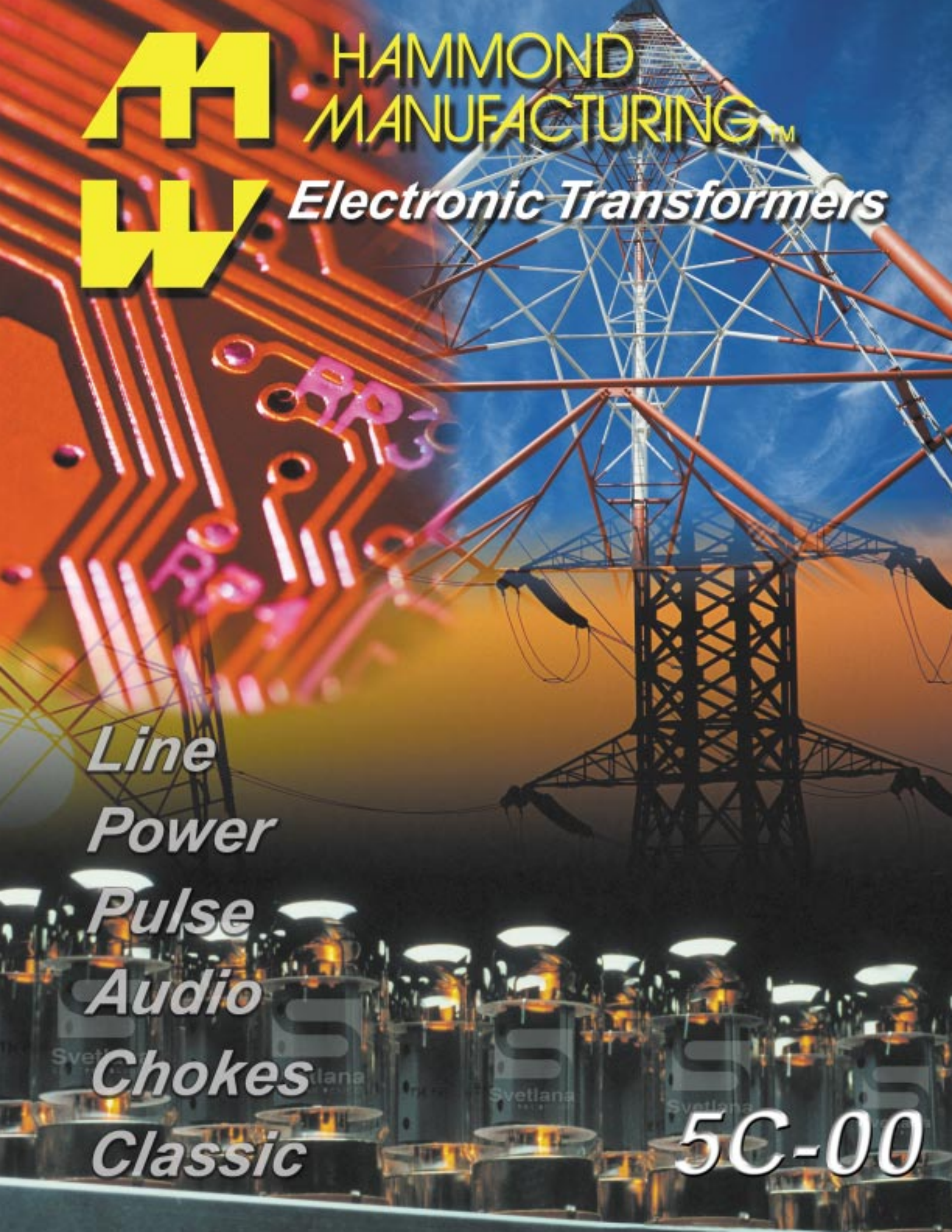
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Quick Tab - Product Locator

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Chokes

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Class 2

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5C-00 cover collage created with stock photos and group tube photo, compliments of Svetlana Electron Devices (www.svetlana.com)

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Table Of Contents

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Power

TRANSFORMER SELECTION GUIDE

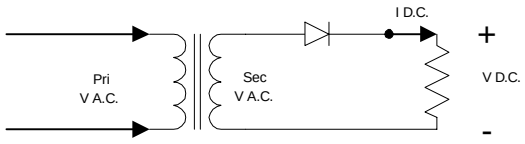
Transformer Voltage: A transformer's secondary A.C. voltage required varies greatly with the type of rectifier chosen and filter arrangement. Use the formulas below as a guide based on the D.C. voltage you require and the rectifier/filter chosen. All A.C. voltage references are R.M.S. Don't forget to take into account losses (not included in this guide), especially diode voltage drop. Leave an adequate safety margin for D.C. regulator voltage requirements and minimum operating line voltage.

Transformer Current Ratings: A transformer's A.C. current rating needs to be recalculated from the D.C. load current. The required current varies with type of rectifier chosen and filter type. Use the formulas below as a guide, shown for common D.C. supplies. Included in the formulas is higher peak to peak capacitor charging current in the filter.

Rectifier Selection Notes: When selecting rectifiers remember, average current in a full wave circuit is .5 x I D.C. per diode. In a half wave circuit, average current is equal to I D.C. per diode. A rating at least twice the output current is recommended to cover turn on surge. In full wave circuits, the reverse voltage rating should be in excess of 1.4 x V A.C. In half wave circuits, the reverse voltage rating should be in excess of 2.8 x V A.C.

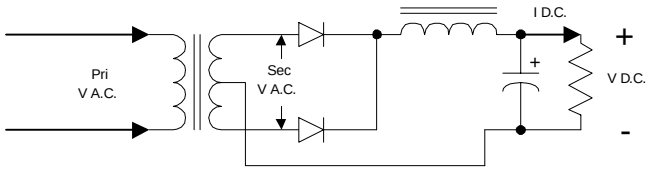
Capacitor Selection Notes: When choosing capacitor voltage, allowances should be made for D.C. voltage rise due to transformer regulation. Remember, RMS ripple current in a filter capacitor can be 2 to 3 times D.C. load current. Capacitor life is greatly increased by reducing it's temperature via less RMS current or reduced ambient temperature.

HALF WAVE Resistive Load



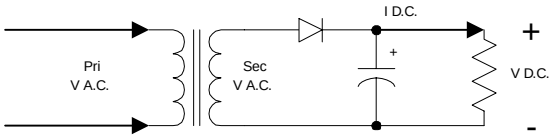
V D.C. = 0.45 X Sec. V A.C.
I D.C. = 0.64 X Sec. I A.C.

FULL WAVE Choke Input Load



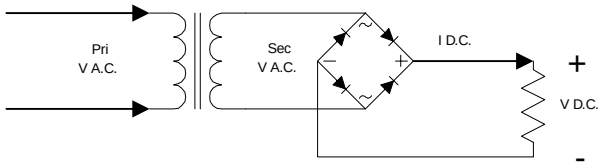
V (Peak) D.C. = 0.45 X Sec. V A.C.
V (Avg) D.C. = 0.45 X Sec. V A.C.
I D.C. = 1.54 X Sec. I A.C.

HALF WAVE Capacitor Input Load



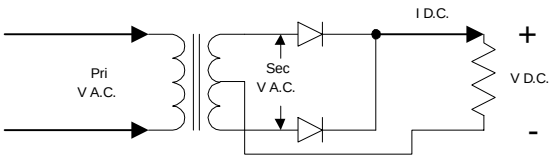
V (Peak) D.C. = 1.41 X Sec. V A.C.
V (Avg) D.C. = 0.90 X Sec. V A.C.
I D.C. = 0.28 X Sec. I A.C.

FULL WAVE BRIDGE Resistive Load



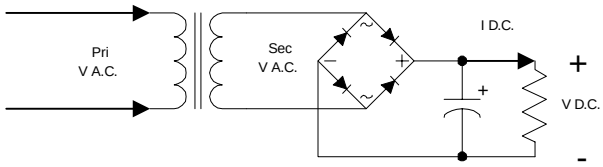
V D.C. = 0.90 X Sec. V A.C.
I D.C. = 0.90 X Sec. I A.C.

FULL WAVE Resistive Load



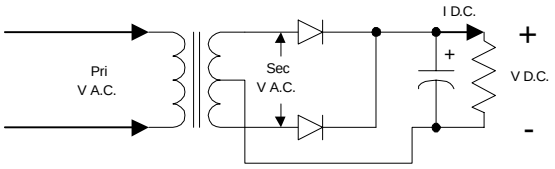
V D.C. = 0.45 X Sec. V A.C.
I D.C. = 1.27 X Sec. I A.C.

FULL WAVE BRIDGE Capacitor Input Load



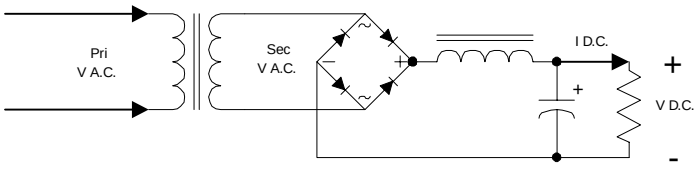
V (Peak) D.C. = 1.41 X Sec. V A.C.
V (Avg) D.C. = 0.90 X Sec. V A.C.
I D.C. = 0.62 X Sec. I A.C.

FULL WAVE Capacitor Input Load



V (Peak) D.C. = 0.71 X Sec. V A.C.
V (Avg) D.C. = 0.45 X Sec. V A.C.
I D.C. = 1.00 X Sec. I A.C.

FULL WAVE BRIDGE Choke Input Load



V (Peak) D.C. = 0.90 X Sec. V A.C.
V (Avg) D.C. = 0.90 X Sec. V A.C.
I D.C. = 0.94 X Sec. I A.C.

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LOW VOLTAGE - P.C. BOARD MOUNT LOW PROFILE

- 20 output voltages to choose from (5 - 120VAC R.M.S.)
- Six VA size models available from - 1.1 to 36VA
- Both series operate on 50/60 Hz current
- Low profile, split bobbin design.
- Dual winding secondaries, non-concentrically wound
- Low primary to secondary coupling - no electrostatic shield required.
- Choice of economical single primary 115V (164 series) or universal dual primary 115/230V (162 series) - either model 50/60 Hz operation.
- One year warranty
- High insulation - Hipot of 2,500V RMS.
- Class B insulation - 130 degrees C.
- No mounting hardware required on 1.1 and 2.4 VA sizes, two hole mounting on 6, 12 and 20VA sizes, four hole mounting on 36VA size (mounting screws not provided). P.C. board mount with industry standard pin spacing.
- CSA certified (# LR3902) and UL recognized (# E50394).

Cat. No. Single Pri. 115V	Cat. No. Dual Pri. 115/230V	Size VA	Secondary (RMS)	
			Series	Parallel
164D10	162D10	1.1	10V C.T. @ .11A	5V @ .22A
164E10	162E10	2.4	10V C.T. @ .25A	5V @ .5A
164F10	162F10	6.0	10V C.T. @ .6A	5V @ 1.2A
164G10	162G10	12.0	10V C.T. @ 1.2A	5V @ 2.4A
164H10	162H10	20.0	10V C.T. @ 2A	5V @ 4.0A
164J10	162J10	36.0	10V C.T. @ 3.6A	5V @ 7.2A
164D12	162D12	1.1	12.6V C.T. @ .09A	6.3V @ .18A
164E12	162E12	2.4	12.6V C.T. @ .2A	6.3V @ .4A
164F12	162F12	6.0	12.6V C.T. @ .5A	6.3V @ 1.0A
164G12	162G12	12.0	12.6V C.T. @ 1.0A	6.3V @ 2.0A
164H12	162H12	20.0	12.6V C.T. @ 1.6A	6.3V @ 3.2A
164J12	162J12	36.0	12.6V C.T. @ 2.85A	6.3V @ 5.7A
164D16	162D16	1.1	16V C.T. @ .07A	8V @ .14A
164E16	162E16	2.4	16V C.T. @ .15A	8V @ .3A
164F16	162F16	6.0	16V C.T. @ .4A	8V @ .8A
164G16	162G16	12.0	16V C.T. @ .8A	8V @ 1.6A
164H16	162H16	20.0	16V C.T. @ 1.25A	8V @ 2.5A
164J16	162J16	36.0	16V C.T. @ 2.25A	8V @ 4.5A
164D20	162D20	1.1	20V C.T. @ .055A	10V @ .11A
164E20	162E20	2.4	20V C.T. @ .12A	10V @ .24A
164F20	162F20	6.0	20V C.T. @ .3A	10V @ .6A
164G20	162G20	12.0	20V C.T. @ .6A	10V @ 1.2A
164H20	162H20	20.0	20V C.T. @ 1A	10V @ 2.0A
164J20	162J20	36.0	20V C.T. @ 1.8A	10V @ 3.6A
164D24	162D24	1.1	24V C.T. @ .045A	12V @ .09A
164E24	162E24	2.4	24V C.T. @ .1A	12V @ .2A
164F24	162F24	6.0	24V C.T. @ .25A	12V @ .5A
164G24	162G24	12.0	24V C.T. @ .5A	12V @ 1.0A
164H24	162H24	20.0	24V C.T. @ .8A	12V @ 1.6A
164J24	162J24	36.0	24V C.T. @ 1.5A	12V @ 3.0A
164D28	162D28	1.1	28V C.T. @ .04A	14V @ .08A
164E28	162E28	2.4	28V C.T. @ .085A	14V @ .17A
164F28	162F28	6.0	28V C.T. @ .2A	14V @ .4A
164G28	162G28	12.0	28V C.T. @ .42A	14V @ .84A
164H28	162H28	20.0	28V C.T. @ .7A	14V @ 1.4A
164J28	162J28	36.0	28V C.T. @ 1.3A	14V @ 2.6A
164D36	162D36	1.1	36V C.T. @ .03A	18V @ .06A
164E36	162E36	2.4	36V C.T. @ .065A	18V @ .13A
164F36	162F36	6.0	36V C.T. @ .17A	18V @ .34A
164G36	162G36	12.0	36V C.T. @ .35A	18V @ . 7A
164H36	162H36	20.0	36V C.T. @ .55A	18V @ 1.1A
164J36	162J36	36.0	36V C.T. @ 1A	18V @ 2.0A
164D48	162D48	1.1	48V C.T. @ .023A	24V @ .046A
164E48	162E48	2.4	48V C.T. @ .05A	24V @ .1A
164F48	162F48	6.0	48V C.T. @ .125A	24V @ .25A
164G48	162G48	12.0	48V C.T. @ .25A	24V @ .5A
164H48	162H48	20.0	48V C.T. @ .4A	24V @ .8A
164J48	162J48	36.0	48V C.T. @ .75A	24V @ 1.5A
164D56	162D56	1.1	56V C.T. @ .02A	28V @ .04A
164E56	162E56	2.4	56V C.T. @ .045A	28V @ .09A
164F56	162F56	6.0	56V C.T. @ .11A	28V @ .22A
164G56	162G56	12.0	56V C.T. @ .22A	28V @ .44A
164H56	162H56	20.0	56V C.T. @ .35A	28V @ .7A
164J56	162J56	36.0	56V C.T. @ .65A	28V @ 1.3A
164D120	162D120	1.1	120V C.T. @ .01A	60V @ .02A
164E120	162E120	2.4	120V C.T. @ .02A	60V @ .04A
164F120	162F120	6.0	120V C.T. @ .05A	60V @ .1A
164G120	162G120	12.0	120V C.T. @ .1A	60V @ .2A
164H120	162H120	20.0	120V C.T. @ .16A	60V @ .32A
164J120	162J120	36.0	120V C.T. @ .3A	60V @ .6A

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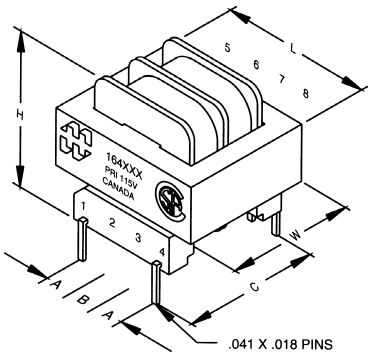
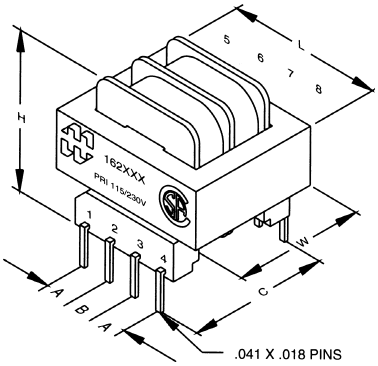
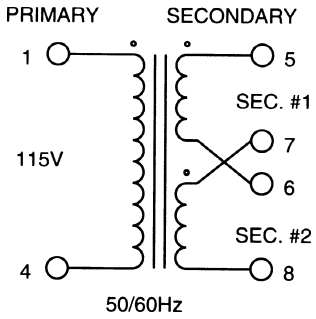
Single Primary - 164 Series



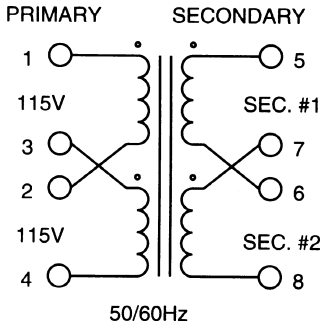
Dual Primary - 162 Series



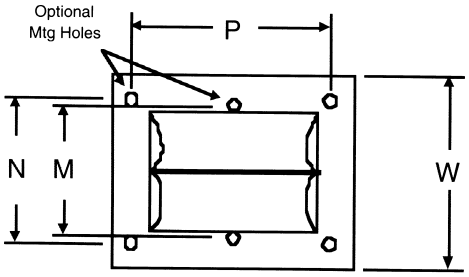
Single Primary - 164 Series Schematic



Dual Primary - 162 Series Schematic



164 & 162 Series - Common Mounting Hole Drawing (6, 12, 20 & 36 VA units)



Top View

164 & 162 Series Common Dimension Table

(VA) Size	L	W	H	A	B	C	M	N	P	Mtg. Screw	lbs.
1.1	1 3/8	1 1/8	1 15/16	.25	.25	1.20	--	--	--	--	0.17
2.4	1 3/8	1 1/8	1 3/16	.25	.25	1.20	--	--	--	--	0.25
6	1 5/8	1 5/16	1 5/16	.25	.35	1.28	1 1/16	--	--	#4	0.44
12	1 7/8	1 9/16	1 1/2	.30	.40	1.41	1 1/4	--	--	#4	0.70
20	2 1/4	1 7/8	1 7/16	.30	.40	1.60	1 1/2	--	--	#4	0.80
36	2 5/8	2 3/16	1 9/16	.40	.40	1.85	--	1 3/4	2 3/16	#6	1.10

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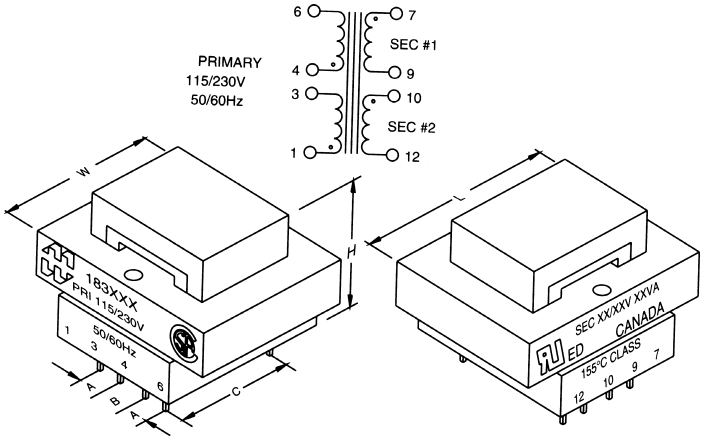
LOW VOLTAGE - P.C. BOARD MOUNT UNIVERSAL

- 14 output voltages to choose from (5 - 36 VAC R.M.S.)
- Six VA size models available from - 2.5 to 56VA
- Universal operation on 50/60 Hz current, 115 or 230V dual primary
- Low profile, split bobbin with top shroud design.
- Dual winding secondaries, non-concentrically wound
- Low primary to secondary coupling - no electrostatic shield required.
- One year warranty
- High insulation - Hipot of 4,000V RMS.
- Class F insulation - 155 degrees C.
- Two hole mounting on 2.5, 5, 10 and 20VA sizes, four hole mounting on 30 and 56VA size (mounting screws not provided).
- P.C. board mount with industry standard pin spacing.
- CSA certified (# LR3902) and UL recognized (# E50394).

183 Series - Drawing & Schematic



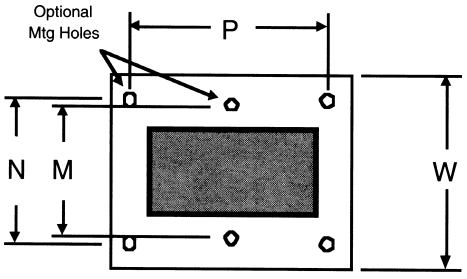
Dimension Table

(VA) Size	L	W	H	A	B	C	M	N	P	Mtg. Screw	lbs.
2.5	1 5/8	1 7/16	1 1/8	.20	.25	1.00	1 1/16	--	--	#4	0.17
5	1 5/8	1 7/16	1 3/8	.20	.40	1.00	1 1/16	--	--	#4	0.37
10	1 7/8	1 9/16	1 3/8	.20	.40	1.14	1 1/4	--	--	#4	0.53
20	2 1/4	1 7/8	1 5/8	.40	.40	1.46	1 1/2	--	--	#4	0.9
30	2 5/8	2 3/16	1 9/16	.55	.28	1.68	--	1 3/4	2 3/16	#6	1.15
56	3	2 1/2	1 13/16	.60	.30	1.90	--	2	2 1/2	#6	1.70

Selection Table

Cat. No. Dual Pri. 115/230V	Size VA	Secondary (RMS)	
		Series	Parallel
183E10	2.5	10V C.T. @ .25A	5V @ .5A
183F10	5.0	10V C.T. @ .5A	5V @ 1A
183G10	10.0	10V C.T. @ 1A	5V @ 2A
183H10	20.0	10V C.T. @ 2A	5V @ 4A
183J10	30.0	10V C.T. @ 3A	5V @ 6A
183K10	56.0	10V C.T. @ 5.6A	5V @ 11.2A
183E12	2.5	12.6V C.T. @ .2A	6.3V @ .4A
183F12	5.0	12.6V C.T. @ .4A	6.3V @ .8A
183G12	10.0	12.6V C.T. @ .8A	6.3V @ 1.6A
183H12	20.0	12.6V C.T. @ 1.6A	6.3V @ 3.2A
183J12	30.0	12.6V C.T. @ 2.4A	6.3V @ 4.8A
183K12	56.0	12.6V C.T. @ 4.4A	6.3V @ 8.8A
183E16	2.5	16V C.T. @ .15A	8V @ .3A
183F16	5.0	16V C.T. @ .31A	8V @ .62A
183G16	10.0	16V C.T. @ .62A	8V @ 1.25A
183H16	20.0	16V C.T. @ 1.25A	8V @ 2.5A
183J16	30.0	16V C.T. @ 1.9A	8V @ 3.8A
183K16	56.0	16V C.T. @ 3.5A	8V @ 7A
183E20	2.5	20V C.T. @ .12A	10V @ .24A
183F20	5.0	20V C.T. @ .25A	10V @ .5A
183G20	10.0	20V C.T. @ .5A	10V @ 1A
183H20	20.0	20V C.T. @ 1.0A	10V @ 2A
183J20	30.0	20V C.T. @ 1.5A	10V @ 3A
183K20	56.0	20V C.T. @ 2.8A	10V @ 5.6A
183E24	2.5	24V C.T. @ .1A	12V @ .2A
183F24	5.0	24V C.T. @ .21A	12V @ .42A
183G24	10.0	24V C.T. @ .42A	12V @ .84A
183H24	20.0	24V C.T. @ .83A	12V @ 1.66A
183J24	30.0	24V C.T. @ 1.25A	12V @ 2.5A
183K24	56.0	24V C.T. @ 2.33A	12V @ 4.66A
183E28	2.5	28V C.T. @ .09A	14V @ .18A
183F28	5.0	28V C.T. @ .18A	14V @ .36A
183G28	10.0	28V C.T. @ .36A	14V @ .72A
183H28	20.0	28V C.T. @ .72A	14V @ 1.44A
183J28	30.0	28V C.T. @ 1.06A	14V @ 2.12A
183K28	56.0	28V C.T. @ 2A	14V @ 4A
183E36	2.5	36V C.T. @ .07A	18V @ .14A
183F36	5.0	36V C.T. @ .14A	18V @ .28A
183G36	10.0	36V C.T. @ .28A	18V @ .56A
183H36	20.0	36V C.T. @ .56A	18V @ 1.12A
183J36	30.0	36V C.T. @ .82A	18V @ 1.64A
183K36	56.0	36V C.T. @ 1.56A	18V @ 3.12A

Mounting Hole Drawing



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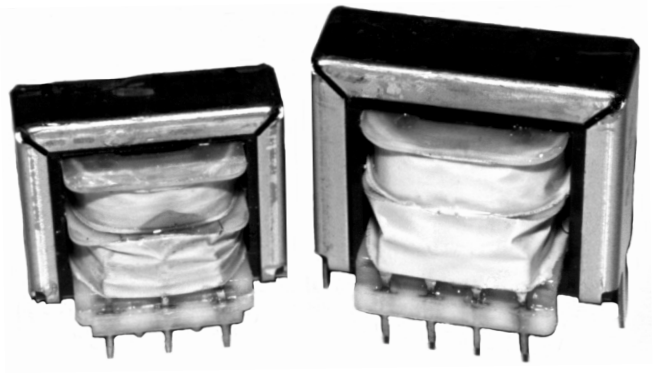
Selection Table

Cat. No. Single Pri. 115V	Cat. No. Dual Pri. 115/230V	Size VA	Secondary (RMS)	
			Series	Parallel
161C10	-	.5	10V C.T. @ 50ma	5V @ 100ma
161D10	160D10	1.0	10V C.T. @ 90ma	5V @ 180ma
161FA10	160F10	1.2	10V C.T. @ 120ma	5V @ 240ma
161GA10	160G10	4.4	10V C.T. @ 440ma	5V @ 880ma
161J10	160J10	10	10V C.T. @ 1A	5V @ 2A
161H10	160H10	24	10V C.T. @ 2.4A	5V @ 4.8A
161C12	-	.5	12.6V C.T. @ 40ma	6.3V @ 80ma
161D12	160D12	1	12.6V C.T. @ 70ma	6.3V @ 140ma
161FA12	160F12	1.2	12.6V C.T. @ 100ma	6.3V @ 200ma
161GA12	160G12	4.4	12.6V C.T. @ 350ma	6.3V @ 700ma
161K12	160K12	10	12.6V C.T. @ 800ma	6.3V @ 1.6A
161H12	160H12	24	12.6V C.T. @ 2A	6.3V @ 4A
161C16	-	.5	16V C.T. @ 31.3ma	8V @ 62.5ma
161D16	160D16	1.0	16V C.T. @ 55ma	8V @ 110ma
161EA16	160E16	1.2	16V C.T. @ 75ma	8V @ 150ma
161FA16	160F16	4.4	16V C.T. @ 260ma	8V @ 520ma
161G16	160G16	10	16V C.T. @ 640ma	8V @ 1.28A
161H16	160H16	24	16V C.T. @ 1.5A	8V @ 3A
161D20	160D20	1	20V C.T. @ 45ma	10V @ 90ma
161EA20	160E20	1.2	20V C.T. @ 60ma	10V @ 120ma
161FA20	160F20	4.4	20V C.T. @ 220ma	10V @ 440ma
161G20	160G20	10	20V C.T. @ 500ma	10V @ 1A
161H20	160H20	24	20V C.T. @ 1.2A	10V @ 2.4A
161D24	160D24	1	24V C.T. @ 35ma	12V @ 70ma
161E24	160E24	1.2	24V C.T. @ 50ma	12V @ 100ma
161F24	160F24	4.4	24V C.T. @ 180ma	12V @ 360ma
161G24	160G24	10	24V C.T. @ 450ma	12V @ 900ma
161H24	160H24	24	24V C.T. @ 1A	12V @ 2A
161D28	160D28	1	28V C.T. @ 30ma	14V @ 60ma
161E28	160E28	1.2	28V C.T. @ 40ma	14V @ 80ma
161F28	160F28	4.4	28V C.T. @ 160ma	14V @ 320ma
161G28	160G28	10	28V C.T. @ 360ma	14V @ 720ma
161H28	160H28	24	28V C.T. @ 800ma	14V @ 1.6A
161D34	160D34	1	34V C.T. @ 25ma	17V @ 50ma
161E34	160E34	1.2	34V C.T. @ 35ma	17V @ 70ma
161F34	160F34	4.4	34V C.T. @ 125ma	17V @ 250ma
161G34	160G34	10	34V C.T. @ 300ma	17V @ 600ma
161H34	160H34	24	34V C.T. @ 700ma	17V @ 1.4A
161D40	160D40	1	40V C.T. @ 20ma	20V @ 40ma
161E40	160E40	1.2	40V C.T. @ 30ma	20V @ 60ma
161F40	160F40	4.4	40V C.T. @ 110ma	20V @ 220ma
161G40	160G40	10	40V C.T. @ 250ma	20V @ 500ma
161H40	160H40	24	40V C.T. @ 600ma	20V @ 1.2A
161D56	160D56	1	56V C.T. @ 15ma	28V @ 30ma
161E56	160E56	1.2	56V C.T. @ 20ma	28V @ 40ma
161F56	160F56	4.4	56V C.T. @ 80ma	28V @ 160ma
161G56	160G56	10	56V C.T. @ 180ma	28V @ 360ma
161H56	160H56	24	56V C.T. @ 420ma	28V @ 840ma
161D120	160D120	1	120V C.T. @ 8ma	60V @ 16ma
161E120	160E120	1.2	120V C.T. @ 10ma	60V @ 20ma
161F120	160F120	4.4	120V C.T. @ 35ma	60V @ 70ma
161G120	160G120	10	120V C.T. @ 85ma	60V @ 170ma
161H120	160H120	24	120V C.T. @ 200ma	60V @ 400ma



LOW VOLTAGE - P.C. BOARD VERTICAL MOUNT

- 20 output voltages to choose from (5 - 120VAC R.M.S.)
- Six VA size models available from - .5 to 24 VA
- Vertical mount, split bobbin design.
- Dual winding secondaries, non-concentrically wound
- Low primary to secondary coupling - no electrostatic shield required.
- Choice of economical single primary 115V - 60 Hz only (161 series) or the universal dual primary 115/230V - 50/60 Hz (160 series).
- One year warranty
- High insulation - Hipot of 2,000V RMS.
- Class B insulation - 130 degrees C.
- CSA certified (File # LR3902) and UL recognized (File #E50394).

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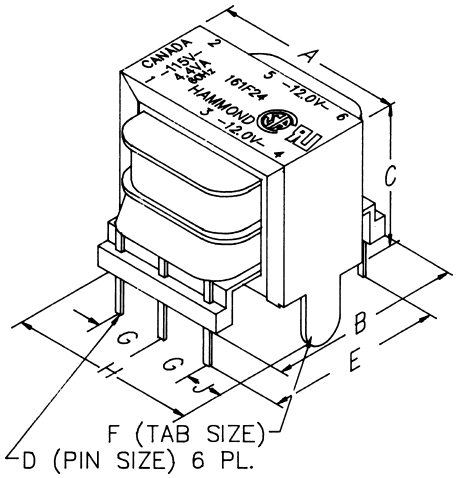
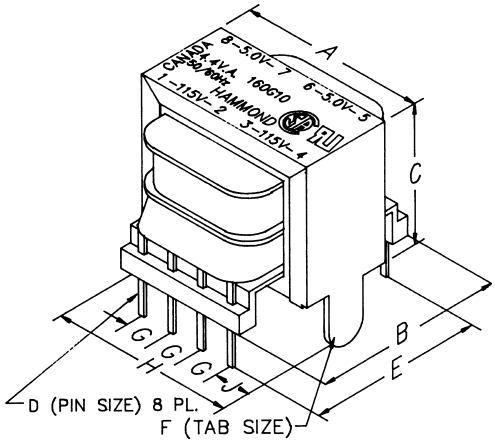
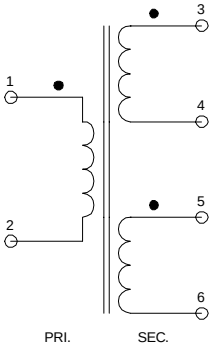
Single Primary - 161 Series



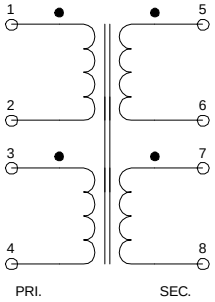
Dual Primary - 160 Series



Single Primary - 161 Series Schematic



Dual Primary - 160 Series Schematic



Single Primary - Dimension Table

(VA) Size	A	B	C	D	E	F	G	H	J
0.5	1.00	0.94	0.84	0.25 sq.	0.78	N/A	.20	N/A	N/A
1	1.00	1.38	0.83	.018 x .041	1.20	N/A	.20	N/A	N/A
1.2	1.38	1.19	1.22	.018 x .041	1.00	N/A	.31	N/A	N/A
4.4	1.69	1.25	1.45	.018 x .041	1.10	.125 x .03	.40	1.67	0.44
10	1.94	1.44	1.69	.018 x .041	1.30	.188 x .03	.40	1.89	0.55
24	1.63	2.25	1.38	.018 x .041	2.10	N/A	.40	N/A	N/A

Dual Primary - Dimension Table

(VA) Size	A	B	C	D	E	F	G	H	J
1	1.00	1.38	0.83	.018 x .041	1.20	N/A	.20	N/A	N/A
1.2	1.38	1.19	1.22	.018 x .041	1.00	N/A	.20	N/A	N/A
4.4	1.69	1.25	1.45	.018 x .041	1.10	.125 x .03	.25	1.67	0.46
10	1.94	1.44	1.69	.018 x .041	1.30	.188 x .03	.25	1.89	0.57
24	1.63	2.25	1.38	.018 x .041	2.10	N/A	.25	N/A	N/A

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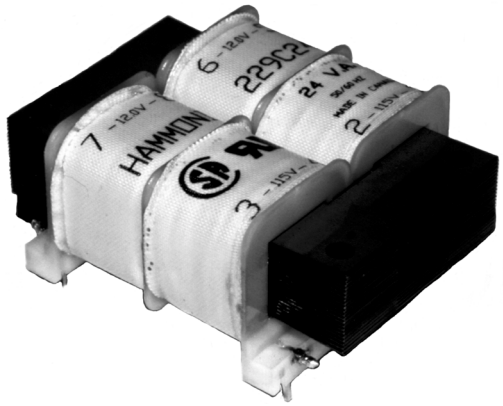
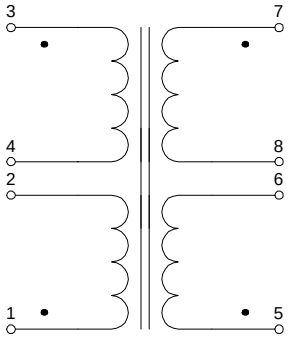
Selection Table

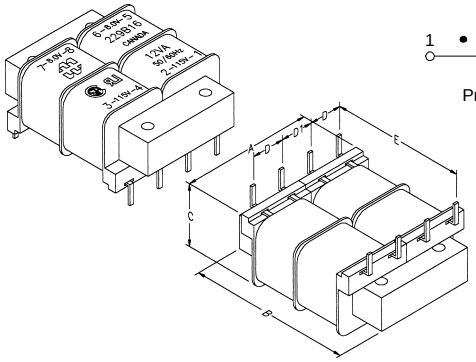
Cat. No. Dual Pri. 115/230V	Size VA	Secondary (RMS)	
		Series	Parallel
229E10	2	10V C.T. @ 250ma	5V @ 500ma
229A10	6	10V C.T. @ 600ma	5V @ 1.2A
229B10	12	10V C.T. @ 1.2A	5V @ 2.4A
229C10	24	10V C.T. @ 2.4A	5V @ 4.8A
229D10	48	10V C.T. @ 4.8A	5V @ 9.6A
229E12	2	12.6V C.T. @ 200ma	6.3V @ 400ma
229A12	6	12.6V C.T. @ 450ma	6.3V @ 900ma
229B12	12	12.6V C.T. @ 900ma	6.3V @ 1.8a
229C12	24	12.6V C.T. @ 1.9A	6.3V @ 3.8A
229D12	48	12.6V C.T. @ 3.8A	6.3V @ 7.6A
229E16	2	16V C.T. @ 150ma	8V @ 300ma
229A16	6	16V C.T. @ 350ma	8V @ 700ma
229B16	12	16V C.T. @ 700ma	8V @ 1.4A
229C16	24	16V C.T. @ 1.5A	8V @ 3A
229D16	48	16V C.T. @ 3A	8V @ 6A
229E20	2	20V C.T. @ 125ma	10V @ 250ma
229A20	6	20V C.T. @ 300ma	10V @ 600ma
229B20	12	20V C.T. @ 600ma	10V @ 1.2A
229C20	24	20V C.T. @ 1.2A	10V @ 2.4A
229D20	48	20V C.T. @ 2.4A	10V @ 4.8A
229E24	2	24V C.T. @ 100ma	12V @ 200ma
229A24	6	24V C.T. @ 250ma	12V @ 500ma
229B24	12	24V C.T. @ 500ma	12V @ 1A
229C24	24	24V C.T. @ 1A	12V @ 2A
229D24	48	24V C.T. @ 2A	12V @ 4A
229E30	2	30V C.T. @ 85ma	15V @ 170ma
229A30	6	30V C.T. @ 200ma	15V @ 400ma
229B30	12	30V C.T. @ 400ma	15V @ 800ma
229C30	24	30V C.T. @ 800ma	15V @ 1.6A
229D30	48	30V C.T. @ 1.6A	15V @ 3.2A
229E34	2	34V C.T. @ 75ma	17V @ 150ma
229A34	6	34V C.T. @ 170ma	17V @ 340ma
229B34	12	34V C.T. @ 340ma	17V @ 680ma
229C34	24	34V C.T. @ 700ma	17V @ 1.4A
229D34	48	34V C.T. @ 1.4A	17V @ 2.8A
229E40	2	40V C.T. @ 60ma	20V @ 120ma
229A40	6	40V C.T. @ 150ma	20V @ 300ma
229B40	12	40V C.T. @ 300ma	20V @ 600ma
229C40	24	40V C.T. @ 600ma	20V @ 1.2A
229D40	48	40V C.T. @ 1.2A	20V @ 2.4A
229E56	2	56V C.T. @ 45ma	28V @ 90ma
229A56	6	56V C.T. @ 100ma	28V @ 200ma
229B56	12	56V C.T. @ 200ma	28V @ 400ma
229C56	24	56V C.T. @ 425ma	28V @ 850ma
229D56	48	56V C.T. @ 850ma	28V @ 1.7A
229E88	2	88V C.T. @ 28ma	44V @ 56ma
229A88	6	88V C.T. @ 65ma	44V @ 130ma
229B88	12	88V C.T. @ 130ma	44V @ 260ma
229E120	2	120V C.T. @ 20ma	60V @ 40ma
229A120	6	120V C.T. @ 50ma	60V @ 100ma
229B120	12	120V C.T. @ 100ma	60V @ 200ma
229E230	2	230V C.T. @ 10ma	115V @ 20ma
229A230	6	230V C.T. @ 25ma	115V @ 50ma
229B230	12	230V C.T. @ 50ma	115V @ 100ma



LOW VOLTAGE - P.C. BOARD
LOW PROFILE

- Low profile mounting, dual - split bobbin design.
- Low primary to secondary coupling, balanced windings, no electrostatic shield required and low EMF radiation due to semi-toroidal design.
- Universal dual primary 115/230V - 50/60 Hz.
- High insulation - Hipot of 1,750V RMS.
- Class B insulation - 130 degrees C.
- CSA certified (File # LR3902) and UL recognized (File #E50394).





Dimension Table

(VA) Size	Regulation	P.C. Card Spacing	A	B	C	D	D1	E
2	30%	0.75	1.56	1.88	0.65	0.38	0.38	1.60
6	30%	1.00	1.56	1.88	0.85	0.38	0.38	1.60
12	20%	1.25	2.00	2.50	1.07	0.50	0.50	2.00
24	15%	1.50	2.25	2.87	1.25	0.60	0.53	1.90
48	15%	1.50	2.50	3.12	1.38	0.60	0.66	2.18

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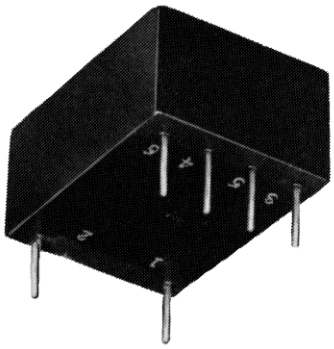
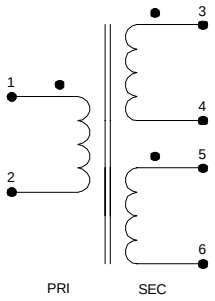
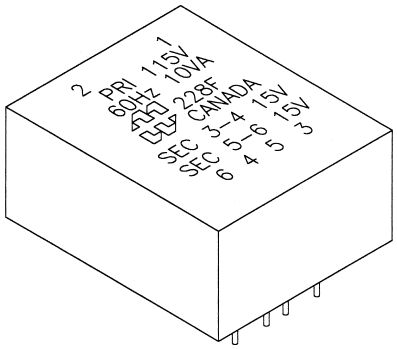


Transformer Schematic



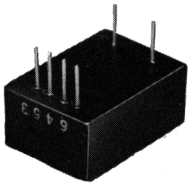
LOW PROFILE - EPOXY CAST
P.C. MOUNT POWER TRANSFORMERS

- Primary 115 VAC, 60 or 400Hz. models, 3 case sizes
- Epoxy cast to withstand shock and severe environments
- Two coil design provides balanced windings and low magnetic radiation - no electrostatic shield required.
- 228 series include four, 6-32 X .38 machine screw inserts for less strain on p.c. board connections.

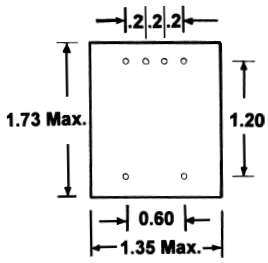


226 SERIES

Cat. No.	Size VA	Freq. Hz	Secondary (RMS) Series	Secondary (RMS) Parallel	Temp. Rise C	% Regul.
226D	1	60	20V C.T. @ 50ma	10V @ 100ma	25	19.7
226F	1	60	30V C.T. @ 34ma	15V @ 67ma	25	21.7
226H	1	60	40V C.T. @ 25ma	20V @ 50ma	25	18.9
226N	20	400	20V C.T. @ 1A	10V @ 2A	35	7.2
226P	20	400	26V C.T. @ 770ma	13V @ 1.54A	35	7.6
226R	20	400	30V C.T. @ 670ma	15V @ 1.33A	35	7.5
226T	20	400	40V C.T. @ 500ma	20V @ 1A	35	7.2

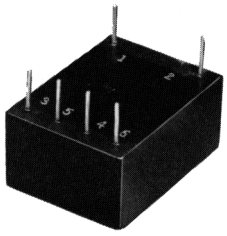


0.22 lbs.
0.80" High Max.
0.04" Pin Dia.

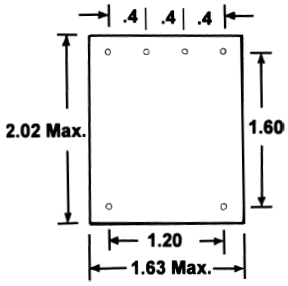


227 SERIES

Cat. No.	Size VA	Freq. Hz	Secondary (RMS) Series	Secondary (RMS) Parallel	Temp. Rise C	% Regul.
227D	5	60	20V C.T. @ 250ma	10V @ 500ma	25	20.07
227F	5	60	30V C.T. @ 170ma	15V @ 340ma	25	24
227H	5	60	40V C.T. @ 125ma	20V @ 250ma	25	26
227N	40	400	20V C.T. @ 2A	10V @ 4A	45	6
227P	40	400	26V C.T. @ 1.54A	13V @ 3.08A	45	5.7
227R	40	400	30V C.T. @ 1.33A	15V @ 2.66A	45	6
227T	40	400	40V C.T. @ 1A	20V @ 2A	45	5.7

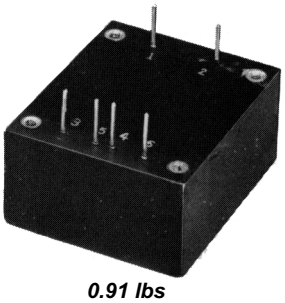


0.38 lbs
1.05" High Max.
0.05" Pin Dia.

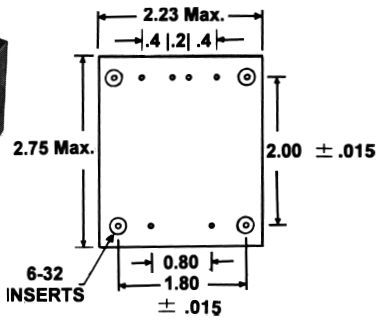


228 SERIES

Cat. No.	Size VA	Freq. Hz	Secondary (RMS) Series	Secondary (RMS) Parallel	Temp. Rise C	% Regul.
228D	10	60	20V C.T. @ 500ma	10V @ 1A	20	12.2
228F	10	60	30V C.T. @ 340ma	15V @ 670ma	20	12.5
228H	10	60	40V C.T. @ 250ma	20V @ 500ma	20	12.2



0.91 lbs
1.22" High Max.
0.05" Pin Dia.



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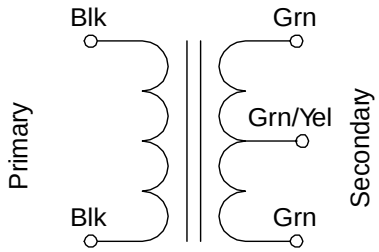
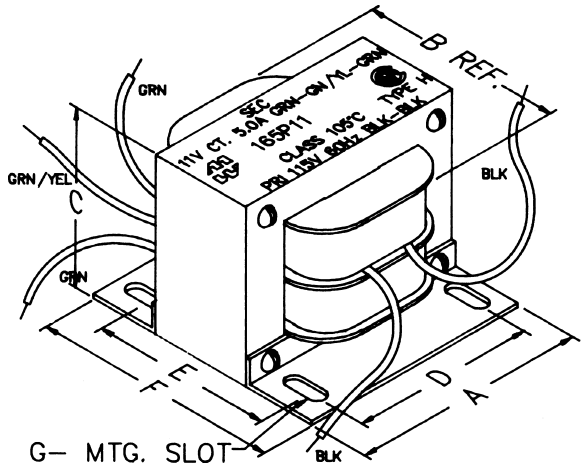
Transformer Schematic



HIGH CURRENT - OPEN FRAME FILAMENT & L.V. RECTIFIER USE TRANSFORMERS

- Primary 115 VAC, 60 Hz.
- All secondaries center tapped, VAC (RMS)
- Open style, 4 hole frame chassis mount.
- Minimum 6" long leads or copper tabs with holes.
- Dual bobbin design - no electrostatic shield required.
- Class B insulation (130 degrees, C).
- Hi-Pot test of 2,000V RMS.
- UL listed (# E50394)& CSA certified (# LR3902).



Dimension Table

Mtg. Style	Dimensions						Mtg. Slot
	A	B	C	D	E	F	
H7	3.00	3.25	2.56	2.50	3.25	4.00	.22x.56
H9	3.75	2.63	3.13	3.13	2.50	3.25	.22x.56
H10	3.75	3.13	3.13	3.13	2.75	3.50	.22x.56
H12	3.75	3.63	3.13	3.13	3.25	4.00	.22x.56
H16	4.50	3.88	3.75	3.75	2.75	3.50	.28x.56
H18	4.50	4.38	3.75	3.75	3.25	4.00	.28x.56
H19	4.50	4.38	3.75	3.75	3.75	4.50	.28x.56

Selection Table

Primary 115 VAC 60 Hz.

Cat. No.	Secondary (RMS)		Dim. Ref.
	VAC	Amps	
165Z3	3.0ct	50	H10
165X5	5.0ct	30	H9
165V7	7.5ct	21	H9
165V10	10.0ct	20	H10
165U11	11.0ct	15	H9
165S12	12.6ct	10	H7
165V12	12.6ct	20	H12
165S18	18.0ct	10	H10
165U18	18.0ct	15	H16
165V18	18.0ct	20	H18
165T22	22.0ct	12	H16
165V22	22.0ct	20	H19
165P25	25.0ct	5	H7
165S25	25.0ct	10	H12
165P30	30.0ct	5	H7
165S30	30.0ct	10	H16
165P60	60.0ct	5	H16
165N80	80.0ct	4	H18

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OPEN STYLE
DUAL PRIMARY
FILAMENT & L.V. RECTIFIER USE TRANSFORMERS

- Primary 117/234 VAC, 50/60 Hz.
- All units have dual secondaries, can be connected as center tapped or used individually
- Open style
- Minimum 6" long leads.
- Dual bobbin design - no electrostatic shield required.
- Class B insulation (130 degrees, C)
- Hi-Pot test of 2,000V RMS.
- UL listed (# E50394) & CSA certified (# LR3902).

Selection Table

Primary 117/234 VAC 50/60 Hz.

Cat. No.	VA	Secondary VAC (RMS)		Mtg. Style	Dimensions (Inches)					Mounting Hole
		Series	Parallel		A	B	C	D	E	
266F12	3.78	12.6V @ 0.3A	6.3V @ 0.6A	A	2.38	1.50	1.45	2.00	-	0.187
266J12	12.6	12.6V @ 1A	6.3V @ 2A	A	3.25	1.75	2.00	2.81	-	0.187
266L12	31.5	12.6V @ 2.5A	6.3V @ 5A	A	3.69	2.20	2.31	3.13	-	0.187
266N12	50.4	12.6V @ 4A	6.3V @ 8A	A	4.00	2.40	2.62	3.56	-	0.187
266J16	16	16V @ 1A	8V @ 2A	A	3.25	1.90	2.00	2.81	-	0.187
266L16	35.2	16V @ 2.2A	8V @ 4.4A	A	3.69	2.20	2.35	3.13	-	0.187
266M16	48	16V @ 3A	8V @ 6A	A	4.00	2.30	2.62	3.56	-	0.187
266G20	10	20V @ 0.5A	10V @ 1A	V	2.88	1.90	2.37	2.38	-	0.187
266G24	12	24V @ 0.5A	12V @ 1A	V	2.88	1.90	2.37	2.38	-	0.187
266J24	24	24V @ 1A	12V @ 2A	V	3.13	2.00	2.75	2.81	-	0.187
266L24	48	24V @ 2A	12V @ 4A	V	3.56	2.25	3.12	3.13	-	0.187
266N24	96	24V @ 4A	12V @ 8A	B	2.81	3.06	3.38	2.25	2.50	.203 x .375
266J48	48	48V @ 1A	24V @ 2A	V	3.56	2.20	3.12	3.13	-	0.187
266L48	96	48V @ 2A	24V @ 4A	B	2.81	3.06	3.38	2.25	2.50	.203 x .375
266M48	144	48V @ 3A	24V @ 6A	B	3.13	3.06	3.84	2.50	2.50	.203 x .375
266N48	192	48V @ 4A	24V @ 8A	B	3.44	3.62	4.22	2.75	3.00	.203 x .375

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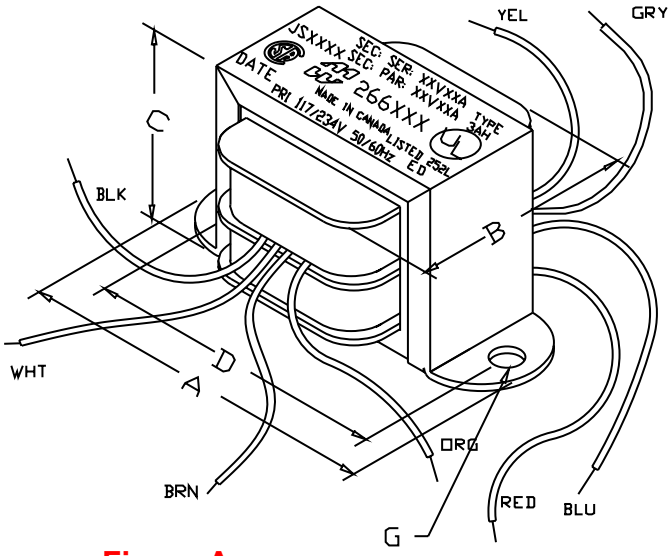


Figure A

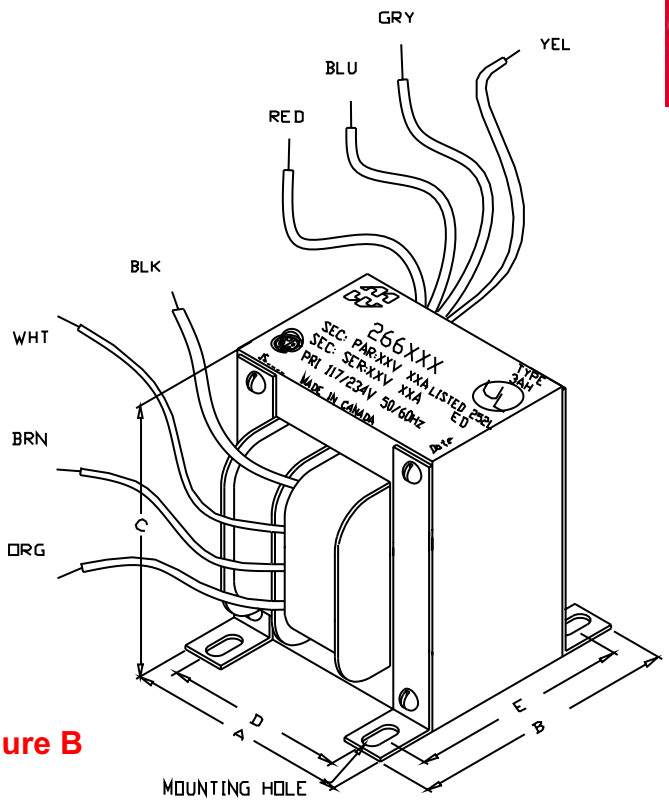


Figure B

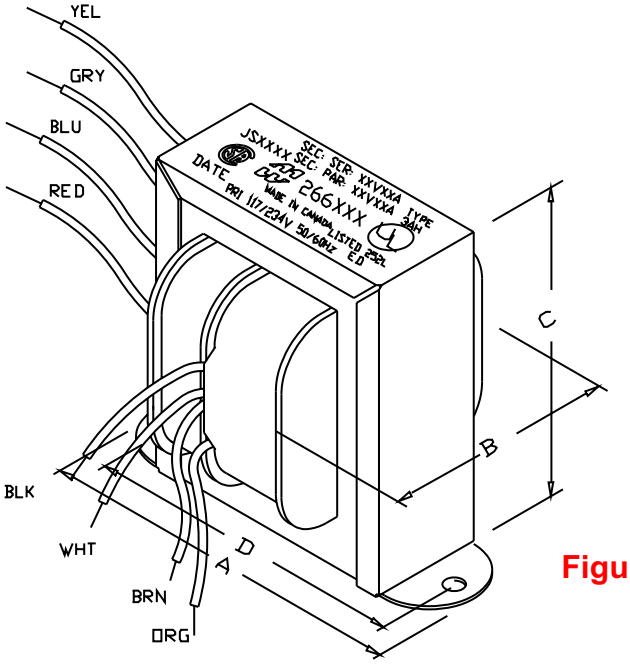
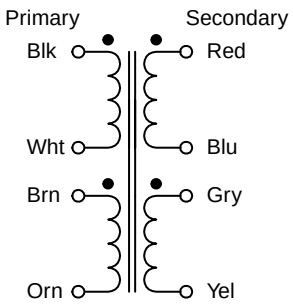


Figure V

Transformer Schematic



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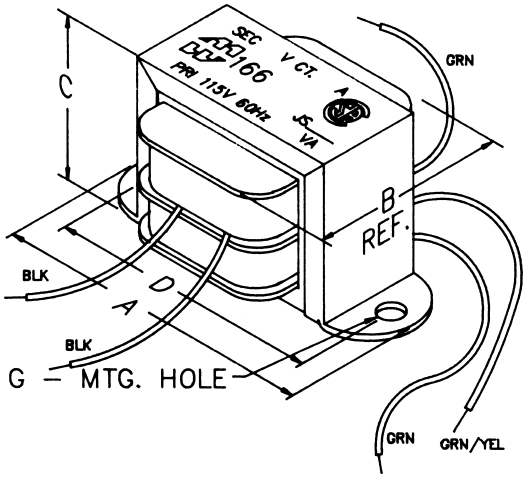
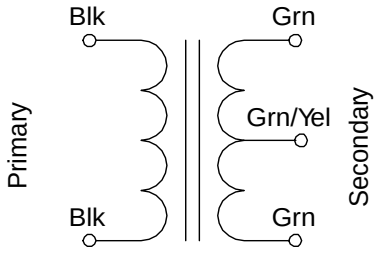
OPEN STYLE
FILAMENT & L.V. RECTIFIER USE TRANSFORMERS

- Primary 115 VAC, 60 Hz.
- All secondaries center tapped, VAC (RMS)
- Open style, channel bracket, two hole chassis mount.
- Minimum 6" long leads.
- Dual bobbin design - no electrostatic shield required.
- Class B insulation (130 degrees, C)
- Hi-Pot test of 2,000V RMS.
- UL listed (# E50394) & CSA certified (# LR3902).



Transformer Schematic



Dimension Table

Mtg. Style	Dimensions				Mtg. Hole
	A	B	C	D	
C0H	1.35	0.69	0.69	1.06	.125
C1H	1.63	0.88	0.81	1.38	.125
C2H	2.06	1.25	1.19	1.75	.187
C3H	2.06	1.38	1.19	1.75	.187
C4H	2.38	1.38	1.38	2.00	.187
C5H	2.38	1.50	1.38	2.00	.187
C6H	2.81	1.50	1.69	2.38	.187
C7H	2.81	1.63	1.69	2.38	.187
C8H	3.25	1.63	2.00	2.81	.187
C9H	3.25	1.75	2.00	2.81	.187
C10H	3.25	2.00	2.00	2.81	.187
C11H	3.69	1.88	2.31	3.13	.187
C12H	3.69	2.00	2.31	3.13	.187
C13H	3.69	2.13	2.31	3.13	.187
C14H	4.03	2.25	2.63	3.56	.187
C15H	4.03	2.50	2.63	3.56	.187
C16H	4.50	2.50	2.88	4.00	.203

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Primary 115 VAC 60 Hz.

Cat. No.	Secondary (RMS)		Dim. Ref.
	VAC	Amps	
166F2	2.5ct	0.25	C2H
166G2	2.5ct	0.50	C2H
166J2	2.5ct	1.00	C3H
166K2	2.5ct	1.50	C4H
166L2	2.5ct	2.50	C6H
166M2	2.5ct	3.00	C6H
166Q2	2.5ct	6.00	C8H
166S2	2.5ct	10.00	C12H
166F5	5.0ct	0.25	C2H
166G5	5.0ct	0.50	C3H
166J5	5.0ct	1.00	C5H
166L5	5.0ct	2.00	C7H
166MS	5.0ct	3.00	C9H
166R5	5.0ct	8.00	C12H
166RS	5.0ct	8.00	C16H
166S5	5.0ct	10.00	C13H
166U5	5.0ct	15.00	C14H
166V5	5.0ct	20.00	C16H
166E6	6.3ct	0.15	C2H
166F6	6.3ct	0.30	C3H
166G6	6.3ct	0.60	C4H
166J6	6.3ct	1.00	C6H
166K6	6.3ct	1.20	C6H
166L6	6.3ct	2.00	C7H
166N6	6.3ct	4.00	C9H
166Q6	6.3ct	6.00	C12H
166S6	6.3ct	10.00	C14H
166G7	7.0ct	0.70	C5H
166U7	7.5ct	15.00	C16H
166G8	8.0ct	0.50	C4H
166J8	8.5ct	1.00	C6H
166L8	8.5ct	2.00	C8H
166M8	8.5ct	3.00	C9H
166N8	8.5ct	4.00	C10H
166G9	9.0ct	0.50	C4H
166F10	10.0ct	0.30	C3H
166G10	10.0ct	0.50	C5H
166J10	10.0ct	1.00	C7H
166L10	10.0ct	2.00	C9H
166M10	10.0ct	3.00	C10H
166N10	10.0ct	4.00	C12H
166P10	10.0ct	5.00	C13H
166R10	10.0ct	8.00	C15H
166S10	10.0ct	10.00	C16H
166P11	11.0ct	5.00	C13H
166S11	11.0ct	10.00	C16H
166C12	6.3/12.6ct	.1/.05	C2H
166E12	12.0ct	0.15	C3H
166K12	12.0ct	1.20	C8H
166F12	12.6ct	0.30	C4H
166G12	12.6ct	0.50	C6H
166J12	12.6ct	1.00	C7H
166L12	12.6ct	2.50	C10H
166N12	12.6ct	4.00	C13H
166Q12	12.6ct	6.00	C14H
166R12	12.6ct	8.00	C16H
166E14	14.0ct	0.15	C3H
166G14	14.0ct	0.50	C6H

Primary 115 VAC 60 Hz.

Cat. No.	Secondary (RMS)		Dim. Ref.
	VAC	Amps	
166J14	14.0ct	1.00	C7H
166L14	14.0ct	2.00	C10H
166Q14	14.0ct	6.00	C15H
166F16	16.0ct	0.25	C4H
166G16	16.0ct	0.50	C6H
166J16	16.0ct	1.00	C8H
166L16	16.0ct	2.20	C10H
166M16	16.0ct	3.00	C13H
166B18	9.0/18.0ct	.06/.03	C2H
166K18	18.0ct	1.50	C9H
166M18	18.0ct	3.00	C13H
166P18	18.0ct	5.00	C15H
166D20	20.0ct	0.1	C3H
166E20	20.0ct	0.15	C3H
166F20	20.0ct	0.30	C5H
166G20	20.0ct	0.50	C7H
166J20	20.0ct	1.00	C9H
166L20	20.0ct	2.00	C11H
166L22	22.0ct	2.00	C13H
166A24	12.6/25.2ct	.05/.025	C2H
166C24	24.0ct	.085	C3H
166L24	24.0ct	2.00	C13H
166N24	24.0ct	4.00	C16H
166D25	25.0ct	0.10	C3H
166E25	25.0ct	0.15	C4H
166F25	25.0ct	0.30	C6H
166G25	25.0ct	0.50	C7H
166J25	25.0ct	1.0	C9H
166K25	25.0ct	1.5	C11H
166L25	25.0ct	2.00	C13H
166M25	25.0ct	3.00	C14H
166F28	28.0ct	0.25	C6H
166G28	28.0ct	0.50	C7H
166J28	28.0ct	1.00	C10H
166L28	28.0ct	2.00	C13H
166E30	30.0ct	0.15	C4H
166F30	30.0ct	0.25	C6H
166G30	30.0ct	0.50	C8H
166J33	33.0ct	1.00	C10H
166K35	35.0ct	1.50	C13H
166E36	36.0ct	0.15	C5H
166F36	36.0ct	0.30	C7H
166G36	36.0ct	0.50	C8H
166J36	36.0ct	1.00	C11H
166L42	42.0ct	2.00	C15H
166E44	44.0ct	0.15	C6H
166F44	44.0ct	0.25	C7H
166G44	44.0ct	0.50	C9H
166J44	44.0ct	1.00	C12H
166C50	50.0ct	0.075	C4H
166F50	50.0ct	0.30	C8H
166G50	50.0ct	0.50	C9H
166J50	50.0ct	1.00	C13H
166L50	50.0ct	2.00	C16H
166G60	60.0ct	0.50	C10H
166G80	80.0ct	0.50	C11H
166G100	100.0ct	0.50	C13H
166F120	120.0ct	0.30	C11H

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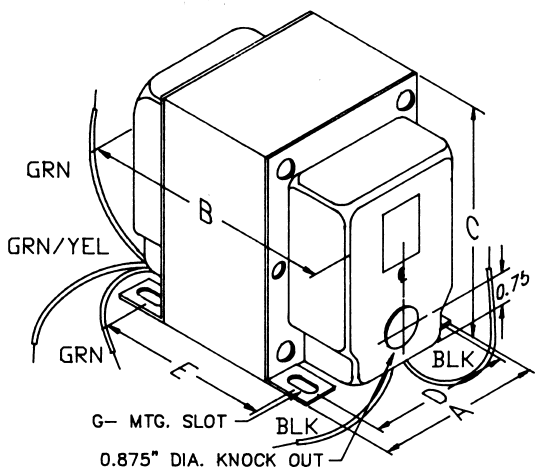
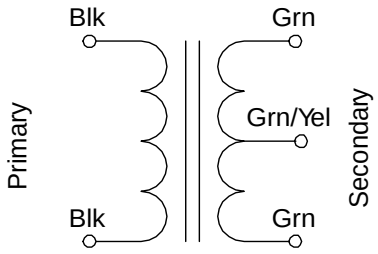
Filament & L.V. Rectifier Use



ENCLOSED
FILAMENT & L.V. RECTIFIER USE
TRANSFORMERS

- Primary 115 VAC, 60 Hz.
- All secondaries center tapped, VAC (RMS)
- Enclosed, 4 hole chassis mount.
- Minimum 6" long leads.
- Dual bobbin design - no electrostatic shield required.
- Class B insulation (130 degrees C).
- Hi-Pot test of 2,000V RMS.
- UL listed (# E50394) & CSA certified (# LR3902).

Transformer Schematic



Dimension Table

Mtg. Style	Dimensions					G-Mtg. Slot
	A	B	C	D	E	
X1	1.88	2.19	2.50	1.50	1.31	.19 X .31
X2	1.88	2.44	2.50	1.50	1.56	.19 X .31
X3	2.19	2.38	2.63	1.75	1.31	.19 X .25
X4	2.19	2.50	2.63	1.75	1.44	.19 X .25
X5	2.19	2.63	2.63	1.75	1.56	.19 X .25
X6	2.50	2.75	3.06	2.00	1.69	.203 X .38
X7	2.50	3.00	3.06	2.00	1.94	.203 X .38
X8	2.50	3.25	3.06	2.00	2.19	.203 X .38
X9	2.50	3.75	3.06	2.00	2.69	.203 X .38
X10	3.13	3.50	3.81	2.50	2.19	.203 X .38
X11	3.13	3.75	3.81	2.50	2.44	.203 X .38
X13	3.75	4.00	4.56	3.00	2.81	.203 X .38
X14	3.75	4.50	4.56	3.00	3.31	.203 X .38
X15	3.75	5.00	4.56	3.00	3.81	.203 X .38
X16	3.75	5.50	4.56	3.00	4.31	.203 X .38

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Selection Tables

Primary 115 VAC 60 Hz.

Cat. No.	Secondary (RMS)		Dim. Ref.
	VAC	Amps	
167M5	5.0ct	3	X1
167Q5	5.0ct	6	X2
167R5	5.0ct	8	X4
167S5	5.0ct	10	X5
167U5	5.0ct	15	X6
167V5	5.0ct	20	X8
167X5	5.0ct	30	X10
167N6	6.3ct	4	X2
167Q6	6.3ct	6	X3
167R6	6.3ct	8	X5
167S6	6.3ct	10	X6
167T6	6.3ct	12	X6
167U6	6.3ct	16	X8
167U7	7.5ct	15	X8
167V7	7.5ct	21	X10
167N10	10.0ct	4	X4
167P10	10.0ct	5	X5
167R10	10.0ct	8	X7
167S10	10.0ct	10	X8
167P11	11.0ct	5	X6
167S11	11.0ct	10	X8
167U11	11.0ct	15	X10
167L12	12.6ct	2.5	X2
167N12	12.6ct	4	X5
167Q12	12.6ct	6	X6
167R12	12.6ct	8	X8
167S12	12.6ct	10	X9
167V12	12.6ct	20	X13
167N14	14.0ct	4	X6
167Q14	14.0ct	6	X7
167M16	16.0ct	3	X5
167P16	16.0ct	5	X7
167M18	18.0ct	3	X6
167P18	18.0ct	5	X7
167S18	18.0ct	10	X11
167U18	18.0ct	15	X13
167V18	18.0ct	20	X14
167M20	20.0ct	3	X6
167P20	20.0ct	5	X8
167U20	20.0ct	16	X14
167T22	22.0ct	12	X13
167V22	22.0ct	20	X15
167L24	24.0ct	2	X5

Primary 115 VAC 60 Hz.

Cat. No.	Secondary (RMS)		Dim. Ref.
	VAC	Amps	
167J25	25.0ct	1	X2
167K25	25.0ct	1.5	X3
167M25	25.0ct	3	X6
167N25	25.0ct	4	X8
167P25	25.0ct	5	X9
167S25	25.0ct	10	X13
167J28	28.0ct	1	X2
167L28	28.0ct	2	X6
167M28	28.0ct	3	X7
167K30	30.0ct	1.5	X4
167M30	30.0ct	3	X7
167P30	30.0ct	5	X10
167S30	30.0ct	10	X13
167J33	33.0ct	1	X2
167J36	36.0ct	1	X3
167L36	36.0ct	2	X6
167M36	36.0ct	3	X8
167P36	36.0ct	5	X11
167R36	36.0ct	8	X13
167T36	36.0ct	12	X15
167L44	44.0ct	2	X7
167J50	50.0ct	1	X5
167L50	50.0ct	2	X8
167P50	50.0ct	5	X13
167G55	55.0ct	0.5	X2
167J55	55.0ct	1	X6
167L55	55.0ct	2	X8
167G60	60.0ct	0.5	X2
167J60	60.0ct	1	X6
167L60	60.0ct	2	X9
167M60	60.0ct	3	X11
167P60	60.0ct	5	X13
167S64	64.0ct	10	X16
167L70	70.0ct	2	X9
167N70	70.0ct	4	X13
167G80	80.0ct	0.5	X4
167J80	80.0ct	1	X7
167L80	80.0ct	2	X10
167N80	80.0ct	4	X14
167G100	100.0ct	0.5	X5
167J100	100.0ct	1	X8
167P100	100.0ct	5	X16
167G120	120.0ct	0.5	X6
167H200	200.0ct	0.87	X11

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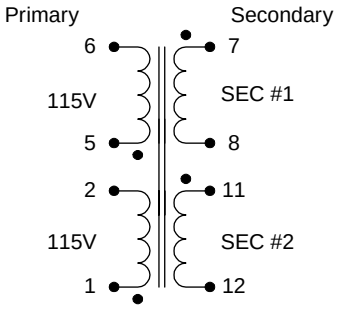
Global Use - Terminal Connection

GLOBAL USE - TERMINAL CONNECTION
L.V. RECTIFIER USE
TRANSFORMERS

- Dual primary 115/230 VAC
- 50/60 Hz. operation
- Dual secondaries for series or parallel connections
- 4,000 V RMS Hi-Pot test
- Chassis mount
- 5 different VA sizes to choose from
- Dual bobbin construction
- Dual use terminals (solder lug or quick connect)
- UL recognized to UL 506
- CSA certified to C22.2 #66
- CE certified to IEC 950

Transformer Schematic



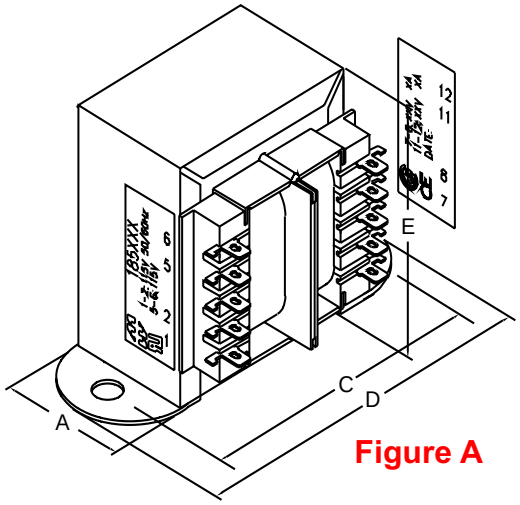


Figure A

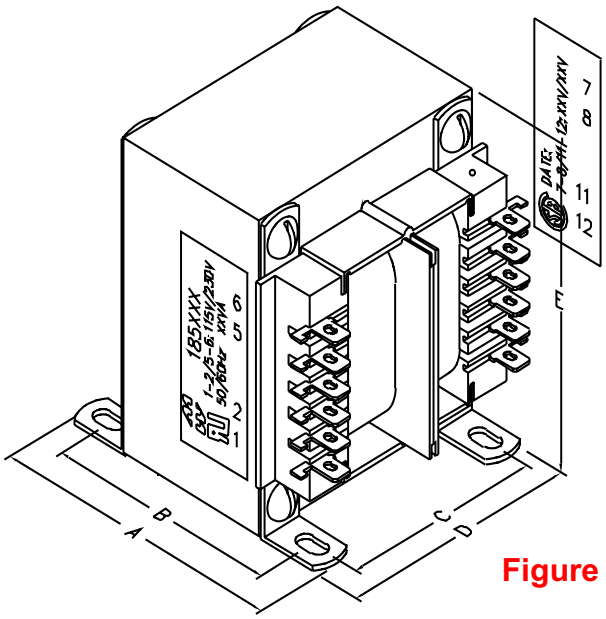


Figure B

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Selection Table

Primary 115/230 VAC 50/60 Hz.

Cat. No.	VA	Secondary VAC (RMS)		Dimensions (Inches)			Fig.	Hole to Hole Mtg. Dim. (Inches)	
		Series	Parallel	D	A	E		C	B
185C10	25	10VCT @ 2.5A	5V @ 5.0A	2.81	1.87	2.31	A	2.37	-
185D10	43	10VCT @ 4.3A	5V @ 8.6A	3.12	2.06	2.68	A	2.81	-
185E10	80	10VCT @ 8.0A	5V @ 16.0A	2.5	2.37	3	B	2	2.18
185F10	130	10VCT @ 13.0A	5V @ 26.0A	2.81	2.87	3.37	B	2.25	2.5
185G10	175	10VCT @ 17.5A	5V @ 35.0A	3.12	2.87	3.75	B	2.5	2.5
185C12	25	12.6VCT @ 2.0A	6.3V @ 4.0A	2.81	1.87	2.31	A	2.37	-
185D12	43	12.6VCT @ 3.4A	6.3V @ 6.8A	3.12	2.06	2.68	A	2.81	-
185E12	80	12.6VCT @ 6.3A	6.3V @ 12.6A	2.5	2.37	3	B	2	2.18
185F12	130	12.6VCT @ 10.3A	6.3V @ 20.6A	2.81	2.87	3.37	B	2.25	2.5
185G12	175	12.6VCT @ 14.0A	6.3V @ 28.0A	3.12	2.87	3.75	B	2.5	2.5
185C16	25	16VCT @ 1.6A	8V @ 3.2A	2.81	1.87	2.31	A	2.37	-
185D16	43	16VCT @ 2.7A	8V @ 5.4A	3.12	2.06	2.68	A	2.81	-
185E16	80	16VCT @ 5.0A	8V @ 10.0A	2.5	2.37	3	B	2	2.18
185F16	130	16VCT @ 8.1A	8V @ 16.2A	2.81	2.87	3.37	B	2.25	2.5
185G16	175	16VCT @ 11.0A	8V @ 22.0A	3.12	2.87	3.75	B	2.5	2.5
185C20	25	20VCT @ 1.25A	10V @ 2.5A	2.81	1.87	2.31	A	2.37	-
185D20	43	20VCT @ 2.2A	10V @ 4.4A	3.12	2.06	2.68	A	2.81	-
185E20	80	20VCT @ 4.0A	10V @ 8.0A	2.5	2.37	3	B	2	2.18
185F20	130	20VCT @ 6.5A	10V @ 13.0A	2.81	2.87	3.37	B	2.25	2.5
185G20	175	20VCT @ 8.8A	10V @ 17.6A	3.12	2.87	3.75	B	2.5	2.5
185C24	25	24VCT @ 1.0A	12V @ 2.0A	2.81	1.87	2.31	A	2.37	-
185D24	43	24VCT @ 1.8A	12V @ 3.6A	3.12	2.06	2.68	A	2.81	-
185E24	80	24VCT @ 3.3A	12V @ 6.6A	2.5	2.37	3	B	2	2.18
185F24	130	24VCT @ 5.4A	12V @ 10.8A	2.81	2.87	3.37	B	2.25	2.5
185G24	175	24VCT @ 7.3A	12V @ 14.6A	3.12	2.87	3.75	B	2.5	2.5
185C28	25	28VCT @ 0.9A	14V @ 1.86A	2.81	1.87	2.31	A	2.37	-
185D28	43	28VCT @ 1.5A	14V @ 3.0A	3.12	2.06	2.68	A	2.81	-
185E28	80	28VCT @ 2.8A	14V @ 5.6A	2.5	2.37	3	B	2	2.18
185F28	130	28VCT @ 4.6A	14V @ 9.2A	2.81	2.87	3.37	B	2.25	2.5
185G28	175	28VCT @ 6.25A	14V @ 12.5A	3.12	2.87	3.75	B	2.5	2.5
185C36	25	36VCT @ 0.7A	18V @ 1.4A	2.81	1.87	2.31	A	2.37	-
185D36	43	36VCT @ 1.2A	18V @ 2.4A	3.12	2.06	2.68	A	2.81	-
185E36	80	36VCT @ 2.2A	18V @ 4.4A	2.5	2.37	3	B	2	2.18
185F36	130	36VCT @ 3.6A	18V @ 7.2A	2.81	2.87	3.37	B	2.25	2.5
185G36	175	36VCT @ 4.8A	18V @ 9.6A	3.12	2.87	3.75	B	2.5	2.5
185C230	25	230VCT @ 0.11A	115V @ 0.22A	2.81	1.87	2.31	A	2.37	-
185D230	43	230VCT @ 0.19A	115V @ 0.38A	3.12	2.06	2.68	A	2.81	-
185E230	80	230VCT @ 0.35A	115V @ 0.7A	2.5	2.37	3	B	2	2.18
185F230	130	230VCT @ 0.57A	115V @ 1.14A	2.81	2.87	3.37	B	2.25	2.5
185G230	175	230VCT @ 0.76A	115V @ 1.52A	3.12	2.87	3.75	B	2.5	2.5

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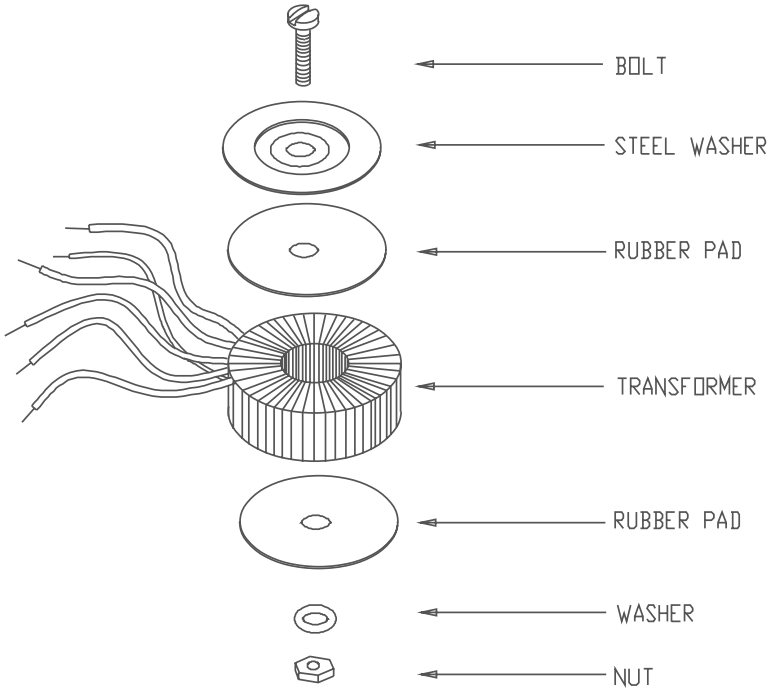
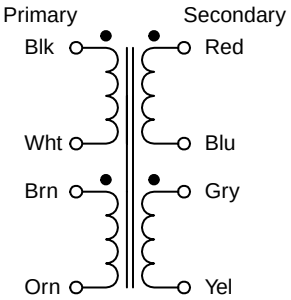
Power

TOROIDAL POWER L.V. RECTIFIER USE TRANSFORMERS

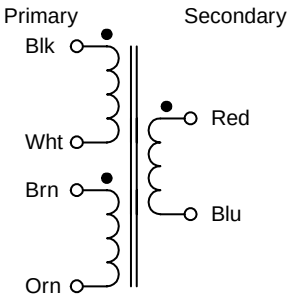
- Low profile
- Space saving and lightweight due to high efficiency toroidal design.
- Low EMF radiation.
- Dual primary 117/234 VAC, 50/60 Hz.
- Dual secondaries for series or parallel connections
- Chassis mount, complete with 2 rubber pads, steel washer and mounting hardware
- Minimum 8" long leads
- Hi-Pot test of 4,000V RMS
- CSA certified to C22.2 #66
- UL recognized to UL506
- CE certified to IEC 950



Dual Secondary Schematic



Single Secondary Schematic



Dimension Table

Mtg. Ref.	Outside Diameter (in.)	Height (in.)	Weight (lbs.)
A	3.20	1.25	0.76
B	2.95	1.60	1.12
C	3.63	1.73	1.67
D	3.73	1.52	2.15
E	3.98	1.68	2.84
F	4.43	1.73	3.87
G	4.97	1.90	4.96
H	5.06	2.27	5.58
I	5.50	2.21	8.46
J	6.10	3.10	10.38
K	6.40	3.10	13.53
L	6.50	3.50	16.49
M	7.20	3.50	24.97

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Selection Tables

Primary 117/234 VAC 50/60 Hz.

Cat. No.	VA	VAC Secondary (RMS)		Dim. Ref.
		Series	Parallel	
182K6	15	12V ct @1.25A	6V @ 2.5A	A
182H9	15	18V ct @ .83A	9V @ 1.66A	A
182G12	15	24V ct @ .63A	12V @ 1.26A	A
182G15	15	30V ct @ .5A	15V @ 1A	A
182F18	15	36V ct @ .42A	18V @ .84A	A
182F22	15	44V ct @ .34A	22V @ .68A	A
182D110	15	220V ct @ 68ma	110V @ 136ma	A
182D117	15	234V ct @ 64ma	117V @ 128ma	A
182B240	15	-	240V @ 63ma	A
182L6	30	12V ct @ 2.5A	6V @ 5A	B
182K9	30	18V ct @ 1.67A	9V @ 3.34A	B
182K12	30	24V ct @ 1.25A	12V @ 2.5A	B
182J15	30	30V ct @ 1A	15V @ 2A	B
182H18	30	36V ct @ .83A	18V @ 1.66A	B
182G22	30	44V ct @ .68A	22V @ 1.36A	B
182E110	30	220V ct @ 136ma	110V @ 272ma	B
182E117	30	234V ct @ 128ma	117V @ 256ma	B
182D240	30	-	240V @ 125ma	B
182N6	50	12V ct @ 4.17A	6V @ 8.34A	C
182M9	50	18V ct @ 2.78A	9V @ 5.56A	C
182L12	50	24V ct @ 2.08A	12V @ 4.16A	C
182K15	50	30V ct @ 1.67A	15V @ 3.34A	C
182J18	50	36V ct @ 1.39A	18V @ 2.78A	C
182J22	50	44V ct @ 1.14A	22V @ 2.28A	C
182G110	50	220V ct @ 227ma	110V @ 454ma	C
182G117	50	234V ct @ 214ma	117V @ 428ma	C
182E240	50	-	240V @ 208ma	C
182Q6	80	12V ct @ 6.67A	6V @ 13.34A	D
182N9	80	18V ct @ 4.44A	9V @ 8.88A	D
182M12	80	24V ct @ 3.33A	12V @ 6.66A	D
182M15	80	30V ct @ 2.67A	15V @ 5.34A	D
182L18	80	36V ct @ 2.22A	18V @ 4.44A	D
182L22	80	44V ct @ 1.82A	22V @ 3.64A	D
182K30	80	60V ct @ 1.33A	30V @ 2.66A	D
182H110	80	220V ct @ 364ma	110V @ 728ma	D
182H117	80	234V ct @ 342ma	117V @ 684ma	D
182F240	80	-	240V @ 333ma	D
182Q9	120	18V ct @ 6.67A	9V @ 13.34A	E
182P12	120	24V ct @ 5A	12V @ 10A	E
182N15	120	30V ct @ 4A	15V @ 8A	E
182M18	120	36V ct @ 3.33A	18V @ 6.66A	E
182M22	120	44V ct @ 2.73A	22V @ 5.46A	E
182L30	120	60V ct @ 2A	30V @ 4A	E
182J110	120	220V ct @ 545ma	110V @ 1.09A	E
182J117	120	234V ct @ 513ma	117V @ 1.02A	E
182G240	120	-	240V @ .5A	E
182Q12	160	24V ct @ 6.67A	12V @ 13.34A	F
182P15	160	30V ct @ 5.33A	15V @ 10.66A	F
182N18	160	36V ct @ 4.44A	18V @ 8.88A	F
182N22	160	44V ct @ 3.64A	22V @ 7.28A	F
182M30	160	60V ct @ 2.67A	30V @ 5.34A	F
182K110	160	220V ct @ 727ma	110V @ 1.45A	F
182K117	160	234V ct @ 684ma	117V @ 1.37A	F
182H240	160	-	240V @ 667ma	F

Primary 117/234 VAC 50/60 Hz.

Cat. No.	VA	VAC Secondary (RMS)		Dim. Ref.
		Series	Parallel	
182S12	225	24V ct @ 9.38A	12V @ 18.76A	G
182H15	225	30V ct @ 7.5A	15V @ 15A	G
182G18	225	36V ct @ 6.25A	18V @ 12.5A	G
182P22	225	44V ct @ 5.11A	22V @ 10.22A	G
182F30	225	60V ct @ 3.75A	30V @ 7.5A	G
182L110	225	220V ct @ 1.02A	110V @ 2.04A	G
182L117	225	234V ct @ .96A	117V @ 1.92A	G
182J240	225	-	240V @ .94A	G
182T12	300	24V ct @ 12.5A	12V @ 25A	H
182S15	300	30V ct @ 10A	15V @ 20A	H
182P30	300	60V ct @ 5A	30V @ 10A	H
182L60	300	120V ct @ 2.5A	60V @ 5A	H
182M110	300	220V ct @ 1.36A	110V @ 2.72A	H
182M117	300	234V ct @ 1.28A	117V @ 2.56A	H
182K240	300	-	240V @ 1.25A	H
182S24	500	48V ct @ 10.42A	24V @ 20.82A	I
182R30	500	60V ct @ 8.33A	30V @ 16.66A	I
182N60	500	120V ct @ 4.17A	60V @ 8.34A	I
182P110	500	220V ct @ 2.27A	110V @ 4.54A	I
182N117	500	234V ct @ 2.14A	117V @ 4.28A	I
182L240	500	-	240V @ 2.08A	I
182T24	625	48V ct @ 13.02A	24V @ 26.04A	J
182S30	625	60V ct @ 10.42A	30V @ 20.84A	J
182P60	625	120V ct @ 5.21A	60V @ 10.42A	J
182Q110	625	220V ct @ 2.84A	110V @ 5.68A	J
182P117	625	234V ct @ 2.67A	117V @ 5.34A	J
182M240	625	-	240V @ 2.6A	J
182U24	750	48V ct @ 15.63A	24V @ 31.26A	K
182T30	750	60V ct @ 12.5A	30V @ 25A	K
182Q60	750	120V ct @ 6.25A	60V @ 12.5A	K
182R110	750	220V ct @ 3.41A	110V @ 6.82A	K
182Q117	750	234V ct @ 3.21A	117V @ 6.42A	K
182N240	750	-	240V @ 3.13A	K
182V24	1000	48V ct @ 20.8A	24V @ 41.7A	L
182U30	1000	60V ct @ 16.7A	30V @ 33.3A	L
182R60	1000	120V ct @ 8.3A	60V @ 16.7A	L
182S110	1000	220V ct @ 4.5A	110V @ 9.1A	L
182R117	1000	234V ct @ 4.3A	117V @ 8.5A	L
182P240	1000	-	240V @ 4.17A	L
182V40	1500	80V ct @ 18.8A	40V @ 37.5A	M
182T60	1500	120V ct @ 12.5A	60V @ 25A	M
182U110	1500	220V ct @ 6.8A	110V @ 13.6A	M
182T117	1500	234V ct @ 6.4A	117V @ 12.8A	M
182Q240	1500	-	240V @ 6.3A	M

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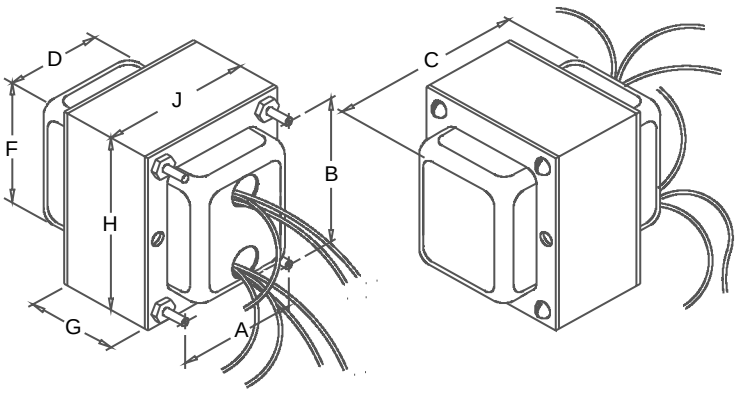
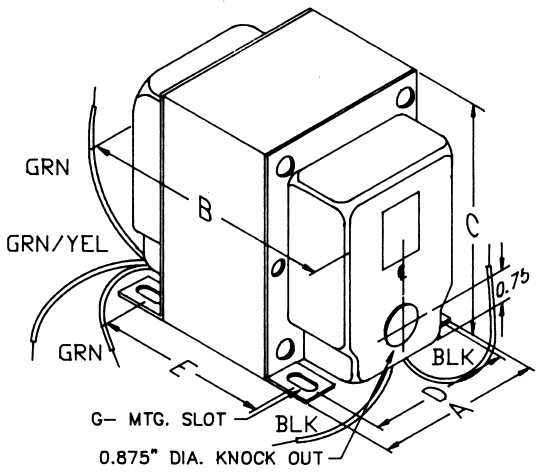
"CLASSIC" ENCLOSED PLATE & FILAMENT POWER TRANSFORMERS

- Most primaries 115 VAC, 60 Hz. (except as noted in table)
- H.V. DC current, measured with cap. input filter (full wave - 2 diode, C.T. rectifier circuit).
- Enclosed, 4 hole chassis mount (3 designs use "Z" mount)
- Minimum 6" long leads.
- Class A insulation (105 degrees C).
- Hi-Pot test of 2,000V RMS.
- Conservative designs - CSA certified (# LR3902).



"Z" Mounting - Dimension Table

Mtg. Style	Dimensions							
	A	B	C	D	F	G	H	J
Z6	2.00	2.50	2.50	1.75	2.00	1.06	3.00	2.50
Z7	2.25	2.88	3.25	1.88	2.38	1.25	3.38	2.81
Z8	2.25	2.81	3.63	1.75	2.25	1.50	3.38	2.81



"X" Mounting - Dimension Table

Mtg. Style	Dimensions					G-Mtg. Slot
	A	B	C	D	E	
X2	1.88	2.44	2.50	1.50	1.56	.19 X .31
X4	2.19	2.50	2.63	1.75	1.44	.19 X .25
X5	2.19	2.63	2.63	1.75	1.56	.19 X .25
X6	2.50	2.75	3.06	2.00	1.69	.203 X .38
X7	2.50	3.00	3.06	2.00	1.94	.203 X .38
X7A	2.50	3.00	3.13	2.00	2.06	.203 X .38
X7B	2.50	3.00	3.13	2.00	2.19	.203 X .38
X8	2.50	3.25	3.06	2.00	2.19	.203 X .38
X9	2.50	3.75	3.06	2.00	2.69	.203 X .38
X9A	2.88	3.50	3.50	2.25	2.44	.203 X .38
X9B	3.13	3.50	3.50	2.50	2.38	.203 X .38
X10	3.13	3.50	3.81	2.50	2.19	.203 X .38
X10A	3.13	3.50	3.88	2.50	2.38	.203 X .38
X11	3.13	3.75	3.81	2.50	2.44	.203 X .38
X13	3.75	4.00	4.56	3.00	2.81	.203 X .38
X14	3.75	4.50	4.56	3.00	3.31	.203 X .38
X15	3.75	5.00	4.56	3.00	3.81	.203 X .38
X19	3.13	4.00	3.81	2.50	2.69	.203 X .38

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Selection Table

Cat. No.	VA	Primary		Secondary		Filament #1 (VAC)	Filament #2 (VAC)	Dim. Ref.
		VAC	Hz	(R.M.S.)	DC (ma.)			
263AX	32	115	60	100-0-100	100	5V @ 2A	-	X2
269AX	40	115	60	125-0-125	100	6.3V @ 2A	-	X4
269BX	38	115	60	150-0-150	75	6.3V @ 2A	-	X4
263CX	116	115	60	180-0-180	250	5V @ 3A ct	-	X9
269EX	43	115	60	190-0-190	65	6.3V @ 2.5A	-	X5
269GX	48	115	60	225-0-225	65	6.3V @ 2.5A	-	X5
270X	41	115	60	240-0-240	40	5V @ 2A	6.3V @ 1.5A	X4
270AX	42	115	60	240-0-240	50	6.3V @ 2.5A	-	X4
269JX	50	115	60	250-0-250	60	6.3V @ 2.5A	-	X5
270CAX	65	117	50/60	250-0-250	70	5V @ 2A	6.3V @ 2.5A	X7A
270DAX	76	117	50/60	260-0-260	90	6.3V @ 3.5A	-	X7B
270DAZ	76	117	60	260-0-260	90	6.3V @ 3.5A	-	Z7
270BX	53	115	60	275-0-275	50	5V @ 2A	6.3V @ 2A	X6
270CX	59	115	60	275-0-275	65	6.3V @ 0.6A	6.3V @ 2.5A	X6
270DX	83	115	60	275-0-275	90	5V @ 2A	6.3V @ 3A	X7
270EX	118	115	60	275-0-275	125	5V @ 3A	6.3V @ 4A	X9
270FX	138	115	60	275-0-275	150	5V @ 3A	6.3V @ 5A ct	X10
270HX	176	115	60	275-0-275	200	5V @ 3A ct	6.3V @ 6A ct	X19
271X	63	115	60	280-0-280	60	5V @ 2A	6.3V @ 2A ct	X6
272BX	95	115	60	300-0-300	100	5V @ 2A	6.3V @ 3A	X8
272DX	123	115	60	300-0-300	125	5V @ 3A	6.3V @ 4A	X9
272FX	146	115	60	300-0-300	150	5V @ 3A ct	6.3V @ 5A ct	X10
272HX	186	115	60	300-0-300	200	5V @ 3A ct	6.3V @ 6A ct	X19
272JX	236	115	60	300-0-300	250	5V @ 4A ct	6.3V @ 8A ct	X13
272X	74	115	60	310-0-310	70	5V @ 2A	6.3V @ 2.4A	X7
276X	150	115	60	320-0-320	150	5V @ 3A ct	6.3V @ 5A ct	X10
273AZ	35	117	50/60	325-0-325	40	5V @ 2A	6.3V @ 2A	Z6
273CZ	159	117	50/60	325-0-325	150	5V @ 3A	6.3V @ 5A ct	X9B
273DX	101	117	50/60	350-0-350	90	5V @ 2A	6.3V @ 3A ct	X9A
273DZ	101	117	50/60	350-0-350	90	5V @ 2A	6.3V @ 3A ct	Z8
273X	120	115	60	350-0-350	110	5V @ 2A	6.3V @ 4A ct	X9
273BX	182	115	60	350-0-350	175	5V @ 3A	6.3V @ 5A ct	X19
274AX	137	117	50/60	360-0-360	120	5V @ 3A	6.3V @ 3.5A ct	X10A
274X	138	115	60	375-0-375	110	5V @ 3A	6.3V @ 5A ct	X10
274BX	198	115	60	375-0-375	175	5V @ 3A ct	6.3V @ 6A ct	X19
275X	167	115	60	400-0-400	135	5V @ 3A ct	6.3V @ 5A ct	X11
278X	229	115	60	400-0-400	200	5V @ 3A ct	6.3V @ 6A ct	X19
278CX	454	115	60	400-0-400	465	6.3V @ 6A ct	-	X15
279X	186	115	60	425-0-425	150	5V @ 3A	6.3V @ 5A ct	X19
282X	273	115	60	500-0-500	200	5V @ 3A ct	6.3V @ 6A ct	X14

Transformer Schematic

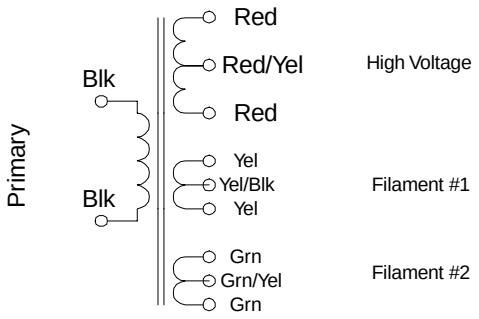

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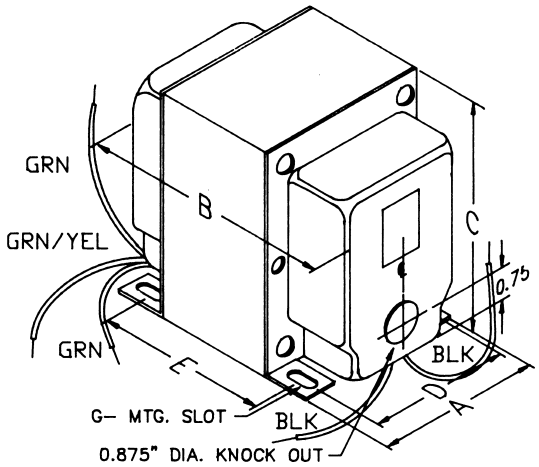
Plate & Filament (Universal Primary)



"CLASSIC" ENCLOSED PLATE & FILAMENT

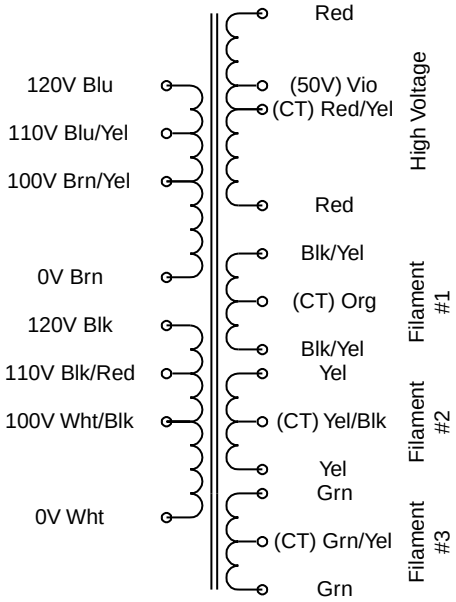
- Universal Primary, 100, 110, 120, 200, 220, 240 VAC, 50/60 Hz.
- H.V. DC current measured with full wave C.T. rectifier and capacitor input filter.
- Concentric wound windings for low stray field and low noise.
- Includes bias tap (50 VAC) from high voltage C.T.
- Enclosed, 4 hole chassis mount.
- Minimum 6" long leads.
- Class A insulation (105 degrees C).
- Hi-Pot test of 2,000V RMS.
- Conservative designs - CSA certified (# LR3902).
- P/N 300BX designed for use with 300B tube designs and the 302AX designed for 2A3 tube designs

Dimension Table

Mtg. Style	Dimensions					G-Mtg. Slot
	A	B	C	D	E	
X6	2.50	2.75	3.06	2.00	1.69	.203 X .38
X7	2.50	3.00	3.06	2.00	1.94	.203 X .38
X10	3.13	3.50	3.81	2.50	2.19	.203 X .38
X11	3.13	3.75	3.81	2.50	2.44	.203 X .38
X13	3.75	4.00	4.56	3.00	2.81	.203 X .38
X14	3.75	4.50	4.56	3.00	3.34	.203 X .38
X15	3.75	5.00	4.56	3.00	3.81	.203 X .38
X20	3.13	4.25	3.81	2.50	2.94	.203 X .38
X21	4.38	6.00	5.50	3.50	3.54	.203 X .38
X22	3.75	3.06	4.56	3.00	3.06	.203 X .38

Cat. No.	Total Power (VA)	Secondary (R.M.S.)	Secondary D.C. (ma.)	Bias Tap (VAC)	Filament #1 (VAC)	Filament #2 (VAC)	Filament #3 (VAC)	Dim. Ref.
300BX	280	400-0-400	250	50	5V ct @ 1.2A	5V ct @ 3A	6.3V ct @ 6A	X15
302AX	198	300-0-300	200	50	2.5V CT @ 2.5A	5V ct @ 3A	6.3V ct @ 6A	X13
363CX	119	180-0-180	250	50	5V ct @ 3A	-	-	X11
369AX	40	125-0-125	100	50	6.3V ct @ 2A	-	-	X6
369BX	39	150-0-150	75	50	6.3V ct @ 2A	-	-	X6
369EX	45	190-0-190	65	50	6.3V ct @ 2.5A	-	-	X6
369GX	50	225-0-225	65	50	6.3V ct @ 2.5A	-	-	X6
369JX	50	250-0-250	60	50	6.3V ct @ 2.5A	-	-	X6
370AX	44	240-0-240	50	50	6.3V ct @ 2.5A	-	-	X6
370BX	55	275-0-275	50	50	5V ct @ 2A	6.3V ct @ 2A	-	X7
370FX	142	275-0-275	150	50	5V ct @ 3A	6.3V ct @ 5A	-	X20
370HX	180	275-0-275	200	50	5V ct @ 3A	6.3V ct @ 6A	-	X20
372BX	98	300-0-300	100	50	5V ct @ 2A	6.3V ct @ 3A	-	X10
372FX	150	300-0-300	150	50	5V ct @ 3A	6.3V ct @ 5A	-	X20
372JX	243	300-0-300	250	50	5V ct @ 4A	6.3V ct @ 8A	-	X14
373BX	187	350-0-350	175	50	5V ct @ 3A	6.3V ct @ 5A	-	X13
373X	125	350-0-350	110	50	5V ct @ 2A	6.3V ct @ 4A	-	X11
374BX	200	375-0-375	175	50	5V ct @ 3A	6.3V ct @ 6A	-	X13
378CX	465	400-0-400	465	50	6.3V ct @ 6A	-	-	X21
378X	237	400-0-400	200	50	5V ct @ 3A	6.3V ct @ 6A	-	X22

Transformer Schematic



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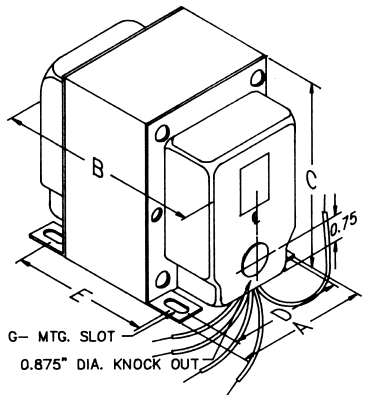


Fig. A

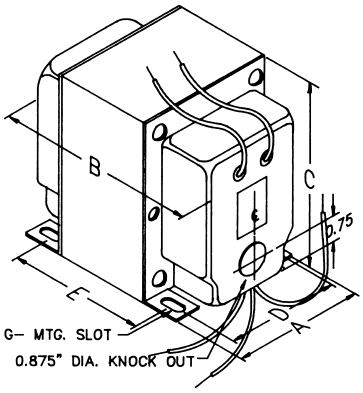


Fig. B

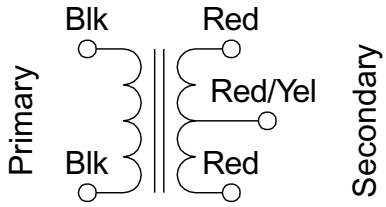
"CLASSIC" ENCLOSED PLATE TRANSFORMERS

- Primary 115 VAC, 50/60 Hz.
- At 1,000 VAC and above, secondary leads are through rubber bushings (figure B).
- Units can be run full wave bridge or full wave C.T.
- Enclosed, 4 hole chassis mount.
- Minimum 6" long leads.
- Class A insulation (105 degrees C).
- Hi-Pot test at a minimum of twice secondary voltage
- Conservative designs - CSA certified (# LR3902).

Cat. No.	Secondary R.M.S.	DC Volts Choke Input	DC ma. CCS	DC ma. ICAS	Dwg. Type	Dimensions A	B	C	D	E	Wt. Lb.
710	375-0-375	300	300	450	A	3.75	4.13	4.50	3.00	2.25	7.2
712	425-0-425	350	300	450	A	3.75	4.63	4.50	3.00	2.75	8.8
714	510-0-510	400	170	250	A	3.13	3.75	3.75	2.50	2.38	5.5
715	510-0-510	400	300	450	A	3.75	4.63	4.50	3.00	2.75	9
717	510-0-510	400	500	750	A	5.00	5.25	6.50	4.56	3.25	17.7
718	625-0-625	500	200	300	A	3.75	4.38	4.50	3.00	2.50	8
720	625-0-625	500	300	450	A	3.75	5.38	4.50	3.00	3.50	12
722	625-0-625	500	500	750	A	5.00	5.25	6.50	4.56	3.25	17.7
724	750-0-750	625	200	300	A	3.75	5.25	4.50	3.00	3.38	12
726	890-0-890	750	175	260	A	3.75	5.25	4.50	3.00	3.38	12
728	1000-0-1000	850	150	225	B	3.75	5.25	4.50	3.00	3.38	12
732	1250-0-1250	1000	200	300	B	5.00	5.25	6.50	4.56	3.25	17.7
733	1250-0-1250	1000	300	450	B	5.00	6.00	6.50	4.56	4.00	24
735	1500-0-1500	1250	250	375	B	5.00	6.00	6.50	4.56	4.00	24
737	1500-0-1500	1250	400	600	B	5.00	7.00	6.50	4.56	5.00	28.5
739	1750-0-1750	1500	400	600	B	5.00	7.63	6.50	4.56	5.50	34.7

Notes : CCS = Continuous Commercial Service
ICAS = Intermittent Commercial or Amateur Service

Transformer Schematic



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"CLASSIC" LOW POWER PLATE & FILAMENT TRANSFORMERS

- Primary 115 VAC, 60 Hz.
- Designed for small power or bias supplies, test equipment, pre-amps etc.
- Models 261C6, 261E6, and 261G6 can also be used with full wave C.T. rectifiers.
- Economical , 2 hole (.187 dia. = G) channel bracket, chassis mount.
- Minimum 5" long leads.
- Convenient 6.3 or 12.6 volt filament/auxiliary winding.

Cat. No.	VA	A.C. Secondary #1 RMS	A.C. Filament Sec. #2 RMS	Schematic Figure #	Dimensions				Wt. Lbs.
					A	B	C	D	
261C6	17.5	250V C.T. @ 45 ma	6.3V @ 1A	1	3.25	1.75	2.00	2.81	1.0
261E6	29	250V C.T. @ 91 ma	6.3V @ 1A	1	3.69	2.38	2.31	3.13	1.7
261G6	45	250V C.T. @ 130 ma	6.3V @ 2A	1	4.00	2.50	2.63	3.56	2.0
261M6	83	215V @ 269 ma	6.3V @ 4A	2	2.81	3.00	3.38	2.00	4.0
262B6	7	120V @ 43 ma	6.3V @ 0.3A	2	2.81	1.88	1.63	2.38	0.6
262B12	7	120V @ 45 ma	12.6V @ 0.3A	2	2.81	1.88	1.63	2.38	0.6
262B24	7	120V @ 27 ma	12/12V @ 0.2/0.2A	3	2.81	1.88	1.63	2.38	0.6
262D6	12	120V @ 53 ma	6.3V @ 0.9A	2	3.25	2.00	2.00	2.81	1.0
262D12	12	120V @ 53 ma	12.6V @ 0.45A	2	3.25	2.00	2.00	2.81	1.0
262E6	18	120V @ 87 ma	6.3V @ 1.2A	2	3.25	2.00	2.00	2.81	1.3
262E12	18	120V @ 87 ma	12.6V @ 0.6A	2	3.25	2.00	2.00	2.81	1.3
262F6	26	120V @ 140 ma	6.3V @ 1.5A	2	3.69	2.38	2.31	3.13	1.7
262F12	26	120V @ 140 ma	12.6V @ 0.75A	2	3.69	2.25	2.31	3.13	1.5

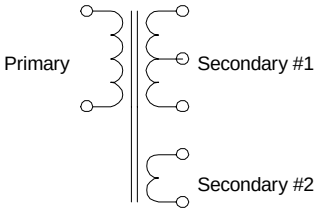


Figure 1

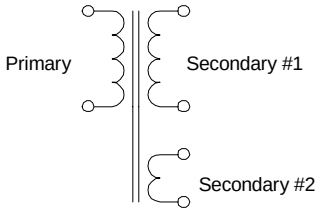


Figure 2

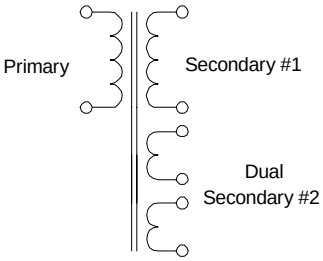
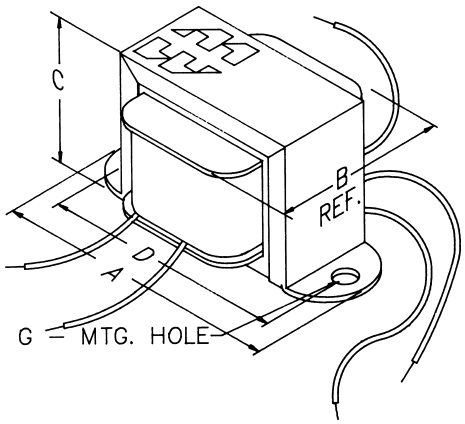


Figure 3



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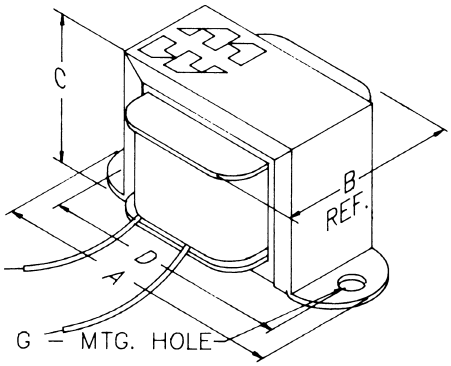
Chokes

OPEN BRACKET
D.C. FILTER CHOKES

- Economical "open bracket" - channel mount.
- Tolerance of 15% on both inductance & resistance.
- Inductances measured at rated D.C. current.
- Minimum 5" long leads.
- Units will exhibit less inductance at slightly higher currents or more at lower currents.
- Perfect for high voltage power supply filtering.



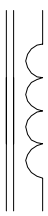
Selection Table

Cat. No.	Inductance Henrys	D.C. Current ma.	Resistance Ohms	Max. Oper. Volts D.C.	Wt. Lbs.	Dim. Ref.
153E	7	25	770	300	.10	C1H
153H	2.2	50	305	300	.10	C1H
153L	0.9	75	125	300	.10	C1H
153M	0.6	100	86	300	.10	C1H
154E	20	20	1666	300	.25	C2H
154G	9	40	700	300	.25	C2H
154H	4	50	300	300	.25	C2H
154M	2	100	175	300	.25	C2H
155C	60	8	2750	400	.30	C4H
155G	7	40	340	400	.30	C4H
155H	5	50	270	400	.30	C4H
155J	15	30	1026	400	.30	C4H
156C	150	8	3700	400	.50	C6H
156G	9	40	300	400	.50	C6H
156L	5	75	135	400	.50	C6H
156M	3	100	86	400	.50	C6H
156R	1.5	200	56	400	.50	C6H
157G	30	40	595	400	1.0	C9H
157J	10	65	205	400	1.0	C9H
157L	14	75	429	400	1.0	C9H
157M	8	100	259	400	1.0	C9H
157Q	3.5	150	98	400	1.0	C9H
157R	2	200	57	400	1.0	C9H
158L	15	75	411	400	1.25	C10H
158M	10	100	195	400	1.25	C10H
158Q	5	150	105	400	1.25	C10H
158S	1.5	250	60	400	1.50	C10H
158T	1.0	300	40	400	1.50	C10H
159M	15	100	256	500	2.25	C14H
159P	10	125	155	500	2.25	C14H
159Q	7	150	100	500	2.25	C14H
159S	4	225	65	500	2.25	C14H
159T	2.5	300	43	500	2.25	C14H
159V	1.5	500	27	500	2.25	C14H
159Y	0.6	750	11	500	2.25	C14H
154B	3mH	1.5A	0.14	300	.25	C2H
155B	6mH	2A	0.3	400	.30	C4H
156B	1.5mH	5A	0.07	400	.50	C6H
157D	1mH	10A	.038	400	1.0	C9H
159ZA	300mH	1A	6.0	500	2.50	C14H
159ZC	60mH	2A	0.7	500	2.50	C14H
159ZE	28mH	3A	0.43	500	2.75	C14H
159ZG	15mH	4A	0.25	500	2.75	C14H
159ZJ	10mH	5A	0.16	500	2.75	C14H
159ZL	2.5mH	10A	0.044	500	2.75	C14H

Dimension Table

Mtg. Style	Dimensions				Mtg. Hole
	A	B	C	D	
C1H	1.63	0.88	0.81	1.38	0.125
C2H	2.06	1.25	1.19	1.75	0.187
C4H	2.38	1.38	1.38	2.00	0.187
C6H	2.81	1.50	1.69	2.38	0.187
C9H	3.25	1.75	2.00	2.81	0.187
C10H	3.25	2.00	2.00	2.81	0.187
C14H	4.03	2.25	2.63	3.56	0.187

Choke Schematic



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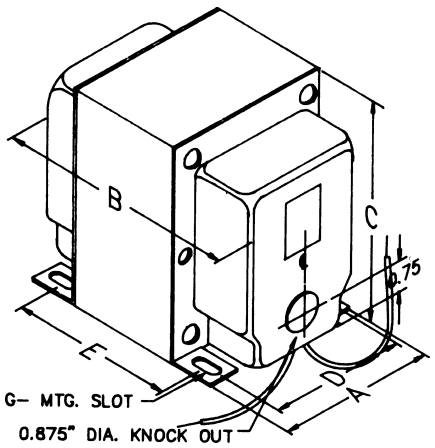
ENCLOSED
D.C. FILTER CHOKES

- Enclosed, 4-hole mounted chokes.
- Tolerance of 15% on both inductance & resistance.
- Inductances measured at rated D.C. current.
- Minimum 8" long leads.
- Units will exhibit less inductance at slightly higher currents or more at lower currents.
- Perfect for high voltage power supply filtering, case matches power transformers & tube audio output transformers.

Selection Table

Cat. No.	Inductance Henrys	D.C. Current ma.	Resistance Ohms	Max. Oper. Volts D.C.	Wt. Lbs.	Dim. Ref.
193B	12	100	155	600	2.5	X6
193C	20	100	181	600	3.25	X8
193D	8	150	75	600	3.25	X8
193G	10	150	102	800	4.25	X17
193H	5	200	65	600	2.5	X6
193J	10	200	82	800	5.5	X11
193K	2.6	300	21	800	3.25	X8
193L	5	300	57	800	5.5	X11
193M	10	300	63	800	10.5	X14
193N	3	500	35	600	5.0	X11
193P	5	500	26	800	10.75	X14
193Q	10	500	53	1000	21.0	X16
193R	.3	1000	3.50	1000	4.5	X10
193S	1.0	1000	5.75	1000	8.0	X13
193T	.05	2000	0.7	300	2.5	X6
193U	.2	2000	1.7	300	6.0	X12
193V	.15	3000	1.0	300	9.0	X14

Choke Schematic



Dimension Table

Mtg. Style	Dimensions					G-Mtg. Slot
	A	B	C	D	E	
X6	2.50	2.75	3.06	2.00	1.69	.203 x .38
X8	2.50	3.25	3.06	2.00	2.19	.203 x .38
X10	3.13	3.50	3.81	2.50	2.19	.203 x .38
X11	3.13	3.75	3.81	2.50	2.44	.203 x .38
X12	3.13	4.25	3.81	2.50	2.94	.203 x .38
X13	3.75	4.00	4.56	3.00	2.81	.203 x .38
X14	3.75	4.50	4.56	3.00	3.31	.203 x .38
X16	3.75	5.50	4.56	3.00	4.31	.203 x .38
X17	3.13	3.25	3.81	2.50	1.94	.203 x .38

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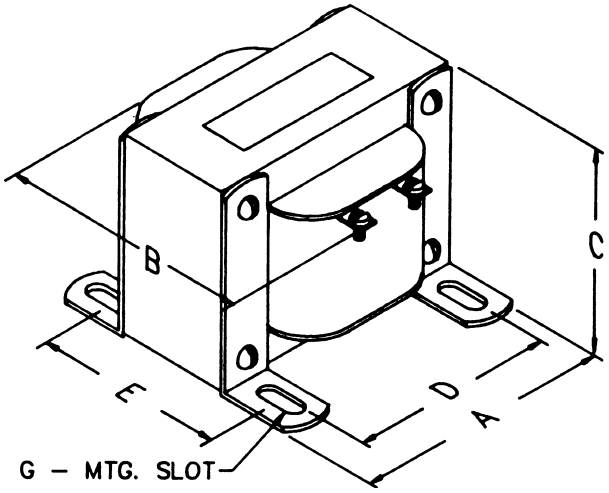
HEAVY CURRENT REACTORS

- Open core & coil, 4-slot bracket mounting chokes.
- Tolerance of 15% on both inductance & resistance.
- Inductances measured at rated D.C. current.
- Connections are made to a screw terminal or heavy copper tabs with holes
- Perfect for high current power supply filtering.
- Working voltage 600 VAC typical
- Hi-Pot test at 2,000 VAC RMS



Selection Table

Cat. No.	Inductance Millihenries	Current D.C. Amps	Resistance Ohms	Insulation Class	Dimensions A	B*	C	D	E	Slot (G)	Wt. Lbs.
195B150	0.5	150	.0018	B	5.25	5.50	4.47	4.38	4.13	.28 x .56	26
195C20	1.0	20	.013	A	3.00	3.06	2.50	2.50	2.25	.20 x .38	3
195C30	1.0	30	.009	A	3.75	3.85	3.13	3.13	2.50	.20 x .38	6
195C50	1.0	50	.005	A	4.50	5.25	3.75	3.75	3.50	.20 x .38	14.5
195C75	1.0	75	.004	A	5.25	6.00	4.47	4.38	4.63	.28 x .56	23
195C100	1.0	100	.0036	B	5.25	6.50	4.47	4.38	5.13	.28 x .56	26
195E20	2.5	20	.022	A	3.75	4.20	3.13	3.13	2.75	.20 x .38	6.5
195E30	2.5	30	.013	A	4.50	5.25	3.75	3.75	3.50	.20 x .38	12.5
195E50	2.5	50	.008	A	5.25	6.00	4.47	4.38	4.63	.28 x .56	23.5
195E75	2.5	75	.008	B	6.00	6.63	5.16	5.00	4.88	.28 x .56	32.5
195E100	2.5	100	.006	B	9.00	9.75	7.50	7.00	6.00	.44 x .75	75
195G10	5	10	.040	A	3.75	3.60	3.13	3.13	2.25	.20 x .38	5.5
195G20	5	20	.025	A	4.50	4.75	3.75	3.75	3.00	.20 x .38	10.5
195G30	5	30	.023	A	5.25	5.00	4.47	4.38	3.63	.28 x .56	16
195G50	5	50	.021	B	7.50	6.50	6.25	6.00	4.50	.38 x .63	38
195G75	5	75	.01	B	9.00	9.75	7.00	7.00	6.75	.44 x .75	87
195J10	10	10	.07	A	3.75	4.35	3.13	3.13	3.00	.20 x .38	8
195J20	10	20	.045	A	5.25	5.00	4.47	4.38	3.63	.28 x .56	17.5
195J30	10	30	.037	A	6.00	7.50	5.00	5.00	5.88	.31 x .50	36
195J50	10	50	.023	B	9.00	9.75	7.50	7.00	6.25	.44 x .75	79
195M10	20	10	.013	A	4.50	4.75	3.75	3.75	3.00	.20 x .38	10.2
195M20	20	20	.075	A	6.00	7.50	5.00	5.00	5.88	.31 x .50	34
195M30	20	30	.045	B	6.00	7.63	5.16	5.00	5.88	.28 x .56	41
195P5	30	5	.23	A	3.75	4.20	3.13	3.13	2.75	.20 x .38	6.5
195P10	30	10	.17	A	4.50	5.25	3.75	3.75	3.50	.20 x .38	16
195P20	30	20	.13	B	5.25	6.91	4.47	4.38	5.54	.28 x .56	28
195R10	50	10	.165	A	5.25	5.50	4.47	4.38	4.13	.28 x .56	26
195R20	50	20	.13	B	9.00	8.25	7.50	7.00	5.75	.44 x .75	72
195T5	100	5	.64	A	4.50	5.25	3.75	3.75	3.50	.20 x .38	14
195T10	100	10	.42	B	7.50	6.00	6.25	6.00	4.25	.38 x .63	35

**** B dimension is approximate maximum over coil or copper tabs***

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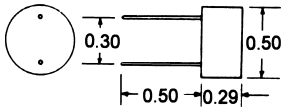
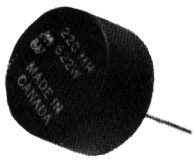
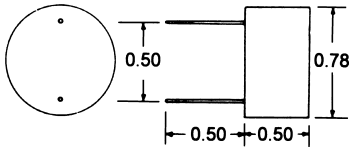


621 Series





622 Series

MINIATURE INDUCTORS

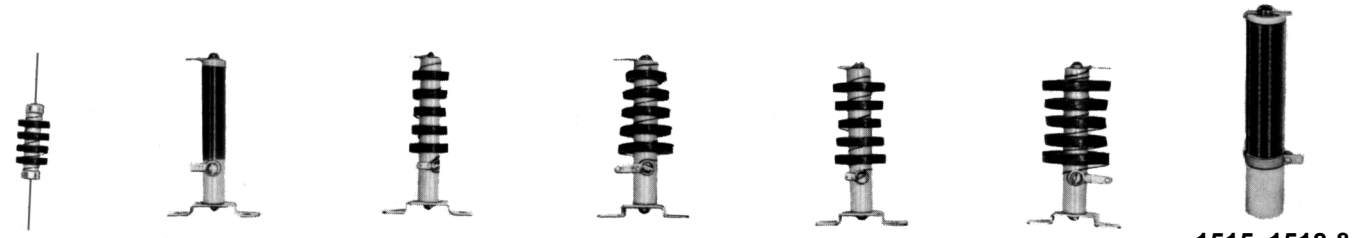
- Vacuum epoxy cast for stability.
- Constructed to pass MIL environmental specs.
- Low profile and pin mounted for P.C. applications.
- Pin diameter 0.032"

Selection Table

Cat. No.	Inductance (L) +/- 2% mH	Idc (mA)* for -2% L	Nominal Q	Freq. kHz	D.C. resistance +/- 20%
621G	1.0	51	40	50	2
621J	2.2	34	40	45	4.5
621L	4.7	23	38	40	8.2
621N	10.0	16	38	30	20
621Q	22.0	11	38	35	45
622S	47	13.7	65	16	27
622U	100	9.3	64	15	49
622W	220	6.4	60	13	122
622Y	470	4.3	54	10	218
622ZA	1000	2.9	45	8	400

** I D.C. current (ma.) for minus 2% change of inductance (L)*

1500 **1501** **1502** **1503** **1504** **1505**



1506 **1508** **1509** **1510** **1511** **1512** **1515, 1518 & 1521**

R.F. CHOKES

- Low loss ceramic or powdered iron forms
- Tolerance +/- 10% on inductance
- Catalog numbers 1515, 1518, 1521 designed for heavy duty use in linear amplifiers or other transmitter applications. Wound on 1" dia. ceramic forms with standoff insulators and 1/4-20 mounting bolt.

Selection Table

Cat. No.	D. C. mA	Induct. mH	D.C. Res ohms	No. of Pies	Form		Wt. Oz.
					Type	Length	
1500	125	1.0	12.0	1	Powdered	0.63	0.25
1501	75	10	47.0	2	Powdered	0.88	0.5
1502	500	0.007	1.3	Layer	Ceramic	1.5	0.25
1503	50	2.5	22.0	2	Powdered	0.63	0.25
1504	125	2.5	44.0	4	Ceramic	1.5	0.5
1505	250	2.5	12.0	4	Ceramic	1.5	0.75
1506	250	1.6	12.0	4	Ceramic	1.5	0.5
1508	500	0.035	3.1	Layer	Ceramic	3	1.3
1509	600	1.0	6.0	5	Ceramic	3	2
1510	400	4.4	12.0	5	Ceramic	3	3
1511	600	4.0	11.0	5	Ceramic	3	2.5
1512	1000	3.2	4.5	5	Ceramic	3	5
1515	500	0.25	3.0	Layer	Ceramic	4	8
1518	750	0.1	1.2	Layer	Ceramic	4	8
1521	1000	0.09	0.68	Layer	Ceramic	4	8

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SUB-MINIATURE R.F. CHOKES

- Subminiature design ranging from only .25" to .63"
- Coils are varnish impregnated.
- Ideally suited to network, filter, delay lines etc., applications.
- L and Q values measured on a Q meter.

Selection Table

Cat. No.	Inductance L uH	Induct. Tolerance	Q Min.	Test Freq. Mhz.	Fo Min. Mhz	R - D.C. Max. Ohms	I - D.C. Max. ma.	Coil Dia. Max.	Form Length +/- .03"	Core Material
1530B106	1	+/- 20%	41	25	118	.048	2041	.165	.25	Iron
1530B126	1.2	+/- 10%	45	7.9	118	.072	1666	.16	.25	Iron
1530B156	1.5	+/- 10%	42	7.9	102	.096	1443	.16	.25	Iron
1530B276	2.7	+/- 10%	34	7.9	74	.168	1091	.16	.25	Iron
1530B336	3.3	+/- 10%	40	7.9	66	.24	912	.15	.25	Iron
1530B396	3.9	+/- 10%	35	7.9	61	.264	870	.15	.25	Iron
1530B476	4.7	+/- 10%	43	7.9	53	.457	661	.15	.25	Iron
1530B566	5.6	+/- 10%	41	7.9	49	.492	637	.15	.25	Iron
1530B686	6.8	+/- 10%	40	7.9	49	.624	566	.15	.25	Iron
1530B105	10	+/- 10%	36	7.9	19	1.56	277	.16	.25	Iron
1530B155	15	+/- 10%	52	2.5	16	1.92	250	.165	.25	Iron
1530B225	22	+/- 5%	51	2.5	13	2.28	229	.165	.25	Iron
1530B335	33	+/- 5%	50	2.5	10	2.76	208	.17	.25	Iron
1530B395	39	+/- 5%	48	2.5	9.3	3.36	188	.175	.25	Iron
1530B475	47	+/- 5%	44	2.5	9.1	3.36	188	.175	.25	Iron
1530B565	56	+/- 5%	45	2.5	8.6	3.84	176	.18	.25	Iron
1530B685	68	+/- 5%	42	2.5	8.1	4.2	169	.18	.25	Iron
1530B825	82	+/- 5%	41	2.5	6.7	4.8	158	.185	.25	Iron
1530B104	100	+/- 5%	25	2.5	3.6	7.68	139	.165	.25	Iron
1530B154	150	+/- 5%	47	.79	3	8.16	135	.165	.25	Iron
1530B224	220	+/- 5%	46	.79	2.5	11.5	114	.17	.25	Iron
1530B334	330	+/- 5%	41	.79	2	13.9	103	.175	.25	Iron
1530B474	470	+/- 5%	35	.79	1.8	16.3	95	.185	.25	Iron
1530B684	680	+/- 5%	37	.79	1.6	19.8	87	.2	.25	Iron
1530B824	820	+/- 5%	33	.79	1.6	22.9	80	.21	.25	Iron
1530B103	1,000	+/- 5%	30	.79	1.4	24	79	.225	.25	Iron
1530B153	1,500	+/- 5%	40	.25	1.1	37.2	63	.225	.25	Iron
1530B223	2,200	+/- 5%	40	.25	.96	45.6	57	.24	.25	Iron
1530C253	2,500	+/- 5%	48	.25	.96	45.6	57	.26	.38	Iron
1530C333	3,300	+/- 5%	52	.25	.8	51.6	53	.26	.38	Iron
1530C473	4,700	+/- 5%	49	.25	.68	64.8	48	.285	.38	Iron
1530C683	6,800	+/- 5%	51	.25	.64	78	43	.31	.38	Iron
1530C823	8,200	+/- 5%	48	.25	.6	92.4	40	.33	.38	Iron
1530C102	10,000	+/- 5%	41	.25	.52	101	38	.335	.38	Iron
1530C182	18,000	+/- 5%	49	.079	.29	128	44	.325	.5	Iron
1530D252	25,000	+/- 5%	59	.079	.25	115	46	.34	.63	Ferrite
1530D332	33,000	+/- 5%	61	.079	.232	134	43	.353	.63	Ferrite
1530D101	100,000	+/- 5%	48	.079	.157	278	29	.446	.63	Ferrite

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R.F. CHOKES

Single Layer Coil Type

- Coil is protected with vinyl shrink sleeve
- Lead length of 1.5" (+/- .13")
- Wound for low distributed capacity by using solenoid (single coil) or 3-Pi windings.

3-Pi Coil Type

Cat. No.	Inductance L	L Tolerance	Q Min.	Test Freq.	Self Resonant Min. Freq. MHz.	Max. D.C. Resist. Ohms	Max. D.C. Current ma.	Coil Dia. In.	Core Material	Core Length In.	Coil Type
1531L	2.4 uH	10%	56	7.9 MHz	120	0.19	1500	0.27	Phenolic	0.75	Single
1531R	10 uH	10%	36	7.9 MHz	61	1.5	500	0.27	Phenolic	0.75	Single
1532A	10 uH	5%	69	2.5 MHz	40	0.11	1500	0.29	Iron	0.875	Single
1532B	15 uH	5%	62	2.5 MHz	33	0.17	1000	0.29	Iron	0.875	Single
1532C	24 uH	5%	65	2.5 MHz	25	0.34	800	0.29	Iron	0.875	Single
1532D	39 uH	5%	70	2.5 MHz	0.2	0.65	600	0.29	Iron	0.875	Single
1532E	55 uH	5%	72	2.5 MHz	17	1.0	500	0.29	Iron	0.875	Single
1532H	100 uH	5%	107	0.79 MHz	12	3.0	400	0.29	Iron	0.875	Single
1533H	1 mH	5%	59	0.25 MHz	3.7	19	160	0.563	Phenolic	0.75	3-Pi
1534A	1 mH	5%	83	250KHz	2.6	8.6	160	0.469	Iron	0.875	3-Pi
1534C	2.4 mH	5%	80	250KHz	1.7	15	160	0.531	Iron	0.875	3-Pi
1535B	2.5 mH	5%	106	250KHz	1.3	9.0	160	0.469	Ferrite	0.875	3-Pi
1535D	5 mH	5%	91	250KHz	1.0	14	160	0.531	Ferrite	0.875	3-Pi
1535G	10 mH	5%	108	79 KHz	0.71	31	100	0.531	Ferrite	0.875	3-Pi
1535J	25 mH	5%	102	79 KHz	0.47	82	65	0.531	Ferrite	0.875	3-Pi
1535L	50 mH	5%	113	79 KHz	0.33	127	65	0.625	Ferrite	0.875	3-Pi

Cat. No.	Inductance */- 20% uH	D.C. Resistance Ohms	Self Resonant Freq. MHz.	Max. D.C. Current Amps	Coil Dia. In.	Core Length In.
1536D	3.35	0.010	45	20	0.53	1.31
1536E	4.9	0.016	42	15	0.50	1.25
1536F	8.8	0.021	28	10	0.50	1.25
1536L	4.0	0.012	24.3	8	0.31	0.91
1536P	40	0.082	10.4	3	0.31	1.25
1536S	68	0.054	5.7	5	0.53	1.25
1536T	100	0.216	4.1	2	0.31	1.25
1536TA *	100	0.55	-	1	0.80	1.10
1536W	125	0.08	2.65	3.5	0.50	1.25
1536X	250	0.17	1.5	2.5	0.43	1.25
1536Y	500	0.26	1.17	2	0.56	1.25
1536Z	1000	0.55	-	1	0.50	1.03

** Dual choke - all electrical values are for both sections*

HEAVY DUTY HASH CHOKES

- Molded powdered iron core
- 1.25" long leads minimum
- High inductance & high current
- L measured at 7.9 Mhz. on 1536D, E and F all others at 1 Khz.

Cat. No.	Inductance +/- 10% uH	Min. Q	D.C. Resistance Ohms	Max. D.C. Current Amps	Coil Dia. In.	Lead Dia. Gauge
1537E	10	4.5	.006	20	0.63	14
1537F	20	6.5	.013	12.5	0.60	16
1537G	30	5.3	.024	8	0.58	18
1537H	40	5.2	.039	5	0.57	20
1537J	50	3.4	.064	3.2	0.56	20
1537K	75	3.2	.128	2	0.54	20
1537L	100	10.5	.050	8	0.71	18
1537M	250	12.0	.114	5	0.69	18
1537N	500	11.6	.260	3.2	0.65	20
1537P	750	10.0	.465	2	0.61	20
1537R	1000	7.4	.830	1.25	0.59	20

HIGH CURRENT CHOKES

- Large ferrite core for extended saturation point, optimum frequency range .01-2 Mhz.
- 1.5" long leads minimum
- Test frequency 1 Khz.
- Core length 1.25", coil is covered with vinyl shrink sleeve.

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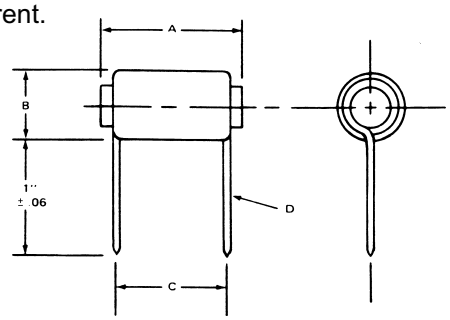
EMI/RFI CHOKES

- High saturation flux density ferrite rods.
- 1" long leads, tinned to within 1/8" of body.
- Ideal for filtering or energy storage inductors.
- Inductance measured at @ 1Khz. with 0 amps. D.C. current, typical inductance change is less than 5% @ twice rated current.

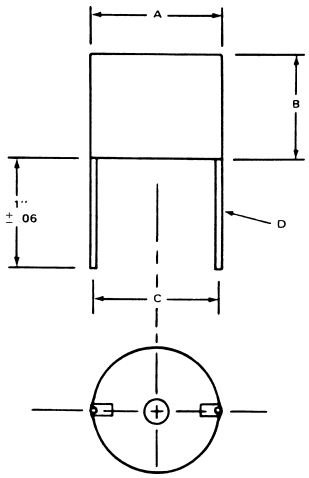


Cat. No.	Inductance L uH +/- 10%	Fo Min MHz	R - D.C. Max. Ohms	I - D.C. Max. Amps	Max. Dim. A	Max. Dim. B	Typ. Dim. C	Typ. Dim. D
1538M01	5	32.4	.013	10	0.88	0.63	0.50	.042
1538M02	10	21.6	.017	9	1.12	0.63	0.69	.042
1538M03	27	5.6	.030	7	0.88	0.81	0.44	.042
1538M04	50	3.44	.040	5.6	0.88	0.81	0.75	.042
1538M05	100	2.08	.061	4.9	1.12	0.81	0.94	.042
1538M06	150	1.84	.069	4.6	1.38	0.81	1.06	.042
1538M07	250	1.1	.089	4	1.62	0.81	1.31	.042
1538M08	5	27.2	.009	14	0.88	0.64	0.75	.053
1538M09	10	21.7	.012	12	1.12	0.64	1.00	.053
1538M10	27	5.6	.022	9	0.88	0.88	0.56	.053
1538M11	50	4.4	.028	8	1.12	0.88	0.75	.053
1538M12	68	3.6	.034	7.3	1.12	0.88	0.88	.053
1538M13	100	2.4	.038	6.8	1.38	0.88	1.00	.053
1538M14	150	1.6	.046	6.3	1.62	0.88	1.25	.053
1538M15	5	34.7	.006	19	1.12	0.69	0.81	.065
1538M16	10	20	.008	16	1.38	0.94	1.22	.065
1538M17	27	6.2	.014	12.5	1.12	0.94	0.69	.065
1538M18	50	3.8	.020	10.5	1.38	0.94	0.94	.065
1538M19	68	3.2	.023	10	1.38	0.94	1.12	.065
1538M20	100	2.2	.027	10	1.62	0.94	1.31	.065
1538M21	5	30.8	.004	23	1.38	0.72	0.94	.082
1538M22	10	20	.006	20	1.69	0.72	1.50	.082
1538M23	27	6.4	.010	15	1.38	1.00	0.94	.082
1538M24	50	3.5	.013	15	1.62	1.00	1.12	.082

Cat. No.	Inductance L uH +/- 10%	Fo Min MHz	R - D.C. Max. Ohms	I - D.C. Max. Amps	Max. Dim. A	Max. Dim. B	Typ. Dim. C	Typ. Dia. D
1539M01	5	24.7	.007	15	.83	.91	.59	.065
1539M02	10	11.4	.008	14	.83	.91	.60	.065
1539M03	25	6.2	.023	8	.83	.91	.57	.042
1539M04	50	4.1	.034	6.6	.83	.91	.65	.042
1539M05	100	2.4	.072	4.5	.83	.91	.69	.042
1539M06	250	1.6	.173	2.9	.83	.91	.65	.042
1539M07	500	1	.378	2	.83	.91	.68	.042
1539M08	1000	0.70	.801	1.3	.83	.91	.66	.042
1539M09	2500	0.43	2.04	0.85	.83	.91	.71	.042
1539M10	5	26.7	.005	20	1.22	1.11	.94	.082
1539M11	10	15.6	.006	17	1.22	1.11	.95	.082
1539M12	25	5.2	.009	14	1.22	1.11	.93	.082
1539M13	50	3.6	.017	10	1.22	1.11	.99	.065
1539M14	100	2.2	.034	7	1.22	1.11	.85	.053
1539M15	250	1.2	.083	4.6	1.22	1.11	.97	.053
1539M16	500	0.89	.129	3.7	1.22	1.11	1.12	.053
1539M17	1000	0.58	.279	2.5	1.22	1.11	1.05	.053
1539M18	2500	0.35	.690	1.6	1.22	1.11	1.05	.053
1539M19	50	3.4	.012	14	1.50	1.11	1.23	.082
1539M20	100	2	.025	9.8	1.50	1.11	1.12	.065
1539M21	250	1.3	.059	6.4	1.50	1.11	1.10	.053
1539M22	500	0.90	.090	5	1.50	1.11	1.14	.053
1539M23	1000	0.54	.195	3.5	1.50	1.11	1.36	.053
1539M24	2500	0.34	.499	2.2	1.50	1.11	1.32	.053
1539M25	5000	0.24	1.08	1.5	1.50	1.11	1.27	.053
1539M26	100	1.8	.018	14	1.50	1.50	1.18	.082
1539M27	250	1	.040	9	1.50	1.50	1.12	.065
1539M28	500	0.70	.085	6.5	1.50	1.50	1.06	.053
1539M29	1000	0.44	.183	4.4	1.50	1.50	1.23	.053
1539M30	2500	0.26	.464	2.8	1.50	1.50	1.21	.053
1539M31	5000	0.19	.714	2.2	1.50	1.50	1.32	.053
1539M32	10000	0.13	1.55	1.5	1.50	1.50	1.25	.053

EMI/RFI CHOKES

- High saturation flux density ferrite bobbins.
- 1" long leads, tinned to within 1/8" of body.
- Ideal for filtering or energy storage inductors.
- Inductance measured at @ 1Khz. with 0 amps. D.C. current, typical inductance change is less than 5% @ twice rated current.



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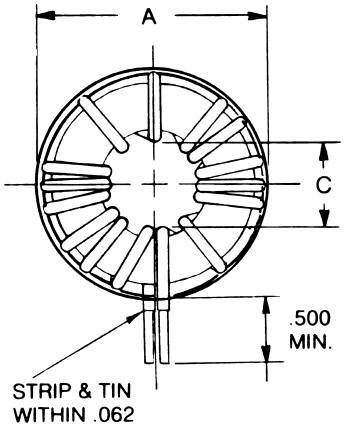

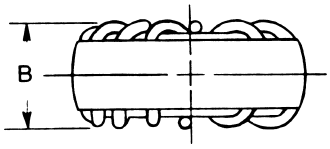

HIGH CURRENT TOROID INDUCTORS

- Ideal for EMI/RFI filtering applications
- Suitable for energy storage inductors for switching power supplies.
- High current
- Minimum .5" long leads, for P.C. board mounting.

Selection Table

Cat. No.	Inductance Ls +/- 15% @ 0A D.C. uH	Rated D.C. Amps	Minimum Inductance at rated D.C. uH	D.C. Resistance max. Ohms	D.C. Amps for 0.8 Ls	Dimensions			Typ. Lead Dia. In.
						A Max.	B Max.	C Min.	
1540M01	10	11.00	5	0.008	7.50	0.875	0.437	0.187	0.064
1540M02	25	5.50	12	0.014	3.25	0.875	0.437	0.187	0.040
1540M03	125	2.75	70	0.12	1.50	0.875	0.437	0.187	0.020
1540M04	275	2.00	150	0.24	1.30	0.875	0.437	0.187	0.016
1540M05	450	1.50	250	0.49	0.80	0.875	0.437	0.187	0.012
1540M06	25	9.00	15	0.012	5.50	1.125	0.562	0.312	0.064
1540M07	75	5.00	40	0.04	3.00	1.125	0.562	0.312	0.036
1540M08	400	2.25	225	0.33	1.40	1.125	0.562	0.312	0.018
1540M09	800	1.75	475	0.64	1.00	1.125	0.562	0.312	0.015
1540M10	1000	1.50	575	0.98	0.90	1.125	0.562	0.312	0.012
1540M11	50	9.50	25	0.012	6.00	1.25	0.625	0.375	0.064
1540M12	150	4.75	85	0.046	2.50	1.25	0.625	0.375	0.036
1540M13	700	2.25	400	0.42	1.25	1.25	0.625	0.375	0.018
1540M14	1250	1.75	750	0.85	1.00	1.25	0.625	0.375	0.015
1540M15	1600	1.50	950	1.27	0.80	1.25	0.625	0.375	0.012
1540M16	125	7.75	65	0.032	5.25	1.812	.075	0.75	0.064
1540M17	500	4.00	275	0.15	2.75	1.812	0.75	0.75	0.032
1540M18	1100	2.50	650	0.33	1.80	1.812	0.75	0.75	0.025
1540M19	2250	1.75	1350	0.92	1.30	1.812	0.75	0.75	0.080
1540M20	4500	1.25	2700	2.64	0.90	1.812	0.75	0.75	0.012
1540M21	250	8.00	125	0.041	4.75	2.125	0.937	0.625	0.062
1540M22	900	3.75	500	0.175	2.00	2.125	0.937	0.625	0.032
1540M23	1800	2.50	1000	0.55	1.40	2.125	0.937	0.625	0.023
1540M24	4000	1.75	2100	1.16	1.10	2.125	0.937	0.625	0.018
1540M25	8000	1.00	4500	3.34	0.70	2.125	0.937	0.625	0.012

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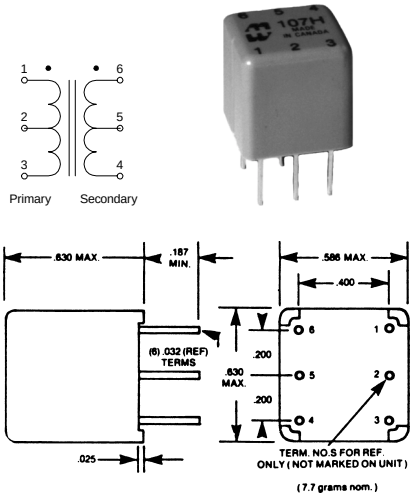
Audio

MINIATURE EPOXY POTTED AUDIO TRANSFORMERS

- Audio input, line matching and output transformers.
- Epoxy potted in an attractive molded case, Pin type P.C. board mount (min. 0.187" length).
- In some models where no center tap is required (on secondary), pin No. 5 is omitted.
- Power level ratings are maximum at lowest frequency rating (noted by series above charts) power can be increased slightly at higher frequencies (except 107X).
- Will withstand soldering for 10 sec. @ 260 degrees C, ambient temp. 85 degrees C max.

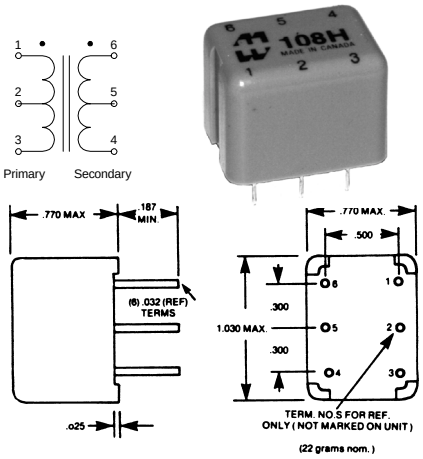
150 milliwatt (+/- 1.5 db, 300 Hz. - 50 Khz.) - 107 Series

Cat. No.	Nominal Impedance		D.C. Resistance +/- 20%		Max. D.C. Unbalance
	Primary (1-3)	Secondary (4-6)	Primary (1-3)	Secondary (4-6)	
107B	150 ct	12	20	2	12
107D	150 ct	150 ct	20	25	12
107E	600 ct	3.2	59	0.6	6
107G	600 ct	250 ct	59	10	6
107H	600 ct	600 ct	59	75	6
107J	1K ct	600 ct	92	71	4.5
107L	10K ct	3.2	780	0.65	1.5
107N	10K ct	600 ct	680	70	1.5
107P	10K ct	1.5K ct	680	150	1.5
107R	10K ct	4K ct	680	390	1.5
107T	10K ct	10K ct	680	700	1.5
107V	25K ct	600 ct	1300	70	1.0
107X	100K ct	1K ct	3700	80	0



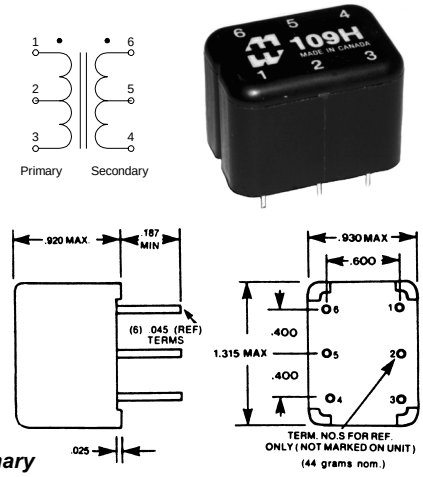
500 milliwatt (+/- 1.5 db, 300 Hz. - 50 Khz.) - 108 Series

Cat. No.	Nominal Impedance		D.C. Resistance +/- 20%		Max. D.C. Unbalance
	Primary (1-3)	Secondary (4-6)	Primary (1-3)	Secondary (4-6)	
108E	600 ct	3.2	65	0.43	6
108F	600 ct	150 ct	65	18	6
108G	600 ct	250 ct	65	29	6
108H	600 ct	600 ct	65	69	6
108J	1K ct	600 ct	109	69	4.5
108K	1.5K ct	600 ct	170	69	4.0
108L	10K ct	3.2	1050	0.43	1.5
108N	10K ct	600 ct	1050	69	1.5
108P	10K ct	1.5K ct	1050	180	1.5
108T	10K ct	10K ct	1050	1200	1.5



2 Watt (+/- 1.5 db 300Hz. - 50 Khz.) - 109 Series

Cat. No.	Nominal Impedance		D.C. Resistance +/- 20%		Max. D.C. Unbalance
	Primary (1-3)	Secondary (4-6)	Primary (1-3)	Secondary (4-6)	
109E	600 ct	3.2	43	0.37	6
109F	600 ct	150 ct	43	15	6
109G	600 ct	250 ct	43	24	6
109H	600 ct	600 ct	43	60	6
109J	1K ct	600 ct	69	60	4.5
109K	1.5K ct	600 ct	105	60	4.0
109L	10K ct	3.2	700	0.37	1.5
109N	10K ct	600 ct	700	60	1.5
109R	10K ct	1.5K ct	700	150	1.5
109T	10K ct	10K ct	700	1000	1.5



NOTES: * Unbalanced ma. D.C. in half primary winding, divide by 2 for total ma. D.C. in primary

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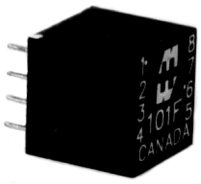
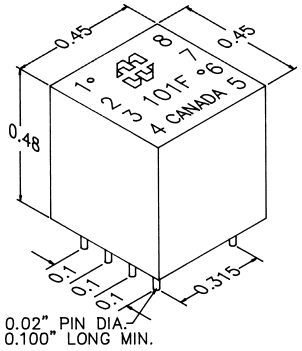
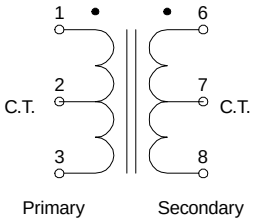
MINIATURE EPOXY POTTED AUDIO TRANSFORMERS

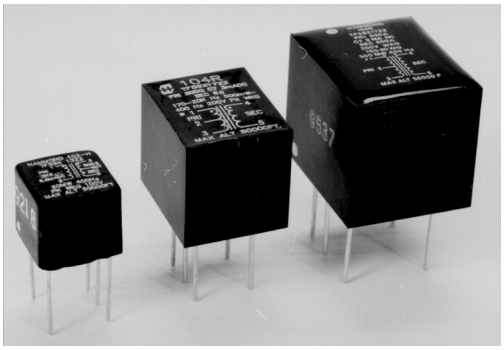




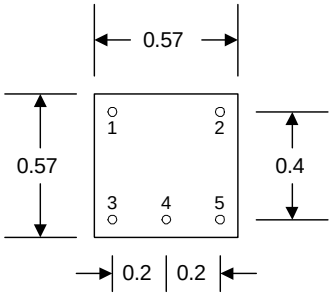
- Pin type, P.C. board mount, net weight of only 0.1 oz.
- Rugged black epoxy potted construction produces a completely sealed unit withstanding severe environmental conditions.
- Secondary may be used as primary and primary as secondary.
- Power level: 100mw @ 300 Hz. to 100 Khz.
  - -Freq. range @ +10 dbm is 200 Hz. to 100 Khz. +/- 0.5db
  - -Freq. range @ +15 dbm is 200 Hz. to 100 Khz. +/- 0.5 db
  - -Freq. range @ +20 dbm is 300 Hz. to 100 Khz. +/- 0.5db
  - -Freq. measurements with no D.C. saturation.

Cat. No.	Nominal Impedance		Nominal Resistance		Useful Impedance Range	
	Primary	Secondary	Primary	Secondary	Pri./Sec. to Pri./Sec.	
101D	300 ct	600 ct	20.4	54.0	150/300	600/1200
101F	600 ct	600 ct	44.0	52.0	300/300	1200/1200
101H	1200 ct	600 ct	80.0	53.0	600/300	2400/1200
101J	2500 ct	600 ct	150.0	54.0	1250/300	5000/1200
101P	300 ct	50 ct	20.4	4.8	150/25	600/100
101R	600 ct	50 ct	44.0	4.7	300/25	1200/100
101V	2500 ct	50 ct	150.7	4.9	1250/25	5000/100

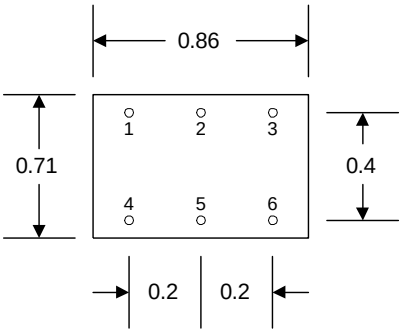




102 Series *104 Series* *106 Series*



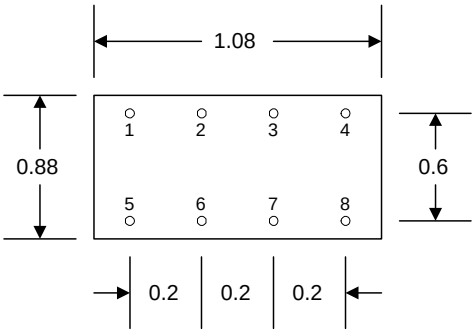
102 Series (0.5" high, Net Wt. 0.32 oz.)
Bottom View



104 Series (0.75" high, Net Wt. 0.8 oz.)
Bottom View

MINIATURE EPOXY POTTED AUDIO TRANSFORMERS

- Output power models from 5 to 1,500 milliwatt level available.
- 0.5" long pin type (.025" dia. on 102 series, .032" dia. on 104 & 106 series), P.C. board mount.
- Bifilar winding technique used on center tapped units for balanced resistive and capacitive characteristics.
- Rugged black epoxy potted construction produces a completely sealed unit withstanding severe environmental conditions including those of MIL-T-27 (Grade 5, Class S).
- For the more economical open type P.C. mount types please refer to the 148 & 149 series.
- Peak working voltage rating of: 100V (102 Series) & 200V (104 & 106 Series).
- Referring to figures 1-9, if connection is not used - no pin will exist.



106 Series (0.95" high, Net Wt. 1.45 oz.)
Bottom View

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MINIATURE EPOXY POTTED AUDIO TRANSFORMERS (Continued)

Cat. No.	Applicaton	Nominal Impedance		Pri. D.C. (*1) ma	D.C. Resistance +/- 15%		Output (*2) Milliwatts	Inserti-on Loss (*3) db	Freq (*4) -1 db Hz.	Dwg. Figure
		Primary	Secondary		Primary	Secondary				
102B	Input	50	1500	0	4	95	20	1.5	310	1
102D	Input	600	1500	0	43	85	20	1.5	310	1
102H	Interstage	2000	500 ct	5.6	341	62	20	1.5	310	2
102J	Interstage	6000	2000 ct	2.8	900	260	20	1.5	310	2
102K	Interstage	10000	2000 ct	2.5	1585	260	20	1.5	310	2
104B	Input	150	80000	0	6.6	3730	5	1	60	5
104H	Interstage	10000	2000 ct	3.2	675	89	35	1	200	6
104K	Interstage	20000	1000 ct	3.2	790	125	35	1	200	6
104L	Interstage	25000	600 ct	2	1890	25	35	1	200	6
104Q	Output	500 ct	3.2	6	27	0.4	500	1	200	3
104R	Output	500 ct	8	6	27	0.9	500	1	200	3
104S	Output	600 ct	150 ct	6	47	10.6	500	1	200	4
106C	Input	50000	1500 ct	0	2400	52	10	1	60	7
106E	Input	600 ct	600	9	65	83	500	1	150	8
106EE	Input	600 ct	600 ct	9	65	83	500	1	150	9
106G	Interstage	4000	600 ct	10	340	24	150	1	215	7
106H	Interstage	4000	2600 ct	10	340	100	150	1	215	7
106J	Interstage	10000	2000 ct	6.5	700	89	150	1	215	7
106M	Interstage	20000	2000 ct	4.5	1180	89	150	1	215	7
106Q	Output	48 ct	3.2	32	2.4	0.3	1500	1	170	8
106R	Output	48 ct	8	32	2.4	0.7	1500	1	170	8
106S	Output	100 ct	3.2	22	4.4	0.3	1500	1	170	8
106T	Output	100 ct	8	22	4.4	0.7	1500	1	170	8
106V	Output	250 ct	8	14	11	0.7	1500	1	170	8
106W	Output	500 ct	3.2	10	26	0.3	1500	1	170	8
106X	Output	500 ct	8	10	26	0.7	1500	1	170	8

NOTES:

****1) Where primary is center-tapped, this figure is the maximum unbalance***

****2) When operating at impedances below normal, power capability and the frequency spectrum are proportionally lower, conversely, at higher impedances power capability and frequency spectrum will be proportionately higher.***

****3) Insertion loss measured at 1000 Hz.***

****4) Approximate frequency in hertz at which the output, at rated load and D.C. unbalance, is 1 db below the 1000 Hertz rating. The high frequency roll-off point exceeds 20 Khz. (Above 35 Khz. in most types).***

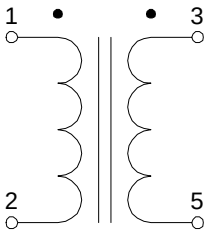

Fig. 1

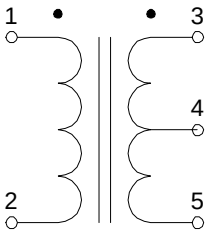

Fig. 2

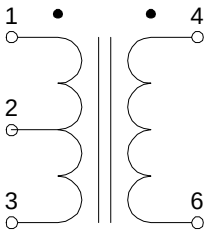

Fig. 3

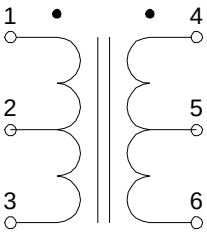

Fig. 4

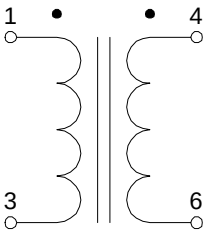

Fig. 5

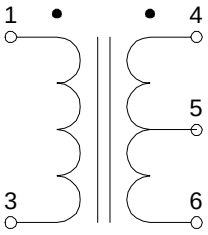

Fig. 6

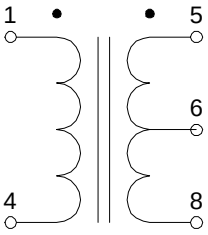

Fig. 7

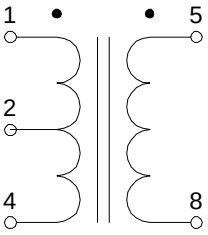

Fig. 8

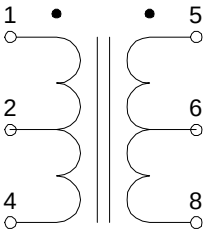

Fig. 9

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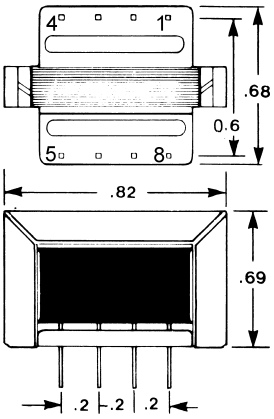

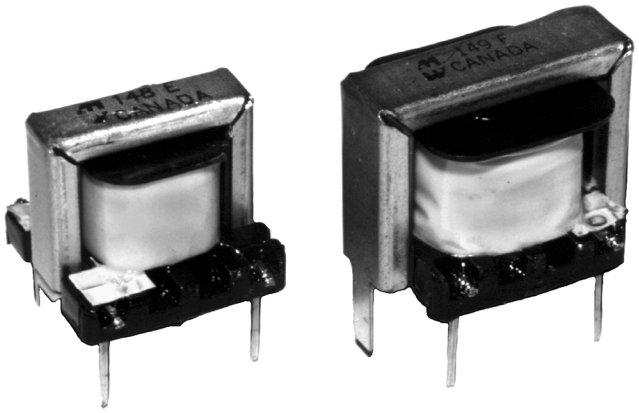

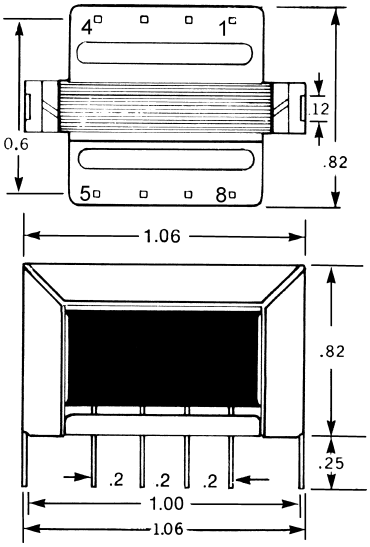

P.C. BOARD MOUNT
AUDIO TRANSFORMERS

- Pin type (0.25" length & 0.025" square), P.C. board mount.
- Economical, open type, horizontal bracket construction. 149 Series includes clinching lugs for extra mounting strength.
- Frequency response 200 Hz. - 50 Khz. (+/- 1 db, ref. @ 1 Khz.).
- Total distortion approximately 2% for drivers and 1% for outputs at 200 Hz., decreasing at higher frequencies.
- Insertion loss less than 1/2 db.
- Bifilar wound for balanced capacitive and resistance characteristics, on pin bobbins for standard 0.2" grid pin spacing.
- Insulation test 250V rms.
- For rugged epoxy cast type units refer to our 102, 104, 106, 107, 108 & 109 series.
- Net weight: 0.6 oz. (148 Series) & 1.0 oz. (149 Series).

Cat. No.	Applicaton	Nominal Impedance		Pri. D.C.	D.C. Resistance +/- 15%		Output	Dwg.
		Primary	Secondary	(*1) ma	Primary	Secondary	Milliwatts	Figure
148A	Input	150/600	600/2400	1.9	45	300	300	1
148B	Input	150	400/1600	3.8	11.3	200	300	2
148C	Input	50000	250/1000	0	1760	25.4	12	2
148D	Input	200K	1000	0	1760	6.2	3	3
148E	Driver	500	125/500	18.0	79	60	75	2
148F	Driver	1500	125/500	11.6	220	58	75	2
148H	Driver	3000	250/1000	7.5	480	107	75	2
148K	Driver	4000	500/2000	6.5	540	230	75	2
148M	Driver	6000	500/2000	5.3	850	230	75	2
148Q	Driver	10000	500/2000	4.1	1700	238	75	2
148R	Driver	20000	250/1000	2.4	2230	123	50	2
148T	Output	500 ct	3.2	2.1	41	0.34	300	4
148V	Output	600 ct	150 ct	1.9	45	14	300	5
148X	Output	4000 ct	3.2	0.8	380	0.34	300	4
148Y	Output	5000 ct	500 ct	0.7	410	52	300	5
149C	Driver	160	20/80	56	24	6.5	200	2
149E	Driver	300	30/120	42	41	9.7	200	2
149F	Driver	450	40/160	33	52	19	200	2
149G	Driver	600	150/600	29	92	58	200	2
149H	Driver	1000	60/240	22	155	24	200	2
149Q	Output	200 ct	3.2	7	19	0.4	1000	4
149S	Output	600 ct	150 ct	4	53	17	1000	5
149T	Output	600 ct	600 ct	4	53	70	1000	5
149U	Output	150/600	8	4	53	95	1000	6
149V	Hybrid	600 ct	300/1200	4	53	63	1000	7

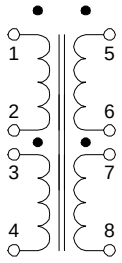

Fig. 1

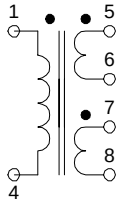

Fig. 2

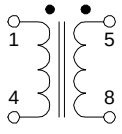

Fig. 3

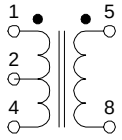

Fig. 4

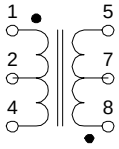

Fig. 5

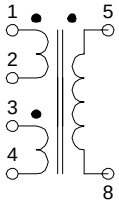

Fig. 6

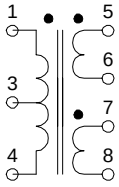

Fig. 7

NOTES:
****1) For output transformers this figure is maximum unbalance.***
- Hybrid circuits require two units (Catalog # 145V)

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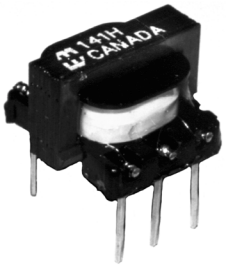

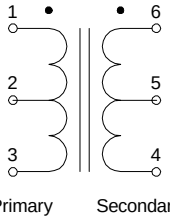

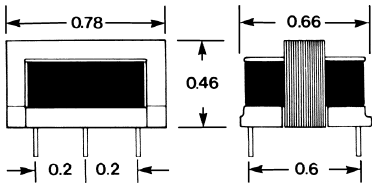

LOW PROFILE - P.C. BOARD MOUNT AUDIO TRANSFORMERS

- Pin type (0.25" length & 0.035" diameter), P.C. board mount
- Low profile, open type construction
- Frequency response 200 Hz. - 50 Khz. (+/- 2 db, ref. @ 1 Khz.)
- Net weight 0.6 oz.

Cat. No.	Nominal Impedance		Max. Pri. D.C. ma	D.C. Resistance		Output Milliwatts
	Primary	Secondary		Primary	Secondary	
141B	200 K	1000	0	3775	85	4
141D	3000 ct	1000 ct	1	120	51	150
141F	25 K	50	2	1645	65	100
141H	600 ct	600 ct	2	32	45	150
141M	300 K	1200 ct	2	1100	47	100
141P	1200 ct	8	2	50	0.45	150

Audio

CHASSIS MOUNT - SHIELDED AUDIO TRANSFORMERS

- Insulated leads 5" long minimum
- Stamped steel case (Diameter of 1.25" and height of 1") for excellent shielding - low hum pick-up.
- Frequency response 70 Hz. - 11 Khz. (+/- 1 db, ref. @ 1 Khz.)
- Case hole mounting centers are 1.6"
- Net weight 2 oz.

Cat. No.	Application	Nominal Impedance		Overall Turns Ratio Pri. to Sec.
		Primary	Secondary	
140A	Voice Coil to Single Grid	4	60000	1:122
140B	Dyn. MIC. to Single Grid	30	60000	1:45
140C	MIC. to Single Grid	50	60000	1:34.5
140H	Bridging Line to P.P. Grids	10000	40000 ct	1:2
140K	MIC. to Single Grid	150	60000	1:20
140M	CRYS, MIC. to Base	100K	1500	8:1
140N	Dyn. MIC to Base	50	1500	1:5.5
140P	Line to Base	150/600	600/2400	1:2
140Q	Line to Line	600 ct	600 ct	1:1

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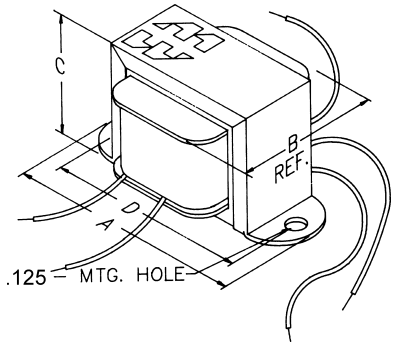
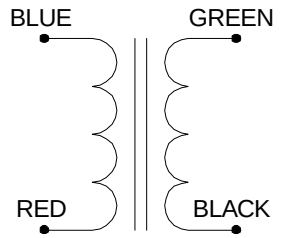
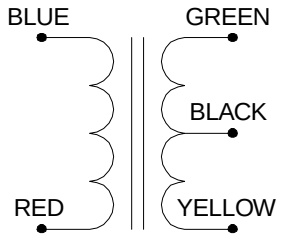
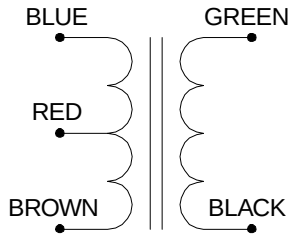
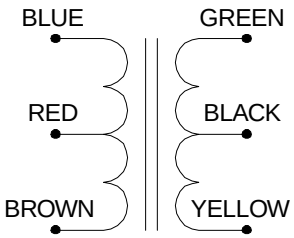


Series No.	Dimensions			
	A	B	C	D
143...	1.35	0.69	0.69	1.06
144...	1.35	0.69	0.69	1.06
145...	1.63	0.88	0.81	1.38
146...	1.63	0.88	0.81	1.38









CHASSIS MOUNT
AUDIO TRANSFORMERS

- Economical, open, two hole horizontal bracket mount.
- Insulated, color coded flexible leads, 4" long minimum (143, 144 & 145 Series) or 3" long minimum (146 Series).
- For a similar P.C. board mount version refer to our 148 & 149 Series.
- Frequency response 150 Hz. to 15 Khz. (+/- 1 db, reference 1000 Hz.)
- When operating at impedances below nominal, power capability and the frequency spectrum are proportionately lower, conversely, at higher impedances power capability and frequency spectrum will be proportionately higher.
- Net weight: 0.5 oz. (143, 144 Series) & 1.4 oz. (145 Series).

Cat. No.	Applicaton	Nominal Impedance		Pri. D.C. (*1) ma	D.C. Resistance +/- 15%		Output mW
		Primary	Secondary		Primary	Secondary	
143B	Input	3.2	4000	0	0.4	245	15
143D	Input	200K	1000	0	4500	30	25
143H	Driver	1500	500 ct	4	111	24	30
143J	Driver	3000	1000 ct	2.6	265	53	30
143L	Driver	10000	200 ct	1.5	720	9	30
143N	Driver	10000	2000 ct	1.5	720	89	30
143R	Driver	25000	600 ct	1	1890	25	30
144B	Output	200 ct	3.2	10	10	0.33	150
144D	Output	300 ct	3.2	9	15	0.33	150
144F	Output	500 ct	3.2	6	27	0.33	150
144G	Output	500 ct	8	6	27	0.9	150
144H	Output	500 ct	50	6	28	7.3	150
144I	Output	600 ct	150 ct	6	45	8.2	150
144P	Output	10000	3.2	5	575	0.5	50
144Q	Output	10000	8	5	575	0.9	50
144S	Output	20000	8	3.5	1240	0.9	50
145A	Driver	100	200 ct	45	14	19	100
145B	Driver-Output	600	600	18	30	38	200
145C	Input	50000	1500 ct	1	2400	52	50
145D	Input	200K	1000	0.5	3600	33	10
145E	Input-Output	600 ct	600 ct	5	65	83	200
145F	Driver	600 ct	200 ct	20	45	9	135
145G	Driver	2000	200 ct	12	140	9	135
145H	Driver	2000	500 ct	12	148	17	135
145J	Driver	4000	600 ct	8	340	24	135
145L	Driver	4000	2600 ct	8	340	100	135
145N	Driver	10000	2000 ct	5	700	89	135
145O	Driver	15000	200 ct	4	850	10	135
145P	Driver	20000	1000 ct	3.5	1180	50	135
145R	Driver	20000	2000 ct	3.5	1180	89	135
146B	Output	48 ct	3.2	20	2.4	0.3	700
146C	Output	48 ct	8	20	2.4	0.7	700
146D	Output	100 ct	3.2	14	4.4	0.3	700
146E	Output	100 ct	8	14	4.4	0.7	700
146F	Output	250 ct	3.2	8	11	0.3	700
146G	Output	250 ct	8	8	11	0.7	700
146H	Output	500 ct	3.2	6	26	0.3	700
146I	Output	500 ct	8	6	26	0.7	700
146J	Output	1000 ct	3.2	4	56	0.3	700
146K	Output	1000 ct	8	4	56	0.7	700
146N	Output	2000 ct	8	3	97	0.7	700
146S	Output	4000 ct	8	2	220	0.7	700

NOTES:
****1) For output transformers this figure is maximum unbalance.***

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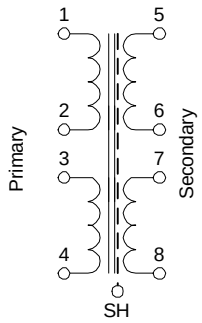
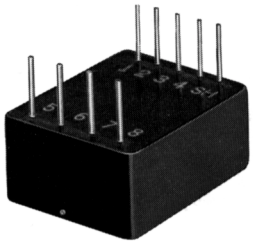
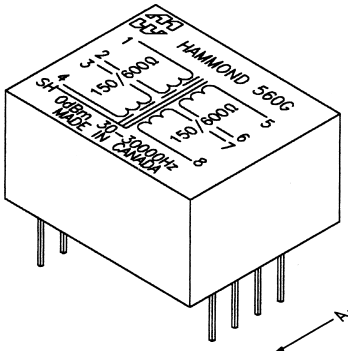
P.C. BOARD MOUNT - EPOXY POTTED BROADCAST QUALITY AUDIO TRANSFORMERS

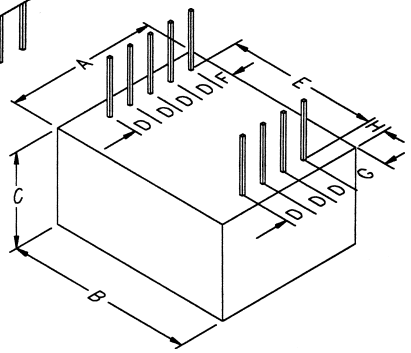
- Rugged black epoxy potted case with 9 pin connections (.025" square by 0.5" long).
- Frequency response @ 0 dbm +/- 1 db max. (+/- 0.5 db is typical) of 30 Hz. to 30 Khz., except 560Q which is 30 Hz. to 15 Khz.
- Insertion loss of 1 db max.
- Maximum power level 0 dbm.
- Electrostatic shield between pri. & sec. connected to core and pin "SH".
- Humbucking construction
- Balanced split windings on pri. & sec. for circuit versatility. Primaries and secondaries can be reversed for impedance matching.
- Overall dimensions 1.64" x 1.33" x 0.85" high max.
- Shipping weight 4 oz.



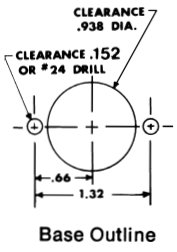




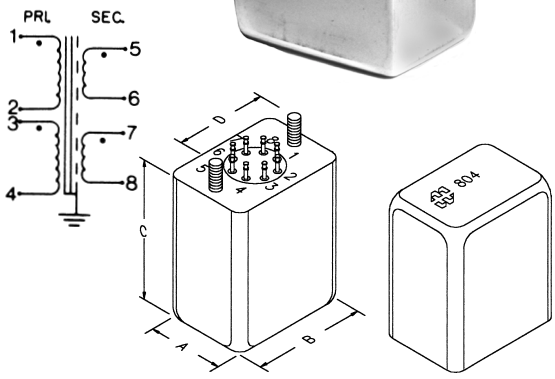
Cat. No.	Application	Nominal Impedance	
		Primary	Secondary
560C	Emitter or mic to Line	12/48	150/600
560E	Emitter or mic to Line	50/20	150/600
560G	Isolating or Hybrid	150/600	150/600
560J	Collector to Line or Line to Base	150/600	1200/4800
560L	Collector to Line or Matching	150/600	5K/20K
560N	Collector to Line	150/600	10K/40K
560Q	Matching or Bridging	10k/40k	10K/40K



A	B	C	D	E	F	G	H
1.33	1.64	0.85 max.	0.20	1.30	0.141	0.344	0.156



Base Outline



CHASSIS MOUNT - HERMETICALLY SEALED BROADCAST QUALITY AUDIO TRANSFORMERS

- Deep-drawn steel case with tin plated finish, with two convenient 6-32 mounting studs with hardware.
- Hermetically sealed for stable characteristics and long life. Header has nine 0.22" long solder pins.
- Frequency response +/- 0.5 db max. from 50 Hz. to 15 Khz.
- Insertion loss of apx. 1 db.
- Maximum power level +15 dbm. (except 841, 842 & 844 which are +20 dbm) with specified characteristics, or higher levels with reduced low frequency performance.
- Electrostatic shield between pri. & sec. connected to terminal 9.
- Humbucking construction
- Balanced split windings on pri. & sec. for circuit versatility. Primary may be used as a secondary and vice versa for impedance matching.
- Overall dimensions 1.75" wide x 1.25" deep x 2.56" high max.
- Shipping weight 0.5 lb.

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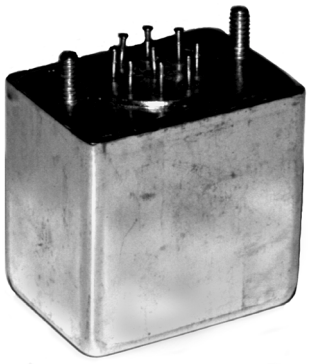
CHASSIS MOUNT - HERMETICALLY SEALED
BROADCAST QUALITY - AUDIO TRANSFORMERS
(continued)

Cat. No.	Applicaton	Nominal Impedance		Max. Pri. D.C. Unbalanced ma
		Primary	Secondary	
801	Isolating, Matching	*50/200	50/200	0.8
802	Isolating, Matching	*50/200 (60/240)	125/500 (150/600)	0.8
804	Isolating, Matching, Hybrid	*125/500 (150/600)	125/500 (150/600)	0.5
806	Dynamic MIC or Voice Coil to Grid	*7.5/30	10K/40K	1.6
807	Dynamic MIC or Voice Coil to Base	*7.5/30	600/2400	1.6
808	MIC or Mixer to Single or P.P. Grid	*50/200	10000/40000	0.6
809	MIC to Mixer to Base	*50/200	600/2400	0.6
812	Line or 150 ohm MIC to 1 or 2 Grids	*125/500 (150/600)	10K/40K (12K/48K)	0.4
813	Line or 150 ohm MIC to Base	*125/500 (150/600)	600/2400 (720/2880)	0.4
832	Interstage (ratio 1:2)	5K/20K	20K/80K	0
834	Interstage (ratio 1:4)	5K/20K	10K/40K	0
835	Interstage (ratio 1:1)	10K/40K	10K/40K	0
841	** P.P. Plates to Line	5K/20K	50/200	0
842	** P.P. Plates to Line	5K/20K (6K/24K)	125/500 (150/600)	0
844	** P.P. Plates to Line	10K/40K (12K/48K)	125/500 (150/600)	0

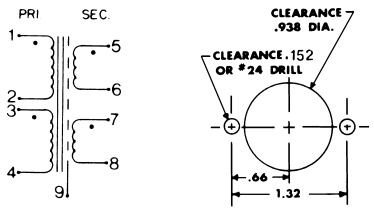
NOTES:
**** Electrostatic shield between primary & secondary***

***** Single plate requires parallel feed. When operating at impedances below nominal, power capability is lower and the frequency spectrum is shifted downward, conversely, at higher impedances power capability and frequency spectrum will be shifted upward.***

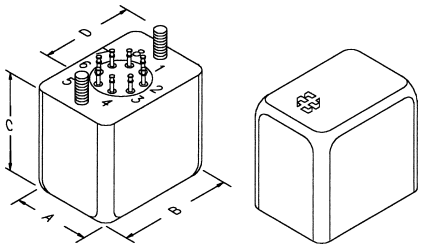


CHASSIS MOUNT - HERMETICALLY SEALED
BROADCAST QUALITY
AUDIO TRANSFORMERS

- Deep-drawn steel case with tin plated finish, with two convenient 6-32 mounting studs with hardware (same as 800 series except low profile).
- Hermetically sealed for stable characteristics and long life. Header has nine 0.22" long solder terminals.
- Frequency response +/- 0.5 db max. from 20 Hz. to 20 Khz., except units over 5K ohms impedance, may be down 1 db @ 20 Khz.
- Insertion loss of apx. 1 db.
- Maximum power level +15 dbm. with specified characteristics, or higher levels with reduced low frequency performance.
- Distortion is apx. 1.5% @ 20 Hz. under full power.
- Electrostatic shield between pri. & sec. connected to terminal 9.
- Humbucking construction
- Balanced split windings on pri. & sec. for circuit versatility. Primary may be used as a secondary and vice versa for impedance matching.
- Overall dimensions 1.7" x 1.2" x 1.65" high max.
- Shipping weight 0.4 lb.



Base Outline



Cat. No.	Applicaton	Nominal Impedance		Nominal Resistance +/- 20%	
		Primary	Secondary	Primary	Secondary
850C	Emitter or MIC to Line	12/48	150/600	6	70
850E	Emitter or MIC to Line	50/200	150/600	27	68
850G	Line Isolation or Hybrid	150/600	150/600	71	71
850H	Line Isolation or Hybrid	150/600	300/1200	70	140
850J	Output to Line, or Line to Base	150/600	1200/4800	69	570
850L	Output to Line, Matching or Bridging	5K/20K	150/600	2240	69
850N	Output to Line, Matching or Interstage	150/600	10K/40K	65	4980
850Q	Interstage or Isolating	10K/40K	10K/40K	4890	4980

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Audiophile Tube Output Transformers

Whether you are into the clean, free spirited "Single Ended" tube output or high efficiency, high power, "Push-Pull" audio, we have the output transformer for you.

We have been producing tube output transformers ***continuously*** for over half a century, constantly improving and tweaking their performance. The output transformer is one of the most critical components in a audiophile amplifier. These excellent designs have survived the years and have enjoyed a recent resurgence along with the tube industry.

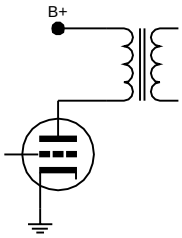
Please note, our specifications are at ***FULL OUTPUT*** power. Many "newbies" to the industry use frequency specification data at milliwatt ranges to inflate their claims. Check carefully when comparing manufacturers specs. We use -1db roll off points to ensure a typical HAMMOND conservative rating, again at ***FULL OUTPUT POWER.***

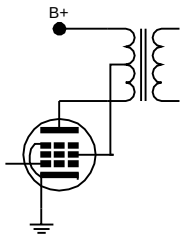
To ensure a long life and maximum versatility these units are built to and tested at a Hi-Pot rating of 2,000 VAC!!!!!

Our transformers are of EI laminated design, we do not offer toroidal designs due to their inability to handle tube imbalance and high manufacturing cost.

More importantly, our designs are "ear tested". After a new design has passed our extensive testing, it's got to sound good too, before we put it on the market! From Bach to rock & three watts to 280 watts, we have your output transformer ***IN STOCK.***

Single Ended Tube Output Transformers

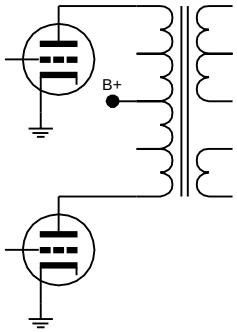


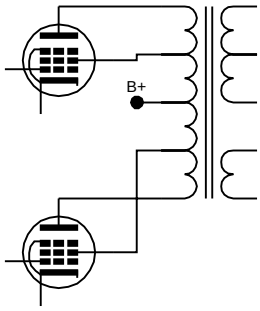


These high quality units are designed for maximum versatility. Designed for both triode or pentode operation - Class A operation. All units include an optional use - 40% screen tap (a proven pentode "sweet spot") for "Ultra-Linear" operation. The ratings shown are at full power and rated plate current.

The lamination iron used is a high quality (M6) grade, silicon steel, for low loss and the lowest possible distortion at bass frequencies. A factory set core cap ensures against core saturation at full ratings. All single-ended output models include multiple interleaved windings to maximize high frequency response. These windings are machine wound with high quality copper wire.

Push Pull Tube Output Transformers





These high quality units are also designed for maximum versatility. All units include an optional use - 40% screen tap (a proven pentode "sweet spot") for "Ultra-Linear" operation. They are designed to be used with most all power output tubes available today. The ratings shown are at full power and rated plate current. We have also added an epoxy potted series to our line for the ultimate in tube output transformers.

HAMMOND Interleaved Windings

The reason for our sparkling high frequency performance is the use of interleaved windings between the primary and secondary. The number of interleaved windings is optimized to the size (wattage) of the unit. All output models (both single ended and push-pull) include multiple interleaved windings to maximize high frequency response. These windings are machine wound with high quality copper wire The multiple interleaved secondaries are wound (series or parallel connecting them) to match to 4, 8 or 16 ohm load impedances.

The primaries of each model (including the "single-ended" series) include Ultra-Linear taps at the 40% point.

Tube Output Transformers - Esthetics

We have also paid close attention to the "look" of our units as they are as much on display in some designs as the tubes themselves. Our units are manufactured with high grade laminations (M6) and machine wound with high quality copper wire. The core is varnished and oven baked to ensure quiet operation - even at high ambient temperatures. Then the end bells are bolted on. These end bells are finished in a tough, low gloss, black powder paint finish to resist scratching. The end bells include knockouts for optional above chassis wiring.

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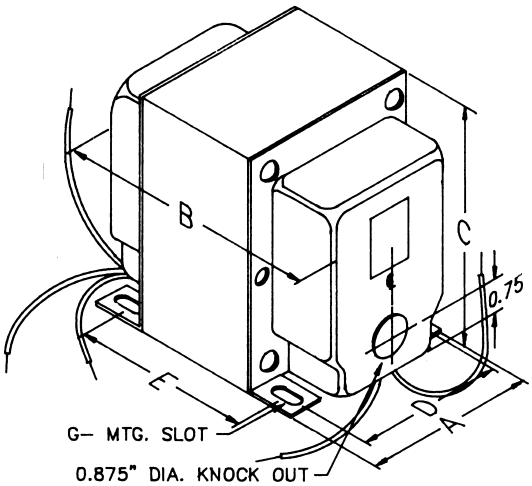


SINGLE-ENDED "CLASSIC" TUBE TYPE - ULTRA-LINEAR OUTPUT TRANSFORMERS

- Over designed for single ended tube output circuits (triode, tetrode or pentode tubes).
- Enclosed (shielded), 4 slot, above chassis Type "X" mounting.
- Frequency response at least 20 Hz. to 20 Khz. at full rated power (+/- 1 db max. ref. 1 Khz.)
- Insulated flexible leads 8" min.
- 25 watt units include a 40% screen tap for Ultra-Linear operation (if desired). 75 watt unit does not include screen taps.
- High quality laminations, (M6) grain oriented silicon steel
- 75 watt model secondary, has easy hook-up taps rather than multiple winding connections.

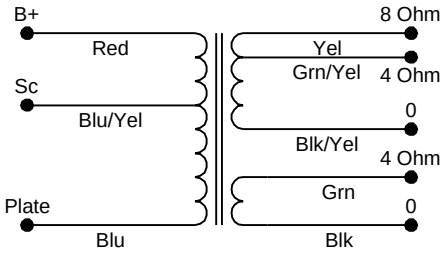
Dimension Table

Cat. No.	A	B	C	D	E	G (slot)
X15	3.75	5.00	4.56	3.00	3.81	.203 x .38
X20	4.38	7.50	5.25	3.50	5.88	.203 x .38

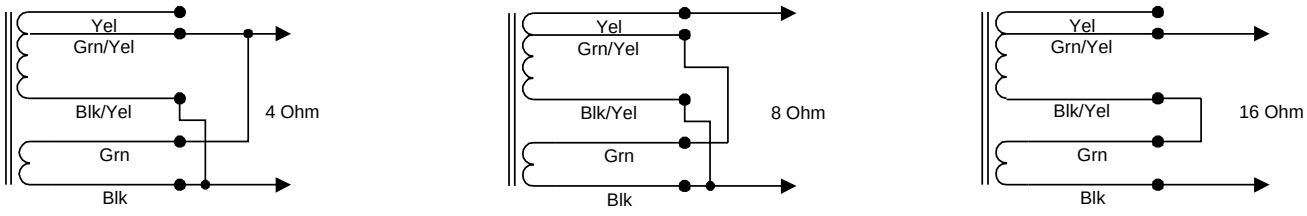
Specifications

Cat. No.	Audio Watts	Primary Impedance	Max. DC Bias	Secondary Impedance	Wt. Lbs.	Dim. Ref.
1627SE	25	2,500	160 ma.	4-8-16	11	X15
1628SE	25	5,000	120 ma.	4-8-16	11	X15
1629SE	25	6,500	100 ma.	4-8-16	11	X15
1640SE	25	1,250	200 ma.	4-8-16	11	X15
1642SE	75	5,000	300 ma.	4-8-16	28	X20

25 Watt Models - Transformer Schematic



25 Watt Models - Secondary Connections



Suggested Tube Types

Cat. No.	Triodes	Pentodes
1627SE	2A3, 6A3, 6B4G, 300B	6CA7, 6L6, 807, 5881, 6550, Parallel - 6AQ5, 6V6, EL84
1628SE	SV572-3, SV572-10, SV811-3, 211, 300B	6AQ5, 6V6, 6L6, 807, 5881, 6550, EL84
1629SE	SV572-30, SV572-160, SV811-10, 811A, 572B	-
1640SE	Parellel - SV811-3, 2A3, 6A3, 6B4G, 300B	Parallel - 6550, 6CA7
1642SE	SV-572-3, SV572-10, SV-572-30, SV-572-160, 845	-

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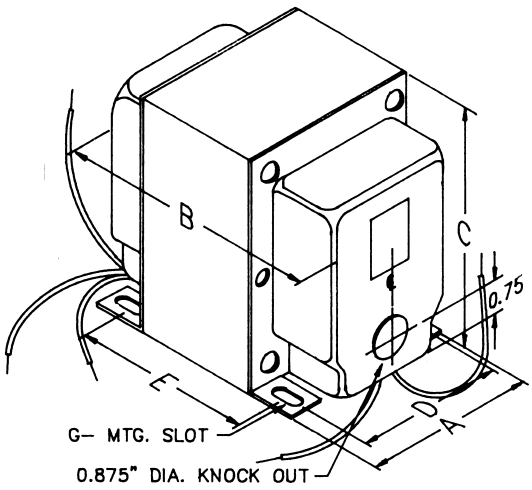


PUSH - PULL
"CLASSIC" TUBE TYPE - ULTRA-LINEAR OUTPUT TRANSFORMERS

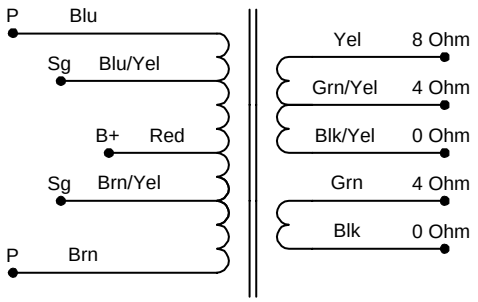
- Designed for push-pull tube output circuits.
- Enclosed (shielded), 4 slot, above chassis Type "X" mounting, both end bells include knockouts for optional above chassis wiring.
- Frequency response 30 Hz. to 30 Khz. at full rated power (+/- 1 db max. ref. 1 Khz) minimum.
- Insulated flexible leads 8" min.
- All units include 40% screen taps for Ultra-Linear operation (if desired).
- Typical applications - Push-Pull: triode, Ultra-Linear pentode, pentode and tetrode connected audio output.
- For the "ultimate" in Push-Pull output see our line of epoxy potted output transformers.

Cat. No.	Audio Watts	Primary Impedance	Secondary Impedance	Wt. Lbs.
1608	10	8,000 ct	4-8-16	2.5
1609	10	10,000 ct	4-8-16	2.5
1615	15	5,000 ct	4-8-16	3.25
1620	20	6,600 ct	4-8-16	3.5
1650F	25	7,600 ct	4-8-16	4
1645	30	5,000 ct	4-8-16-70V	4.5
1650H	40	6,600 ct	4-8-16	6.5
1650K	50	3,400 ct	4-8-16	7
1650N	60	4,300 ct	4-8-16	8
1650P	60	6,600 ct	4-8-16	8
1650R	100	5,000 ct	4-8-16	12
1650T	120	1,900 ct	4-8-16	14
1650W	280	1,900 ct	4-8-16	28

Dimension Table

Cat. No.	A	B	C	D	E +/- 1/16"	G Slot
1608	2.5	2.75	3.06	2	1.69	.203 x .38
1609	2.5	2.75	3.06	2	1.69	.203 x .38
1615	2.5	3.25	3.06	2	2.19	.203 x .38
1620	2.5	3.5	3.06	2	2.44	.203 x .38
1650F	2.5	3.5	3.06	2	2.44	.203 x .38
1645	3.13	3.5	3.81	2.5	2.19	.203 x .38
1650H	3.13	4	3.81	2.5	2.69	.203 x .38
1650K	3.13	4	3.81	2.5	2.69	.203 x .38
1650N	3.13	4.25	3.81	2.5	2.94	.203 x .38
1650P	3.13	4.25	3.81	2.5	2.94	.203 x .38
1650R	3.75	4.25	4.56	3	3.06	.203 x .38
1650T	3.75	4.5	4.56	3	3.31	.203 x .38
1650W	4.38	7.5	5.25	3.5	5.88	.203 x .38

Transformer Schematic



Note: Part # 1645 has an additional tap on the secondary for 70V output

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1600 Series Continued...

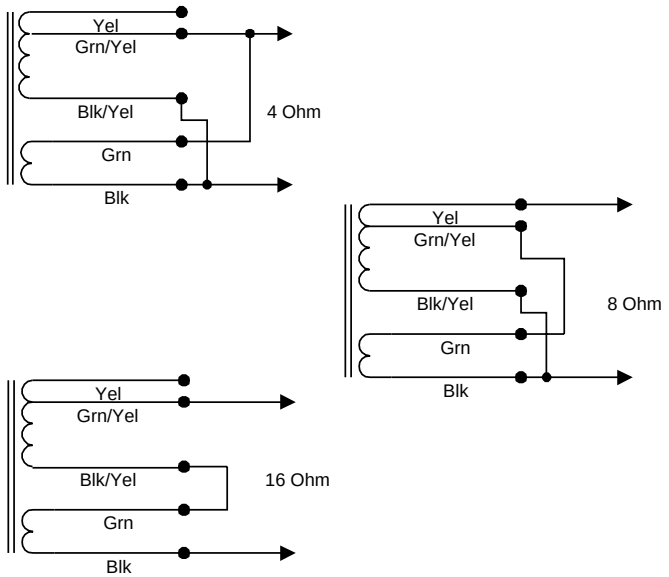
Suggested Tube Types

Cat. No.	Audio Watts	Primary Impedance	Tube Types
1608	10	8,000 ct	6AQ5, 6V6, 6BQ5, EL84
1609	10	10,000 ct	6AQ5, 6V6, 6BQ5, EL84
1615	15	5,000 ct	2A3, 6A3, 6AQ5, 6B4G, 6L6, 6V6
1620	20	6,600 ct	6AQ5, 6L6, 6V6
1650F	25	7,600 ct	6L6GC, 6V6, 807, 5881, EL34
1645	30	5,000 ct	6L6GC, 6V6, 807, 5881, EL34
1650H	40	6,600 ct	6L6GC, 807, 5881, EL34
1650K	50	3,400 ct	6L6GC, 807, 5881, EL34, 6146B, 6550B
1650N	60	4,300 ct	6L6GC, 807, 5881, EL34, 6146B, 6550B, KT88
1650P	60	6,600 ct	6L6GC, 807, 5881, EL34, 6146B, 6550B, KT88
1650R	100	5,000 ct	807, 5881, EL34, 6146B, 6550B, KT88
1650T	120	1,900 ct	6L6GC, 5881, EL34, 6550B, KT88
1650W	280	1,900 ct	6L6GC, 5881, EL34, 6550B, KT88

Notes: The above examples of possible combinations are to help you narrow down the choices of transformers for your favorite tube types. How you operate the tubes (push-pull, push-pull parallel, ultra-linear, class, B+, bias, operating points, etc.) will change optimum plate to plate load impedance. Only a few of the most popular tubes are shown. As more tubes become available we will add them to the list.

A tube manual or tube manufacturer's technical data sheets should be consulted first, before making a decision on a proper output transformer.

Secondary Connections

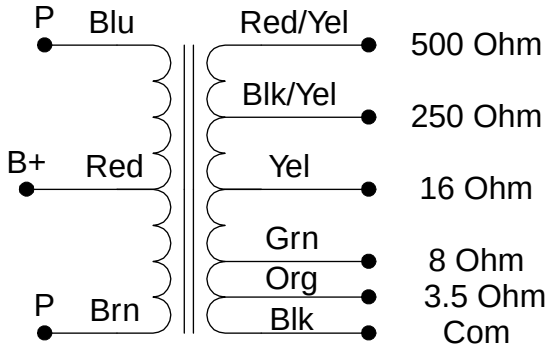


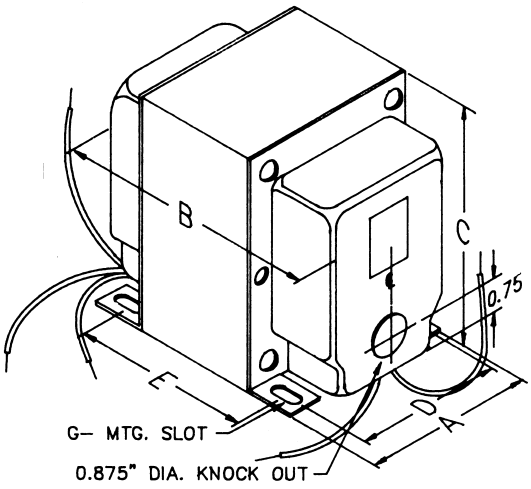
PUSH - PULL "CLASSIC" TUBE TYPE OUTPUT TRANSFORMER

- Designed for push-pull tube output circuits.
- Enclosed (shielded), 4 slot, above chassis Type "X" mounting, both end bells include knockouts for optional above chassis wiring.
- Frequency response 30 Hz. to 30 Khz. at full rated power (+/- 1 db max. ref. 1 Khz) minimum.
- Insulated flexible leads 8" min.
- Typical applications - Push-Pull: triode, pentode and tetrode connected audio output.

Cat. No.	Audio Watts	Primary Impedance	Secondary Impedance	Wt. Lbs.
1650G	35	6,600 ct	3.5-8-16-250-500	5

Transformer Schematic





Dimension Table

A	B	C	D	E	G (slot)
3.13	3.75	3.81	2.50	2.25	.203 x .38

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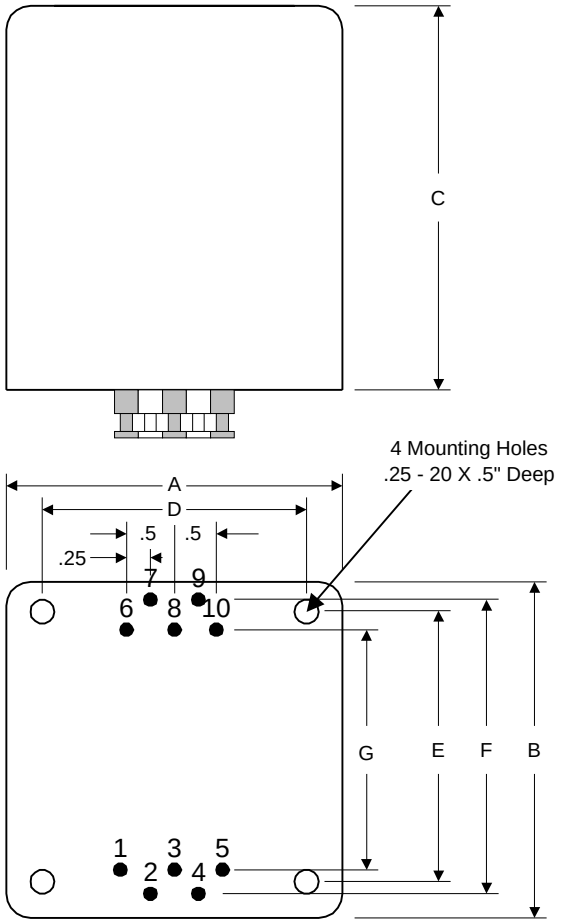
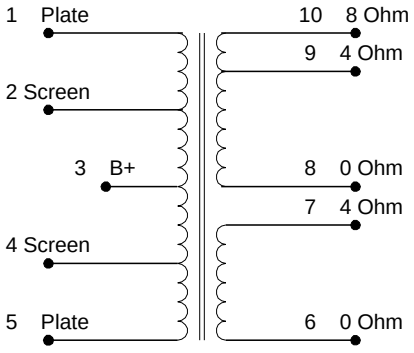


PUSH - PULL "CLASSIC"
TUBE TYPE - ULTRA-LINEAR
POTTED OUTPUT TRANSFORMERS

- Designed for push-pull tube output circuits.
- Enclosed in a drawn steel case, the transformer is completely potted in epoxy.
- Frequency response 30 Hz. to 30 Khz. at full rated power (+/- 1 db max. ref. 1 Khz) minimum.
- Lead connection is via 10 bottom mounted lugs.
- All units include 40% screen taps for Ultra-Linear operation (if desired).
- Typical applications - Push-Pull: triode, Ultra-Linear pentode, pentode and tetrode connected audio output.

Cat. No.	Audio Watts	Primary Impedance	Secondary Impedance	Wt. Lbs.
1650KP	50	3,400 ct	4-8-16	11
1650PP	60	6,600 ct	4-8-16	12
1650RP	100	5,000 ct	4-8-16	18

Transformer Schematic



Dimension Table

Cat. No.	A	B	C	D	E	F	G
1650KP	3.31	3.88	4.25	2.50	3.00	3.31	2.56
1650PP	3.31	3.88	4.25	2.50	3.00	3.31	2.56
1650RP	4.25	5.00	5.44	3.38	4.25	4.50	3.75

Suggested Tube Types

Cat. No.	Audio Watts	Primary Impedance	Tube Types
1650KP	50	3,400 ct	6L6GC, 807, 5881, EL34, 6146B, 6550B
1650PP	60	6,600 ct	6L6GC, 807, 5881, EL34, 6146B, 6550B, KT88
1650RP	100	5,000 ct	807, 5881, EL34, 6146B, 6550B, KT88

Notes: The above examples of possible combinations are to help you narrow down the choices of transformers for your favorite tube types. How you operate the tubes (push-pull, push-pull parallel, ultra-linear, class, B+, bias, operating points, etc.) will change optimum plate to plate load impedance. Only a few of the most popular tubes are shown. As more tubes become available we will add them to the list.

A tube manual or tube manufacturer's technical data sheets should be consulted first, before making a decision on a proper output transformer.

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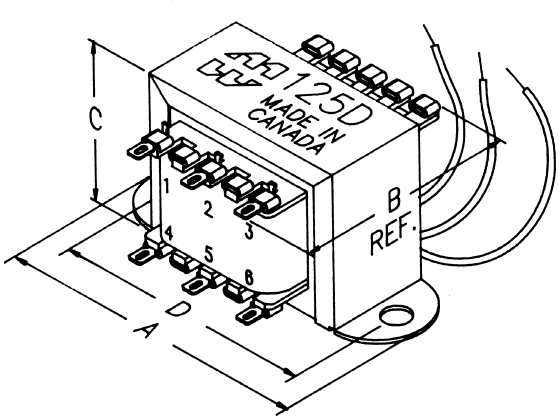


SINGLE ENDED OR PUSH-PULL OUTPUT TRANSFORMERS

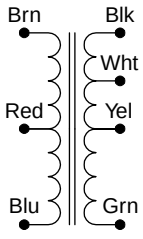
- Designed for general purpose or replacement use in single ended or push-pull tube output circuits.
- Open style with minimum 5" long primary leads, secondary solder lugs for convenient secondary connections (except the 125J). The 125J has wire leads on both primary and secondary.
- Minimum frequency response 150 Hz. - 15 Khz. (+/- 1db max. ref. 1 Khz) at full rated power.

Cat. No.	Audio Watts	Primary Imped.	Secondary Imped.	Max. D.C. Bias (ma)	Wt. Lbs.
125H	8	10K	2/4/8	60	0.6
125J	8	2.5K/4K	6/8 or 3.2/4	80	1.0

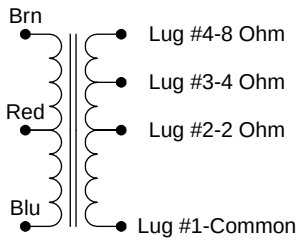
Dimension Table

Cat. No.	A	B	C	D	G Mtg. Hole
125H	2.81	1.50	1.63	2.38	0.187
125J	3.25	1.50	1.94	2.81	0.187

Transformer Schematics



125J



125H

UNIVERSAL SINGLE ENDED OR PUSH-PULL OUTPUT TRANSFORMERS

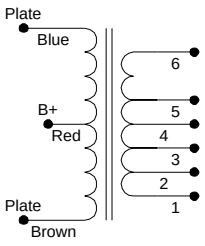
- Designed for general purpose or replacement use in single ended or push-pull tube output circuits.
- Open style with minimum 5" long primary leads, secondary solder lugs for convenient secondary connections.
- Minimum frequency response 150 Hz. - 15 Khz. (+/- 1db max. ref. 1 Khz) at full rated power.
- Tables provided with each transformer listing 90 pre-calculated impedance ratios.
- Primary impedances from 1,200 to 25,000 Ohms.
- Secondary impedances from 1.5 to 15 Ohms.

Cat. No.	Audio Watts	Max. D.C. Bias (ma)	Wt. Lbs.
125A	3	25	0.19
125B	5	45	0.3
125C	8	60	0.5
125D	10	70	1
125E	15	80	1.5

Dimension Table

Cat. No.	A	B	C	D	G Mtg. Hole
125A	2.06	1.25	1.19	1.75	0.187
125B	2.38	1.38	1.38	2.00	0.187
125C	2.81	1.50	1.69	2.38	0.187
125D	3.25	1.75	2.00	2.81	0.187
125E	3.69	2.00	2.31	3.13	0.187

Transformer Schematic



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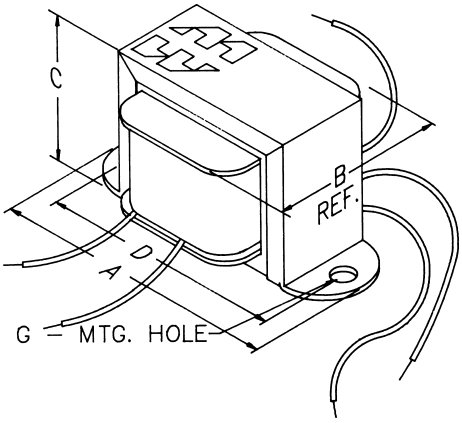


TUBE DRIVER TRANSFORMERS

- Designed for general purpose or replacement use in single ended or phase inverter tube driver circuits.
- Open style with minimum 5" long primary leads.
- Minimum frequency response 150 Hz. - 15 Khz. (+/- 1db max. ref. 1 Khz) at full rated power.

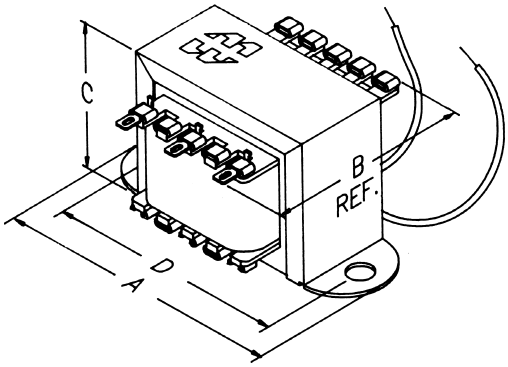
Cat. No.	Audio Watts	Primary Imped.	Secondary Imped.	Secondary	Wt. Lbs.
124D	5 mw	7K c.t.	15.8K c.t.	C.T.	0.6
124E	5 mw	15K c.t.	33.8K/135K	Dual	1.0

Dimension Table

Cat. No.	A	B	C	D	G Mtg. Hole
124D	2.80	1.30	1.68	2.38	0.187
124E	2.87	1.50	2.35	2.38	0.187

SPEAKER MATCHING TRANSFORMER

- Audio isolation unit (ie...separate primary and secondary)
- Built in response to requests from the "Collins Collectors Association" to match "classic" high Z audio outputs to modern low Z speakers.
- Primary: 600 Ohm (with 6" wire leads)
- Secondary: 8 Ohm with 4 Ohm center tap (with solder lugs)
- Power: Rated at 12 watts
- Excellent frequency response: 30 Hz. - 20 Khz. (+/- 1 db @ Full Power - 1 Khz. Reference)
- Weight: 1 pound, 4 oz.
- Mounting: 2 hole bracket mount - on 2 13/16" mounting hole centers



Cat. No.	A	B	C	D	G Mtg. Hole
119DA	3.28	2.35	2.00	2.81	0.187

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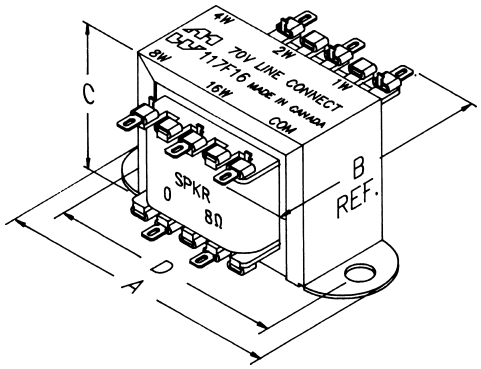
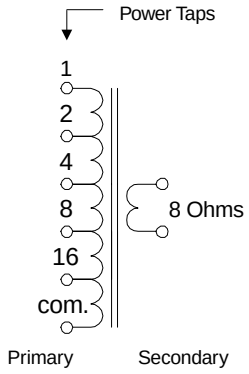
LINE MATCHING AUDIO TRANSFORMERS

- Couple 3.2, 8 or 16 ohm speakers to 25 or 70 volt line outputs of amplifiers.
- Up to 5 power tap levels available (except 117F2 which has 4).
- Primary taps marked in watts (no calculation necessary), to match speaker power.
- Frequency response 100 Hz. to 9 Khz. (1 db. reference @1 Khz.)
- Insertion loss less than 2 db.
- Distortion is less than 1.25% @ 100 Hz. at maximum power.
- Horizontal, channel bracket, 2-hole (.187" dia.) mounting.
- All models have solder lugs, also suitable for slip on jumper connections.
- Total power requirements of speakers should not exceed the rated power of each transformer or rated power of the amplifier.



Cat. No.	System Volts	Power Rating Watts	Audio Power Taps	Voice Coil Impedance Ohms	Mounting Centers	Wt. Lbs.	Dimensions			
							A	B	C	D
117F2	70	2	2, 1, 1/2, 1/4	8	2.00	0.5	2.38	1.38	1.38	2.00
117E4	70	4	4, 2, 1, 1/2, 1/4	3.2	2.38	0.6	2.81	1.50	1.69	2.38
117F4	70	4	4, 2, 1, 1/2, 1/4	8	2.38	0.6	2.81	1.50	1.69	2.38
117E8	70	8	8, 4, 2, 1, 1/2	3.2	2.81	0.9	3.25	1.75	2.00	2.81
117F8	70	8	8, 4, 2, 1, 1/2	8	2.81	0.9	3.25	1.75	2.00	2.81
117E16	70	16	16, 8, 4, 2, 1	3.2	2.38	1.5	3.69	2.00	2.31	3.13
117F16	70	16	16, 8, 4, 2, 1	8	3.13	1.5	3.69	2.00	2.31	3.13
117G16	70	16	16, 8, 4, 2, 1	16	3.13	1.5	3.69	2.00	2.31	3.13
117F32	70	32	32, 16, 8, 4, 2	8	3.56	2.3	4.03	2.25	2.63	3.56
117J4	25	4	4, 2, 1, 1/2, 1/4	3.2	2.38	0.6	2.81	1.50	1.69	2.38
117K4	25	4	4, 2, 1, 1/2, 1/4	8	2.38	0.6	2.81	1.50	1.69	2.38
117J8	25	8	8, 4, 2, 1, 1/2	3.2	2.81	0.6	3.25	1.75	2.00	2.81
117K8	25	8	8, 4, 2, 1, 1/2	8	2.81	0.6	3.25	1.75	2.00	2.81
117K16	25	16	16, 8, 4, 2, 1	8	3.13	1.5	3.69	2.00	2.31	3.13
117K32	25	32	32, 16, 8, 4, 2	8	3.56	2.3	4.03	2.25	2.63	3.56



Typical Winding (117F16)

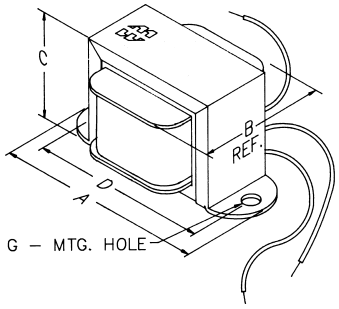


Figure 1

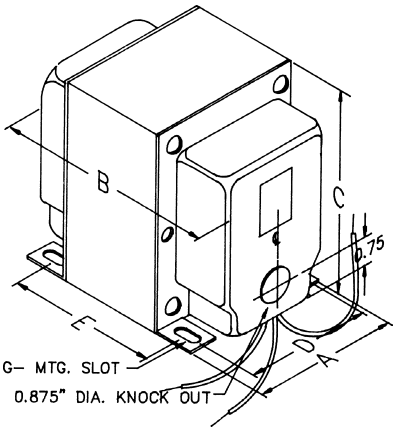
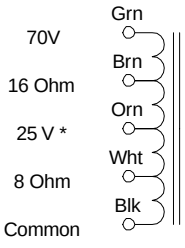


Figure 2



* 25V tap on 119Y30 & 119Y60

MATCHING AUTO 25V OR 70V LINE AUDIO TRANSFORMERS

- Suitable for driving from solid state amplifiers where isolated windings are not required or can be used with our "Classic" 1600 tube output transformers to provide a 25V or 70V line output.
- 8 or 16 ohm input, 25V or 70V line output.
- Frequency response 50 Hz. to 10 Khz. at full ratings
- Leads 6" long minimum
- Can be reversed for operation at high power speaker locations.

Cat. No.	Max Output Watts	Line Output	Mtg. Centers	Mtg. Hole/Slot G	Wt. Lbs.	Dwg. Fig.	Dimensions				
							A	B	C	D	E
119Y30	30	70 & 25v	3.56	0.187	2.4	1	4.03	2.25	2.63	3.56	-
119Y60	60	70 & 25v	2.00 x 2.19	.203 x .38	3.3	2	2.50	3.25	3.06	2.00	2.19
119Y100	100	70v only	2.5 x 2.19	.203 x .38	4.7	2	3.13	3.50	3.81	2.50	2.19
119Y250	250	70v only	2.5 x 2.94	.203 x .38	6.7	2	3.13	4.25	3.81	2.50	2.94

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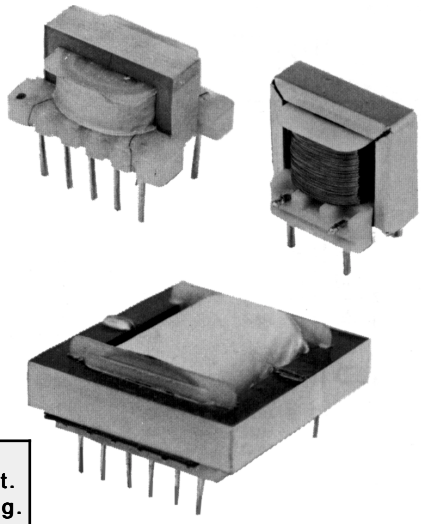
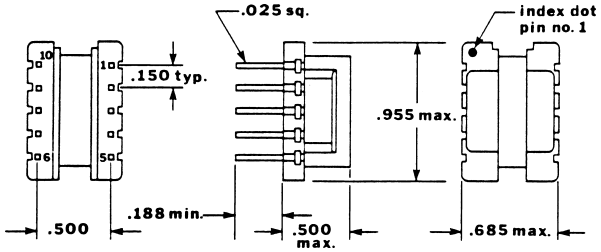
VOICE
AUDIO TRANSFORMERS

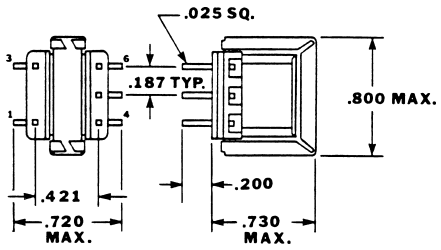


- Catalog numbers marked without a * are impregnated with polyurethane which will withstand cleaning solvents. Catalog numbers marked with a * are processed without impregnation.
- Units withstand temperatures up to 105 degrees C.
- Cross-talk isolation of 65 db minimum.
- Longitudinal balance of 60 db minimum.
- Meets FCC Part 68 requirements
- Voltage breakdown 1500 VRMS.
- Frequency range of 300 Hz. to 3400 Hz.

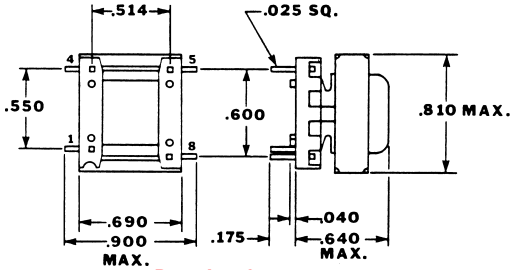
Cat. No.	Nominal Impedance		Unbal. D.C. ma	Insertion Loss db	Freq. Resp. db	Return Loss ERL db	D.C. Resistance		Dim. Dwg.	Ckt. Diag.
	Pri.	Sec.					Pri.	Sec.		
150J011	600	600	0.0	1.25	0.50	24	34.0	47.0	1	A
150J021*	600	600	0.0	1.50	0.50	12	45.0	60.0	2	B
150J022*	600	600	80.0	2.00	3.00	9	47.0	63.0	2	B
150J023*	600	600	0.0	1.50	0.50	12	47.0	63.0	3	C
150J024*	600	600	80.0	2.00	3.00	9	47.0	63.0	3	C
150J031	600	600	80.0	1.25	0.50	26	66.5	73.5	4	D
150J032	600	600CT	75.0	1.50	0.50	26	67.0	90.0	4	E
150J081*	600	600	80.0	2.00	1.00	12	90.0	126.0	5	F
150J201	600	600	80.0	2.00	1.00	18	74.0	97.0	7	G
150J202	600CT	600	80.0	2.00	1.00	18	74.0	97.0	7	H
150J203	600CT	600CT	80.0	2.00	1.00	18	74.0	97.0	7	J
150J211*	600	600	0.0	0.70	0.50	18	31.0	39.0	6	B



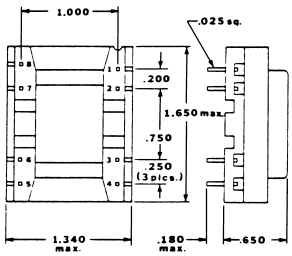
Drawing 1



Drawing 2



Drawing 3



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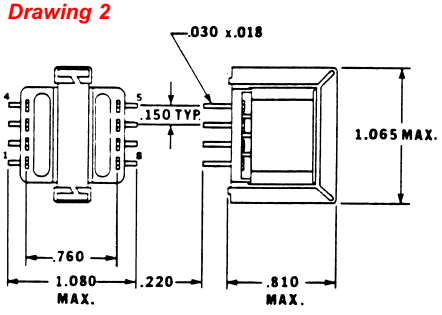

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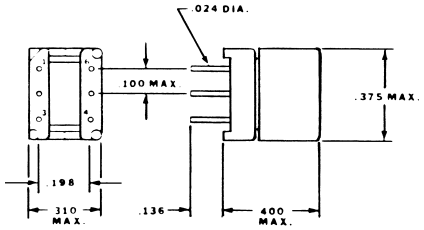
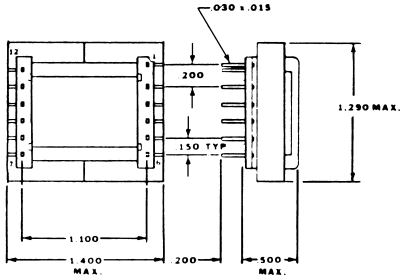


Drawing 6



Drawing 7

Refer to next page for circuit diagrams

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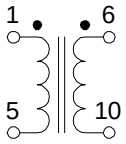
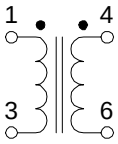
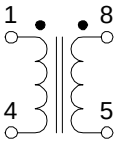
VOICE
AUDIO TRANSFORMERS
(Continued)



Ckt A



Ckt B



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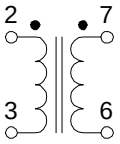
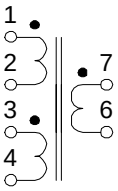


Ckt D



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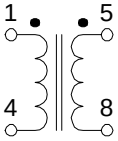

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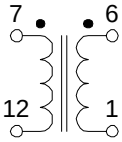

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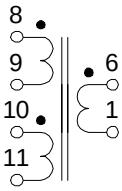
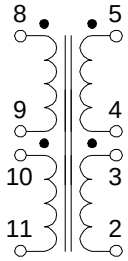
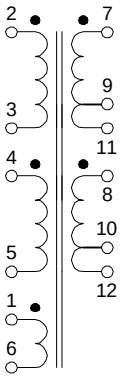


Ckt H



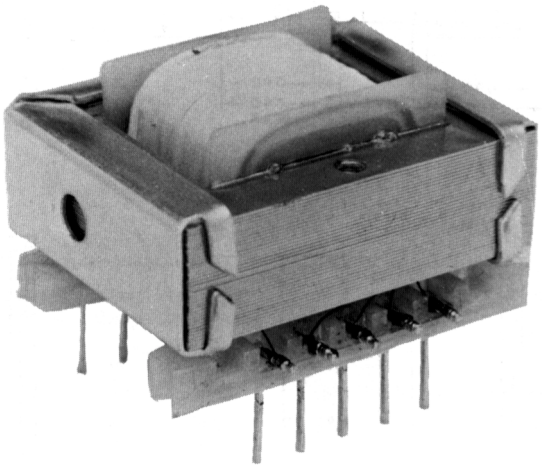
Ckt J

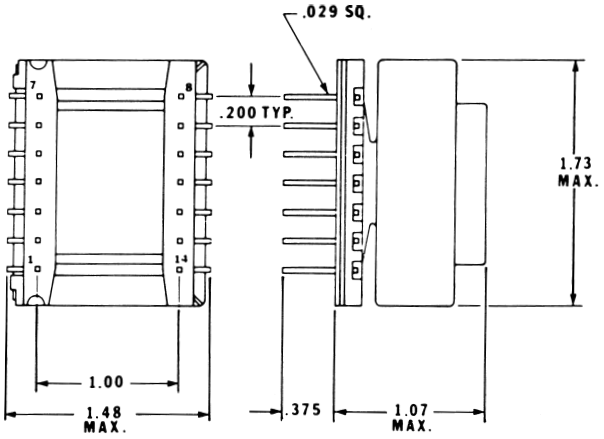
HYBRID VOICE
AUDIO TRANSFORMERS



- Used in all types of central office and customer premises equipment.
- Excellent hybrid characteristics.
- Longitudinal balance of 60 db.

Cat. No.	Application	2 Wire Ohms	4 Wire Ohms	Primary Return loss @ 1 KHz db	Trans - hybrid balance db	Primary D.C. ma
151J101	2 Xfmr Hybrid	600 or 900	600/600	36	45	100





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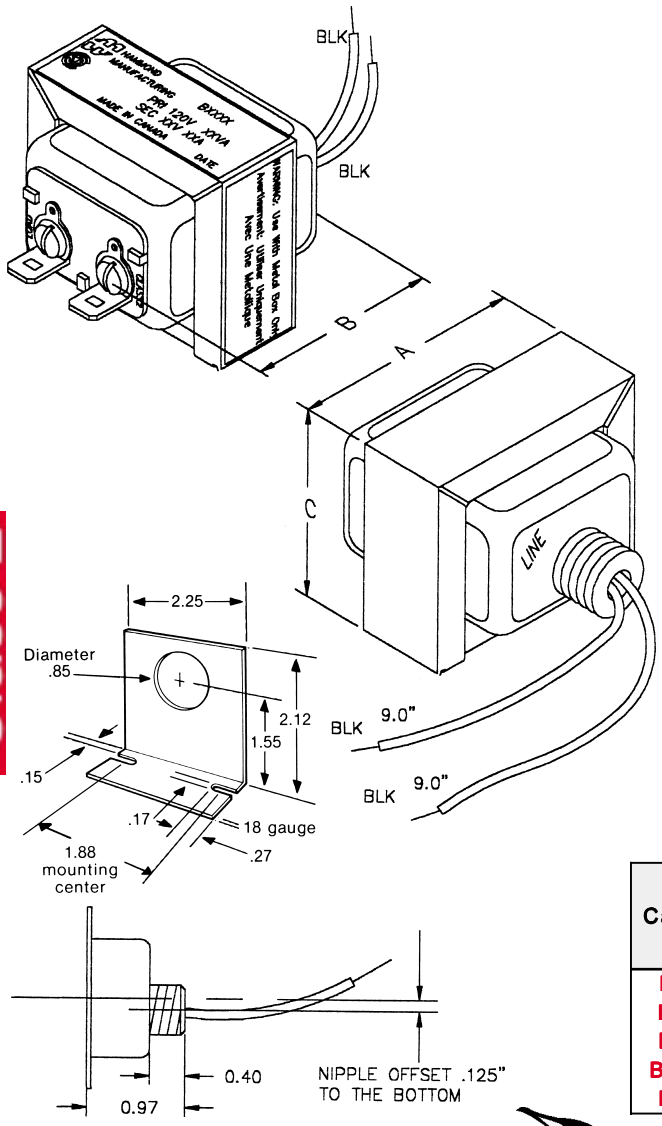
Class 2



CLASS 2
ENERGY LIMITING TRANSFORMERS

- Used in chimes, door bells, security systems, decorative lighting, furnaces, humidifiers, appliances, vending machines, intercom system type applications.
- Rugged, low noise, cool running design, indoor use only.
- Stripped wire input (primary) leads, screw terminal/quick fit tab terminal output (secondary).
- Nipple locknut mount for box installation, complete with mounting bracket.
- Input leads are black, on 240V models 240V lead is red. All models are 60 Hz.- inherently limited - ***no fuses or circuit breakers.***
- UL Pending.
- CSA certified (#LR 3902 Class 2) energy limiting transformer. Complies with CSA standard C22.2 #66 part B.

120 Volt Primary

Cat. No.	A.C. Input (Primary) V (RMS)	A.C. Output Secondary (RMS)		Power Rating VA	Note	Dimensions		
		V	A			A	B	C
BA2DA	120	10	0.5	5	*	2.33	2.22	1.98
BC2DA	120	10	1.2	12	*	2.33	2.22	1.98
BC2F	120	16	0.75	12	*	2.33	2.22	1.98
BC2G	120	24	0.5	12	*	2.33	2.22	1.98
BD2E	120	12	1.67	20	*	2.33	2.34	1.98
BD2EE	120	14	1.43	20	*	2.33	2.34	1.98
BD2F	120	16	1.25	20	*	2.33	2.34	1.98
BD2FF	120	18	1.11	20	*	2.33	2.34	1.98
BD2G	120	24	0.833	20	*	2.33	2.34	1.98
BE2F	120	16.5	2.42	40	*	2.33	2.60	1.98
BE2G	120	24	1.67	40	*	2.33	2.60	1.98

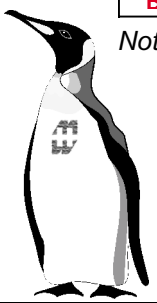
*Notes: * 105 degree temperature design*

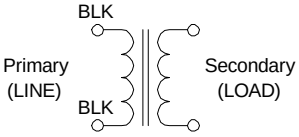
Other Primary Voltages

Cat. No.	A.C. Input (Primary) V (RMS)	A.C. Output Secondary (RMS)		Power Rating VA	Note	Dimensions		
		V	A			A	B	C
BD5F	240	16	1.25	20	*	2.33	2.34	1.98
BD5G	240	24	0.83	20	*	2.33	2.34	1.98
BE5G	240	24	1.67	40	*	2.33	2.60	1.98
BE5DG	208/240	24	1.67	40	*	2.33	2.60	1.98
BE7G	347	24	1.67	40		2.33	2.60	1.98

*Notes: * 105 degree temperature design*

Cool running 105 degree C temperature design vs. most competitors 130 degree!





Class 2

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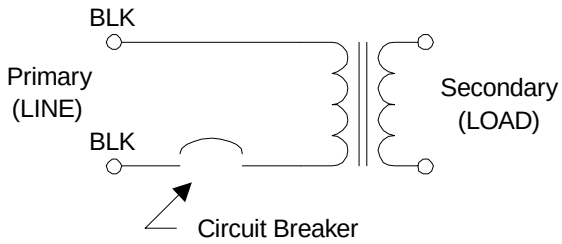
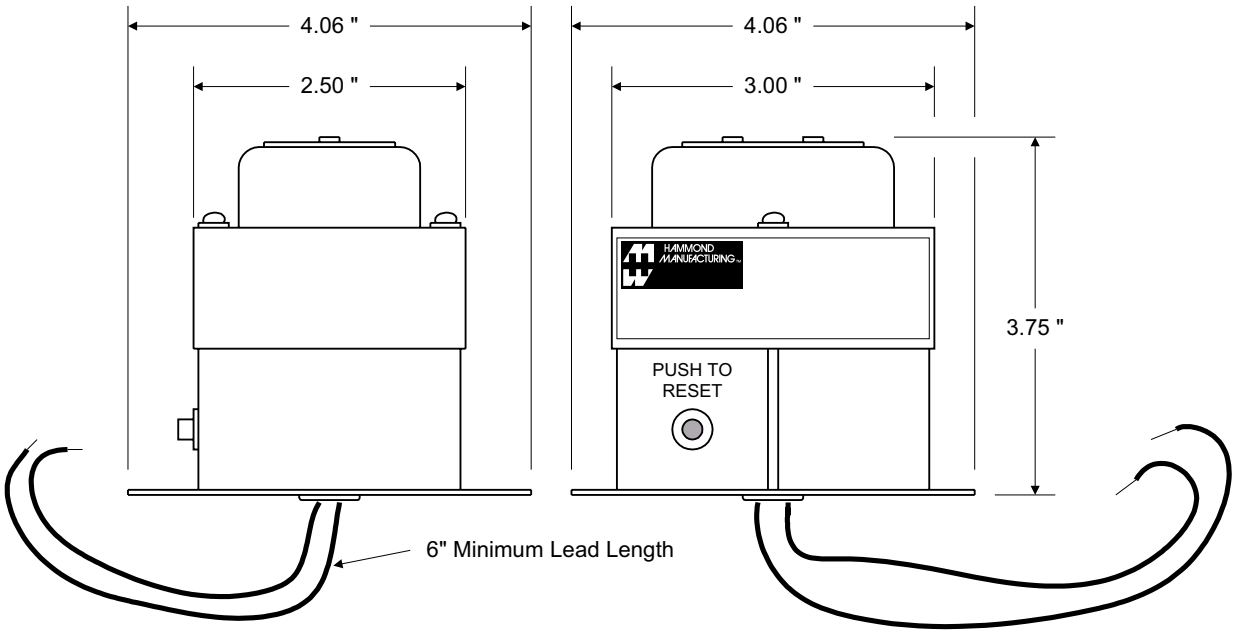
75 VA - CLASS 2
ENERGY LIMITING TRANSFORMERS

- Used in chimes, door bells, security systems, decorative lighting, furnaces, humidifiers, appliances, vending machines, intercom system type applications.
- Rugged, low noise design, indoor use only.
- Stripped wire input (primary) leads, screw terminal output (secondary).
- Mounted on box plate for easy installation.
- Input leads are black 6” minimum, on 240V models 240V lead is red.
- All models are 60 Hz. - limited by built in circuit breaker.
- CSA certified (#LR 3902 Class 2) energy limiting transformer. Complies with CSA standard C22.2 #66 part B.

Cat. No.	A.C. Input (Primary) V (RMS)	A.C. Output Secondary (RMS)		Power Rating VA	Dimensions		
		V	A		A	B	C
BF2F	120	16	4.68	75	3.00	2.50	3.75
BF5F	240	16	4.68	75	3.00	2.50	3.75
BF2G	120	24	3.13	75	3.00	2.50	3.75
BF5F	240	24	3.13	75	3.00	2.50	3.75





Class 2

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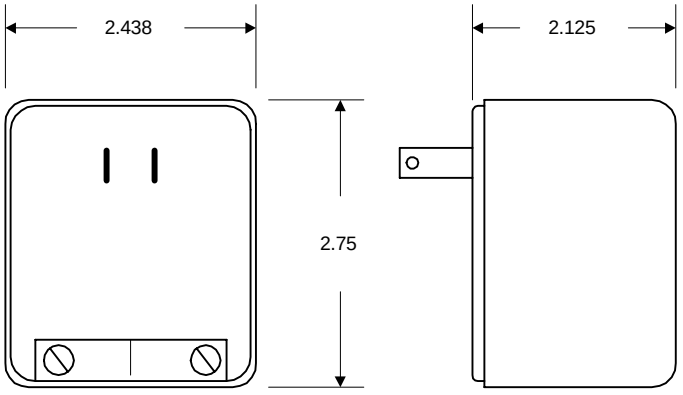
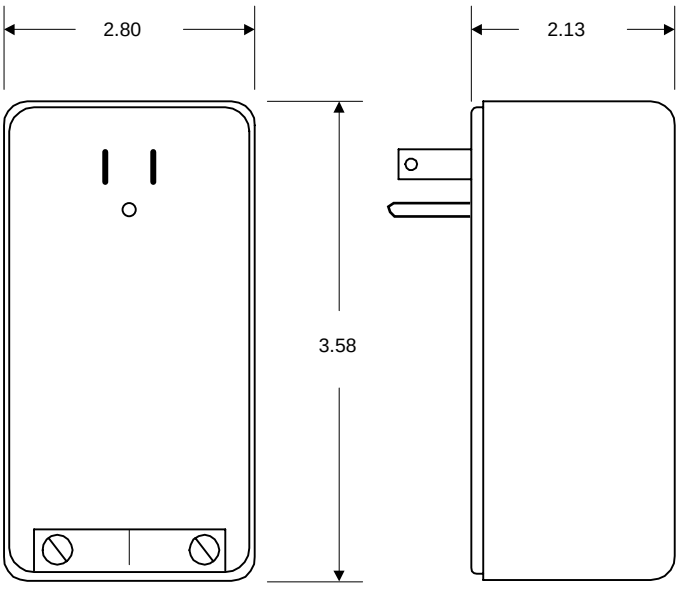
CLASS 2 - PLUG IN ENERGY LIMITING TRANSFORMERS

- Used in chimes, door bells, security systems, decorative lighting, furnaces, humidifiers, appliances, vending machines, intercom system type applications.
- Enclosed in an attractive plug in black plastic case.
- For indoor use only.
- Input 120VAC - 20VA units are inherently limited - ***no fuses or circuit breakers.*** 40VA units use an internal slow blow fuse.
- Secondary - 2 recessed slot head screw terminals (on plug side).
- All models - 60 Hz.
- CSA certified (#LR33322) and UL listed (#E84592)

Cat. No.	A.C. Input (Primary) V (RMS)	A.C. Output Secondary (RMS)		Power Rating VA
		V	A	
BPD2E	120	12	1.67	20
BPD2EE	120	14	1.43	20
BPD2F	120	16	1.25	20
BPD2FF	120	18	1.11	20
BPD2G	120	24	0.83	20
BPE2E	120	12	3.33	40
BPE2EE	120	15	2.86	40
BPE2F	120	16	2.50	40
BPE2FF	120	18	2.22	40
BPE2G	120	24	1.67	40



20 VA



40 VA

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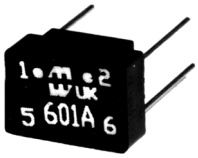
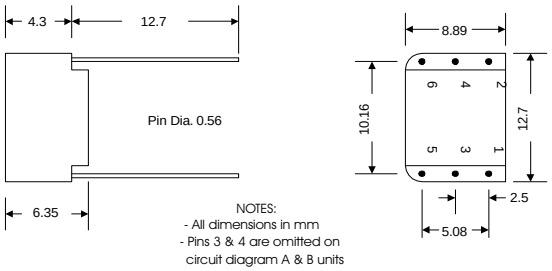
Pulse



PULSE TRANSFORMERS

- These ferrite cored transformers are fully encapsulated in a high grade black molded case with a UL94V-O rating.
- Used in digital and data processing, line coupling, matching, isolation etc.
- Working voltage rating maximum of 500V D.C.
- ET values up to 50V uS.

Cat. No.	Turns Ratio +/- 2%	Primary Inductance uH (min)	Primary ET Constant V uS	Inter. W Capacity p.f. max.	Leakage Inductance uH max.	D.C. Resistance Ohms max.	Cir. Dia.
600AA	1:1	2060	17.5	35	0.6	1.5	A
600BA	1:1	492	8.5	20	0.3	0.8	A
600CA	1:1	219	5.5	12	0.25	0.5	A
600PA	1:1	323	7	12	0.3	0.6	B
602GA	2:1	2.7	3	3	0.9	0.2	B
601A	1:1	2060	17.5	45	0.6	1.5	B
601B	1:1	492	8.5	20	0.3	0.8	B
601C	1:1	219	5.5	12	0.25	0.5	B
601D	1:1	50	4	10	0.2	0.4	B
601E	1:1	23	2.5	8	0.2	0.3	B
601F	1:1	9.5	6	10	0.2	0.4	B
602A	1:1:1	2060	17.5	35	0.6	1.5	C
602B	1:1:1	492	8.5	20	0.3	0.8	C
602C	1:1:1	219	5.5	12	0.25	0.5	C



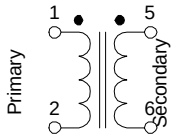


Diagram A

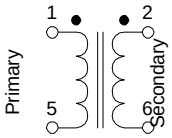


Diagram B

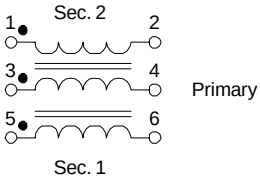
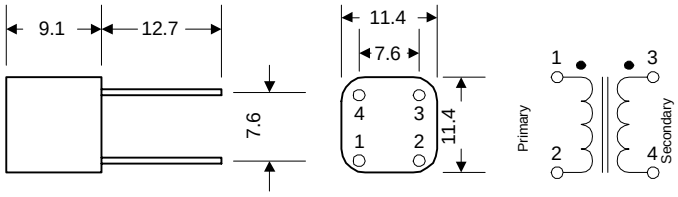
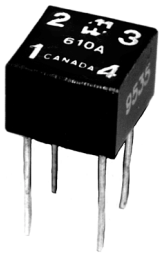


Diagram C

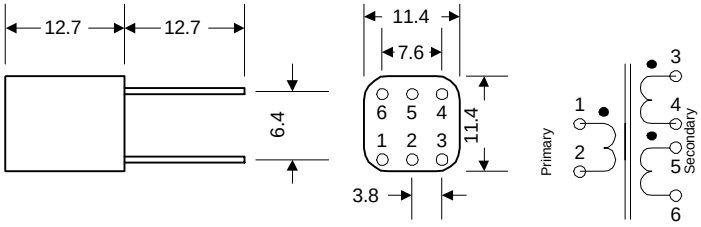
610A Dimensions & Schematic



Note: All dimensions in mm



610B Dimensions & Schematic



Note: All dimensions in mm

PULSE TRANSFORMERS

- These ferrite cored transformers are fully encapsulated in a high grade black molded case with a UL94V-O rating.
- Units are intended for wide band and pulse applications including thyristor / triac firing circuits.
- Peak pulse voltage rating maximum of 250V.
- Insulation tested to 1,000V RMS.

Cat. No.	Ratio	Primary		Secondary Resistance		Primary ET Constant V (uS).	Leakage Inductance uH (max.)	Max. Primary or Secondary Current	
		Inductance mH (min)	Resistance Ohms	Sec. 1 (Ohms)	Sec. 2 (Ohms)			@ 0.1% Duty	@ 0.01% Duty
610A	1:1	3.9	3.4	3.9	-	500	60	0.2A	0.6A
610B	1:1:1	2.7	2.1	2.1	2.3	500	50	0.2A	0.6A

Pulse

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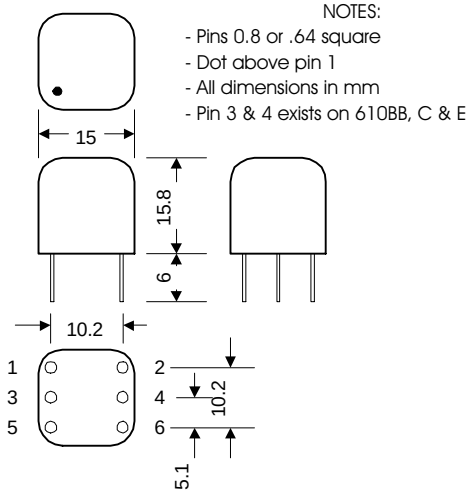
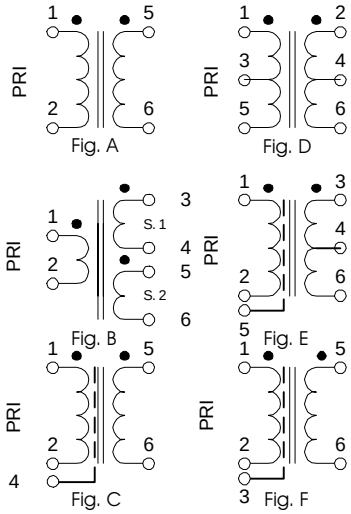


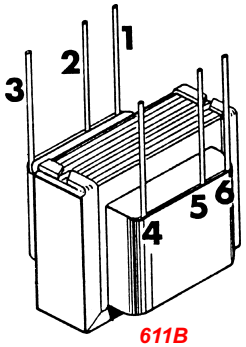


PULSE TRANSFORMERS

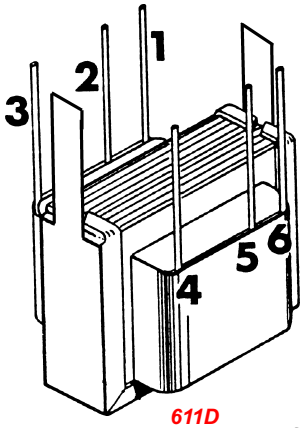
- These ferrite cored transformers are fully encapsulated in a high grade black molded case with a UL94V-O rating.
- Units are intended for wide band and pulse applications including thyristor / triac firing circuits, signal isolation, line matching, low power switch mode power supplies, etc.
- Working voltage rating maximum of 500V RMS
- All units are voltage proof tested to 2.0KV peak 50 Hz.

Cat. No.	Ratio	Primary		Leakage Inductance uH (max)	Capacity pf. (max)	D.C. Winding Resistance (ohms)			Sch. Fig. #	Remarks
		Inductance mH (min)	ET Constant V (uS)			Pri.	Sec. 1	Sec. 2		
610AA	1:1	3	200	22	23	1.2	1	-	A	-
610BB	1:1:1	3	200	9	28	1.4	1.3	1.7	B	-
610C	2:1:1	12	400	35	30	4	1.8	2.4	B	-
610D	1:1 & Shld	3	200	32	15	1.3	1	-	C	610AA plus electrostatic shield
610E	1:1:1	22	550	85	18	10.6	8.9	12.2	B	-
610F	1 ct: 1 ct	3	200	22	23	1.2	1	-	D	610AA with center taps
610G	1:1 ct & Shld	12	400	100	11	3.8	5.3	-	E	includes electrostatic shield
610H	1:2 ct & Shld	1.5	140	15	15	1.2	2.6	-	F	includes electrostatic shield

PULSE TRANSFORMERS



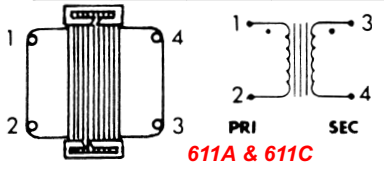
611B



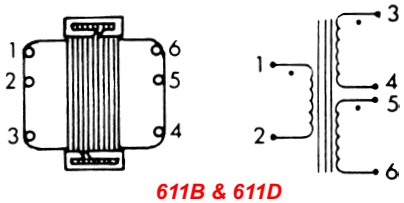
611D

- Economical, open style, P. C. board pin mount
- Units are intended for pulse applications including thyristor / triac firing circuits.

Cat. No.	Ratio	Circuit Max. Volts	Primary		D.C. Winding Resistance		Insulation RMS (Volts)	Wt. Oz.
			Inductance mH (min)	D.C. Res. (Ohms)	Sec.1 (Ohms)	Sec. 2 (Ohms)		
611A	1:1	125	8.6	0.45	0.55	-	1000	0.7
611B	1:1:1	125	17.2	1.26	1.0	1.53	1000	0.7
611C	1:1	250	56	3.31	4.46	-	1500	1.2
611D	1:1:1	250	17	1.73	1.31	2.12	1500	1.2



611A & 611C



611B & 611D

Cat. No.	Pin Spacing	Height	Width	Coil Depth	Mounting Tab	
					Centers	Size
611A & 611B	0.2" x 0.6"	.69"	.82"	.57"	-	-
611C & 611D	0.2" x 0.6"	.82"	1.06"	.82"	1"	.12" x .25"

Pulse

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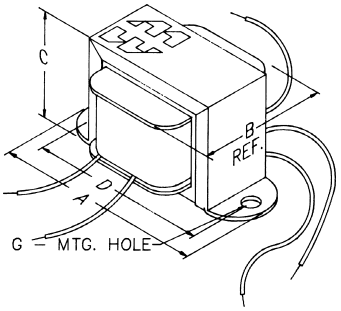
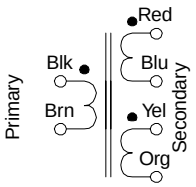
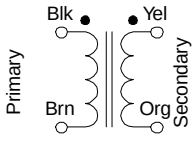




612H

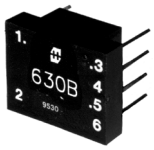
PULSE TRANSFORMERS

- Economical, open style, chassis mount.
- Mounting hole (G) - .187"
- Units are intended for pulse applications including thyristor / triac firing circuits.
- Flexible leads - 4" minimum.

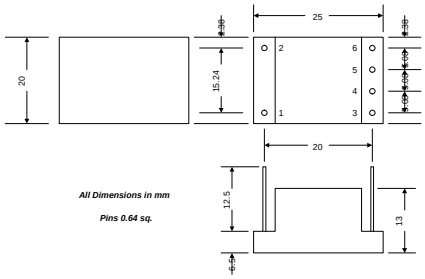


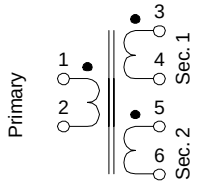
612G

Cat. No.	Ratio	Circuit Max. Volts	Primary		D.C. Winding Resistance		Insulation RMS (Volts)	Wt. Oz.	Dimensions			
			Inductance mH (min.)	D.C. Res. (Ohms)	Sec. 1 (Ohms)	Sec. 2 (Ohms)			A	B	C	D
612G	1:1	600	6.6	0.87	0.87	-	4000	8.0	2.06	1.25	1.19	1.75
612H	1:1:1	600	1.5	0.45	0.42	0.49	4000	8.0	2.06	1.25	1.19	1.75



630 Series - Dimensions & Schematic



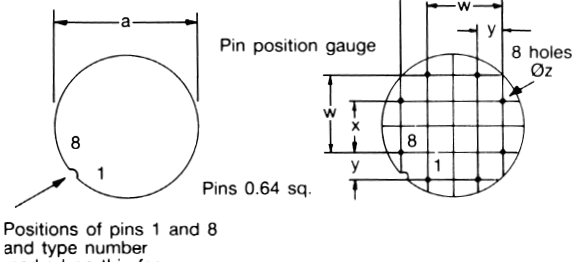


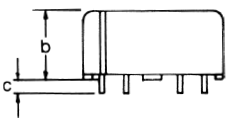
PULSE TRANSFORMERS

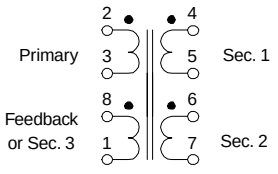
- These transformers are fully encapsulated in a high grade black molded case with a UL94V-O rating.
- They are intended mainly for thyristor / triac triggering applications.
- All units are voltage proof tested between windings at 2500V RMS for 1 minute, for a working voltage rating maximum of 440V RMS.
- Transformers with three or more windings can be series connected to obtain alternative ratios. (ie...a 1:1:1 type may be series connected by linking pins 4 & 5 in which case 3-6 are used as the primary winding to obtain a ratio of 2:1 etc.)

Cat. No.	Turns Ratio	Primary		Leakage Inductance uH (max)	Capacity pf. (max)	D.C. Winding Resistance (ohms)			
		Inductance mH (min.)	ET Constant V uS			Pri.	Sec.1	Sec. 2	Sec. 3
630B	1:1	1	120	2.0	50	0.25	0.23	-	-
631B	1:1:1	1	120	3	40	0.25	0.22	0.28	-
632B	2:1:1	1	120	3.5	30	0.24	0.12	0.15	-
630C	1:1	4	240	5	55	0.86	0.83	-	-
631C	1:1:1	4	240	11	35	0.9	0.76	1.1	-
632C	2:1:1	4	240	11	35	0.84	0.38	0.5	-
630D	1:1	16.3	482	18	65	3.5	3.4	-	-
631D	1:1:1	16.3	482	40	40	3.6	3.1	4.2	-
632D	2:1:1	16.3	482	40	40	3.5	1.6	2.0	-
640A	2:1:1:1	10	370	38	32	2.3	1.1	1.3	1.0
640B	2:1:1:1	30	640	110	38	6.6	3.0	3.8	2.7
640C	2:1:1:1	100	1160	340	35	25.0	12.0	14.6	10.8
641A	2:1:1:1	10	890	28	65	0.45	0.2	0.26	0.19
641B	2:1:1:1	30	1520	75	70	1.2	0.5	0.65	0.46
641C	2:1:1:1	100	2760	190	190	5.2	2.4	2.9	2.2

640 Series - Dimensions & Schematic







Cat. Series No.	Tol.	Dimensions							
		a	b	c	v	w	x	y	z
640 Series	Max.	25.0	12.7	-	17.98	12.9	7.82	5.28	1.2
	Min.	-	-	4.0	17.58	12.47	7.42	4.88	1.1
641 Series	Max.	36.0	20.2	-	28.12	20.52	12.90	7.82	1.2
	Min.	-	-	4.0	27.72	20.12	12.47	7.42	1.1

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Line

Steps To Proper Transformer Selection

1) What power is available (you need to know both voltage & frequency).
2) Check the operating voltage of your equipment (is it single voltage or multiple?).
3) What line frequency will your equipment run on? Either 50, 60 or dual 50/60 Hz.
(remember a transformer ***can not*** change line frequency).
4) Use the chart below to determine your requirements:

Power Available		Your Equipment		Transformer Type Required (You may also need plug adaptors - pg. 74)
Voltage	Frequency	Voltage	Frequency	
115	60	100	50/60	Step Down
115	50	115	50	None Required - or - Straight Isolation
115	50	115	60	Will Not work
115	50	115/230	50/60	None Required - or - Straight Isolation
115	60	115	60	None Required - or - Straight Isolation
115	60	230	50	Will Not work
115	60	230	60	Step Up
115	60	115/230	50/60	None Required - or - Straight Isolation
230	50	115	50	Step Down
230	50	115	60	Will Not work
230	50	115/230	50/60	None Required - or - Straight Isolation
230	60	115	60	Step Down
230	60	230	50	Will Not work
230	60	230	60	None Required - or - Straight Isolation
230	60	115/230	50/60	None Required - or - Straight Isolation

6) Determine if your equipment is ***Electronic*** or ***Electrical***:
- ***Electronic*** = containing a chips, transistors or a circuit such as a radio, shavers, electric toothbrush, computer printers, camcorder battery rechargers etc...(if in doubt, check with the manufacturer or refer to your manual).
- ***Electrical*** = Simple heating device, such as irons, hair dryers, electric blankets, curling irons, etc...

7) Use the chart below to locate correct series & voltage conversion in the catalog pages that follow:

Transformer Type (determined from chart above)	Your Equipment Type	
	Electronic	Electrical
Step Up	Use Isolation (series 298)	Could use "Auto" (series 170 or 170E)
Step Down	Use Isolation (series 172, 179 or 289)	Could use "Auto" (series 175)
Straight Isolation	Use Isolation (series 169 or 171)	-

IMPORTANT NOTES

- ***"Auto" transformers:*** are non-isolating units and should be used where only a voltage change is required. The advantages to using them are light weight (generally half), less expensive and smaller size. The disadvantage is no isolation from the power source. This type of transformer is sometimes referred to as a "converter".

- ***Isolation Transformers:*** Used for maximum safety, versatility (can be used on both electrical & electronic equipment) and isolation from the power source, used to step-up, step-down or for straight isolation. The disadvantage to using them is weight (about double the "Auto"), more expensive and larger size. This type of transformer is some times referred to as "double-wound"

- ***Adaptors:*** We strongly recommend that 3-prong "grounded" plugs be used with all of our products. They should be used only with our "grounded" adaptors. ***Adaptors do not affect voltages***, they are a mechanical device only to match foreign "pin-outs" of receptacles and/or plugs.

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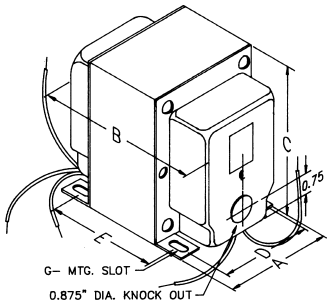
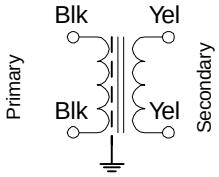


169 SERIES LINE ISOLATION TRANSFORMERS *(115V to 115V)*

- Primary 115VAC, 60 Hz., Secondary 115VAC
- Electrostatic shield between primary & secondary
- Connection by flexible leads, 8" minimum length
- Perfect for circuit isolation or "Classic" bias power supply
- CSA certified (# LR3902)

Transformer Schematic

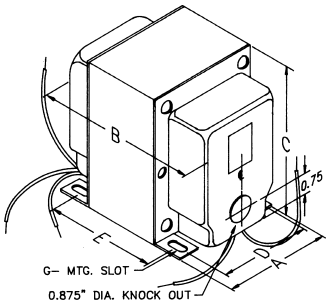


Cat. No.	Capacity VA	Sec. Current ma	Dimensions					Wt. Lbs.
			A	B	C	D	E	
169PS	15	130	1.88	2.07	2.50	1.50	1.19	1.3
169QS	40	260	2.19	2.50	2.63	1.75	1.44	2.5
169RS	60	435	2.50	2.75	3.06	2.00	1.69	3.3
169SS	90	650	2.50	3.25	3.06	2.00	2.19	4.5
169TS	135	870	3.13	3.50	3.81	2.50	2.19	6.5
169VS	175	1300	3.13	4.00	3.81	2.50	2.69	7.0
169WS	250	1700	3.75	4.00	4.56	3.00	2.81	12.0

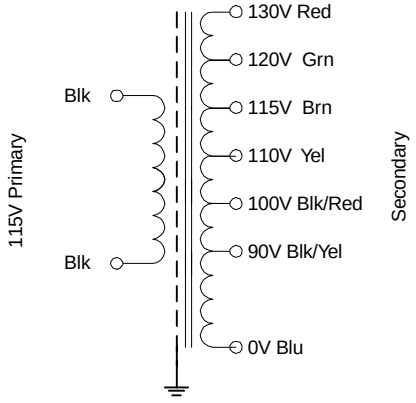
169 SERIES LINE ISOLATION - TAPPED TRANSFORMERS *(115V to 90-130V)*

- Primary 115VAC, 60 Hz.
- Secondary taps @ 90, 100, 110, 115, 120 & 130VAC
- Electrostatic shield between primary & secondary
- Connection by flexible leads, 8" minimum length
- Perfect for critical line voltage needs (ex. Japanese 100V equipment).
- CSA certified (# LR3902) - except 169J

Cat. No.	Capacity VA	Dimensions					Wt. Lbs.
		A	B	C	D	E	
169C	100	2.50	3.50	3.06	2.00	2.44	4
169E	250	3.75	4.00	4.56	3.00	2.81	7
169G	500	6.75	5.50	4.56	3.00	4.31	15
169J	750	4.38	6.13	5.25	3.50	4.50	22



Transformer Schematic



Line

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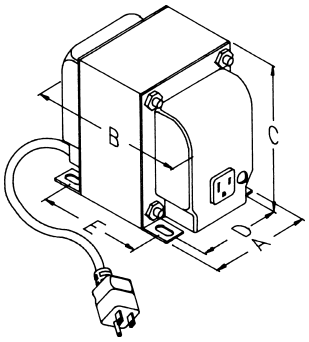
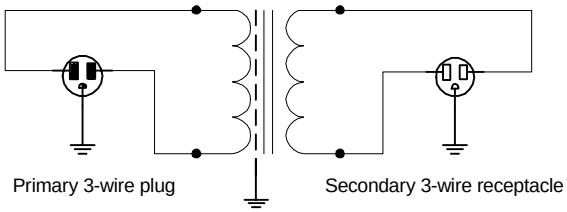


171 SERIES
LINE ISOLATION
PLUG & RECEPTACLE
TRANSFORMERS
(115V to 115V)

- Primary 115VAC, 50/60 Hz., Secondary 115VAC
- Provides circuit isolation.
- Electrostatic shield between primary & secondary.
- Standard 3-wire, grounded plug & receptacle.
- 5 foot "U ground" cord & plug.
- CSA certified (# LR3902) - except 171F

Cat. No.	Capacity VA	Dimensions					Wt. Lbs.
		A	B	C	D	E	
171A	100	3.75	4.00	5.00	3.00	1.88	6.5
171B	200	3.75	4.50	5.00	3.00	2.38	8.0
171C	300	3.75	5.00	5.00	3.00	2.88	11.0
171E	500	3.75	6.00	5.00	3.00	3.88	14.0
171F	900	4.38	8.00	5.50	3.50	5.44	30.0

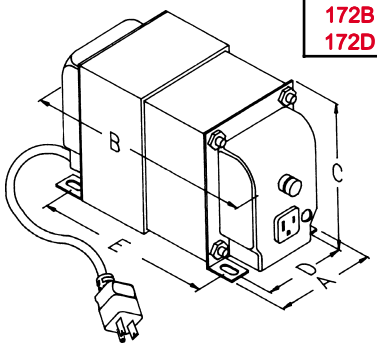
Transformer Schematic



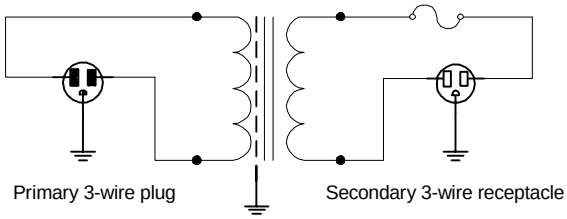
172 SERIES
LINE ISOLATION - STEP DOWN
PLUG & RECEPTACLE
TRANSFORMERS
(230V to 115V)

- Primary 230VAC, 50/60 Hz.
- Secondary 115VAC - fused.
- Provides circuit isolation & steps down primary voltage.
- Electrostatic shield between primary & secondary.
- Standard 3-wire, grounded plug (for use ***only*** with adaptors listed on page 58 for proper grounding).
- Secondary connected to standard 115V - 3 wire grounded receptacle.
- 5 foot "U ground" cord & plug.

Cat. No.	Capacity VA	Dimensions					Wt. Lbs.
		A	B	C	D	E	
172A	100	3.75	6.50	5.00	3.00	3.88	6.5
172B	200	3.75	7.00	5.00	3.00	4.38	8.5
172D	500	3.75	8.50	5.00	3.00	5.88	18.5



Transformer Schematic



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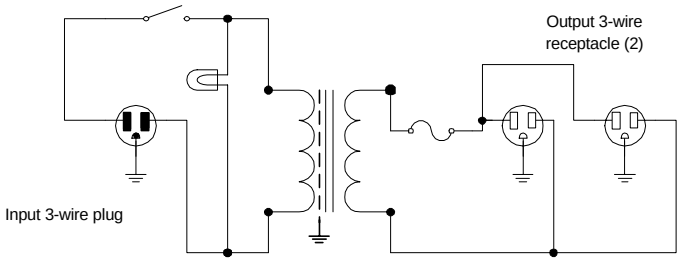
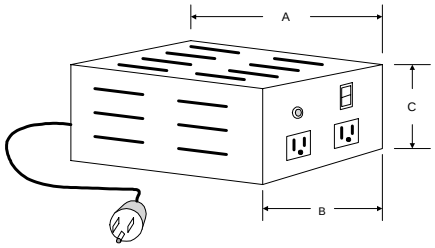
289 SERIES
LINE ISOLATION
STEP DOWN - PLUG IN
(230V to 115V)

- Primary 230VAC, 50/60 Hz., Secondary 115VAC.
- Provides circuit isolation.
- Electrostatic shield between primary & secondary.
- World wide applications, 50 or 60 Hz. operation, step down (230VAC to 115 VAC).
- Standard 3-wire, grounded plug (for use ***only*** with adaptors listed on page 58 for proper grounding).
- Secondary connected to two standard - 3 wire grounded receptacles.
- Features include ventilated black steel case, rocker lighted on-off switch & fuse protected output.
- 5 foot "U ground" cord & plug.

Cat. No.	Capacity VA	# of Outlets	Dimensions A	B	C
289C	250	2	6.00	6.75	4.75
289D	500	2	6.00	8.25	4.75
289E	750	2	7.00	8.25	5.38
289F	1000	2	7.00	9.75	5.38
289G	1500	2	8.50	9.00	6.75

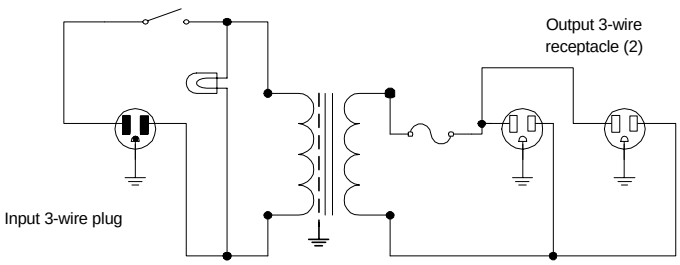


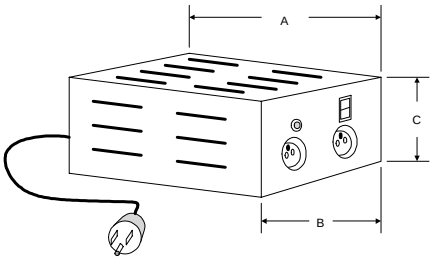


298 SERIES
LINE ISOLATION
STEP UP - PLUG IN
(115V to 230V)

- Primary 115VAC, 50/60 Hz., Secondary 230VAC.
- Provides circuit isolation.
- Electrostatic shield between primary & secondary.
- World wide applications, 50 or 60 Hz. operation, step up (115VAC to 230 VAC).
- Standard 3-wire, grounded plug (for use ***only*** with adaptors listed on page 58 for proper grounding).
- Secondary connected to two European - 3 wire grounded receptacles.
- Features include ventilated black steel case, rocker lighted on-off switch & fuse protected output.
- 5 foot "U ground" cord & plug.

Cat. No.	Capacity VA	# of Outlets	Dimensions A	B	C
298C	250	2	6.00	6.75	4.75
298D	500	2	6.00	8.25	4.75
298E	750	2	7.00	8.25	5.38
298F	1000	2	7.00	9.75	5.38
298G	1500	2	8.50	9.00	6.75





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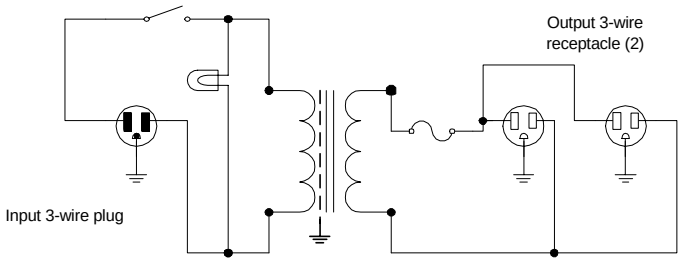
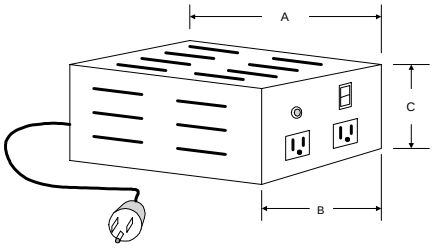
179 SERIES
LINE ISOLATION
STEP DOWN - PLUG IN
(115V to 95V)

- Primary 115VAC, 50/60 Hz., Secondary 95VAC.
- Provides circuit isolation.
- Electrostatic shield between primary & secondary.
- World wide applications, 50 or 60 Hz. operation, step down (115VAC to 95 VAC). Designed mainly for Japanese equipment in North America.
- Standard 3-wire, grounded plug (for use ***only*** with adaptors listed on page 58 for proper grounding).
- Secondary connected to two standard - 3 wire grounded receptacles.
- Features include ventilated black steel case, rocker lighted on-off switch & fuse protected output.
- 5 foot "U ground" cord & plug.

Cat. No.	Capacity VA	# of Outlets	Dimensions		
			A	B	C
179C	250	2	6.00	6.75	4.75
179D	500	2	6.00	8.25	4.75
179E	750	2	7.00	8.25	5.38
179F	1000	2	7.00	9.75	5.38
179G	1500	2	8.50	9.00	6.75





Line

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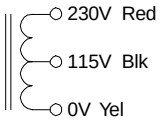
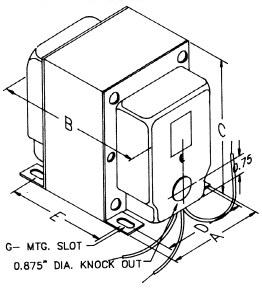
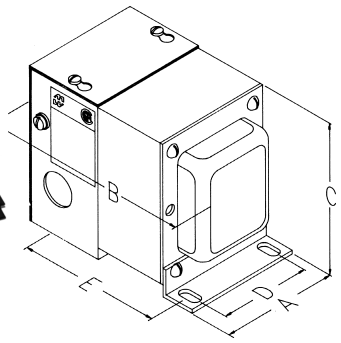
170 SERIES
LEAD CONNECTED
LINE AUTOTRANSFORMERS



- Single winding, ***does not provide isolation,*** for use where equipment is already isolated and only voltage change is required.
- Flexible world wide applications, 50 or 60 Hz. operation, step down (230VAC to 115 VAC) or step up (115VAC to 230VAC).
- Connection by flexible leads, 8" minimum length.
- Models 170A, 170B, 170C & 170D are CSA certified (# LR 3902)

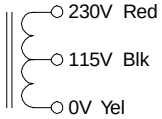
Cat. No.	Capacity VA	Dimensions A	B	C	D	E	Wt. Lbs.
170	50	2.19	2.63	2.63	1.75	1.56	2.0
170A	100	2.50	3.00	3.06	2.00	1.94	3.0
170B	200	3.13	3.50	3.81	2.50	2.19	4.5
170C	300	3.13	4.00	3.81	2.50	2.69	6.0
170D	500	3.75	4.50	4.56	3.00	3.31	10.0
170E	750	3.75	5.50	4.56	3.00	4.31	14.0
170F	1000	3.75	5.50	4.56	3.00	4.31	14.5
170G	1500	4.38	6.63	5.25	3.50	5.10	22.0
170J	2000	4.38	6.63	5.25	3.50	5.10	23.0





170E SERIES
LEAD CONNECTED - LINE
AUTOTRANSFORMERS

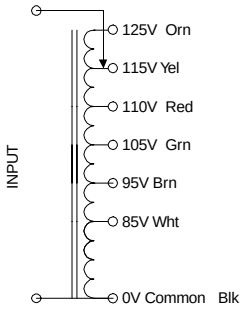
- Single winding, ***does not provide isolation,*** for use where equipment is already isolated and only voltage change is required.
- Flexible world wide applications, 50 or 60 Hz. operation, step down (230VAC to 115 VAC) or step up (115VAC to 230VAC).
- Totally enclosed rear case, includes handy internal grounding bolt.
- Extra vacuum varnish for use in high humidity.
- Includes a rear mounted (but not wired), standard 115VAC, 3-wire receptacle.
- Enclosed case with convenient knockouts and includes two cable clamps allowing for easy wire connections.
- Models 170SE, 170AE, 170BE, 170CE & 170DE are CSA certified (# LR3902)
- Connection by flexible leads, 8" minimum length

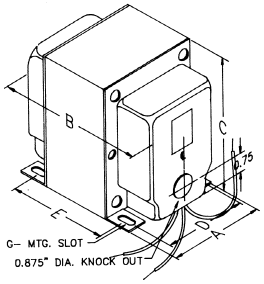


Cat. No.	Capacity VA	Dimensions A	B	C	D	E	Wt. Lbs.
170SE	50	3.13	4.00	4.13	2.25	3.13	3.5
170AE	100	3.13	4.00	4.13	2.25	3.13	4.0
170BE	200	3.13	4.25	4.13	2.25	3.38	5.0
170CE	300	3.13	4.75	4.13	2.25	3.88	6.5
170DE	500	3.75	5.00	4.88	2.75	4.13	10.0
170EE	750	3.75	6.00	4.88	2.75	5.13	15.0
170FE	1000	3.75	6.00	4.88	2.75	5.13	15.5
170GE	1500	4.38	7.00	5.50	3.25	5.88	23.5
170JE	2000	4.38	7.00	5.50	3.25	5.88	24.0

168 SERIES
TAPPED - LEAD CONNECTED LINE
AUTOTRANSFORMERS

- Single winding, ***does not provide isolation,*** for use where equipment is already isolated and only voltage change is required.
- Flexible world wide applications, 50 or 60 Hz. operation, 115VAC input.
- Output taps @ 85, 95, 105, 110, 115 and 125VAC.
- Ideal for manual line voltage adjustment for electronic equipment or small appliance operation.
- Models 168B, 168C & 168D are CSA certified (# LR3902)
- Connection by flexible leads, 8" minimum length.





Cat. No.	Capacity VA	Dimensions A	B	C	D	E	Wt. Lbs.
168B	200	3.13	3.25	3.81	2.50	1.94	4.3
168C	350	3.13	4.00	3.81	2.50	2.69	6.5
168D	500	3.75	4.00	4.56	3.00	2.81	8
168E	750	3.75	4.50	4.56	3.00	3.31	10
168F	1000	3.75	5.50	4.56	3.00	4.31	14
168H	1500	4.38	6.13	5.25	3.50	4.50	20
168J	2000	4.38	6.63	5.25	3.50	5.10	23

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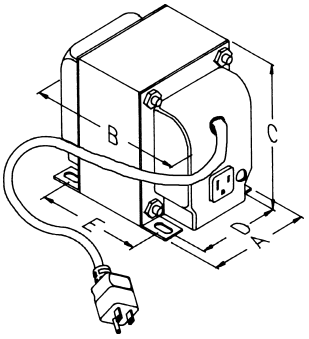
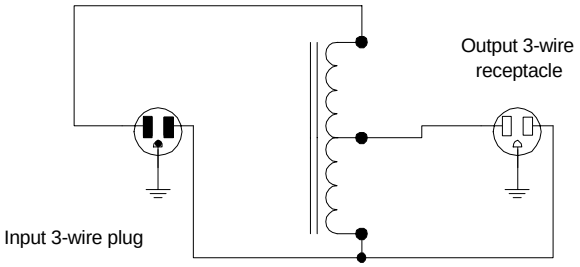
175 SERIES
LINE - STEP DOWN
PLUG IN
AUTOTRANSFORMERS
(230V to 115V)



- Single winding, ***does not provide isolation,*** for use where equipment is already isolated and only voltage change is required.
- World wide applications, 50 or 60 Hz. operation, step down (230VAC to 115 VAC).
- Standard 3-wire, grounded plug (for use ***only*** with adaptors listed on page 58 for proper grounding).
- Output connected to standard 115V - 3 wire grounded receptacle.
- 5 foot "U ground" cord & plug.



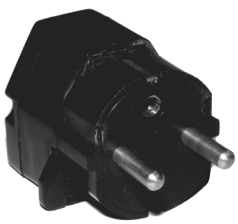
Cat. No.	Capacity VA	Dimensions					Wt. Lbs.
		A	B	C	D	E	
175A	100	3.13	3.25	3.81	2.50	1.94	3.5
175B	200	3.13	3.50	3.81	2.50	2.19	4.5
175C	300	3.13	4.00	3.81	2.50	2.69	6.0
175D	500	3.75	4.50	4.56	3.00	3.31	10.0
175E	750	3.75	5.50	4.56	3.00	4.31	14.0
175F	1000	3.75	5.50	4.56	3.00	4.31	14.5
175G	1500	4.38	6.63	5.25	3.50	5.10	22.0

INTERNATIONAL - GROUNDED
ADAPTOR PLUGS

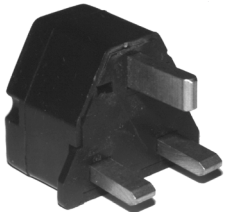
- For use with our 171, 172, 175, 179, 289 & 298 transformers.
- Heavy duty design with plastic shell & double wipe contacts.
- Allows for ground connection between equipment and international power sources.
- With a set of all 4 adaptors, they will accept equipment with plugs from virtually every country except South Africa!
- ***Adaptors do not affect voltages***, they are a mechanical device only to match foreign "pin-outs" of receptacles and/or plugs.

Rear View of all adaptors

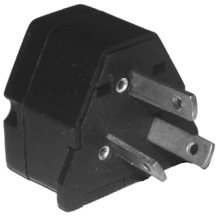
Cat. No.	Grounded Plug Type	Used in the Countries of:
298G4	European	Austria, Belgium, Finland, France, Germany, Middle East, Netherlands, Norway, Parts of Africa/Asia/South America/China/Tahiti & Caribbean, Sweden
298G3	British	Hong Kong, Ireland, Malaysia, Parts of Africa/Caribbean, Singapore, U.K.
298G6	Australian	Australia, People's Republic of China, S. Pacific Islands, New Zealand
298G7	N. American	Canada, Parts of the Caribbean/ South America, Philippines, USA



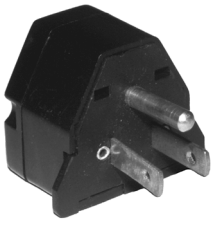
298G4



298G3



298G6



298G7

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HELPFUL HINTS

Your best decision is to try to find a standard, off the shelf transformer to fit your requirements. This ensures a reliable, proven design that seamlessly drops in to your designs. This also allows you take advantage of our cost savings by pooling your requirements with thousands of other customers who have specified standard transformers. You can also take advantage of our large stock of both field distributor inventories and our own!

If you are unable to find what you need from our extensive standard line, remember, ***we have over 1 million special designs on file.*** To help us better serve you, here are a few helpful hints:

1) Make sure simple circuit adjustments can't be made to allow you to use a standard transformer. This will prove much less expensive than a "modified" or "special" design.

2) By using the table of contents, try to find the closest possible standard unit (or series) we make. We have included lots of spec's and photo's to make this easy. Modifying an existing design is much easier, less expensive and faster for both of us. (ex.....you must have a chassis mount 115V primary, 15V @ 3 Amp secondary.....contact us to quote on a "modified 166M16 except 15V @ 3 Amps").

3) Also advise us of any product physical changes you need.

4) Please have estimated quantity (production releases) ready and possibly a budget figure to make sure we pick the correct design. If your design appears to be totally custom, contact us for quotes from prints or for initial help. ***Always feel free to contact our sales offices or contact our factory direct tech. line @ 519-886-6181.***

CATALOG NOTES

Hammond Manufacturing products are continually being revised and improved, to use the best materials available. For this reason, Hammond Manufacturing reserves the right to modify existing electrical or mechanical characteristics of any catalog item without notice.

Dimensions shown in this catalog are nominal, subject to manufacturing tolerances. Transformers and chokes require some clearance for adequate ventilation.

WARRANTY

We warrant Hammond Manufacturing products to be free from defects in workmanship or material, and will, without charge, replace or repair within one year from date of shipment from our factory any products that may be found defective upon inspection at our factory. This warranty does not obligate us where products have been subjected to careless handling, improper application or faulty installation, and we expressly disclaim any obligation, guarantee or liability whatsoever except as above stated.

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Generic Description Index

KJJ RCS

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In Canada...
Hammond Mfg. Co. Ltd.
394 Edinburgh Rd., North
Guelph, Ontario N1H 1E5
Phone: 519-822-2960
Fax: 519-822-0715

In The USA...
Hammond Mfg. Co. Inc.
256 Sonwil Dr.
Cheektowaga, NY 14225
Phone: 716-651-0086
Fax: 716-651-0726

In Quebec...
Les Fabrications Hammond
(Quebec) Inc.
4240 Seré Street
St. Laurent, Quebec H4T 1A6
Tel: 514-343-9010
Fax: 514-343-9941

In The UK...
Hammond Electronics Ltd.
1 Onslow Close
Kingsland Park
Basingstoke, Hampshire RG24 8QL
Tel: 01256 812812
Fax: 01256 332249

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