

Custom design



**BROWNSBURG  
ELECTRONIK INC.**  
Transformer and inductor manufacturer

**Transformers  
&  
Inductors**



**BROWNSBURG  
ELECTRONIK INC.**

Transformer and inductor manufacturer

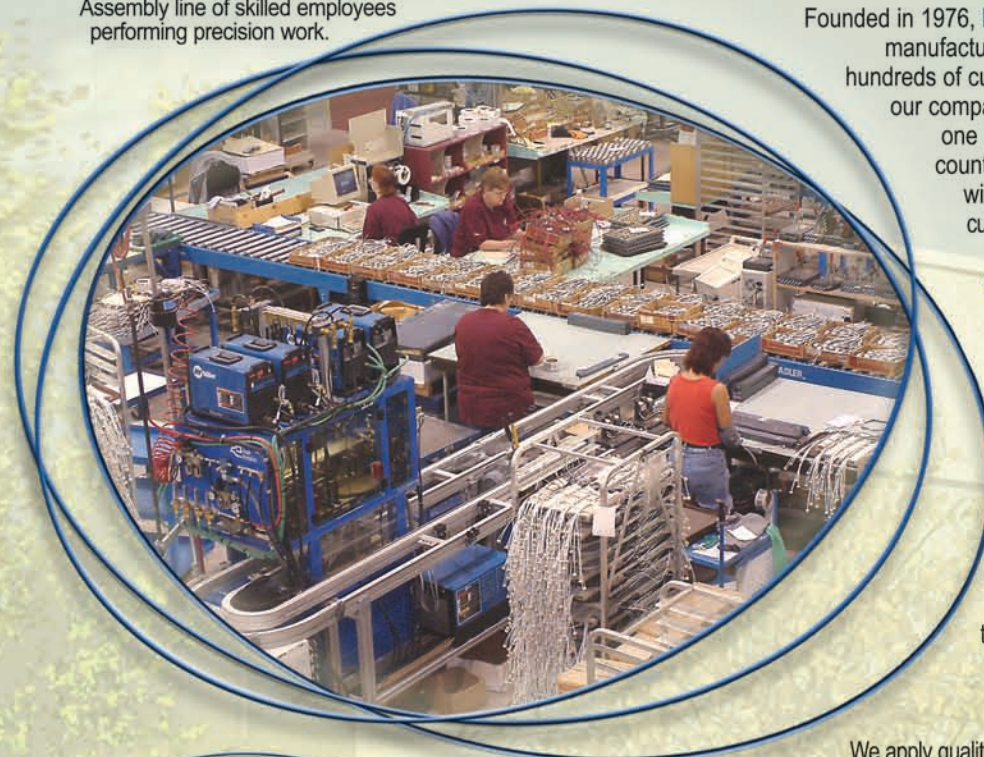
tel. : 450 562-5211  
fax : 450 562-1296  
toll free : 1 888 XFMR555  
1 888 936-7555  
web site : [www.bei.net](http://www.bei.net)  
e-mail : [bei@bei.net](mailto:bei@bei.net)

741, Lowe Street  
Lachute, Québec  
Canada, J8H 4N9

**LEAD FREE  
PRODUCTION ON REQUEST**



Assembly line of skilled employees performing precision work.



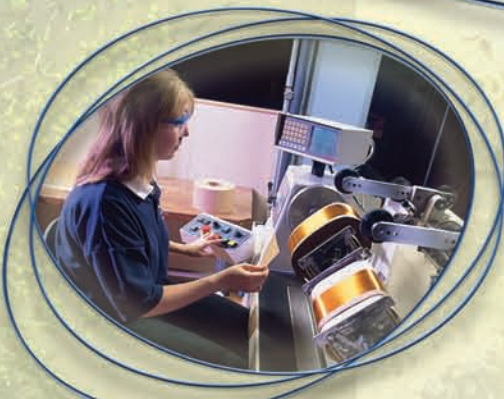
Founded in 1976, **Brownsburg Elektronik Inc.** has a long history of manufacturing quality transformers and inductors. Serving hundreds of customers across Canada and the United States, our company boasts a competent workforce of more than one hundred employees. Our skilled employees can count on top-of-the-line high-tech machinery, housed within our brand new 40 000 sq. ft. facility, to craft custom-made products to fully meet your requirements.

**Our goal is simple: your complete satisfaction.**

Customer satisfaction is the keystone of our company philosophy. The attainment of this goal has always been conditional upon our unflinching commitment to quality. This, coupled with our expertise in designing to customers' specifications and our result-oriented management system, has made **Brownsburg Elektronik Inc.** what it is today. Let us apply our many years of experience and know-how in the field to help you solve magnetic problems. Our qualified engineering department is ready to assist you in any way it can; this is one of the many reasons our customers choose to do business with us.

We apply quality best business practices. **Brownsburg Elektronik Inc.** employees are committed to improve continuously.

Given its state-of-the-art production and test equipment, including computer-assisted design and simulation. Whatever your needs regarding quality or quantities or whether your requirements are standard, special or exceptional, our company has what it takes to meet them. We invite you to visit our web site at [www.bei.net](http://www.bei.net).



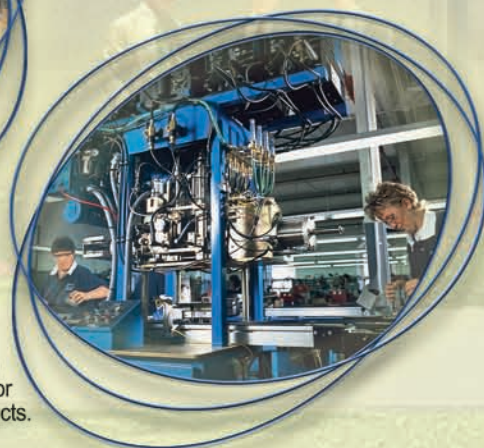
State-of-the-art equipment designed for large items.



Unique testing BEI equipment assisted by computer to guarantee product quality.



Versatile winding equipment to meet different specifications.



Core welding equipment using advanced technology for superior quality products.



Our products are CSA-approved and UL-recognized. International transformers bear the CE mark. Control transformers are UL listed.

Whether for one part... or a million, you can count on **Brownsburg Elektronik Inc.**

Description	Page	Description	Page	Description	Page
<b>A</b>		<b>E</b>		<b>O</b>	
Audio:		Enclosed .....	7,15,18,21,22,28	Open Chassis Mounting	
• Hi-Fi .....	21	Energy Limiting Transformers .....	27	3,4,5,6,10,11,14,15,18,19,20,21,22,25,27,28	
• Matching .....	20	<b>F</b>		<b>P</b>	
• Output .....	20	Ferrite Components .....	19, 21, 23, 24, 26	PC Board Mounting	
• Power .....	21	Filter chokes.....	22,23,24,25,26	.....8,9,11,12,13,19,20,21,23,24,26	
• Speaker .....	20	Fluorescent Ballasts .....	18	Power Transformers:	
• Telecommunication .....	21	<b>H</b>		• 3-Phase .....	25
Autotransformers:		Halogen Lamp Transformers.....	18	• Custom .....	28
• Enclosed.....	28	Hash Chokes .....	23	• Rectifier Calculations .....	2
• Open .....	28	High Frequency Components .....	23,26	• Toroidal .....	10
• Toroids.....	11	<b>I</b>		<b>R</b>	
Ballasts .....	18	Inductors .....	22,23,24,25,26	Rectifier Circuit Transformers:	
Bracket Mounting .....	5,6,7,15,18,19,21,22	International Transformers.....	5,9,27	• Custom .....	28
<b>B</b>		Instrumentation .....	19	• DC Calculations .....	2
<b>C</b>		<b>L</b>		• Models.....	3,4,5,6,7,8,9,10,12,13
Channel Mounting .....	3,4,5,14,18,19,20,22	Lighting Transformers		Reactors .....	22,24,25
Chokes:		• Fluorescent Ballasts .....	18	RF Chokes.....	23,26
• 3-phase.....	25	• Halogen Transformers.....	18	<b>S</b>	
• Common mode .....	24	Line Autotransformers .....	11,28	Speaker Line Matching .....	20
• DC Reactors.....	22	Line Matching:		<b>T</b>	
• Molded .....	23	• Audio .....	20	Telecommunication.....	21
• R.F. ....	23	• Speaker .....	20	Toroidal Chokes.....	24,26
• Toroidal .....	24,26	• Telecommunication .....	21	Toroidal Power Transformers:	
Class 2 and 3 Transformers .....	27	Low Profile Power .....	12	• Autotransformers .....	11
Coil Winding .....	28	Low Voltage Rectifier 3,4,5,6,7,8,9,10,12,13		• Custom .....	28
Control Transformers:		<b>M</b>		• Medical .....	11
• Bracket Mounting.....	15	Measurement .....	19	• PC Board Mounting .....	11,26
• Channel Mounting .....	14	Medical Transformers .....	11,27	• Power .....	10
• Enclosed.....	15	<b>N</b>		<b>W</b>	
• Selection .....	16,17	Non-energy Limiting .....	27	Warranty .....	29
• Wiring diagram.....	17	<b>D</b>			
Current Transformers .....	19	Design Information.....	2,16,17		
Custom .....	28				

**Warranty**

All products are accompanied by a certificate of compliance stating the inspection and test done before leaving BROWNSBURG ELECTRONIK INC. These products are guaranteed against defects in material and workmanship for a period of 1 year of the date of shipment and will be replaced or repaired upon acceptance by us of the defect. The warranty may be voided if misused, mishandled, improper application or installation.

This warranty is limited to the repair or replacement of the part only, and we do not assume liability of any kind for the use or misuse of such equipment or the results therefrom. We assume no responsibility beyond the replacement or repair of the defective part at our factory.

All data is subject to change without prior notice.





**POWER TRANSFORMER GUIDE**

2 .....a.c./d.c. circuits

**AS-AD series**

Low Voltage, Open Style,

3 .....Chassis Mounting

**ASQ-ADQ series**

Low Voltage, Quick connect,

4 .....Open, Chassis Mounting

**ADSQ-DDSQ series**

Low Voltage, Quick connect,

5 .....International

**DS-DD series**

Low Voltage, Chassis Mounting,

6 .....Open, 50 VA to 5 kVA

**DSE-DDE series**

Low Voltage, Enclosed,

7 .....50 VA to 800 VA

**HS-HD series**

Low Voltage,

8 .....Horizontal P.C. Mounting

**HSS-HDS series**

Low Voltage, International

9 .....Horizontal P.C. Mounting,

**TS-TD series**

10 .....Power Transformers, Toroidal

**T series**

Power Transformers,

11 .....Special Toroidal

**UD series**

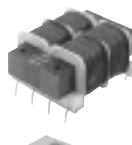
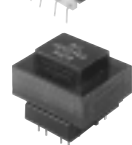
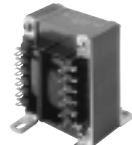
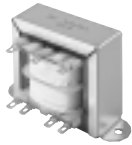
Low Voltage,

12 .....Low Profile P.C. Mounting

**VS-VD series**

Low Voltage,

13 .....Vertical P.C. Mounting



**B series**

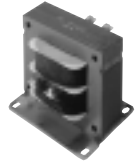
Control transformers,

25 VA to 75 VA .....14

100 VA to 5 KVA .....15

Selection .....16

Wiring diagrams .....17



**LIGHTING series**

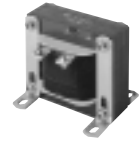
Fluorescent Ballast,

Halogen Lighting.....18



**INSTRUMENTAL series**

Current, Voltage, Measurement .....19



**AUDIO series**

Line Matching, Output .....20

Voice, Telecommunication,

Power, Hi-Fi .....21



**KA-KD series**

D.C Reactors, Filter Chokes .....22



**KM-KR series**

Chokes, Molded, R-F., Hash, .....23



**KT-KHC-KTC series**

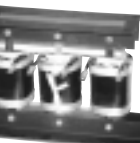
Toroidal Chokes, Common Mode .....24



**KY-Y series**

3-Phase Reactors,

3-Phase Special Transformers .....25



**F series**

Ferrites of all shapes .....26



**MISCELLANEOUS**

Medical .....27

International .....27

Class 2 and 3 .....27

Pulse .....28

Isolation.....28

Auto Transformer .....28

Constant Voltage.....28

Other .....28

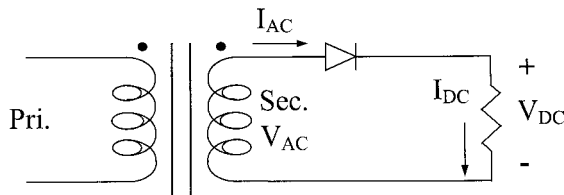
Alphabetical Index .....29

## HOW TO DETERMINE THE RIGHT SIZE OF TRANSFORMER WHEN USED WITH A RECTIFIER CIRCUIT ?

The A.C. power (VA) required to supply a D.C. load through a rectifier circuit is higher than the D.C. power going through the load. The A.C. power rating will vary with the type of rectifier circuit and the type of load. We are giving you formulas that are to be used as a guide to help you determine the right size of transformer. We have chosen the most common rectifier circuits and loads.

### HALF WAVE

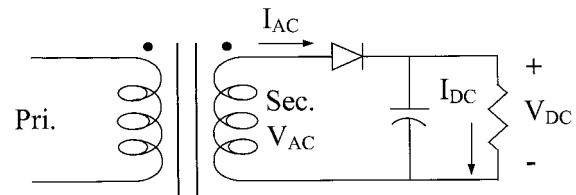
Resistive Load



$$\begin{aligned} V_{AC} &= 2.26 V_{DC} + V_{DROD} \\ I_{AC} &= 1.57 I_{DC} \\ VA_{AC} &= 3.55 (\text{Watts} + 0.44 I_{DC} V_{DROD}) \end{aligned}$$

### HALF WAVE

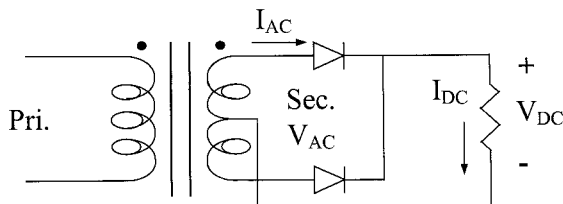
Capacitive Load



$$\begin{aligned} V_{AC} &= V_{DC} + V_{DROD} \\ I_{AC} &= 2.30 I_{DC} \\ VA_{AC} &= 2.30 (\text{Watts} + I_{DC} V_{DROD}) \end{aligned}$$

### FULL WAVE CT

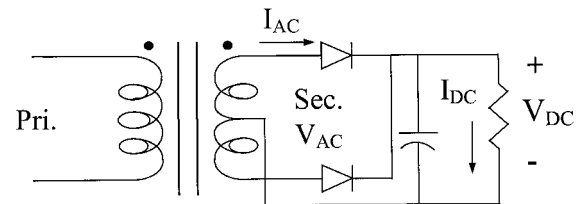
Resistive Load



$$\begin{aligned} V_{AC} &= 2.26 V_{DC} + V_{DROD} \\ I_{AC} &= 0.79 I_{DC} \\ VA_{AC} &= 1.79 (\text{Watts} + 0.44 I_{DC} V_{DROD}) \end{aligned}$$

### FULL WAVE CT

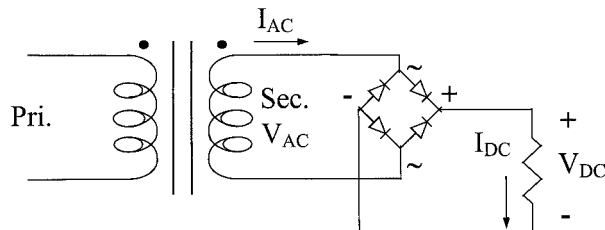
Capacitive Load



$$\begin{aligned} V_{AC} &= 1.70 V_{DC} + V_{DROD} \\ I_{AC} &= 1.15 I_{DC} \\ VA_{AC} &= 1.96 (\text{Watts} + 0.59 I_{DC} V_{DROD}) \end{aligned}$$

### FULL WAVE BRIDGE

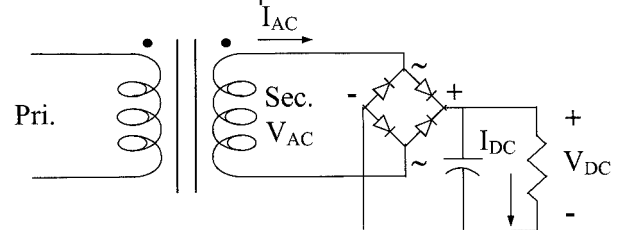
Resistive Load



$$\begin{aligned} V_{AC} &= 1.13 V_{DC} + 2 V_{DROD} \\ I_{AC} &= 1.11 I_{DC} \\ VA_{AC} &= 1.26 (\text{Watts} + 1.76 I_{DC} V_{DROD}) \end{aligned}$$

### FULL WAVE BRIDGE

Capacitive Load



$$\begin{aligned} V_{AC} &= 0.85 V_{DC} + 2V_{DROD} \\ I_{AC} &= 1.65 I_{DC} \\ VA_{AC} &= 1.41 (\text{Watts} + 2.34 I_{DC} V_{DROD}) \end{aligned}$$

#### Where:

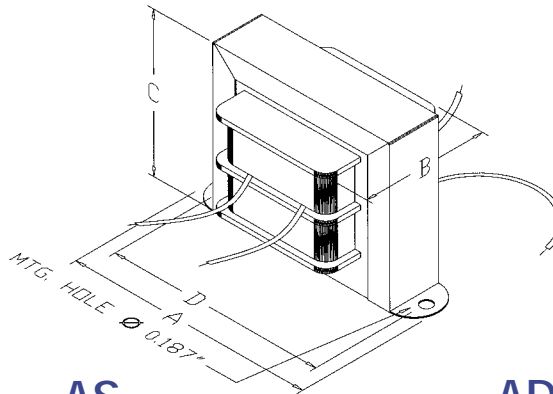
$V_{AC}$  = A.C. rms voltage (coming out of the transformer)  
 $V_{DC}$  = D.C. rms voltage (coming out of the diodes)  
 $V_{DROD}$  = D.C. rms voltage across a diode (typically 1 Volt)  
 $I_{AC}$  = A.C. rms current (coming out of the transformer)

$I_{DC}$  = D.C. rms current (coming out of the diodes)  
 $VA_{AC} = V_{AC} * I_{AC}$  (This value characterizes the size of the transformer)  
 $\text{Watts} = V_{DC} * I_{DC}$  (This value is the power in a resistive load)

OPEN STYLE - CHANNEL MOUNTING

Primary		Size VA	Secondary (RMS)
AS Cat. No 115V 60Hz single (5 LW)	AD Cat. No 115/230V 50/60Hz dual (7 LW)		
AS10E1	AD10E1	3	10 Vct @ .30 A
AS10F1	AD10F1	6	10 Vct @ .60 A
AS10G1	AD10G1	12	10 Vct @ 1.20 A
AS10H1	AD10H1	25	10 Vct @ 2.50 A
AS10K1	AD10K1	40	10 Vct @ 4.00 A
AS10L1	AD10L1	56	10 Vct @ 5.60 A
AS10M1	AD10M1	70	10 Vct @ 7.00 A
AS12E1	AD12E1	3	12.6 Vct @ .23 A
AS12F1	AD12F1	6	12.6 Vct @ .47 A
AS12G1	AD12G1	12	12.6 Vct @ .95 A
AS12H1	AD12H1	25	12.6 Vct @ 1.98 A
AS12K1	AD12K1	40	12.6 Vct @ 3.17 A
AS12L1	AD12L1	56	12.6 Vct @ 4.44 A
AS12M1	AD12M1	70	12.6 Vct @ 5.55 A
AS16E1	AD16E1	3	16 Vct @ .18 A
AS16F1	AD16F1	6	16 Vct @ .37 A
AS16G1	AD16G1	12	16 Vct @ .75 A
AS16H1	AD16H1	25	16 Vct @ 1.56 A
AS16K1	AD16K1	40	16 Vct @ 2.50 A
AS16L1	AD16L1	56	16 Vct @ 3.50 A
AS16M1	AD16M1	70	16 Vct @ 4.37 A
AS20E1	AD20E1	3	20 Vct @ .15 A
AS20F1	AD20F1	6	20 Vct @ .30 A
AS20G1	AD20G1	12	20 Vct @ .60 A
AS20H1	AD20H1	25	20 Vct @ 1.25 A
AS20K1	AD20K1	40	20 Vct @ 2.00 A
AS20L1	AD20L1	56	20 Vct @ 2.80 A
AS20M1	AD20M1	70	20 Vct @ 3.50 A
AS24E1	AD24E1	3	24 Vct @ .12 A
AS24F1	AD24F1	6	24 Vct @ .25 A
AS24G1	AD24G1	12	24 Vct @ .50 A
AS24H1	AD24H1	25	24 Vct @ 1.04 A
AS24K1	AD24K1	40	24 Vct @ 1.66 A
AS24L1	AD24L1	56	24 Vct @ 2.33 A
AS24M1	AD24M1	70	24 Vct @ 2.91 A
AS28E1	AD28E1	3	28 Vct @ .10 A
AS28F1	AD28F1	6	28 Vct @ .21 A
AS28G1	AD28G1	12	28 Vct @ .42 A
AS28H1	AD28H1	25	28 Vct @ .89 A
AS28K1	AD28K1	40	28 Vct @ 1.42 A
AS28L1	AD28L1	56	28 Vct @ 2.00 A
AS28M1	AD28M1	70	28 Vct @ 2.50 A
AS36E1	AD36E1	3	36 Vct @ .08 A
AS36F1	AD36F1	6	36 Vct @ .16 A
AS36G1	AD36G1	12	36 Vct @ .33 A
AS36H1	AD36H1	25	36 Vct @ .69 A
AS36K1	AD36K1	40	36 Vct @ 1.11 A
AS36L1	AD36L1	56	36 Vct @ 1.55 A
AS36M1	AD36M1	70	36 Vct @ 1.94 A
AS48E1	AD48E1	3	48 Vct @ .06 A
AS48F1	AD48F1	6	48 Vct @ .12 A
AS48G1	AD48G1	12	48 Vct @ .25 A
AS48H1	AD48H1	25	48 Vct @ .52 A
AS48K1	AD48K1	40	48 Vct @ .83 A
AS48L1	AD48L1	56	48 Vct @ 1.16 A
AS48M1	AD48M1	70	48 Vct @ 1.45 A
AS56E1	AD56E1	3	56 Vct @ .053 A
AS56F1	AD56F1	6	56 Vct @ .10 A
AS56G1	AD56G1	12	56 Vct @ .21 A
AS56H1	AD56H1	25	56 Vct @ .44 A
AS56K1	AD56K1	40	56 Vct @ .71 A
AS56L1	AD56L1	56	56 Vct @ 1.00 A
AS56M1	AD56M1	70	56 Vct @ 1.25 A
AS120E1	AD120E1	3	120 Vct @ .025 A
AS120F1	AD120F1	6	120 Vct @ .05 A
AS120G1	AD120G1	12	120 Vct @ .10 A
AS120H1	AD120H1	25	120 Vct @ .20 A
AS120K1	AD120K1	40	120 Vct @ .33 A
AS120L1	AD120L1	56	120 Vct @ .46 A
AS120M1	AD120M1	70	120 Vct @ .58 A

- VA size models available from 3 to 70 VA.
- Split bobbin design on most models.
- Single or dual primary voltages.
- Lead wire 8" long.
- Class A insulation – 105 °C.
- CSA approved (LR63462) and UL recognized (E193917).
- Center tapped to secondary winding.
- Other primary and secondary voltages available.
- Vertical mounting also available.

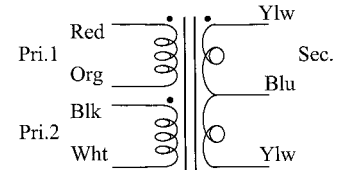
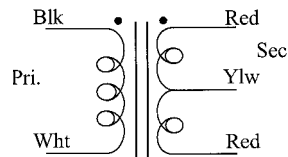


AS

AD

Single primary 115V 60Hz

Dual primary 115/230V 50/60Hz



VA Size	A	B	C	D	lbs
3	2.06	1.25	1.19	1.75	0.19
6	2.38	1.38	1.38	2.00	0.35
12	2.81	1.55	1.69	2.38	0.58
25	3.25	1.80	2.00	2.81	0.83
40	3.69	2.10	2.26	3.13	1.50
56	4.00	2.37	2.57	3.56	2.20
70	4.00	2.63	2.57	3.56	2.80

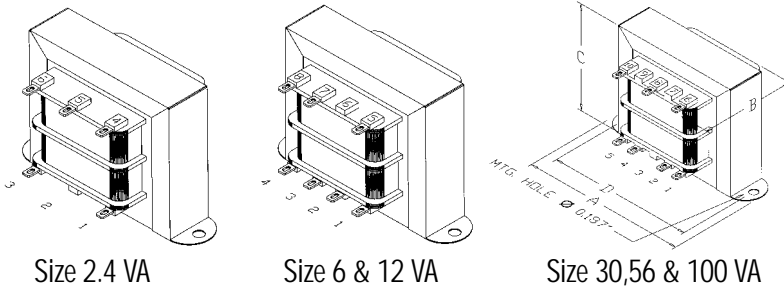
All dimensions are in inches

- VA size models available from 2.4 to 100 VA.
- Split bobbin design.
- Combination- Solder or Quick connect Terminal.
- Single or dual primary voltages.

- Class B insulation – 130 °C.
- CSA approved (LR63462) and UL recognized (E193917).
- Center tapped to secondary winding.
- Other primary and secondary voltages available.



Quick connect 0.187" x 0.020" or solder lug



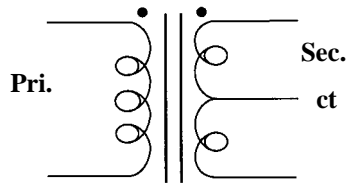
Size 2.4 VA

Size 6 & 12 VA

Size 30, 56 & 100 VA

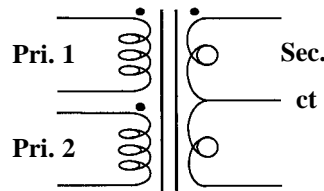
**ASQ**

Single primary 115V 50/60Hz



**ADQ**

Dual primary 115/230V 50/60Hz

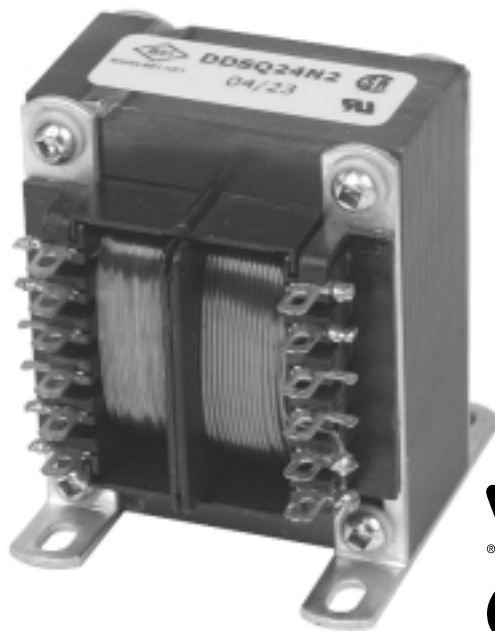


Primary		Size VA	Secondary (RMS)
ASQ Cat. No 115V 50/60Hz single (5 term.)	ADQ Cat. No 115/230V 50/60Hz dual (7 term.)		
ASQ10E1	N/A	2.4	10 V <sub>CT</sub> @ .25 A
ASQ10F1	ADQ10F1	6	10 V <sub>CT</sub> @ .60 A
ASQ10G1	ADQ10G1	12	10 V <sub>CT</sub> @ 1.2 A
ASQ10J1	ADQ10J1	30	10 V <sub>CT</sub> @ 3.0 A
ASQ10L1	ADQ10L1	56	10 V <sub>CT</sub> @ 5.0 A
ASQ10N1	ADQ10N1	100	10 V <sub>CT</sub> @ 10.0 A
ASQ12E1	N/A	2.4	12.6 V <sub>CT</sub> @ .20 A
ASQ12F1	ADQ12F1	6	12.6 V <sub>CT</sub> @ .50 A
ASQ12G1	ADQ12G1	12	12.6 V <sub>CT</sub> @ 1.0 A
ASQ12J1	ADQ12J1	30	12.6 V <sub>CT</sub> @ 2.5 A
ASQ12L1	ADQ12L1	56	12.6 V <sub>CT</sub> @ 4.0 A
ASQ12N1	ADQ12N1	100	12.6 V <sub>CT</sub> @ 8.0 A
ASQ16E1	N/A	2.4	16 V <sub>CT</sub> @ .15 A
ASQ16F1	ADQ16F1	6	16 V <sub>CT</sub> @ .40 A
ASQ16G1	ADQ16G1	12	16 V <sub>CT</sub> @ .80 A
ASQ16J1	ADQ16J1	30	16 V <sub>CT</sub> @ 2.0 A
ASQ16L1	ADQ16L1	56	16 V <sub>CT</sub> @ 3.5 A
ASQ16N1	ADQ16N1	100	16 V <sub>CT</sub> @ 6.25 A
ASQ20E1	N/A	2.4	20 V <sub>CT</sub> @ .12 A
ASQ20F1	ADQ20F1	6	20 V <sub>CT</sub> @ .30 A
ASQ20G1	ADQ20G1	12	20 V <sub>CT</sub> @ .60 A
ASQ20J1	ADQ20J1	30	20 V <sub>CT</sub> @ 1.5 A
ASQ20L1	ADQ20L1	56	20 V <sub>CT</sub> @ 2.8 A
ASQ20N1	ADQ20N1	100	20 V <sub>CT</sub> @ 5.0 A
ASQ24E1	N/A	2.4	24 V <sub>CT</sub> @ .10 A
ASQ24F1	ADQ24F1	6	24 V <sub>CT</sub> @ .25 A
ASQ24G1	ADQ24G1	12	24 V <sub>CT</sub> @ .50 A
ASQ24J1	ADQ24J1	30	24 V <sub>CT</sub> @ 1.25 A
ASQ24L1	ADQ24L1	56	24 V <sub>CT</sub> @ 2.4 A
ASQ24N1	ADQ24N1	100	24 V <sub>CT</sub> @ 4.0 A
ASQ28E1	N/A	2.4	28 V <sub>CT</sub> @ .085 A
ASQ28F1	ADQ28F1	6	28 V <sub>CT</sub> @ .20 A
ASQ28G1	ADQ28G1	12	28 V <sub>CT</sub> @ .42 A
ASQ28J1	ADQ28J1	30	28 V <sub>CT</sub> @ 1.1 A
ASQ28L1	ADQ28L1	56	28 V <sub>CT</sub> @ 2.0 A
ASQ28N1	ADQ28N1	100	28 V <sub>CT</sub> @ 3.6 A
ASQ36E1	N/A	2.4	36 V <sub>CT</sub> @ .065 A
ASQ36F1	ADQ36F1	6	36 V <sub>CT</sub> @ .17 A
ASQ36G1	ADQ36G1	12	36 V <sub>CT</sub> @ .35 A
ASQ36J1	ADQ36J1	30	36 V <sub>CT</sub> @ .85 A
ASQ36L1	ADQ36L1	56	36 V <sub>CT</sub> @ 1.5 A
ASQ36N1	ADQ36N1	100	36 V <sub>CT</sub> @ 2.8 A
ASQ48E1	N/A	2.4	48 V <sub>CT</sub> @ .05 A
ASQ48F1	ADQ48F1	6	48 V <sub>CT</sub> @ .125 A
ASQ48G1	ADQ48G1	12	48 V <sub>CT</sub> @ .25 A
ASQ48J1	ADQ48J1	30	48 V <sub>CT</sub> @ .63 A
ASQ48L1	ADQ48L1	56	48 V <sub>CT</sub> @ 1.2 A
ASQ48N1	ADQ48N1	100	48 V <sub>CT</sub> @ 2.0 A
ASQ56E1	N/A	2.4	56 V <sub>CT</sub> @ .045 A
ASQ56F1	ADQ56F1	6	56 V <sub>CT</sub> @ .11 A
ASQ56G1	ADQ56G1	12	56 V <sub>CT</sub> @ .22 A
ASQ56J1	ADQ56J1	30	56 V <sub>CT</sub> @ .54 A
ASQ56L1	ADQ56L1	56	56 V <sub>CT</sub> @ 1.0 A
ASQ56N1	ADQ56N1	100	56 V <sub>CT</sub> @ 1.8 A
ASQ120E1	N/A	2.4	120 V <sub>CT</sub> @ .02 A
ASQ120F1	ADQ120F1	6	120 V <sub>CT</sub> @ .05 A
ASQ120G1	ADQ120G1	12	120 V <sub>CT</sub> @ .10 A
ASQ120J1	ADQ120J1	30	120 V <sub>CT</sub> @ .25 A
ASQ120L1	ADQ120L1	56	120 V <sub>CT</sub> @ .50 A
ASQ120N1	ADQ120N1	100	120 V <sub>CT</sub> @ .85 A

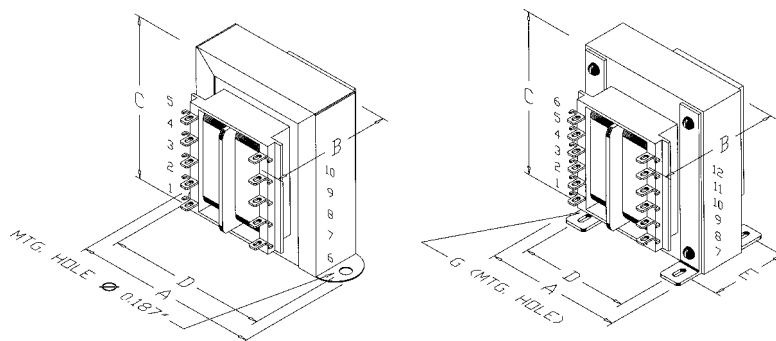
VA Size	A	B	C	D	Terminal Number				lbs
					ASQ		ADQ		
					Pri.	Sec.	Pri.	Sec.	
2.4	2.06	1.55	1.19	1.75	<u>1</u> -3	<u>4</u> -5-6	N/A	N/A	0.25
6	2.38	1.68	1.38	2.00	<u>2</u> -3	<u>5</u> -7-8	<u>1</u> -2, <u>3</u> -4	<u>5</u> -7-8	0.44
12	2.81	1.80	1.63	2.38	<u>2</u> -3	<u>5</u> -7-8	<u>1</u> -2, <u>3</u> -4	<u>5</u> -7-8	0.70
30	3.25	2.11	1.94	2.81	<u>2</u> -4	<u>6</u> -8-10	<u>1</u> -2, <u>4</u> -5	<u>6</u> -8-10	1.10
56	3.69	2.23	2.25	3.13	<u>2</u> -4	<u>6</u> -8-10	<u>1</u> -2, <u>4</u> -5	<u>6</u> -8-10	1.70
100	4.03	2.60	2.56	3.56	<u>2</u> -4	<u>6</u> -8-10	<u>1</u> -2, <u>4</u> -5	<u>6</u> -8-10	2.75

All dimensions are in inches. Underline indicates polarity.

- VA size models available from 25 to 175 VA.
- Split bobbin with top shroud design.
- Combination- Solder or Quick connect Terminal.
- Dual primary voltages.
- Class F insulation – 155 °C.
- CSA approved (LR63462) and UL recognized (E193917).
- Series/parallel secondary winding on all.
- Other primary and secondary voltages available.
- High insulation-4000 V between prim. and sec.

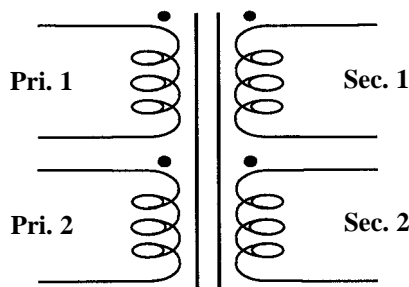


Primary Cat. No 115/230V 50/60Hz dual (8 term.)	Size VA	Secondary (RMS)	
		Series	Parallel
ADSQ10H2	25	10 V <sub>CR</sub> @ 2.5 A	5 V @ 5.0 A
ADSQ10L2	43	10 V <sub>CR</sub> @ 4.3 A	5 V @ 8.6 A
DDSQ10N2	80	10 V <sub>CR</sub> @ 8.0 A	5 V @ 16.0 A
DDSQ10Q2	130	10 V <sub>CR</sub> @ 13.0 A	5 V @ 26.0 A
DDSQ10R2	175	10 V <sub>CR</sub> @ 17.5 A	5 V @ 35.0 A
ADSQ12H2	25	12.6 V <sub>CR</sub> @ 2.0 A	6.3 V @ 4.0 A
ADSQ12L2	43	12.6 V <sub>CR</sub> @ 3.4 A	6.3 V @ 6.8 A
DDSQ12N2	80	12.6 V <sub>CR</sub> @ 6.3 A	6.3 V @ 12.6 A
DDSQ12Q2	130	12.6 V <sub>CR</sub> @ 10.3 A	6.3 V @ 20.6 A
DDSQ12R2	175	12.6 V <sub>CR</sub> @ 14.0 A	6.3 V @ 28.0 A
ADSQ16H2	25	16 V <sub>CR</sub> @ 1.6 A	8 V @ 3.2 A
ADSQ16L2	43	16 V <sub>CR</sub> @ 2.7 A	8 V @ 5.4 A
DDSQ16N2	80	16 V <sub>CR</sub> @ 5.0 A	8 V @ 10.0 A
DDSQ16Q2	130	16 V <sub>CR</sub> @ 8.1 A	8 V @ 16.2 A
DDSQ16R2	175	16 V <sub>CR</sub> @ 11.0 A	8 V @ 22.0 A
ADSQ20H2	25	20 V <sub>CR</sub> @ 1.25 A	10 V @ 2.5 A
ADSQ20L2	43	20 V <sub>CR</sub> @ 2.2 A	10 V @ 4.4 A
DDSQ20N2	80	20 V <sub>CR</sub> @ 4.0 A	10 V @ 8.0 A
DDSQ20Q2	130	20 V <sub>CR</sub> @ 6.5 A	10 V @ 13.0 A
DDSQ20R2	175	20 V <sub>CR</sub> @ 8.8 A	10 V @ 17.6 A
ADSQ24H2	25	24 V <sub>CR</sub> @ 1.0 A	12 V @ 2.0 A
ADSQ24L2	43	24 V <sub>CR</sub> @ 1.8 A	12 V @ 3.6 A
DDSQ24N2	80	24 V <sub>CR</sub> @ 3.3 A	12 V @ 6.6 A
DDSQ24Q2	130	24 V <sub>CR</sub> @ 5.4 A	12 V @ 10.8 A
DDSQ24R2	175	24 V <sub>CR</sub> @ 7.3 A	12 V @ 14.6 A
ADSQ28H2	25	28 V <sub>CR</sub> @ 0.9 A	14 V @ 1.86 A
ADSQ28L2	43	28 V <sub>CR</sub> @ 1.5 A	14 V @ 3.0 A
DDSQ28N2	80	28 V <sub>CR</sub> @ 2.8 A	14 V @ 5.6 A
DDSQ28Q2	130	28 V <sub>CR</sub> @ 4.6 A	14 V @ 9.2 A
DDSQ28R2	175	28 V <sub>CR</sub> @ 6.25 A	14 V @ 12.5 A
ADSQ36H2	25	36 V <sub>CR</sub> @ 0.7 A	18 V @ 1.4 A
ADSQ36L2	43	36 V <sub>CR</sub> @ 1.2 A	18 V @ 2.4 A
DDSQ36N2	80	36 V <sub>CR</sub> @ 2.2 A	18 V @ 4.4 A
DDSQ36Q2	130	36 V <sub>CR</sub> @ 3.6 A	18 V @ 7.2 A
DDSQ36R2	175	36 V <sub>CR</sub> @ 4.8 A	18 V @ 9.6 A
ADSQ230H2	25	230 V <sub>CR</sub> @ 0.11 A	115 V @ 0.22 A
ADSQ230L2	43	230 V <sub>CR</sub> @ 0.19 A	115 V @ 0.38 A
DDSQ230N2	80	230 V <sub>CR</sub> @ 0.35 A	115 V @ 0.70 A
DDSQ230Q2	130	230 V <sub>CR</sub> @ 0.57 A	115 V @ 1.14 A
DDSQ230R2	175	230 V <sub>CR</sub> @ 0.76 A	115 V @ 1.52 A



**ADSQ DDSQ**

Dual primary 115/230V 50/60Hz



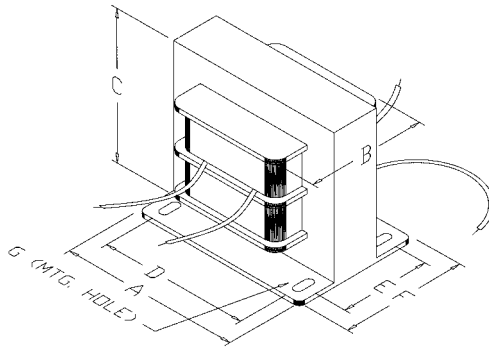
VA Size	Style	A	B	C	D	E	Mount. Hole G	Terminal Number		Terminal	lbs
								Pri.	Sec.		
25	ADSQ	2.81	2.25	2.35	2.38	-	.187	<u>1-2, 4-5</u>	<u>6-7, 9-10</u>	.187 x .020	1.3
43	ADSQ	3.13	2.25	2.73	2.81	-	.187	<u>1-2, 4-5</u>	<u>6-7, 9-10</u>	.187 x .020	1.6
80	DDSQ	2.52	2.63	3.04	2.00	2.25	.203 x .375	<u>1-2, 5-6</u>	<u>7-8, 11-12</u>	.187 x .020	2.8
130	DDSQ	2.83	3.13	3.42	2.25	2.50	.203 x .375	<u>1-2, 5-6</u>	<u>7-8, 11-12</u>	.250 x .031	4.1
175	DDSQ	3.15	3.25	3.79	2.50	2.50	.203 x .375	<u>1-2, 5-6</u>	<u>7-8, 11-12</u>	.250 x .031	5.5

All dimensions are in inches. Underline indicates polarity.



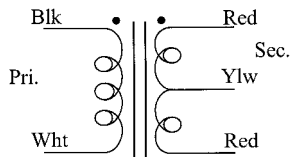
- VA size models available from 50 VA to 5 kVA.
- Single or dual primary voltages.
- Lead wire 8" long up to 1 kVA, copper lug up to 5 kVA.
- Insulation system class B (130 °C) up to 1 kVA, class H (180 °C) up to 5 kVA.

- CSA approved (LR63462) and UL recognized (E193917).
- Center tapped to secondary winding.
- Other primary and secondary voltages available.



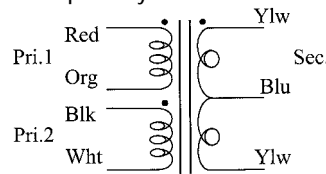
**DS**

Single primary 115V 60Hz



**DD**

Dual primary 115/230V 50/60Hz



Primary		Size VA	Secondary (RMS)
DS Cat. No 115V 60Hz single (5 LW)	DD Cat. No 115/230V 50/60Hz dual (7 LW)		
DS5L1	DD5L1	50	5 V <sub>CR</sub> @ 10 A
DS5N1	DD5N1	100	5 V <sub>CR</sub> @ 20 A
DS5Q1	DD5Q1	150	5 V <sub>CR</sub> @ 30 A
DS6L1	DD6L1	50	6.3 V <sub>CR</sub> @ 8 A
DS6N1	DD6N1	100	6.3 V <sub>CR</sub> @ 15 A
DS6Q1	DD6Q1	150	6.3 V <sub>CR</sub> @ 23 A
DS10L1	DD10L1	50	10 V <sub>CR</sub> @ 5 A
DS10N1	DD10N1	100	10 V <sub>CR</sub> @ 10 A
DS10Q1	DD10Q1	150	10 V <sub>CR</sub> @ 15 A
DS10T1	DD10T1	250	10 V <sub>CR</sub> @ 25 A
DS12L1	DD12L1	50	12.6 V <sub>CR</sub> @ 4 A
DS12N1	DD12N1	100	12.6 V <sub>CR</sub> @ 8 A
DS12Q1	DD12Q1	150	12.6 V <sub>CR</sub> @ 12 A
DS12T1	DD12T1	250	12.6 V <sub>CR</sub> @ 20 A
DS12U1	DD12U1	350	12.6 V <sub>CR</sub> @ 28 A
DS16L1	DD16L1	50	16 V <sub>CR</sub> @ 3 A
DS16N1	DD16N1	100	16 V <sub>CR</sub> @ 6 A
DS16Q1	DD16Q1	150	16 V <sub>CR</sub> @ 9 A
DS16T1	DD16T1	250	16 V <sub>CR</sub> @ 15 A
DS16U1	DD16U1	350	16 V <sub>CR</sub> @ 21 A
DS20L1	DD20L1	50	20 V <sub>CR</sub> @ 2.5 A
DS20N1	DD20N1	100	20 V <sub>CR</sub> @ 5.0 A
DS20Q1	DD20Q1	150	20 V <sub>CR</sub> @ 7.5 A
DS20T1	DD20T1	250	20 V <sub>CR</sub> @ 12.5 A
DS20U1	DD20U1	350	20 V <sub>CR</sub> @ 17 A
DS20V1(A)	DD20V1(A)	500	20 V <sub>CR</sub> @ 25 A
DS24L1	DD24L1	50	24 V <sub>CR</sub> @ 2 A
DS24N1	DD24N1	100	24 V <sub>CR</sub> @ 4 A
DS24Q1	DD24Q1	150	24 V <sub>CR</sub> @ 6 A
DS24T1	DD24T1	250	24 V <sub>CR</sub> @ 10 A
DS24U1	DD24U1	350	24 V <sub>CR</sub> @ 14 A
DS24V1(A)	DD24V1(A)	500	24 V <sub>CR</sub> @ 20 A
DS36L1	DD36L1	50	36 V <sub>CR</sub> @ 1.3 A
DS36N1	DD36N1	100	36 V <sub>CR</sub> @ 2.7 A
DS36Q1	DD36Q1	150	36 V <sub>CR</sub> @ 4.1 A
DS36T1	DD36T1	250	36 V <sub>CR</sub> @ 6.9 A
DS36U1	DD36U1	350	36 V <sub>CR</sub> @ 9.7 A
DS36V1(A)	DD36V1(A)	500	36 V <sub>CR</sub> @ 13 A
DS36W1	DD36W1	750	36 V <sub>CR</sub> @ 20 A
DS36X1	DD36X1	1000	36 V <sub>CR</sub> @ 27 A
DS48L1	DD48L1	50	48 V <sub>CR</sub> @ 1.0 A
DS48N1	DD48N1	100	48 V <sub>CR</sub> @ 2.0 A
DS48Q1	DD48Q1	150	48 V <sub>CR</sub> @ 3.1 A
DS48T1	DD48T1	250	48 V <sub>CR</sub> @ 5.2 A
DS48U1	DD48U1	350	48 V <sub>CR</sub> @ 7.2 A
DS48V1(A)	DD48V1(A)	500	48 V <sub>CR</sub> @ 10 A
DS48W1	DD48W1	750	48 V <sub>CR</sub> @ 15 A
DS48X1	DD48X1	1000	48 V <sub>CR</sub> @ 20 A
DS120L1	DD120L1	50	120 V <sub>CR</sub> @ 0.4 A
DS120N1	DD120N1	100	120 V <sub>CR</sub> @ 0.8 A
DS120Q1	DD120Q1	150	120 V <sub>CR</sub> @ 1.2 A
DS120T1	DD120T1	250	120 V <sub>CR</sub> @ 2.0 A
DS120U1	DD120U1	350	120 V <sub>CR</sub> @ 2.9 A
DS120V1(A)	DD120V1(A)	500	120 V <sub>CR</sub> @ 4.1 A
DS120W1	DD120W1	750	120 V <sub>CR</sub> @ 6.2 A
DS120X1	DD120X1	1000	120 V <sub>CR</sub> @ 8.3 A

VA Size	A	B	C	D	E	F	G	lbs
50	3.00	2.38	2.61	2.50	2.00	2.63	.221 x .375	2.3
100	3.00	3.13	2.61	2.50	3.00	3.63	.221 x .375	3.8
150	3.75	2.88	3.23	3.13	2.25	2.88	.221 x .375	4.7
250	4.50	3.38	3.86	3.75	2.50	4.00	.221 x .375	8.0
350	4.50	4.38	3.86	3.75	3.50	5.00	.221 x .375	12.0
500	4.50	5.38	3.86	3.75	4.62	5.75	.281 x .625	17.0
500 (A)	5.25	4.25	4.48	4.38	3.50	4.75	.312 x .687	15.0
750	5.25	5.35	4.48	4.38	4.50	5.75	.312 x .687	20.0
1k	5.25	6.25	4.48	4.38	5.50	6.75	.312 x .687	25.0
3k	8.82	8.50*	6.38	6.25	5.00	6.25	.375 x .750	63.0
5k	9.00	10.0*	8.13	6.00	6.50	7.75	.375 x .687	120.0

All dimensions are in inches \*Add 1.5" per side for copper tabs (on 3 kVA and 5 kVA).

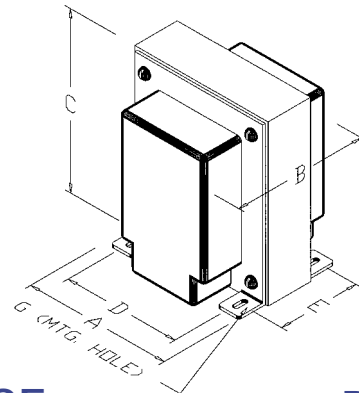


ENCLOSED VERTICAL MOUNTING

- VA size models available from 50 to 800 VA.
- Single or dual primary voltages.
- Lead wire 8" long.
- Class B insulation – 130 °C.

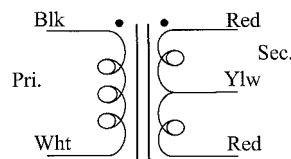
- CSA approved (LR63462) and UL recognized (E193917).
- Center tapped to secondary winding.
- Other primary and secondary voltages available.

Primary		Size VA	Secondary (RMS)
DSE Cat. No 115V 60Hz single (5 LW)	DDE Cat. No 115/230V 50/60Hz dual (7 LW)		
DSE5L1	DDE5L1	40	5 V <sub>cr</sub> @ 8 A
DSE5N1	DDE5N1	80	5 V <sub>cr</sub> @ 16 A
DSE5Q1	DDE5Q1	120	5 V <sub>cr</sub> @ 24 A
DSE6L1	DDE6L1	40	6.3 V <sub>cr</sub> @ 6 A
DSE6N1	DDE6N1	80	6.3 V <sub>cr</sub> @ 12 A
DSE6Q1	DDE6Q1	120	6.3 V <sub>cr</sub> @ 19 A
DSE10L1	DDE10L1	40	10 V <sub>cr</sub> @ 4 A
DSE10N1	DDE10N1	80	10 V <sub>cr</sub> @ 8 A
DSE10Q1	DDE10Q1	120	10 V <sub>cr</sub> @ 12 A
DSE10T1	DDE10T1	200	10 V <sub>cr</sub> @ 20 A
DSE12L1	DDE12L1	40	12.6 V <sub>cr</sub> @ 3 A
DSE12N1	DDE12N1	80	12.6 V <sub>cr</sub> @ 6 A
DSE12Q1	DDE12Q1	120	12.6 V <sub>cr</sub> @ 9 A
DSE12T1	DDE12T1	200	12.6 V <sub>cr</sub> @ 15 A
DSE12U1	DDE12U1	280	12.6 V <sub>cr</sub> @ 22 A
DSE16L1	DDE16L1	40	16 V <sub>cr</sub> @ 2.5 A
DSE16N1	DDE16N1	80	16 V <sub>cr</sub> @ 5 A
DSE16Q1	DDE16Q1	120	16 V <sub>cr</sub> @ 7.5 A
DSE16T1	DDE16T1	200	16 V <sub>cr</sub> @ 12 A
DSE16U1	DDE16U1	280	16 V <sub>cr</sub> @ 17 A
DSE20L1	DDE20L1	40	20 V <sub>cr</sub> @ 2 A
DSE20N1	DDE20N1	80	20 V <sub>cr</sub> @ 4 A
DSE20Q1	DDE20Q1	120	20 V <sub>cr</sub> @ 5 A
DSE20T1	DDE20T1	200	20 V <sub>cr</sub> @ 10 A
DSE20U1	DDE20U1	280	20 V <sub>cr</sub> @ 14 A
DSE20V1(A)	DDE20V1(A)	400	20 V <sub>cr</sub> @ 20 A
DSE24L1	DDE24L1	40	24 V <sub>cr</sub> @ 1.6 A
DSE24N1	DDE24N1	80	24 V <sub>cr</sub> @ 3.3 A
DSE24Q1	DDE24Q1	120	24 V <sub>cr</sub> @ 5.0 A
DSE24T1	DDE24T1	200	24 V <sub>cr</sub> @ 8.3 A
DSE24U1	DDE24U1	280	24 V <sub>cr</sub> @ 11.6 A
DSE24V1(A)	DDE24V1(A)	400	24 V <sub>cr</sub> @ 16 A
DSE36L1	DDE36L1	40	36 V <sub>cr</sub> @ 1.1 A
DSE36N1	DDE36N1	80	36 V <sub>cr</sub> @ 2.2 A
DSE36Q1	DDE36Q1	120	36 V <sub>cr</sub> @ 3.3 A
DSE36T1	DDE36T1	200	36 V <sub>cr</sub> @ 5.5 A
DSE36U1	DDE36U1	280	36 V <sub>cr</sub> @ 7.7 A
DSE36V1(A)	DDE36V1(A)	400	36 V <sub>cr</sub> @ 11 A
DSE36W1	DDE36W1	600	36 V <sub>cr</sub> @ 16 A
DSE36X1	DDE36X1	800	36 V <sub>cr</sub> @ 22 A
DSE48L1	DDE48L1	40	48 V <sub>cr</sub> @ 0.8 A
DSE48N1	DDE48N1	80	48 V <sub>cr</sub> @ 1.6 A
DSE48Q1	DDE48Q1	120	48 V <sub>cr</sub> @ 2.5 A
DSE48T1	DDE48T1	200	48 V <sub>cr</sub> @ 4.1 A
DSE48U1	DDE48U1	280	48 V <sub>cr</sub> @ 5.8 A
DSE48V1(A)	DDE48V1(A)	400	48 V <sub>cr</sub> @ 8.3 A
DSE48W1	DDE48W1	600	48 V <sub>cr</sub> @ 12 A
DSE48X1	DDE48X1	800	48 V <sub>cr</sub> @ 16 A
DSE120L1	DDE120L1	40	120 V <sub>cr</sub> @ 0.3 A
DSE120N1	DDE120N1	80	120 V <sub>cr</sub> @ 0.6 A
DSE120Q1	DDE120Q1	120	120 V <sub>cr</sub> @ 1.0 A
DSE120T1	DDE120T1	200	120 V <sub>cr</sub> @ 1.6 A
DSE120U1	DDE120U1	280	120 V <sub>cr</sub> @ 2.3 A
DSE120V1(A)	DDE120V1(A)	400	120 V <sub>cr</sub> @ 3.3 A
DSE120W1	DDE120W1	600	120 V <sub>cr</sub> @ 5.0 A
DSE120X1	DDE120X1	800	120 V <sub>cr</sub> @ 6.6 A



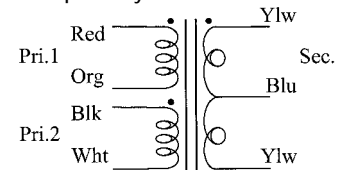
**DSE**

Single primary 115V 60Hz



**DDE**

Dual primary 115/230V 50/60Hz



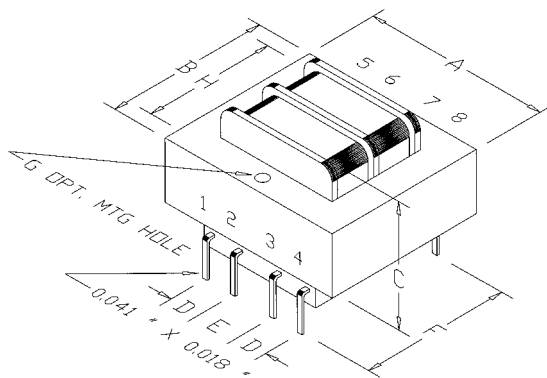
VA Size	A	B	C	D	E	G	lbs
40	2.61	2.87	3.00	2.00	1.69	.203 x .375	2.3
80	2.61	3.62	3.00	2.00	2.44	.203 x .375	3.8
120	3.23	3.62	3.75	2.50	2.19	.203 x .375	4.7
200	3.86	4.00	4.50	3.00	2.81	.203 x .375	8.0
280	3.86	5.00	4.50	3.00	3.81	.203 x .375	12.0
400	3.86	6.00	4.50	3.00	4.81	.203 x .375	17.0
400(A)	4.48	5.12	5.25	3.50	3.50	.281 x .375	15.0
600	4.48	6.12	5.25	3.50	4.50	.281 x .375	20.0
800	4.48	7.12	5.25	3.50	5.50	.281 x .375	25.0

All dimensions are in inches



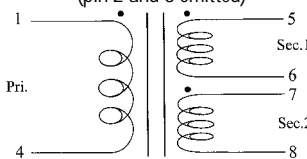
- VA size models available from 1.1 to 36 VA.
- Horizontal mounting, industry std P.C. board layout.
- Split bobbin design.
- Single or dual primary voltages.

- Class B insulation – 130 °C.
- CSA approved (LR63462) and UL recognized (E193917).
- Series/parallel secondary winding on all.
- Other primary and secondary voltages available.



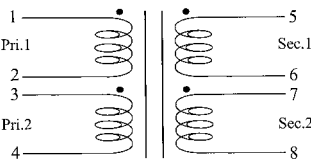
**HS**

Single primary  
115V 50/60Hz  
(pin 2 and 3 omitted)



**HD**

Dual primary  
115/230V 50/60Hz



VA Size	A	B	C	D	E	F	H	lbs
1.1	1.38	1.13	0.94	.25	.25	1.20	-	0.17
2.4	1.38	1.13	1.19	.25	.25	1.20	-	0.25
6.0	1.63	1.31	1.31	.25	.35	1.28	1.06	0.44
12.0	1.88	1.56	1.44	.30	.40	1.41	1.25	0.70
20.0	2.25	1.88	1.44	.30	.40	1.60	1.50	0.80
36.0	2.63	2.19	1.56	.40	.40	1.85	2.19 x 1.75	1.10

All dimensions are in inches 36 VA size has 4 mounting holes in 4 corners.

Primary		Size VA	Secondary (RMS)	
HS Cat. No 115V 50/60Hz single (6 pins)	HD Cat. No 115/230V 50/60Hz dual (8 pins)		Series	Parallel
HS10D2	HD10D2	1.1	10 V <sub>CT</sub> @ .11 A	5 V @ .22 A
HS10E2	HD10E2	2.4	10 V <sub>CT</sub> @ .25 A	5 V @ .50 A
HS10F2	HD10F2	6.0	10 V <sub>CT</sub> @ .60 A	5 V @ 1.2 A
HS10G2	HD10G2	12.0	10 V <sub>CT</sub> @ 1.2 A	5 V @ 2.4 A
HS10H2	HD10H2	20.0	10 V <sub>CT</sub> @ 2.0 A	5 V @ 4.0 A
HS10K2	HD10K2	36.0	10 V <sub>CT</sub> @ 3.6 A	5 V @ 7.2 A
HS12D2	HD12D2	1.1	12.6 V <sub>CT</sub> @ .09 A	6.3 V @ .18 A
HS12E2	HD12E2	2.4	12.6 V <sub>CT</sub> @ .20 A	6.3 V @ .40 A
HS12F2	HD12F2	6.0	12.6 V <sub>CT</sub> @ .50 A	6.3 V @ 1.0 A
HS12G2	HD12G2	12.0	12.6 V <sub>CT</sub> @ 1.0 A	6.3 V @ 2.0 A
HS12H2	HD12H2	20.0	12.6 V <sub>CT</sub> @ 1.6 A	6.3 V @ 3.2 A
HS12K2	HD12K2	36.0	12.6 V <sub>CT</sub> @ 2.85 A	6.3 V @ 5.7 A
HS16D2	HD16D2	1.1	16 V <sub>CT</sub> @ .07 A	8 V @ .14 A
HS16E2	HD16E2	2.4	16 V <sub>CT</sub> @ .15 A	8 V @ .30 A
HS16F2	HD16F2	6.0	16 V <sub>CT</sub> @ .40 A	8 V @ .80 A
HS16G2	HD16G2	12.0	16 V <sub>CT</sub> @ .80 A	8 V @ 1.6 A
HS16H2	HD16H2	20.0	16 V <sub>CT</sub> @ 1.25 A	8 V @ 2.5 A
HS16K2	HD16K2	36.0	16 V <sub>CT</sub> @ 2.25 A	8 V @ 4.5 A
HS20D2	HD20D2	1.1	20 V <sub>CT</sub> @ .055 A	10 V @ .11 A
HS20E2	HD20E2	2.4	20 V <sub>CT</sub> @ .12 A	10 V @ .24 A
HS20F2	HD20F2	6.0	20 V <sub>CT</sub> @ .30 A	10 V @ .60 A
HS20G2	HD20G2	12.0	20 V <sub>CT</sub> @ .60 A	10 V @ 1.2 A
HS20H2	HD20H2	20.0	20 V <sub>CT</sub> @ 1.0 A	10 V @ 2.0 A
HS20K2	HD20K2	36.0	20 V <sub>CT</sub> @ 1.8 A	10 V @ 3.6 A
HS24D2	HD24D2	1.1	24 V <sub>CT</sub> @ .045 A	12 V @ .09 A
HS24E2	HD24E2	2.4	24 V <sub>CT</sub> @ .10 A	12 V @ .20 A
HS24F2	HD24F2	6.0	24 V <sub>CT</sub> @ .25 A	12 V @ .50 A
HS24G2	HD24G2	12.0	24 V <sub>CT</sub> @ .50 A	12 V @ 1.0 A
HS24H2	HD24H2	20.0	24 V <sub>CT</sub> @ .80 A	12 V @ 1.6 A
HS24K2	HD24K2	36.0	24 V <sub>CT</sub> @ 1.5 A	12 V @ 3.0 A
HS28D2	HD28D2	1.1	28 V <sub>CT</sub> @ .04 A	14 V @ .08 A
HS28E2	HD28E2	2.4	28 V <sub>CT</sub> @ .085 A	14 V @ .17 A
HS28F2	HD28F2	6.0	28 V <sub>CT</sub> @ .20 A	14 V @ .40 A
HS28G2	HD28G2	12.0	28 V <sub>CT</sub> @ .42 A	14 V @ .84 A
HS28H2	HD28H2	20.0	28 V <sub>CT</sub> @ .70 A	14 V @ 1.4 A
HS28K2	HD28K2	36.0	28 V <sub>CT</sub> @ 1.3 A	14 V @ 2.6 A
HS36D2	HD36D2	1.1	36 V <sub>CT</sub> @ .03 A	18 V @ .06 A
HS36E2	HD36E2	2.4	36 V <sub>CT</sub> @ .065 A	18 V @ .13 A
HS36F2	HD36F2	6.0	36 V <sub>CT</sub> @ .17 A	18 V @ .34 A
HS36G2	HD36G2	12.0	36 V <sub>CT</sub> @ .35 A	18 V @ .70 A
HS36H2	HD36H2	20.0	36 V <sub>CT</sub> @ .55 A	18 V @ 1.1 A
HS36K2	HD36K2	36.0	36 V <sub>CT</sub> @ 1.0 A	18 V @ 2.0 A
HS48D2	HD48D2	1.1	48 V <sub>CT</sub> @ .023 A	24 V @ .046 A
HS48E2	HD48E2	2.4	48 V <sub>CT</sub> @ .05 A	24 V @ .10 A
HS48F2	HD48F2	6.0	48 V <sub>CT</sub> @ .125 A	24 V @ .25 A
HS48G2	HD48G2	12.0	48 V <sub>CT</sub> @ .25 A	24 V @ .50 A
HS48H2	HD48H2	20.0	48 V <sub>CT</sub> @ .40 A	24 V @ .80 A
HS48K2	HD48K2	36.0	48 V <sub>CT</sub> @ .75 A	24 V @ 1.5 A
HS56D2	HD56D2	1.1	56 V <sub>CT</sub> @ .02 A	28 V @ .04 A
HS56E2	HD56E2	2.4	56 V <sub>CT</sub> @ .045 A	28 V @ .09 A
HS56F2	HD56F2	6.0	56 V <sub>CT</sub> @ .11 A	28 V @ .22 A
HS56G2	HD56G2	12.0	56 V <sub>CT</sub> @ .22 A	28 V @ .44 A
HS56H2	HD56H2	20.0	56 V <sub>CT</sub> @ .35 A	28 V @ .70 A
HS56K2	HD56K2	36.0	56 V <sub>CT</sub> @ .65 A	28 V @ 1.3 A
HS120D2	HD120D2	1.1	120 V <sub>CT</sub> @ .01 A	60 V @ .02 A
HS120E2	HD120E2	2.4	120 V <sub>CT</sub> @ .02 A	60 V @ .04 A
HS120F2	HD120F2	6.0	120 V <sub>CT</sub> @ .05 A	60 V @ .10 A
HS120G2	HD120G2	12.0	120 V <sub>CT</sub> @ .10 A	60 V @ .20 A
HS120H2	HD120H2	20.0	120 V <sub>CT</sub> @ .16 A	60 V @ .32 A
HS120K2	HD120K2	36.0	120 V <sub>CT</sub> @ .30 A	60 V @ .60 A

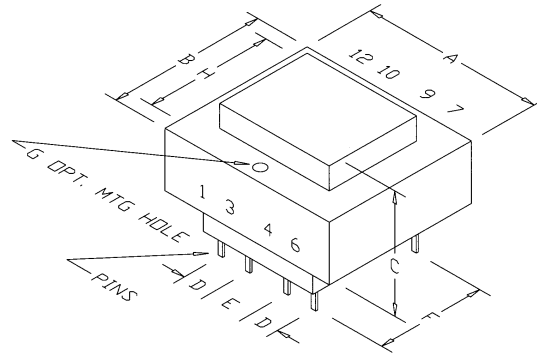


LOW VOLTAGE - HORIZONTAL P.C. MOUNTING - INTERNATIONAL

- VA size models available from 2.5 to 56 VA.
- Horizontal mounting, industry std P.C. board layout.
- Split bobbin with top shroud design.
- Single or dual primary voltages.
- Class F insulation – 155 °C.
- CSA approved (LR63462) and UL recognized (E193917).

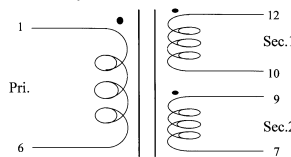
- Series/parallel secondary winding on all.
- Other primary and secondary voltages available.
- High insulation-4000 V between prim. and sec.

Primary		Size VA	Secondary (RMS)	
HSS Cat. No 115V 50/60Hz single (6 pins)	HDS Cat. No 115/230V 50/60Hz dual (8 pins)		Series	Parallel
HSS10E2	HDS10E2	2.5	10 V <sub>Cr</sub> @ .25 A	5 V @ .50 A
HSS10F2	HDS10F2	5.0	10 V <sub>Cr</sub> @ .50 A	5 V @ 1.0 A
HSS10G2	HDS10G2	10.0	10 V <sub>Cr</sub> @ 1.00 A	5 V @ 2.0 A
HSS10H2	HDS10H2	20.0	10 V <sub>Cr</sub> @ 2.00 A	5 V @ 4.0 A
HSS10J2	HDS10J2	30.0	10 V <sub>Cr</sub> @ 3.00 A	5 V @ 6.0 A
HSS10L2	HDS10L2	56.0	10 V <sub>Cr</sub> @ 5.60 A	5 V @ 11.2 A
HSS12E2	HDS12E2	2.5	12.6 V <sub>Cr</sub> @ .20 A	6.3 V @ .40 A
HSS12F2	HDS12F2	5.0	12.6 V <sub>Cr</sub> @ .40 A	6.3 V @ .80 A
HSS12G2	HDS12G2	10.0	12.6 V <sub>Cr</sub> @ .80 A	6.3 V @ 1.60 A
HSS12H2	HDS12H2	20.0	12.6 V <sub>Cr</sub> @ 1.60 A	6.3 V @ 3.20 A
HSS12J2	HDS12J2	30.0	12.6 V <sub>Cr</sub> @ 2.40 A	6.3 V @ 4.80 A
HSS12L2	HDS12L2	56.0	12.6 V <sub>Cr</sub> @ 4.40 A	6.3 V @ 8.80 A
HSS16E2	HDS16E2	2.5	16 V <sub>Cr</sub> @ .15 A	8 V @ .30 A
HSS16F2	HDS16F2	5.0	16 V <sub>Cr</sub> @ .31 A	8 V @ .62 A
HSS16G2	HDS16G2	10.0	16 V <sub>Cr</sub> @ .62 A	8 V @ 1.25 A
HSS16H2	HDS16H2	20.0	16 V <sub>Cr</sub> @ 1.25 A	8 V @ 2.50 A
HSS16J2	HDS16J2	30.0	16 V <sub>Cr</sub> @ 1.90 A	8 V @ 3.80 A
HSS16L2	HDS16L2	56.0	16 V <sub>Cr</sub> @ 3.50 A	8 V @ 7.00 A
HSS20E2	HDS20E2	2.5	20 V <sub>Cr</sub> @ .12 A	10 V @ .24 A
HSS20F2	HDS20F2	5.0	20 V <sub>Cr</sub> @ .25 A	10 V @ .50 A
HSS20G2	HDS20G2	10.0	20 V <sub>Cr</sub> @ .50 A	10 V @ 1.00 A
HSS20H2	HDS20H2	20.0	20 V <sub>Cr</sub> @ 1.00 A	10 V @ 2.00 A
HSS20J2	HDS20J2	30.0	20 V <sub>Cr</sub> @ 1.50 A	10 V @ 3.00 A
HSS20L2	HDS20L2	56.0	20 V <sub>Cr</sub> @ 2.80 A	10 V @ 5.60 A
HSS24E2	HDS24E2	2.5	24 V <sub>Cr</sub> @ .10 A	12 V @ .20 A
HSS24F2	HDS24F2	5.0	24 V <sub>Cr</sub> @ .21 A	12 V @ .42 A
HSS24G2	HDS24G2	10.0	24 V <sub>Cr</sub> @ .42 A	12 V @ .84 A
HSS24H2	HDS24H2	20.0	24 V <sub>Cr</sub> @ .83 A	12 V @ 1.66 A
HSS24J2	HDS24J2	30.0	24 V <sub>Cr</sub> @ 1.25 A	12 V @ 2.50 A
HSS24L2	HDS24L2	56.0	24 V <sub>Cr</sub> @ 2.33 A	12 V @ 4.66 A
HSS28E2	HDS28E2	2.5	28 V <sub>Cr</sub> @ .09 A	14 V @ .18 A
HSS28F2	HDS28F2	5.0	28 V <sub>Cr</sub> @ .18 A	14 V @ .36 A
HSS28G2	HDS28G2	10.0	28 V <sub>Cr</sub> @ .36 A	14 V @ .72 A
HSS28H2	HDS28H2	20.0	28 V <sub>Cr</sub> @ .72 A	14 V @ 1.44 A
HSS28J2	HDS28J2	30.0	28 V <sub>Cr</sub> @ 1.06 A	14 V @ 2.12 A
HSS28L2	HDS28L2	56.0	28 V <sub>Cr</sub> @ 2.00 A	14 V @ 4.00 A
HSS36E2	HDS36E2	2.5	36 V <sub>Cr</sub> @ .07 A	18 V @ .14 A
HSS36F2	HDS36F2	5.0	36 V <sub>Cr</sub> @ .14 A	18 V @ .28 A
HSS36G2	HDS36G2	10.0	36 V <sub>Cr</sub> @ .28 A	18 V @ .56 A
HSS36H2	HDS36H2	20.0	36 V <sub>Cr</sub> @ .56 A	18 V @ 1.12 A
HSS36J2	HDS36J2	30.0	36 V <sub>Cr</sub> @ .82 A	18 V @ 1.64 A
HSS36L2	HDS36L2	56.0	36 V <sub>Cr</sub> @ 1.56 A	18 V @ 3.12 A



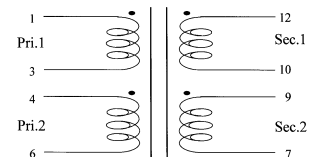
**HSS**

Single primary  
115V 50/60Hz  
(pin 3 and 4 omitted)



**HDS**

Dual primary  
115/230V 50/60Hz

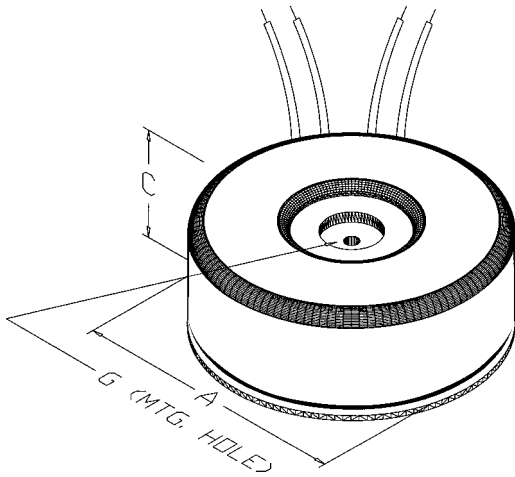


VA Size	A	B	C	D	E	F	Pin Dim	H	G Mtg. Screw	lbs
2.5	1.63	1.31	1.13	.20	.25	1.00	.025 sq.	1.06	2 x #4	0.25
5.0	1.63	1.31	1.38	.20	.40	1.00	.025 sq.	1.06	2 x #4	0.37
10.0	1.88	1.56	1.38	.20	.40	1.14	.038 sq.	1.25	2 x #4	0.53
20.0	2.25	1.88	1.63	.40	.40	1.46	.038 sq.	1.50	2 x #4	0.90
30.0	2.63	2.19	1.56	.55	.28	1.68	.045 sq.	1.75 x 2.18	4 x #6	1.15
56.0	3.00	2.50	1.81	.60	.30	1.90	.045 sq.	2.00 x 2.50	4 x #6	1.70

All dimensions are in inches 30 VA and 56 VA size has 4 mounting holes in 4 corners.

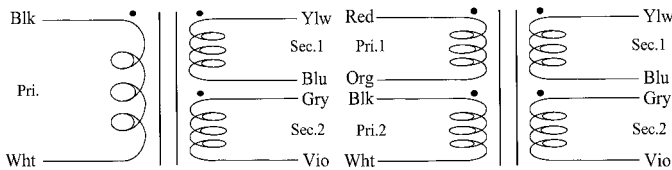


- VA size models available from 15 to 2000 VA.
- Single or dual primary voltages.
- Standard class B (130 °C) insulation.
- CSA approved (LR63462) and UL recognized (E193917).
- Also available Class F (155 °C) or H (180 °C).
- Series/parallel secondary winding on all.
- Other primary and secondary voltages available.



**TS**  
Single primary  
115V 60Hz

**TD**  
Dual primary  
115/230V 50/60Hz



Mounting hardware for 300 VA and less consists of :

- 1 metal disk
- 2 neoprenes
- 1 bolt, nut and flat washer

500 VA and more are centered epoxy and are sold with :

- 1 neoprene
- 1 bolt, nut and flat washer

Primary		Size VA	Secondary (RMS)	
TS Cat. No 115V 60Hz single (6 LW)	TD Cat. No 115/230V 50/60Hz dual (8 LW)		Series	Parallel
TS12G2	TD12G2	15	12.6 V <sub>Cr</sub> @ 1.2 A	6.3 V @ 2.4 A
TS12J2	TD12J2	30	12.6 V <sub>Cr</sub> @ 2.4 A	6.3 V @ 4.8 A
TS16G2	TD16G2	15	16 V <sub>Cr</sub> @ .94 A	8 V @ 1.9 A
TS16J2	TD16J2	30	16 V <sub>Cr</sub> @ 1.9 A	8 V @ 3.8 A
TS16L2	TD16L2	50	16 V <sub>Cr</sub> @ 3.2 A	8 V @ 6.4 A
TS20G2	TD20G2	15	20 V <sub>Cr</sub> @ .75 A	10 V @ 1.5 A
TS20J2	TD20J2	30	20 V <sub>Cr</sub> @ 1.5 A	10 V @ 3.0 A
TS20L2	TD20L2	50	20 V <sub>Cr</sub> @ 2.5 A	10 V @ 5.0 A
TS20N2	TD20N2	90	20 V <sub>Cr</sub> @ 4.5 A	10 V @ 9.0 A
TS24J2	TD24J2	30	24 V <sub>Cr</sub> @ 1.3 A	12 V @ 2.6 A
TS24L2	TD24L2	50	24 V <sub>Cr</sub> @ 2.1 A	12 V @ 4.2 A
TS24N2	TD24N2	90	24 V <sub>Cr</sub> @ 3.8 A	12 V @ 7.6 A
TS24P2	TD24P2	120	24 V <sub>Cr</sub> @ 5.0 A	12 V @ 10 A
TS30G2	TD30G2	15	30 V <sub>Cr</sub> @ .50 A	15 V @ 1.0 A
TS30J2	TD30J2	30	30 V <sub>Cr</sub> @ 1.0 A	15 V @ 2.0 A
TS30L2	TD30L2	50	30 V <sub>Cr</sub> @ 1.7 A	15 V @ 3.4 A
TS30N2	TD30N2	90	30 V <sub>Cr</sub> @ 3.0 A	15 V @ 6.0 A
TS30P2	TD30P2	120	30 V <sub>Cr</sub> @ 4.0 A	15 V @ 8.0 A
TS40J2	TD40J2	30	40 V <sub>Cr</sub> @ .75 A	20 V @ 1.5 A
TS40L2	TD40L2	50	40 V <sub>Cr</sub> @ 1.3 A	20 V @ 2.6 A
TS40N2	TD40N2	90	40 V <sub>Cr</sub> @ 2.3 A	20 V @ 4.6 A
TS40P2	TD40P2	120	40 V <sub>Cr</sub> @ 3.0 A	20 V @ 6.0 A
TS40Q2	TD40Q2	160	40 V <sub>Cr</sub> @ 4.0 A	20 V @ 8.0 A
TS40T2	TD40T2	225	40 V <sub>Cr</sub> @ 5.6 A	20 V @ 11 A
TS50L2	TD50L2	50	50 V <sub>Cr</sub> @ 1.0 A	25 V @ 2.0 A
TS50N2	TD50N2	90	50 V <sub>Cr</sub> @ 1.8 A	25 V @ 3.6 A
TS50P2	TD50P2	120	50 V <sub>Cr</sub> @ 2.4 A	25 V @ 4.8 A
TS50Q2	TD50Q2	160	50 V <sub>Cr</sub> @ 3.2 A	25 V @ 6.4 A
TS50T2	TD50T2	225	50 V <sub>Cr</sub> @ 4.5 A	25 V @ 9.0 A
TS50U2	TD50U2	300	50 V <sub>Cr</sub> @ 6.0 A	25 V @ 12 A
TS56V2	TD56V2	500	56 V <sub>Cr</sub> @ 9.0 A	28 V @ 18 A
TS70N2	TD70N2	90	70 V <sub>Cr</sub> @ 1.3 A	35 V @ 2.6 A
TS70P2	TD70P2	120	70 V <sub>Cr</sub> @ 1.7 A	35 V @ 3.4 A
TS70Q2	TD70Q2	160	70 V <sub>Cr</sub> @ 2.3 A	35 V @ 4.6 A
TS70T2	TD70T2	225	70 V <sub>Cr</sub> @ 3.2 A	35 V @ 6.4 A
TS70U2	TD70U2	300	70 V <sub>Cr</sub> @ 4.3 A	35 V @ 8.6 A
TS70V2	TD70V2	500	70 V <sub>Cr</sub> @ 7.2 A	35 V @ 14 A
TS90U2	TD90U2	300	90 V <sub>Cr</sub> @ 3.3 A	45 V @ 6.6 A
TS90V2	TD90V2	500	90 V <sub>Cr</sub> @ 5.6 A	45 V @ 11 A
TS110V2	TD110V2	500	110 V <sub>Cr</sub> @ 4.6 A	55 V @ 9.1 A
TS240N2	TD240N2	90	240 V <sub>Cr</sub> @ .38 A	120 V @ .76 A
TS240P2	TD240P2	120	240 V <sub>Cr</sub> @ .50 A	120 V @ 1.0 A
TS240Q2	TD240Q2	160	240 V <sub>Cr</sub> @ .67 A	120 V @ 1.3 A
TS240T2	TD240T2	225	240 V <sub>Cr</sub> @ .94 A	120 V @ 1.9 A

VA Size	A	C	G	lbs
15	2.60	1.31	0.19	0.9
30	2.88	1.55	0.19	1.3
50	3.39	1.68	0.28	2.0
90	3.66	1.92	0.28	2.8
120	4.13	1.95	0.31	3.7
160	4.13	2.19	0.31	4.5
225	4.61	2.27	0.31	5.5
300	4.72	2.73	0.31	6.5
500	5.51	2.68	0.44	11.0
750	6.10	3.25	0.44	15.0
1000	6.50	3.50	0.44	18.0
1500	7.09	3.68	0.56	25.0
2000	7.68	3.89	0.56	30.0

All dimensions are in inches

Dim. C includes hardware.



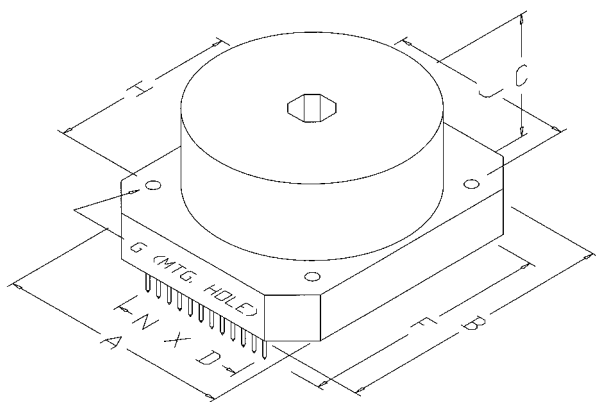
## TOROID FOR MEDICAL EQUIPMENT

- Magnetic shielding.
- Low leakage current and interwinding capacitance.
- Can be supplied with thermal protection.
- Protective earth conductor or double reinforced insulation.



## HORIZONTAL P.C. MOUNTING TOROIDAL

- Toroidal power transformers from 20 VA to 160 VA.
- Fully encapsulated.
- Insulation class B (130 °C).
- Input and output to meet your requirements.



Size VA	A	B	C	D	F	G	H	J	N	Lbs
20	2.49	3.15	1.71	0.20	2.76	0.14	1.97	1.97	5	1.3
40	2.89	3.56	1.71	0.20	3.15	0.14	2.37	2.37	7	2.0
60	3.29	3.94	1.71	0.20	3.55	0.14	2.76	2.76	9	2.6
120	3.68	4.34	1.99	0.20	3.94	0.14	3.15	3.15	11	3.9
160	4.07	4.74	2.19	0.20	4.33	0.14	3.55	3.55	13	4.7

All dimensions are in inches.

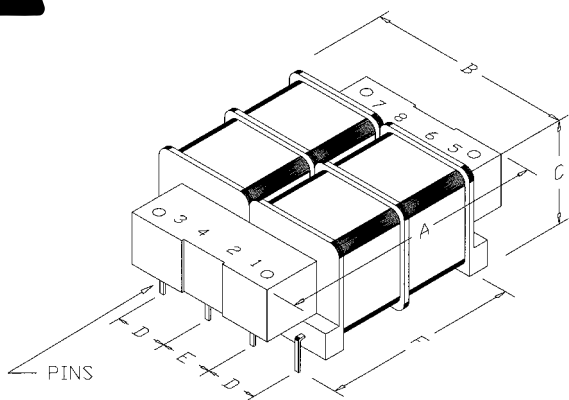
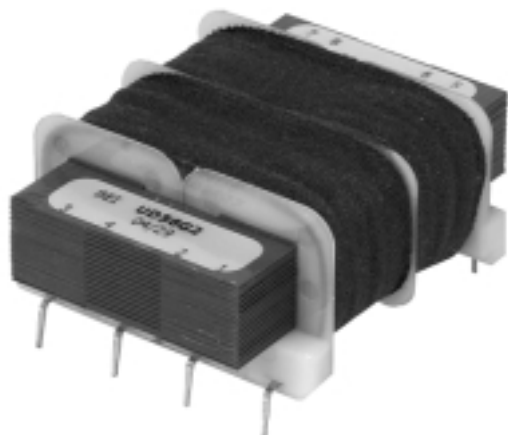
N equals the maximum number of spaces between pins.

## AUTOTRANSFORMERS

- Designed to your specifications.
- Insulation class B (130 °C).
- Input and output to meet your requirements.

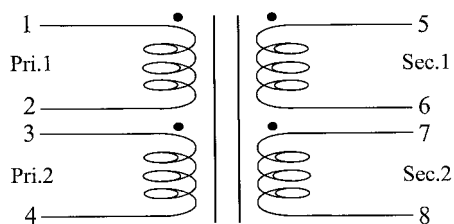


- VA size models available from 2 to 48 VA.
- Industry standard P.C. board layout.
- Split bobbin design.
- Dual primary voltages.
- Class B insulation – 130 °C.
- CSA approved (LR63462) and UL recognized (E193917).
- Series/parallel secondary winding on all.
- Other primary and secondary voltages available.



**DUAL PRIMARY**

115/230V 50/60Hz



Primary UD Cat. No 115/230V 50/60Hz dual (8 pins)	Size VA	Secondary (RMS)	
		Series	Parallel
UD10E2	2	10 V <sub>CT</sub> @ .25 A	5 V @ .50 A
UD10F2	6	10 V <sub>CT</sub> @ .60 A	5 V @ 1.2 A
UD10G2	12	10 V <sub>CT</sub> @ 1.2 A	5 V @ 2.4 A
UD10H2	24	10 V <sub>CT</sub> @ 2.4 A	5 V @ 4.8 A
UD10L2	48	10 V <sub>CT</sub> @ 4.8 A	5 V @ 9.6 A
UD12E2	2	12.6 V <sub>CT</sub> @ .20 A	6.3 V @ .40 A
UD12F2	6	12.6 V <sub>CT</sub> @ .45 A	6.3 V @ .90 A
UD12G2	12	12.6 V <sub>CT</sub> @ .90 A	6.3 V @ 1.8 A
UD12H2	24	12.6 V <sub>CT</sub> @ 1.9 A	6.3 V @ 3.8 A
UD12L2	48	12.6 V <sub>CT</sub> @ 3.8 A	6.3 V @ 7.6 A
UD16E2	2	16 V <sub>CT</sub> @ .15 A	8 V @ .30 A
UD16F2	6	16 V <sub>CT</sub> @ .35 A	8 V @ .70 A
UD16G2	12	16 V <sub>CT</sub> @ .70 A	8 V @ 1.4 A
UD16H2	24	16 V <sub>CT</sub> @ 1.5 A	8 V @ 3.0 A
UD16L2	48	16 V <sub>CT</sub> @ 3.0 A	8 V @ 6.0 A
UD20E2	2	20 V <sub>CT</sub> @ .125 A	10 V @ .25 A
UD20F2	6	20 V <sub>CT</sub> @ .30 A	10 V @ .60 A
UD20G2	12	20 V <sub>CT</sub> @ .60 A	10 V @ 1.2 A
UD20H2	24	20 V <sub>CT</sub> @ 1.2 A	10 V @ 2.4 A
UD20L2	48	20 V <sub>CT</sub> @ 2.4 A	10 V @ 4.8 A
UD24E2	2	24 V <sub>CT</sub> @ .10 A	12 V @ .20 A
UD24F2	6	24 V <sub>CT</sub> @ .25 A	12 V @ .50 A
UD24G2	12	24 V <sub>CT</sub> @ .50 A	12 V @ 1.0 A
UD24H2	24	24 V <sub>CT</sub> @ 1.0 A	12 V @ 2.0 A
UD24L2	48	24 V <sub>CT</sub> @ 2.0 A	12 V @ 4.0 A
UD30E2	2	30 V <sub>CT</sub> @ .085 A	15 V @ .17 A
UD30F2	6	30 V <sub>CT</sub> @ .20 A	15 V @ .40 A
UD30G2	12	30 V <sub>CT</sub> @ .40 A	15 V @ .80 A
UD30H2	24	30 V <sub>CT</sub> @ .80 A	15 V @ 1.6 A
UD30L2	48	30 V <sub>CT</sub> @ 1.6 A	15 V @ 3.2 A
UD34E2	2	34 V <sub>CT</sub> @ .075 A	17 V @ .15 A
UD34F2	6	34 V <sub>CT</sub> @ .17 A	17 V @ .34 A
UD34G2	12	34 V <sub>CT</sub> @ .34 A	17 V @ .68 A
UD34H2	24	34 V <sub>CT</sub> @ .70 A	17 V @ 1.4 A
UD34L2	48	34 V <sub>CT</sub> @ 1.4 A	17 V @ 2.8 A
UD40E2	2	40 V <sub>CT</sub> @ .06 A	20 V @ .12 A
UD40F2	6	40 V <sub>CT</sub> @ .15 A	20 V @ .30 A
UD40G2	12	40 V <sub>CT</sub> @ .30 A	20 V @ .60 A
UD40H2	24	40 V <sub>CT</sub> @ .60 A	20 V @ 1.2 A
UD40L2	48	40 V <sub>CT</sub> @ 1.2 A	20 V @ 2.4 A
UD56E2	2	56 V <sub>CT</sub> @ .045 A	28 V @ .09 A
UD56F2	6	56 V <sub>CT</sub> @ .10 A	28 V @ .20 A
UD56G2	12	56 V <sub>CT</sub> @ .20 A	28 V @ .40 A
UD56H2	24	56 V <sub>CT</sub> @ .45 A	28 V @ .85 A
UD56L2	48	56 V <sub>CT</sub> @ .85 A	28 V @ 1.7 A
UD88E2	2	88 V <sub>CT</sub> @ .028 A	44 V @ .056 A
UD88F2	6	88 V <sub>CT</sub> @ .065 A	44 V @ .130 A
UD88G2	12	88 V <sub>CT</sub> @ .130 A	44 V @ .260 A
UD120E2	2	120 V <sub>CT</sub> @ .020 A	60 V @ .040 A
UD120F2	6	120 V <sub>CT</sub> @ .050 A	60 V @ .100 A
UD120G2	12	120 V <sub>CT</sub> @ .100 A	60 V @ .200 A
UD230E2	2	230 V <sub>CT</sub> @ .010 A	115 V @ .020 A
UD230F2	6	230 V <sub>CT</sub> @ .025 A	115 V @ .050 A
UD230G2	12	230 V <sub>CT</sub> @ .050 A	115 V @ .100 A

VA Size	P.C. Card Spacing	A	B	C	D	E	F	Pins	lbs
2	0.75	1.88	1.56	0.65	0.38	0.38	1.60	0.041 x 0.018	0.32
6	1.00	1.88	1.56	0.85	0.38	0.38	1.60	0.041 x 0.018	0.44
12	1.25	2.50	2.00	1.07	0.50	0.50	2.00	0.041 x 0.018	0.69
24	1.50	2.87	2.25	1.25	0.60	0.53	1.90	0.040 sq	0.94
48	1.50	3.12	2.50	1.38	0.60	0.66	2.18	0.040 sq	1.31

All dimensions are in inches

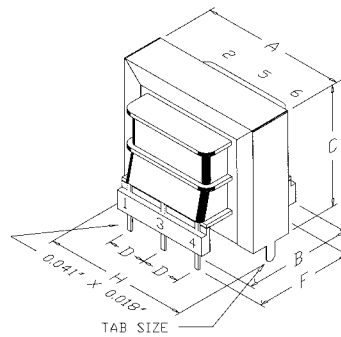


LOW VOLTAGE - VERTICAL P.C. MOUNTING

- VA size models available from 0.5 to 24 VA.
- Vertical mounting, industry std P.C. board layout.
- Split bobbin design on most models.
- Single or dual primary voltages.

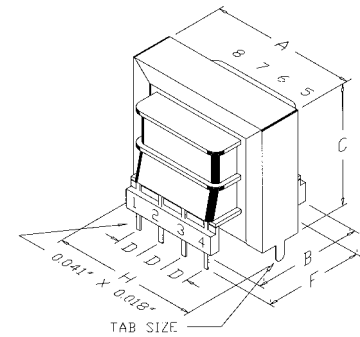
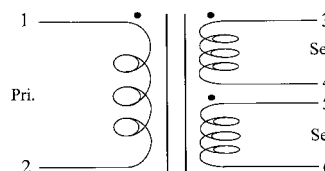
- Class B insulation – 130 °C.
- CSA approved (LR63462) and UL recognized (E193917).
- Series/parallel secondary winding on all.
- Other primary and secondary voltages available.

Primary		Size VA	Secondary (RMS)	
VS Cat. No 115V 60Hz single (6 pins)	VD Cat. No 115/230V 50/60Hz dual (8 pins)		Series	Parallel
VS10C2	-	0.5	10 Vct @ 50 mA	5 V @ 100 mA
VS10D2	VD10D2	1.0	10 Vct @ 90 mA	5 V @ 180 mA
VS10E2	VD10E2	1.2	10 Vct @ 150 mA	5 V @ 300 mA
VS10F2	VD10F2	4.4	10 Vct @ 500 mA	5 V @ 1.0 A
VS10G2	VD10G2	10.0	10 Vct @ 1.0 A	5 V @ 2.0 A
VS10H2	VD10H2	24.0	10 Vct @ 2.4 A	5 V @ 4.8 A
VS12C2	-	0.5	12.6 Vct @ 40 mA	6.3 V @ 80 mA
VS12D2	VD12D2	1.0	12.6 Vct @ 70 mA	6.3 V @ 140 mA
VS12E2A	VD12E2	1.2	12.6 Vct @ 120 mA	6.3 V @ 240 mA
VS12E2	-	1.2	12.6 Vct @ 250 mA	6.3 V @ 500 mA
VS12F2A	VD12F2	4.4	12.6 Vct @ 350 mA	6.3 V @ 700 mA
VS12F2	-	4.4	12.6 Vct @ 500 mA	6.3 V @ 1.0 A
VS12G2	VD12G2	10.0	12.6 Vct @ 800 mA	6.3 V @ 1.6 A
VS12H2	VD12H2	24.0	12.6 Vct @ 2.0 A	6.3 V @ 4.0 A
VS16C2	-	0.5	16 Vct @ 31 mA	8 V @ 62 mA
VS16D2	VD16D2	1.0	16 Vct @ 55 mA	8 V @ 110 mA
VS16E2A	VD16E2	1.2	16 Vct @ 90 mA	8 V @ 180 mA
VS16E2	-	1.2	16 Vct @ 180 mA	8 V @ 360 mA
VS16F2	VD16F2	4.4	16 Vct @ 300 mA	8 V @ 600 mA
VS16G2	VD16G2	10.0	16 Vct @ 640 mA	8 V @ 1.2 A
VS16H2	VD16H2	24.0	16 Vct @ 1.5 A	8 V @ 3.0 A
VS20D2	VD20D2	1.0	20 Vct @ 45 mA	10 V @ 90 mA
VS20E2A	VD20E2	1.2	20 Vct @ 80 mA	10 V @ 160 mA
VS20E2	-	1.2	20 Vct @ 150 mA	10 V @ 300 mA
VS20F2A	VD20F2	4.4	20 Vct @ 220 mA	10 V @ 440 mA
VS20F2	-	4.4	20 Vct @ 300 mA	10 V @ 600 mA
VS20G2	VD20G2	10.0	20 Vct @ 500 mA	10 V @ 1.0 A
VS20H2	VD20H2	24.0	20 Vct @ 1.2 A	10 V @ 2.4 A
VS24D2	VD24D2	1.0	24 Vct @ 35 mA	12 V @ 70 mA
VS24E2	VD24E2	1.2	24 Vct @ 60 mA	12 V @ 120 mA
VS24F2	VD24F2	4.4	24 Vct @ 180 mA	12 V @ 360 mA
VS24G2	VD24G2	10.0	24 Vct @ 450 mA	12 V @ 900 mA
VS24H2	VD24H2	24.0	24 Vct @ 1.0 A	12 V @ 2.0 A
VS28D2	VD28D2	1.0	28 Vct @ 30 mA	14 V @ 60 mA
VS28E2	VD28E2	1.2	28 Vct @ 50 mA	14 V @ 100 mA
VS28F2	VD28F2	4.4	28 Vct @ 160 mA	14 V @ 320 mA
VS28G2	VD28G2	10.0	28 Vct @ 360 mA	14 V @ 720 mA
VS28H2	VD28H2	24.0	28 Vct @ 800 mA	14 V @ 1.6 A
VS34D2	VD34D2	1.0	34 Vct @ 25 mA	17 V @ 50 mA
VS34E2	VD34E2	1.2	34 Vct @ 35 mA	17 V @ 70 mA
VS34F2	VD34F2	4.4	34 Vct @ 125 mA	17 V @ 250 mA
VS34G2	VD34G2	10.0	34 Vct @ 300 mA	17 V @ 600 mA
VS34H2	VD34H2	24.0	34 Vct @ 700 mA	17 V @ 1.4 A
VS40D2	VD40D2	1.0	40 Vct @ 20 mA	20 V @ 40 mA
VS40E2	VD40E2	1.2	40 Vct @ 30 mA	20 V @ 60 mA
VS40F2	VD40F2	4.4	40 Vct @ 110 mA	20 V @ 220 mA
VS40G2	VD40G2	10.0	40 Vct @ 250 mA	20 V @ 500 mA
VS40H2	VD40H2	24.0	40 Vct @ 600 mA	20 V @ 1.2 A
VS56D2	VD56D2	1.0	56 Vct @ 15 mA	28 V @ 30 mA
VS56E2	VD56E2	1.2	56 Vct @ 20 mA	28 V @ 40 mA
VS56F2	VD56F2	4.4	56 Vct @ 80 mA	28 V @ 160 mA
VS56G2	VD56G2	10.0	56 Vct @ 180 mA	28 V @ 360 mA
VS56H2	VD56H2	24.0	56 Vct @ 420 mA	28 V @ 840 mA
VS120D2	VD120D2	1.0	120 Vct @ 8 mA	60 V @ 16 mA
VS120E2	VD120E2	1.2	120 Vct @ 10 mA	60 V @ 20 mA
VS120F2	VD120F2	4.4	120 Vct @ 35 mA	60 V @ 70 mA
VS120G2	VD120G2	10.0	120 Vct @ 85 mA	60 V @ 170 mA
VS120H2	VD120H2	24.0	120 Vct @ 200 mA	60 V @ 400 mA



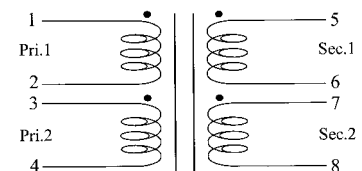
VS

Single primary 115V 60Hz



VD

Dual primary 115/230V 50/60Hz



VA Size	A	B	C	D		F	H	Tab	lbs
				VS	VD				
0.5	1.00	0.94	0.84	0.20	-	0.78	-	-	.06
1.0	1.00	1.38	0.83	0.25	0.20	1.20	-	-	.15
1.2	1.38	1.19	1.22	0.31	0.20	1.00	-	-	.19
4.4	1.69	1.25	1.45	0.40	0.25	1.10	1.67	.125 x .030	.31
10.0	1.94	1.44	1.69	0.40	0.25	1.30	1.92	.188 x .030	.56
24.0	1.63	2.25	1.38	0.40	0.25	2.10	-	-	.75

All dimensions are in inches

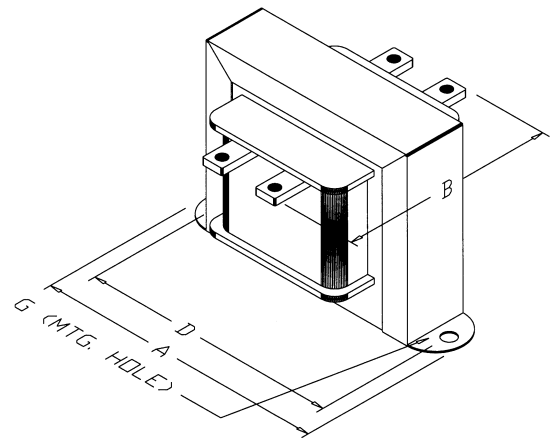
- VA size models available from 25 to 75 VA.
- Economical channel mounting.
- Class B insulation – 130 °C.
- CSA approved (LR63462) and UL listed (E193917).
- Screw type terminals standard.



LISTED  
3RA0

VA Size	A	* B	C	D	lbs
25	3.25	2.00	2.00	2.81	1.1
50	3.69	2.30	2.26	3.13	1.7
75	4.00	2.75	2.57	3.56	2.8

All dimensions are in inches\* Dimension 'B' includes terminals.



The following table contains the most popular models.

Primary Volts	Secondary Volts	25 VA	50 VA	75 VA
120/240	12/24	B25DR	B50DR	B75DR
	120/240	B25DD	B50DD	B75DD
347	12/24	B25FR	B50FR	B75FR
	120/240	B25FD	B50FD	B75FD
240/480	12/24	B25LR	B50LR	B75LR
	120/240	B25LD	B50LD	B75LD
600	12/24	B25KR	B50KR	B75KR
	120/240	B25KD	B50KD	B75KD

Other primary voltages available.  
Other terminations available.



HORIZONTAL PLATE OR BRACKET MOUNTING

- VA size models available from 100 VA to 5000 VA.
- Class B (130 °C) and F (155 °C) insulation system.
- CSA approved (LR63462) and UL listed (E193917).
- Screw type terminals std on primary and low current secondary.
- Copper tab lug with hole on high current secondary.



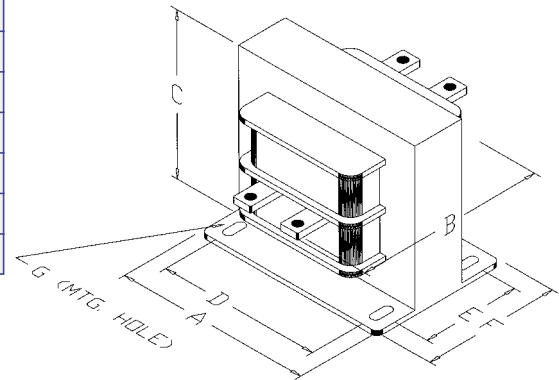
LISTED  
3RA0



VA Size	A	* B	C	D	E	F	G	lbs
100	3.75	4.00	3.23	3.13	3.00	3.63	0.221 x 0.375	4.0
150	3.75	4.25	3.23	3.13	3.00	3.63	0.221 x 0.375	5.0
200	3.75	4.75	3.23	3.13	3.00	3.63	0.221 x 0.375	6.3
250	4.50	5.00	3.86	3.75	3.00	4.50	0.221 x 0.375	8.5
350	4.50	6.00	3.86	3.75	3.50	5.00	0.221 x 0.375	13
500	4.50	7.75	3.86	3.75	4.62	5.75	0.281 x 0.625	18
750	5.25	7.75	4.48	4.38	4.50	5.75	0.312 x 0.687	20
1000	5.25	8.75	4.48	4.38	5.50	6.75	0.312 x 0.687	26
1500	7.50	8.50	6.63	6.75	3.75	5.00	0.375 x 0.687	34
2000	7.50	9.50	6.63	6.75	4.75	6.00	0.375 x 0.687	48
3000	9.00	10.00	8.13	7.50	4.00	5.25	0.375 x 0.687	60
5000	9.00	12.50	8.13	7.50	6.00	7.25	0.375 x 0.687	108

All dimensions are in inches

\* Dimension 'B' includes terminals.



The following tables contains the most popular models.

Pri. Volts	Sec. Volts	100 VA	150 VA	200 VA	250 VA	350 VA	500 VA
120/240	12/24 120/240	B100DR B100DD	B150DR B150DD	B200DR B200DD	B250DR B250DD	B350DR B350DD	B500DR B500DD
347	12/24 120/240	B100FR B100FD	B150FR B150FD	B200FR B200FD	B250FR B250FD	B350FR B350FD	B500FR B500FD
240/480	12/24 120/240/	B100LR B100LD	B150LR B150LD	B200LR B200LD	B250LR B250LD	B350LR B350LD	B500LR B500LD
600	12/24 120/240	B100KR B100KD	B150KR B150KD	B200KR B200KD	B250KR B250KD	B350KR B350KD	B500KR B500KD
Pri. Volts	Sec. Volts	750 VA	1000 VA	1500 VA	2000 VA	3000 VA	5000 VA
120/240	12/24 120/240	B750DR B750DD	B1000DR B1000DD	B1500DR B1500DD	B2000DR B2000DD	B3000DR B3000DD	B5000DR B5000DD
347	12/24 120/240	B750FR B750FD	B1000FR B1000FD	B1500FR B1500FD	B2000FR B2000FD	B3000FR B3000FD	B5000FR B5000FD
240/480	12/24 120/240	B750LR B750LD	B1000LR B1000LD	B1500LR B1500LD	B2000LR B2000LD	B3000LR B3000LD	B5000LR B5000LD
600	12/24 120/240	B750KR B750KD	B1000KR B1000KD	B1500KR B1500KD	B2000KR B2000KD	B3000KR B3000KD	B5000KR B5000KD

Other primary voltages available.  
Other terminations available.  
These transformers can be supplied with enclosed mounting.



Electromagnetic control components demand inrush currents up to 10 times the transformer's nominal rating. While this inrush is occurring, the output side of the transformer must not fall below 85% of nominal as specified by NEMA St. 1, Part 4. Using a transformer that does not meet these ratings may cause erroneous shutdowns or glitches in products downstream.

For proper transformer selection, three characteristics of the load circuit must be determined in addition to the minimum voltage required to operate the circuit. These are total steady state (sealed) VA, total inrush VA, and inrush load power factor.

**A. Total steady state (sealed) VA** is the volt-amperes that the transformer must deliver to the load circuit for an extended period of time.

**B. Total inrush VA** is the volt-amperes that the transformer must deliver upon initial energization of the control circuit. Energization of electromagnetic devices takes 30-50 milliseconds. During this inrush period the electromagnetic control devices draw many times normal current - 3-10 times normal is typical.

**C. Inrush load power factor** is difficult to determine without detailed vector analysis of all the load components. Generally such an analysis is not feasible. Therefore, a safe assumption is 40% power factor. Until recently 20% PF was commonly used for transformer selection, however, tests conducted on major brands of control devices indicate that 40% PF is more accurate.

## Selection

- Determine the supply and load voltages as well as your required frequency (i.e. 60Hz). The supply voltage is the available voltage to the control transformer. The load voltage is the operating voltage of the devices that will be connected to the transformer output.
- Calculate the total sealed VA by adding the VA requirements of all components that will be energized together (timers, contactors, relays, solenoids, pilot lamps, etc.). Sealed VA data is available from the control device manufacturer.
- Add the inrush VA of all components that will be energized together. Be sure to include the sealed VA of components that don't have an inrush, (lamps, timers, etc.) as they present a load to the transformer during maximum inrush.
- Calculate selection inrush VA in one of the following two ways:
 

A. Selection inrush VA = $\sqrt{(VA \text{ sealed})^2 + (VA \text{ inrush})^2}$	}	Method B will result in a slightly oversized transformer
B. Selection inrush VA = (VA sealed) + (VA inrush)		
- If the nominal supply voltage does not fluctuate more than 5%, then reference the 90% secondary voltage column in the Regulation Data Table for the correct VA rating. If the supply voltage varies upwards of 10%, the 95% secondary voltage column should be used to size the transformer. Because contact life may be affected with continuous start-ups at the voltage level, the minimum 85% secondary voltage column should only be used as a reference.
- Using the regulation data tables below, select the appropriate VA rated transformer:
  - With a continuous VA rating that is equal or greater than the value in step 2.
  - With a maximum inrush VA equal to or greater than the value calculated in step 4





Continuous VA Transformer Nameplate Rating	Inrush VA @ 40% Power Factor		
	85% Secondary Voltage	90% Secondary Voltage	95% Secondary Voltage
25	125	100	75
50	210	165	125
75	340	280	200
100	520	410	290
150	1000	805	560
200	1500	1200	800
250	2100	1620	1050
350	2900	2250	1500
500	5000	4000	2600
750	8300	6300	4000
1000	12000	8900	4750

WIRING DIAGRAMS

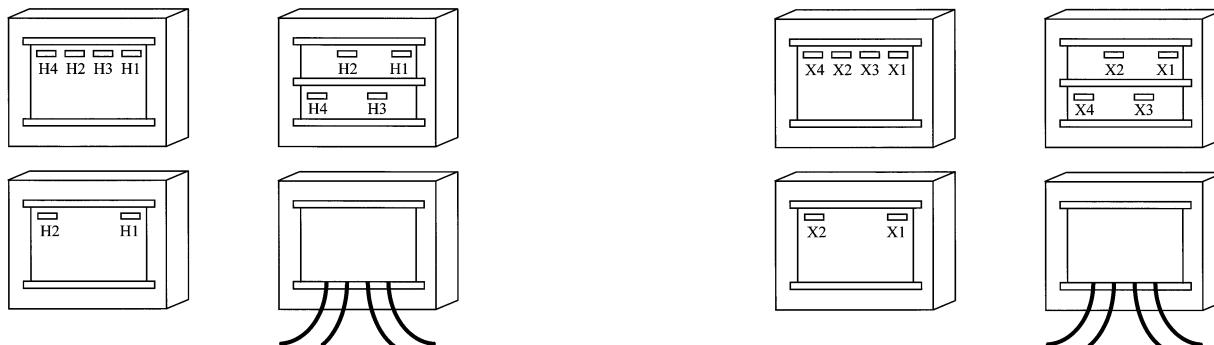
PRIMARY

Type of primary	Desired voltage	Conn type	Install jumper between	Supply lines connected to
120/240V	120V	2	(wht)H1 - H3(org), (blk)H2 - H4(red)	(wht)H1 - H4(red)
	240V	3	(blk)H2 - H3(org)	(wht)H1 - H4(red)
347V	347V	1	-	(org)H1 - H2(org)
240/480V	240V	2	(wht)H1 - H3(brn), (red)H2 - H4(gry)	(wht)H1 - H4(red)
	480V	3	(red)H2 - H3(brn)	(wht)H1 - H4(gry)
600V	600V	1	-	(blu)H1 - H2(blu)

SECONDARY

Type of secondary	Desired voltage	Conn type	Install jumper between	Load lines connected to
12/24V	12V	5	(pur)X1 - X3(blu), (gry)X2 - X4(ylw)	(pur)X1 - X4(ylw)
	24V	6	(gry)X2 - X3(blu)	(pur)X1 - X4(ylw)
120/240V	120V	5	(pur)X1 - X3(blu), (gry)X2 - X4(ylw)	(pur)X1 - X4(ylw)
	240V	6	(gry)X2 - X3(blu)	(pur)X1 - X4(ylw)

CONSTRUCTION TYPES



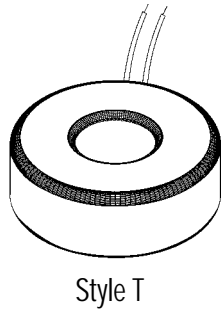
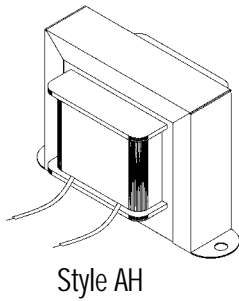
CONNECTION TYPES



No cat.	Volts	Frequency	Lamp power	Fused	Style
BS9X	120	60	9	No	AH
BS13X	120	60	13	No	AH
BS22X	120	60	22	No	AH
BS9F	120	60	9	Yes	AH
BS13F	120	60	13	Yes	AH
BS22F	120	60	22	Yes	AH
BST13X	120	60	13	No	T
BC13X	230	60	13	No	AH
BD13X	230	50	13	No	AH

## FLUORESCENT BALLAST B series

- Reactor type (magnetic).
- Different style : open , enclosed , toroidal.
- For lamps 4 - 48 Watts.
- Available in 120 or 240 Volts, 50 or 60 Hz.

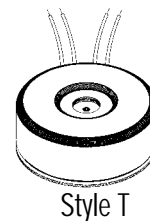
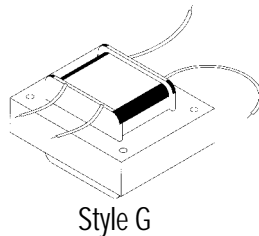
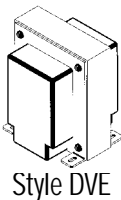
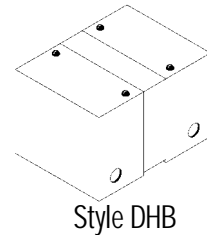
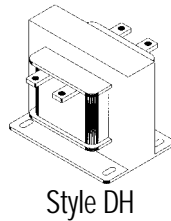
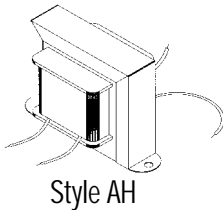


LOW NOISE



## LOW VOLTAGE TRANSFORMERS FOR HALOGEN LIGHTING

- Multiple styles available.
- Insulation class available are A (105 °C), B (130 °C), F (155 °C) or H (180 °C).
- Standard secondary voltage is 12 or 24 Volts.
- 50 W, 75 W, 100 W, 250 W... up to 1000 Watts.
- Available with or without autoreset thermofuse.
- Double insulation model also available.
- Many voltage values available for primary and secondary.





## CURRENT TRANSFORMERS

### MC series

- Working frequency 50/60 Hz.
- To be used in circuit 600 V and lower.
- Screw type terminals.
- Class A insulation – 105 °C.
- CSA approved LR63264.



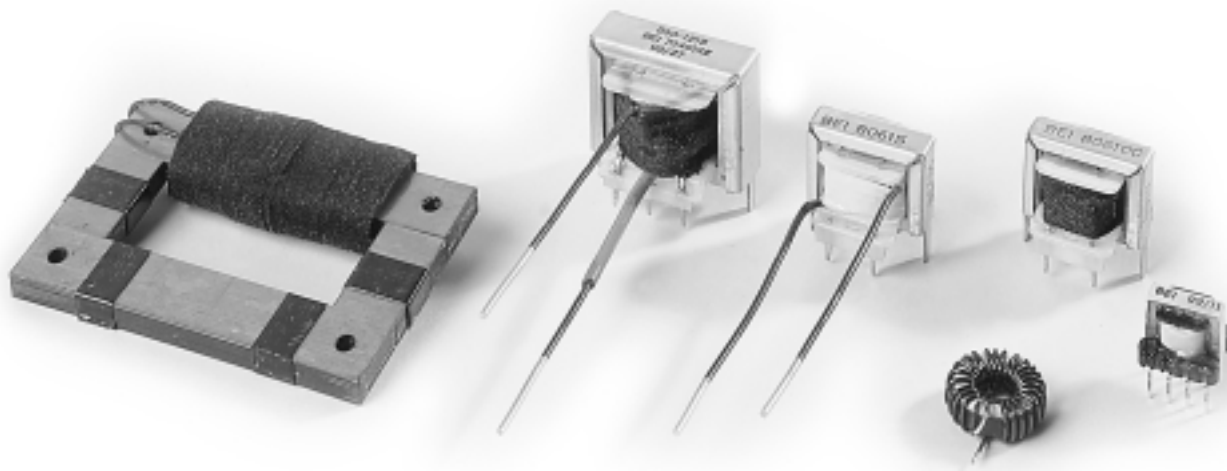
## VOLTAGE TRANSFORMERS

### MV series

- Working frequency 50/60 Hz.
- Primary insulation of 4.0 kV.
- Screw type terminals.
- Class A insulation – 105 °C.
- CSA approved LR63264.



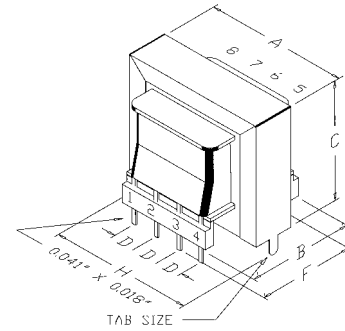
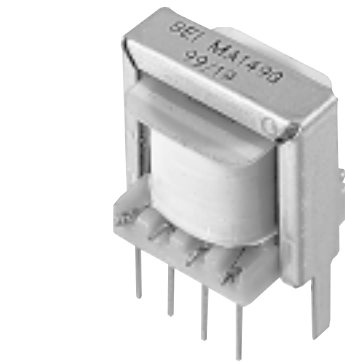
## OTHER TYPES OF MEASUREMENT TRANSFORMERS AVAILABLE



## AUDIO MATCHING

- Economical, light weight (@ 1.0 oz).
- Bifilar wound for balanced capacitive and resistance characteristics.
- Frequency response 200 to 15000 Hz ( $\pm 1$  dB ref.:1 kHz).
- Insertion loss less than 1.5 dB.
- Insulation test 250 Vrms.
- Other values available.

Cat. No.	Application	Nom. Imp.		DCR		Pri. DC mA	Output mW	Volts max.
		Pri.	Sec.	Pri.	Sec.			
MA149C	Driver	160	20/80	24	6.5	56	200	9
MA149E	Driver	300	30/120	41	9.7	42	200	12
MA149F	Driver	450	40/160	52	19.0	33	200	15
MA149G	Driver	600	150/600	92	58.0	29	200	18
MA149H	Driver	1000	60/240	155	24.0	22	200	22
MA149Q	Output	200 ct	3.2	19	0.4	7	1000	11
MA149S	Output	600 ct	150 ct	53	17.0	4	1000	20
MA149T	Output	600 ct	600 ct	53	70.0	4	1000	20
MA149U	Output	150/600	8	53	0.8	4	1000	20
MA149V	Hybrid	600 ct	300/1200	53	63.0	4	1000	20

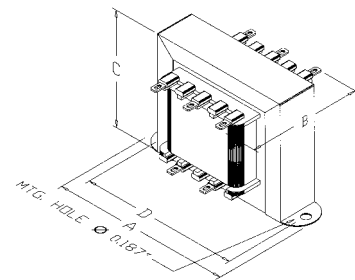


A = 1.06"      F = 0.60"  
 B = 0.82"      H = 1.03"  
 C = 0.82"      Tab = 0.03"x0.12"  
 D = 0.20"

## SPEAKER LINE MATCHING TRANSFORMERS

- 25, 70 or 100 V line input available.
- Output for 3.2, 8, 16 ohms impedance coil.
- Frequency response 100 to 9000 Hz ( $\pm 1$  dB ref.:1 kHz).
- Insertion loss less than 2.0 dB.
- Std solder lug (suitable for slip on jumper connection 0.110") can also be supplied with 0.187" or 0.250" quick connect.
- Combinations of inputs and outputs are available.

Cat. No.	Line Volts	Power Watts	Power taps Watts	Speaker
MA225E	25	4	4,2,1,1/2,1/4	8.0
MA245D	70	2	2,1,1/2,1/4	8.0
MA245E	70	4	4,2,1,1/2,1/4	8.0
MA245F	70	8	8,4,2,1,1/2	8.0
MA242G	70	16	16,8,4,2,1	3.2
MA245G	70	16	16,8,4,2,1	8.0
MA247G	70	16	16,8,4,2,1	16.0
MA245J	70	32	32,16,8,4,2	8.0
MA265F	100	8	8,4,2,1,1/2	8.0



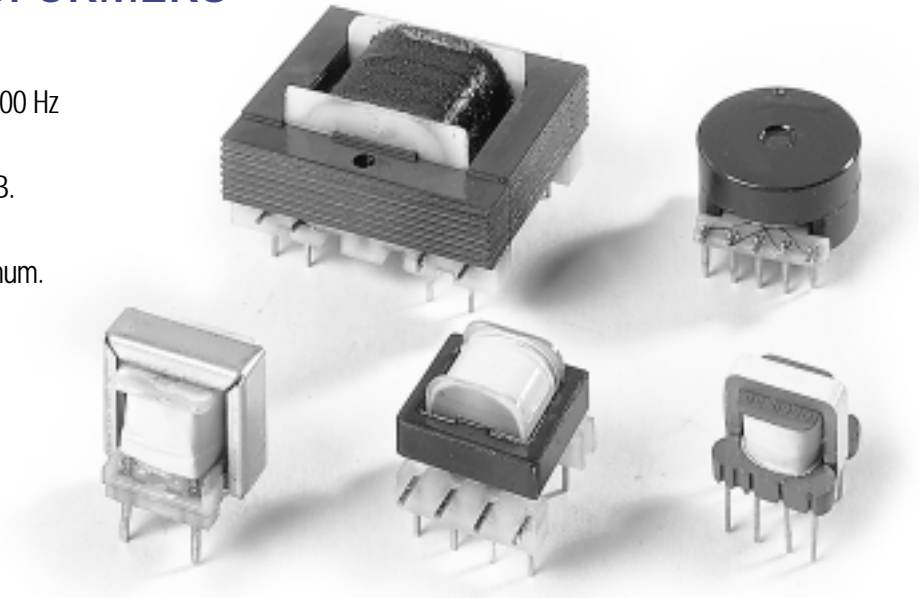
Power	A	B	C	D	lbs
2	2.38	1.38	1.38	2.00	0.35
4	2.81	1.50	1.69	2.38	0.58
8	3.25	1.75	2.00	2.81	0.83
16	3.69	2.00	2.31	3.13	1.5
32	4.03	2.25	2.63	3.56	2.2

All dimensions are in inches



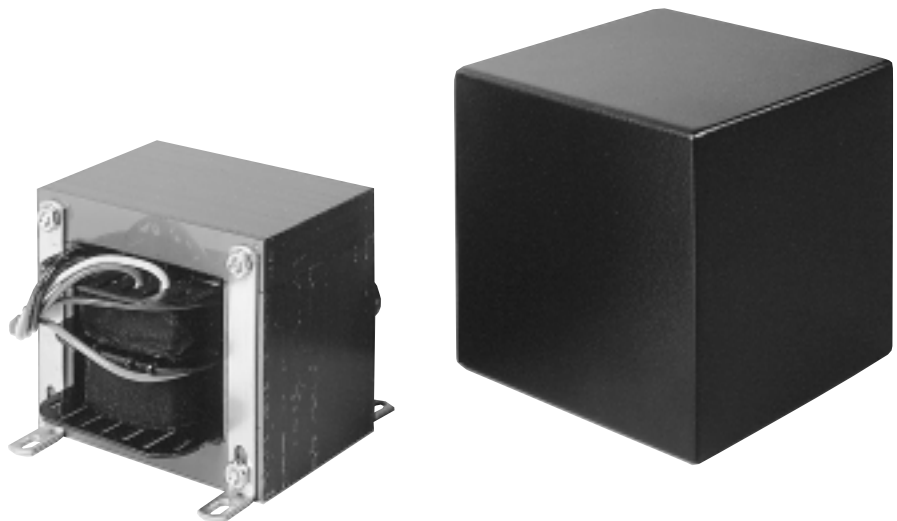
## VOICE AUDIO TRANSFORMERS

- Many sizes and shapes.
- Typical frequency response 300 to 3400 Hz ( $\pm 1$  dB ref.:1 kHz).
- Typical insertion loss less than 2.0 dB.
- Voltage breakdown 1500 Vrms.
- Longitudinal balance of 60 dB minimum.
- Custom design.



## AUDIO OUTPUT TRANSFORMERS FOR SINGLE ENDED OR PUSH PULL TUBES

- From 10 to 75 W on single ended tube output transformers.
- From 10 to 120 W on push pull tube output transformers.
- Open style or enclosed style.
- Custom design.

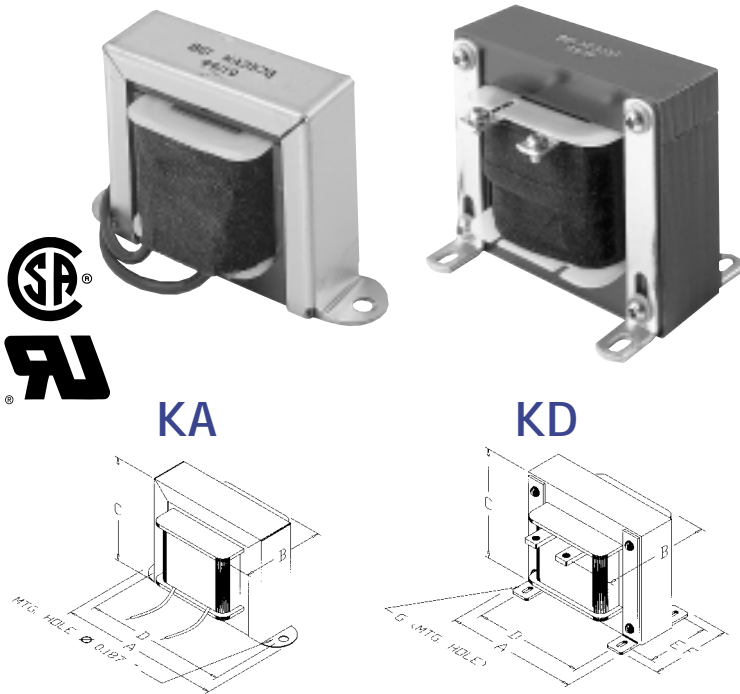


## POWER TRANSFORMERS FOR AUDIO APPLICATIONS

- Low noise level.
- Standard EI shape or toroidal.
- Open, enclosed, molded, P.C. mounting or chassis mounting.
- Magnetic shielding on request.
- CSA approved (LR63462) and UL recognized (E193917).
- Custom design.

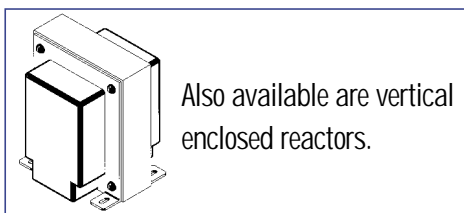


- Economical open type or metal covers.
- We can design to meet your specifications.
- Tolerance is  $\pm 15\%$  on inductance and resistance.
- Inductance are measured with rated DC current flowing.
- Class A (105 °C), B (130 °C), F (155 °C) or H (180 °C) insulation system.
- CSA approved (LR63264) and UL recognized (E193917).



Size	A	B	C	D	E	F	Mounting Hole dim.	lbs
1	1.63	0.88	0.81	1.38	-	-	0.125	0.12
6	2.06	1.25	1.19	1.75	-	-	0.187	0.19
12	2.38	1.38	1.38	2.00	-	-	0.187	0.35
25	2.81	1.55	1.69	2.38	-	-	0.187	0.58
40	3.25	1.80	2.00	2.81	-	-	0.187	0.83
56	3.25	2.05	2.00	2.81	-	-	0.187	1.1
120	4.00	2.37	2.69	3.56	-	-	0.187	2.2
120D	3.00	3.88*	2.75	2.50	2.00	2.63	.221 x .375	2.5
225	3.75	4.13*	3.50	3.13	2.25	2.88	.221 x .375	3.8
250	3.75	4.38*	3.50	3.13	2.25	2.88	.221 x .375	4.7
500	4.50	5.00*	4.13	3.75	2.50	4.00	.221 x .375	8.0
750	4.50	6.00*	4.13	3.75	3.50	5.00	.221 x .375	13.0
1500	5.25	6.75*	4.88	4.38	4.50	5.75	.312 x .687	26.0
2000	5.25	7.75*	4.88	4.38	5.50	6.75	.312 x .687	22.0
2500	7.50	6.50*	6.63	6.75	3.25	4.50	.375 x .687	39.0
4000	7.50	8.00*	6.63	6.75	4.75	6.00	.375 x .687	48.0
5000	8.75	8.25*	6.63	6.25	5.25	6.50	.375 x .750	52.0

All dimensions are in inches. \* Approximate dim. including copper tabs.



KA Cat. No Channel mounting	Induc. Henrys	D.C. Current Amp.	D.C. resistance ohms	Max.op. D.C. Volts	Size
KA104H	0.0010	10.0	0.038	400	40
KA154F	0.0015	5.0	0.070	400	25
KA254M	0.0025	10.0	0.044	500	120
KA304D	0.003	1.5	0.140	300	6
KA604F	0.006	2.0	0.30	400	12
KA105M	0.010	5.0	0.16	500	120
KA155M	0.015	4.0	0.25	500	120
KA285M	0.028	3.0	0.43	500	120
KA605M	0.060	2.0	0.70	500	120
KA306M	0.300	1.0	6	500	120
KA606D	0.600	0.100	86	300	1
KA606N	0.600	0.750	11	500	120
KA107H	1.0	0.300	40	400	56
KA157G	1.5	0.200	56	400	25
KA157H	1.5	0.250	60	400	56
KA157N	1.5	0.500	27	500	120
KA227D	2.2	0.050	305	300	1
KA357H	3.5	0.150	57	400	40
KA507E	5.0	0.050	270	400	12
KA507F	5.0	0.075	135	400	25
KA507J	5.0	0.150	105	400	56
KA707D	7.0	0.025	770	300	1
KA707K	7.0	0.150	100	500	120
KA108G	10	0.065	205	400	40
KA108J	10	0.100	262	400	56
KA108K	10	0.125	155	500	120
KA158E	15	0.030	1026	400	12
KA158H	15	0.075	411	400	56
KA158K	15	0.100	256	500	120
KA208E	20	0.020	1666	300	6
KA308G	30	0.040	595	400	40
KA608D	60	0.008	2750	400	12
KA159E	150	0.008	3700	400	25

Insulation class of these KA chokes is 'A' 105 °C.

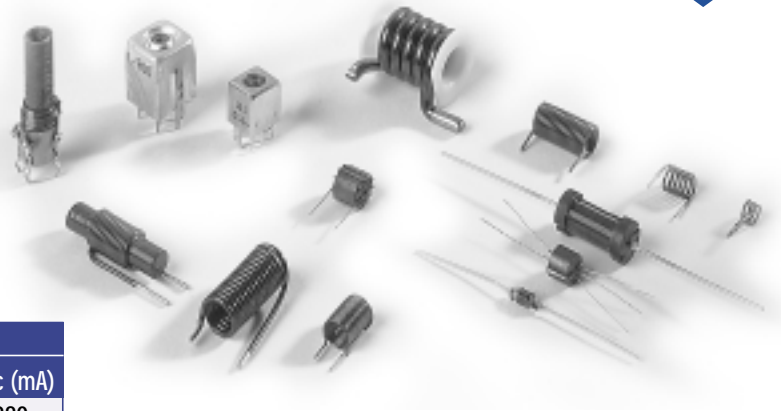
KD Cat. No Bracket mounting	Induc. mH	D.C. Current Amp.	D.C. resistance ohms	Insula. Temp. Class	Size
KD104N	1.0	20	0.013	A	120D
KD104T	1.0	30	0.009	A	250
KD104W	1.0	50	0.005	A	750
KD104XA	1.0	75	0.004	B	1500
KD104XC	1.0	100	0.003	F	2000
KD104XE	1.0	140	0.0023	F	5000
KD254T	2.5	20	0.022	A	250
KD254XD	2.5	75	0.008	F	4000
KD504P	5.0	10	0.040	A	225
KD504XD	5.0	50	0.021	F	4000
KD105T	10	10	0.07	A	250
KD105XD	10	40	0.021	F	4000
KD205V	20	10	0.013	B	500
KD205XE	20	30	0.045	F	5000
KD305S	30	5	0.23	A	250
KD305XC	30	20	0.13	F	4000
KD505XA	50	10	0.165	B	1500
KD106XC	100	10	0.42	F	2500

Bigger sizes available



## MOLDED - R.F. - HASH

- General purpose or used for filtering or delaying.
- Small or high current.
- Various sizes and shapes.
- Many values not listed please inquire.
- Many materials available;
  - Powdered iron
  - Ferrite
  - Air core



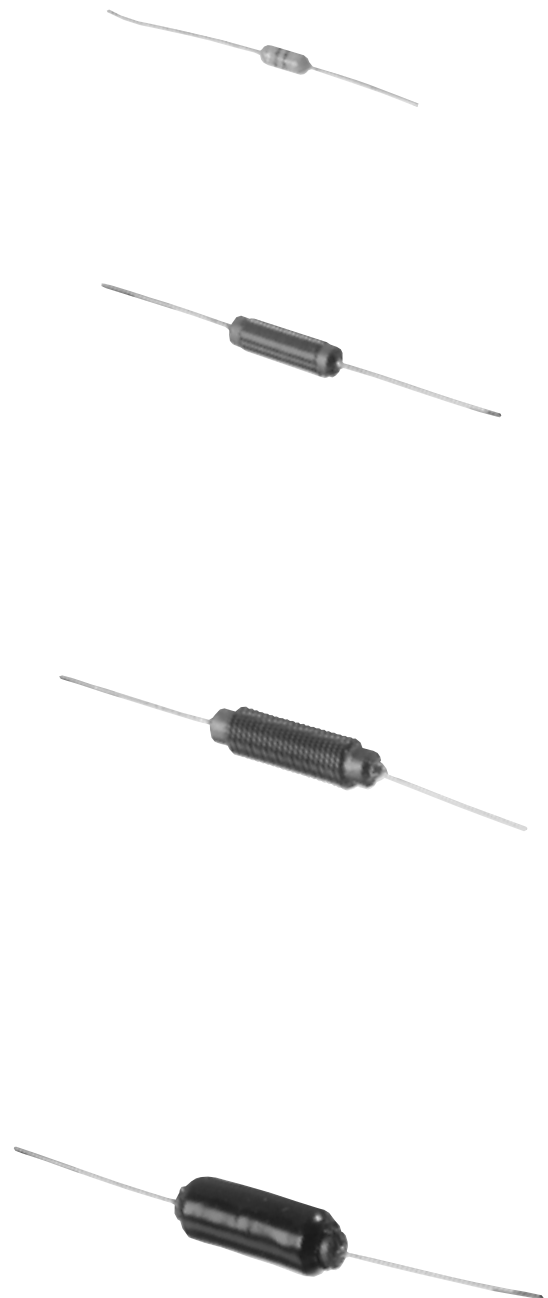
Molded R.F. chokes (resistor type $\phi$ 0.157)						
Cat. No.	L $\mu$ H	Q Min.	Test Freq.	SRF MHz	DCR $\Omega$	I dc (mA)
KM121A	1.2	50	7.96 MHz	144.0	0.18	880
KM102A	10	80	7.96 MHz	40.0	0.65	500
KM222A	22	60	2.52 MHz	9.9	0.90	410
KM123A	120	60	0.796 MHz	3.8	3.0	185
KM473A	470	50	0.796 MHz	1.8	8.5	126

Open R.F. chokes (Powdered Iron $\phi$ 0.290)						
Cat. No.	L $\mu$ H	Q Min.	Test Freq.	SRF MHz	DCR $\Omega$	Amps max.
KR102A	10	69	2.5 MHz	40	0.11	1.5
KR152A	15	62	2.5 MHz	33	0.17	1.0
KR242A	24	65	2.5 MHz	25	0.34	0.8
KR392A	39	70	2.5 MHz	20	0.65	0.6
KR552A	55	72	2.5 MHz	17	1.0	0.5
KR103A	100	107	0.79 MHz	12	3.0	0.4

Heavy Duty Hash Chokes (Powdered Iron)					
Cat. No.	L $\mu$ H	DCR $\Omega$	SRF MHz	Amps	Dia.
KR331B	3.35	0.010	45	20	0.53
KR491B	4.9	0.016	42	15	0.50
KR881B	8.8	0.021	28	10	0.50
KR401B	4.	0.012	24.3	8	0.31
KR402B	40.	0.082	10.4	3	0.56
KR682B	68.	0.054	5.7	5	0.53
KR103B	100	0.216	4.1	2	0.31
KR123B	125	0.08	2.65	3.5	0.50
KR253B	250	0.17	1.5	2.5	0.43
KR503B	500	0.26	1.17	2	0.56
KR104B	1000	0.55	----	1	0.50

Heavy Duty Hash Chokes (Ferrite) (Test frequency 1 kHz)					
Cat. No.	L $\mu$ H	Q Min.	DCR $\Omega$	Amp.	Dia
KR102C	10	4.5	.006	20	.63
KR202C	20	6.5	.013	12.5	.60
KR302C	30	5.3	.024	8	.58
KR402C	40	5.2	.039	5	.57
KR502C	50	3.4	.064	3.2	.56
KR752C	75	3.2	.128	2	.54
KR103C	100	10.5	.050	8	.71
KR253C	250	12.0	.114	5	.69
KR503C	500	11.6	.260	3.2	.65
KR753C	750	10.0	.465	2	.61
KR104C	1000	7.4	.830	1.25	.59

All dimensions are in inches.



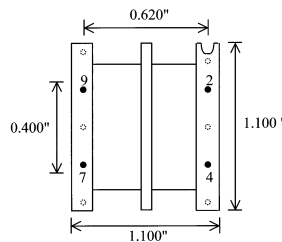
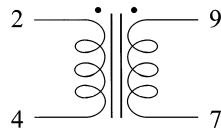
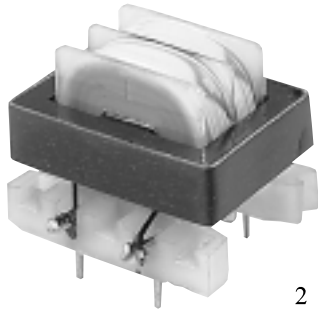
## TOROIDAL CHOKES (KT)



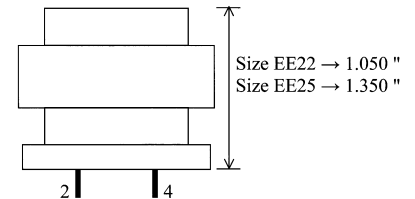
Toroidal Chokes (Powdered Iron)											
Cat. No.	OD 1.0" / 0.45" thick			Cat. No.	OD 1.3" / 0.65" thick			Cat. No.	OD 1.6" / 0.75" thick		
	IND. $\mu$ H	DC A	DCR $\Omega$		IND. $\mu$ H	DC A	DCR $\Omega$		IND. $\mu$ H	DC A	DCR $\Omega$
KT332D	33	8.7	0.013	KT332E	33	14.1	0.010	KT332G	33	20.7	0.007
KT472D	47	7.9	0.016	KT472E	47	12.4	0.013	KT472G	47	19.3	0.008
KT682D	68	6.9	0.021	KT682E	68	11.9	0.014	KT682G	68	16.5	0.011
KT103D	100	6.2	0.026	KT103E	100	9.5	0.022	KT103G	100	13.2	0.017
KT153D	150	4.4	0.051	KT153E	150	7.6	0.035	KT153G	150	11.0	0.025
KT223D	220	3.8	0.066	KT223E	220	6.3	0.050	KT223G	220	9.1	0.036
KT333D	330	3.2	0.096	KT333E	330	5.1	0.076	KT333G	330	7.2	0.057

## COMMON MODE CHOKES (KHC, KTC)

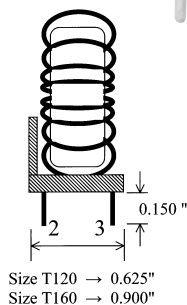
- Toroidal or EE type.
- UL recognized Class B (130 °C) insulation system (E156078).
- Custom values available.



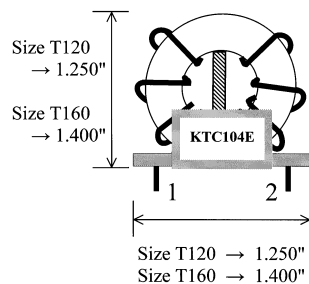
Bottom view  
Size EE22 & EE25



EE style Common Mode Chokes (Ferrite)							
SIZE EE22				SIZE EE25			
Part Number	L min. mH	I Amp.	DCR max. Ohms	Part Number	L min. mH	I Amp.	DCR max. Ohms
KHC105D	9.9	0.5	0.980	KHC175DH	16.8	0.5	1.260
KHC404D	3.9	0.75	0.390	KHC704DH	6.6	0.75	0.500
KHC304D	2.9	1.0	0.270	KHC504DH	4.9	1.0	0.350
KHC224D	2.1	1.25	0.190	KHC404DH	3.6	1.25	0.230
KHC124D	1.1	1.5	0.105	KHC204DH	1.87	1.5	0.130
KHC743D	0.731	2.0	0.069	KHC134DH	1.24	2.0	0.087
KHC473D	0.468	2.5	0.044	KHC803DH	0.796	2.5	0.055
KHC303D	0.299	3.0	0.029	KHC503DH	0.508	3.0	0.037
KHC173D	0.168	4.0	0.016	KHC303DH	0.286	4.0	0.022

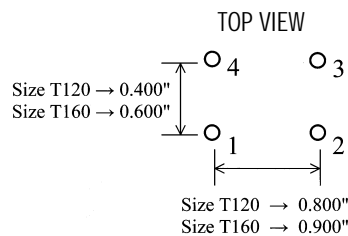


Size T120  $\rightarrow$  0.625"  
Size T160  $\rightarrow$  0.900"

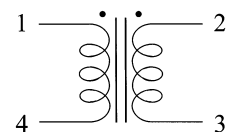


Size T120  $\rightarrow$  1.250"  
Size T160  $\rightarrow$  1.400"

Toroidal Common Mode Chokes (Ferrite)							
SIZE T120				SIZE T160			
Part Number	L min. mH	I Amp.	DCR max. Ohms	Part Number	L min. mH	I Amp.	DCR max. Ohms
KTC354E	3.5	1.3	0.15	KTC115F	10.8	1.3	0.29
KTC174E	1.7	2.0	0.065	KTC704F	7.0	2.0	0.15
KTC104E	1.0	3.2	0.036	KTC374F	3.7	3.2	0.08
KTC753E	0.750	5.0	0.022	KTC224F	2.2	5.0	0.04
KTC423E	0.425	8.1	0.012	KTC114F	1.1	8.1	0.02
KTC273E	0.275	13.0	0.008	KTC583F	0.58	13.0	0.01



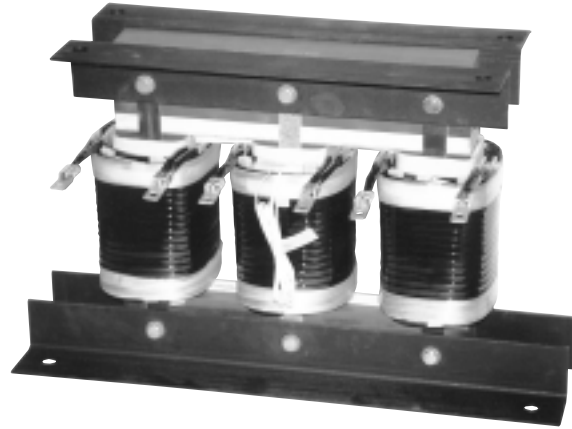
Size T120  $\rightarrow$  0.800"  
Size T160  $\rightarrow$  0.900"





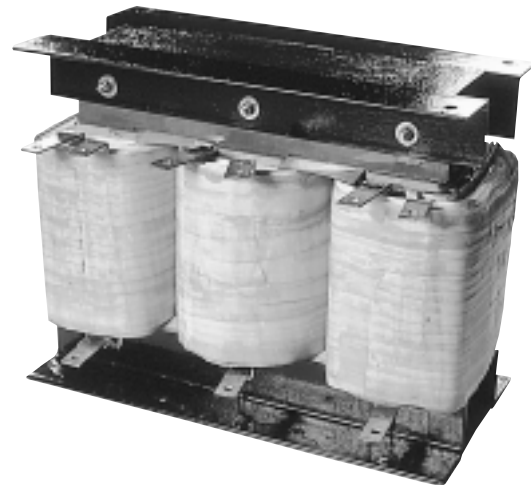
## 3-PHASE REACTORS (KY)

- Used on lines up to 750 V.
- Designed to meet your specifications.
- Tolerance is  $\pm 10\%$  on inductance.
- Copper winding
- Quiet operation
- Thermal switch on center coil standard.
- Class F (155 °C) or H (180 °C) insulation system.
- CSA approved (LR63462) and UL recognized (E194282).



## 3-PHASE SPECIAL TRANSFORMERS (Y)

- VA size models available from 1 to 45 kVA.
- Copper winding.
- Quiet operation.
- Class H insulation – 180 °C.
- CSA approved (LR63462) and UL recognized (E194282).
- Input and output to your specifications.



# FERRITE TRANSFORMERS AND CHOKES

- Many shapes and sizes.
- Different material for different frequencies.
- Horizontal and vertical P.C. board mounting.
- Input and output as per your specifications.

## E, EF cores

E cores are less expensive than pot cores and have the advantages of simple bobbin winding and easy assembly. Gang winding is possible for the bobbins used for these cores. E cores do not, however, offer self-shielding. E cores can be mounted in different directions, and if desired, provide a low profile. Printed circuit bobbins are available for low-profile mounting. E cores are popular shapes due to the lower cost, ease of assembly and winding, and the ready availability of a variety of hardware. E cores are offered in low-loss materials for high performance transformers and inductors. E cores may be provided gapped for power inductors and other high DC bias applications.

## PC cores (POT CORE)

The pot core shape provides a convenient means of adjusting the ferrite structure to meet the specific requirements of the inductor. Because of their design and composition, pot cores offer a number of advantages, including:

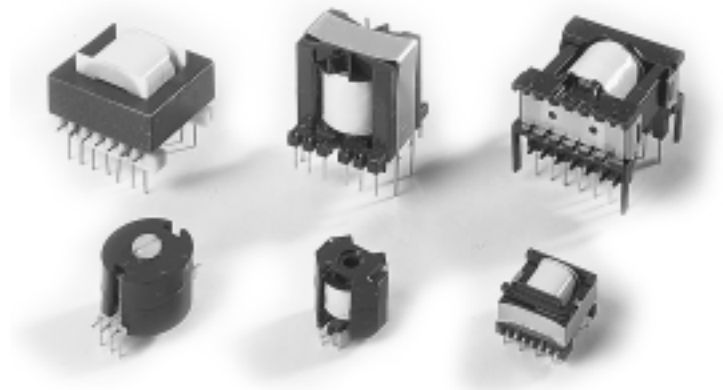
- self-shielding
- compact
- convenient
- low cost
- adjustable
- good time/temperature stability
- high Q
- low losses/distortion

## TT, RS or DS cores

Slab cores are pot cores with the sides removed. This geometry offers all the advantages of pot cores for filter applications, and is ideal for low and medium power transformers and switched-mode power supplies.

## EC, ETD cores

EC, ER, ETD and EER shapes are a cross between E cores and pot cores. Like E cores, they provide a wide opening on each side. This gives adequate space for the large size wires required for low output voltage switched mode power supplies. It also allows for a flow of air which helps keep the assembly cooler. The center post is round, like that of the pot core. One of the advantages of the round center post is that the winding has a shorter path length around it (11% shorter) than the wire around a square center post with an equal area. This reduces the losses of the windings by 11% and enables the core to handle a higher output power. The round center post also eliminates the sharp bend in the wire that occurs with winding on a square center post.



## RM cores

The design of RM cores (square cores) maximizes magnetic performance while minimizing PC board space--at least a 40% savings in mounting area! In addition to all of the magnetic and mechanical advantages of pot cores, RM cores offer the following advantages:

- self-shielding
- simple tuning adjustments
- temperature stability
- low losses
- compactness
- bobbin winding
- ease of assembly
- PCB mounting

## EP cores

EP Cores are round center-post cubical shapes which enclose the coil completely, except for the printed circuit board terminals. This particular shape minimizes the effect of air gaps formed at mating surfaces in the magnetic path and provides a larger volume ratio to total space used. Shielding is excellent.

## PQ cores

PQ cores are designed especially for switched mode power supplies. The design provides an optimized ratio of volume to winding area and surface area. As a result, both maximum inductance and winding area are possible with a minimum core size. The cores thus provide maximum power output with a minimum assembled transformer weight and volume, in addition to taking up a minimum amount of area on the printed circuit board. Assembly with printed circuit bobbins and one piece clamps is simplified. This efficient design provides a more uniform cross-sectional area; thus cores tend to operate with fewer hot spots than with other designs.

## Toroidal cores

Ferrite toroids offer high magnetic efficiency as there is no air gap and the cross-sectional area is uniform

## And more EFD, EI, UI, UU, etc

### Ferrite Core Comparative Geometry Considerations

	Pot Core	DS, RM	E	EC, ETD, EER	PQ	EP	Toroid
Core Cost	high	high	low	medium	high	medium	very low
Bobbin Cost	low	low	low	medium	high	high	none
Winding Cost	low	low	low	low	low	low	high
Winding Flexibility	good	good	excellent	excellent	good	good	fair
Mounting Flexibility	good	good	good	fair	fair	good	poor
Heat Dissipation	poor	good	excellent	good	good	poor	good
Shielding	excellent	good	poor	poor	fair	excellent	good



## MEDICAL TRANSFORMERS

- Magnetic shielding.
- Low leakage current and interwinding capacitance.
- Can be supplied with thermal protection.
- Protective earth conductor or double reinforced insulation.



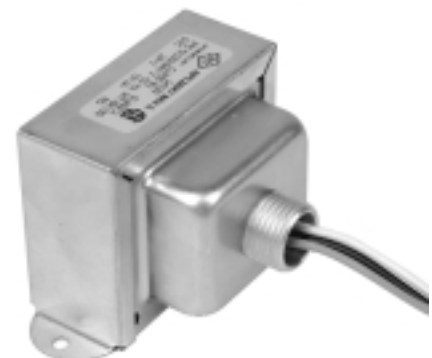
## INTERNATIONAL TRANSFORMERS

- VA size models available from 2.5 to 175 VA.
- Split bobbin with top shroud design.
- Horiz. Mount., ind. std P.C. board layout (see HDS series).
- Comb.- Solder or Quick connect Term. (see ADSQ series).
- Lead wire.
- Class F insulation – 155 degrees C.
- CSA appr.(LR63462) and UL recog.(E193917).
- Primary and secondary voltages as per your specifications.
- High insulation-4000V between prim. and sec.



## CLASS 2 AND 3 TRANSFORMERS

- ENERGY LIMITING.
  - o VA size models available up to 100 VA.
  - o Up to 30V for class 2 and 100V for class 3.
  - o 5A maximum secondary current.
- NON ENERGY LIMITING.
  - o VA size models available up to 100 VA.
  - o Up to 30V for class 2 and 150V for class 3.
  - o 5A maximum secondary current.
- Different mounting styles available.







## PULSE TRANSFORMERS

- Many shapes available.
- 

## ISOLATION TRANSFORMERS

- Open or enclosed.
  - Made to meet your specifications.
- 

## AUTO TRANSFORMERS

- Open or enclosed.
  - Many sizes and shapes available.
- 

## CONSTANT VOLTAGE TRANSFORMERS

- Ferroresonant.
- 

## OTHER TYPES OF WINDINGS

- Molded coils and transformers.
- Solenoid.
- Air coils.
- Etc.



We custom design according to your specifications.



**BROWNSBURG  
ELECTRONIK INC.**

tel.: 450 562-5211  
fax: 450 562-1296  
toll free: 1-888 XFMR 555  
1-888 936-7555

website: [www.bei.net](http://www.bei.net)  
e-mail: [bei@bei.net](mailto:bei@bei.net)  
mail: 741 Lowe Street,  
Lachute, Quebec  
Canada, J8H 4N9