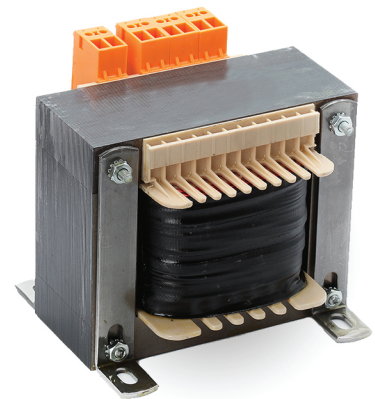
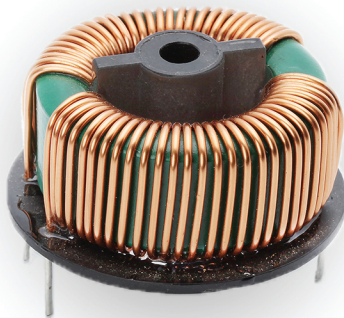
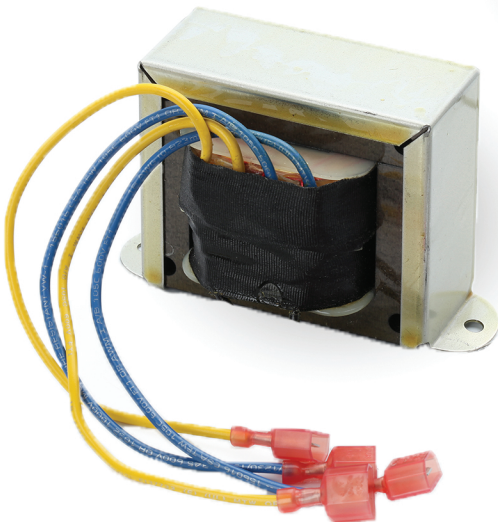
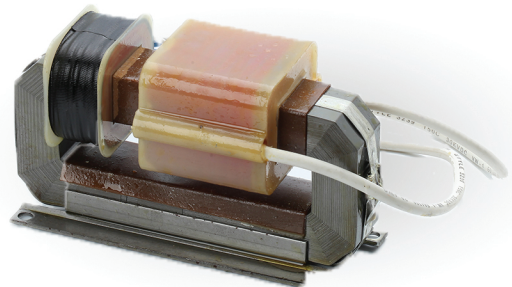
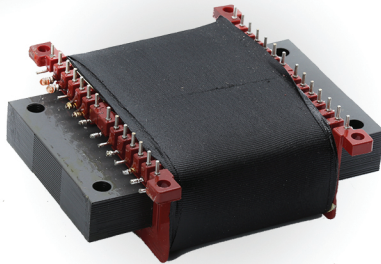
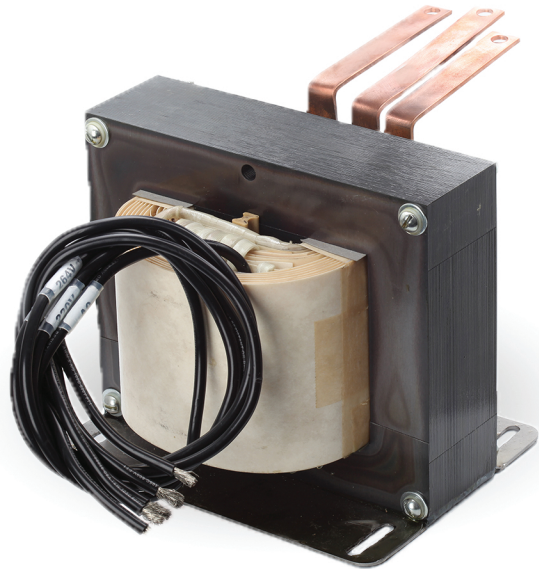
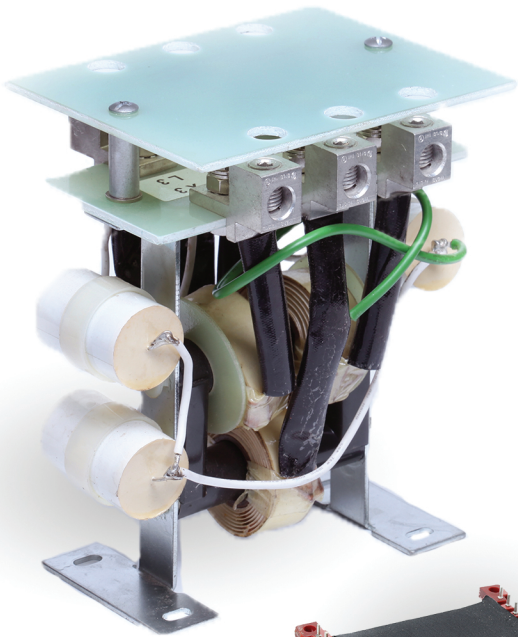




TRANSFORMER CORPORATION



MCI Transformer Corporation GUARANTEES DELIVERY



TOLL FREE
1-800-MCI-TRAN

- **Delivery of 1 to 5 stock transformers within 48 hours**
- **Delivery of 1,000 transformers in four weeks**

IF we don't keep these promises, we will pay the freight on the delivery. Many manufacturers promise prompt delivery but no one else is truly guaranteeing delivery in this manner.

Our modern U.S. manufacturing facilities enable us to service promptly both large and small users. We maintain an extensive inventory of all items so that we can ship small quantities immediately from stock. Since all of our products are manufactured at one of our domestic locations, we can quickly respond to volume requirements and are able to hold our costs to an absolute minimum and pass these savings along to you.

STANDARD STOCK LINE: MCI maintains an extensive inventory of Horizontal, Vertical, and Low Profile printed circuit board transformers and quick-connect Power Transformers which are recognized under Underwriters Laboratories File No. E86403 (M). MCI promises "Guaranteed Delivery" of 1 to 5 transformers within 48 hours and 1,000 transformers in four weeks.

ENGINEERING AND CUSTOMER

SERVICE: The next time you have a requirement, let us assist you. Perhaps you will be able to use one of our stock transformers. If so, you will benefit by saving substantially and having the convenience of off-the-shelf delivery. If your requirements cannot be satisfied by using one of our standard stock units, MCI will assist you in designing the exact transformer you require and, as always, at a competitive price.

NEW PRODUCTS: MCI was founded in 1959.

Our experience and technology have enabled us continually to introduce the most innovative designs to accommodate the changing needs of our customers. MCI's encapsulated transformers, series 4-11 and 4-12 are perfect examples.

These transformers were designed for low power requirements for high volume users. Production of this series is highly automated and MCI can favorably compete with any source in the world, eliminating the need to purchase transformers off-shore. We are pleased to announce that we have a full new line of V.D.E. style transformers for world wide use.

VALUE ANALYSIS: You can be confident when you order an MCI transformer, as only the highest quality materials are ever used in all MCI products. All our transformers are made with strict quality control and each unit is inspected and tested with a "state of the art" computer driven transformer tester.

All MCI products are manufactured in the U.S.A. in the most modern automated manufacturing facilities available. There are no hidden transportation costs from additional manufacturing facilities and no extended delivery times. MCI's decision to have only domestic plants was made with you in mind so that we can offer you the fastest possible response time and the lowest prices in the industry.

MCI is dedicated to bringing our customers only the best quality and service at highly competitive prices.

MCI eventually...why not now?

MCI
TRANSFORMER
CORPORATION

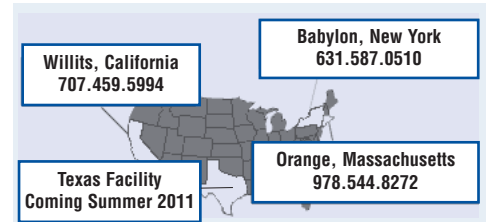
150 Sanhedrin Circle, Willits, CA 95490 • 707. 459. 5994 • FAX: 707. 459. 5998
411 Manhattan Avenue, Babylon, NY 11704 • 631. 587. 0510 • FAX: 631. 587. 0624
25 Blodgett Street, Orange, MA 01364 • 978. 544. 8272 • FAX: 978. 544. 8356
PO Box 1146, Corsicana, TX 75151-1146 • 903. 641. 1185



MCI Transformer Corporation

Visit www.mctransformer.com for individual part numbers and specifications

MCI Transformer Corporation specializes in magnetic component manufacturing of catalog and custom transformers. We provide a wide range of magnetics from power transformers, chokes, class 2 transformers, UL 60601-1 medical certified transformers, current, toroid, and AC & DC switch mode with configurations of horizontal and vertical pc board or chassis mount. We have been serving both large and small customers for over 50 years and our products are UL, CSA and TUV-CE certified. MCI Transformer Corporation has the customer orientation of a small company which fully recognizes the special service needs of our customers. Our unique structure of REGIONAL FACTORIES provides direct, quick response and service with the purchasing and engineering power of a large company. Our offshore manufacturing capability allows for us to accommodate world class high volume requirements with the highest level of service and quality at competitive prices.



MCI eventually . . . why not now!

Engineering and Customer Service:

Our experienced design engineers are ready to discuss your application in detail. Let us help you select the best product for your particular application. Perhaps the best choice will be to use one of our standard catalog transformers. Or, if better suited, we may recommend a modified standard catalog item or a custom designed unit built specifically with your application in mind. There are many options available so why not take advantage of our long time experience, product knowledge and cost saving abilities.



Take advantage of our long time experience, product knowledge and cost saving abilities today!



**MCI
TRANSFORMER
CORPORATION**

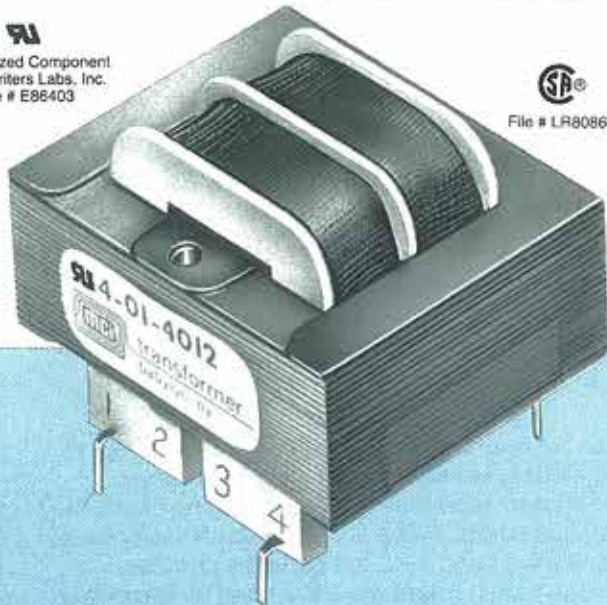
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SERIES 4-01 & 4-02

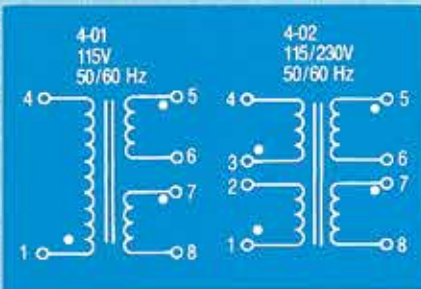
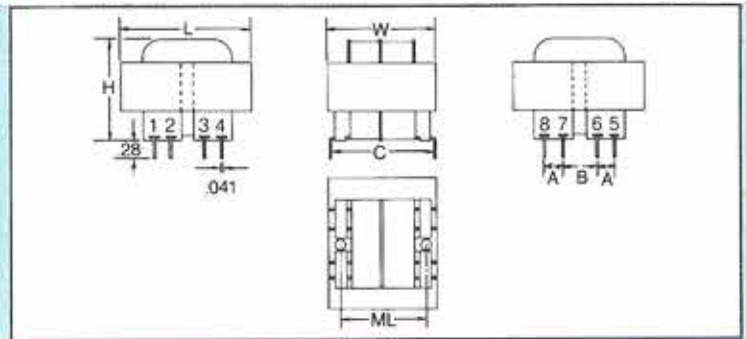
HORIZONTAL PC TRANSFORMERS

UL
Recognized Component
Underwriters Labs. Inc.
File # E86403

SF
File # LR80864



2,500-volt RMS Hipot, available in a variety of sizes. Maximum operating temperature 130°C. Available with either single 115V, or dual 115/230V primary. MCI's pin configuration is designed for ease of connection in printed circuit boards. Heavier transformers are provided with mounting holes for additional mounting security. Adaptations of standard transformers are also available. Dots on schematics shown below indicate like polarity.



To determine part number for specific transformer to be ordered:

1. Locate the column, in the table, for the required voltage.
2. In the voltage column, locate the required current rating.
3. Moving left from the current rating, find the number indicating required primary—single 115V primary or dual 115/230V.
4. Derive part number by combining digits identifying required primary and digits at top of column giving required voltage.

DIMENSIONS										
Size	VA	L	W	H	ML	A	B	C	Optional Mtg. Screw & Nut	Lbs.
2	1.1	1-3/8	1-1/8	15/16	—	250	250	1.200	None	0.17
3	2.4	1-3/8	1-1/8	1-3/16	—	250	250	1.200	None	0.25
4	6.0	1-5/8	1-5/16	1-5/16	1-1/16	250	350	1.280	4-40x1-3/8 Nylon	0.44
5	12.0	1-7/8	1-9/16	1-7/16	1-1/4	300	400	1.410	4-40x1-3/8 Nylon	0.70
6	20.0	2-1/4	1-7/8	1-7/16	1-1/2	300	400	1.600	4-40x1-3/8 Nylon	0.80
7	36.0	2-5/8	2-3/16	1-9/16	†	400	400	1.850	†	1.1

† 4 mounting holes 2⁹/₁₆ x 1³/₄ for #6 screw

CURRENT RATINGS (AMPS RMS)

Last 3 Digits of Part Number:		-010	-012	-016	-020	-024	-028	-036	-048	-056	-120	
First 4 Digits: Single 115V Primary	Dual 115/230V Primary	SERIES CONNECTION					SECONDARY VOLTAGE					
		10V C.T.	12.6V C.T.	16V C.T.	20V C.T.	24V C.T.	28V C.T.	36V C.T.	48V C.T.	56V C.T.	120V C.T.	
4-01-2	4-02-2	.110	.090	.070	.055	.045	.040	.030	.023	.020	.010	
4-01-3	4-02-3	.250	.200	.150	.120	.100	.085	.065	.050	.045	.020	
4-01-4	4-02-4	.600	.500	.400	.300	.250	.200	.170	.125	.110	.050	
4-01-5	4-02-5	1.200	1.000	.800	.600	.500	.420	.350	.250	.220	.100	
4-01-6	4-02-6	2.000	1.600	1.250	1.000	.800	.700	.550	.400	.350	.160	
4-01-7	4-02-7	3.600	2.850	2.250	1.800	1.500	1.300	1.000	.750	.650	.300	
		PARALLEL CONNECTION					SECONDARY VOLTAGE					
		5V	6.3V	8V	10V	12V	14V	18V	24V	28V	60V	
4-01-2	4-02-2	.220	.180	.140	.110	.090	.080	.060	.046	.040	.020	
4-01-3	4-02-3	.500	.400	.300	.240	.200	.170	.130	.100	.090	.040	
4-01-4	4-02-4	1.200	1.000	.800	.600	.500	.400	.340	.250	.220	.100	
4-01-5	4-02-5	2.400	2.000	1.600	1.200	1.000	.840	.700	.500	.440	.200	
4-01-6	4-02-6	4.000	3.200	2.500	2.000	1.600	1.400	1.100	.800	.700	.320	
4-01-7	4-02-7	7.200	5.700	4.500	3.600	3.000	2.600	2.000	1.500	1.300	.600	

VERTICAL PC TRANSFORMERS

SERIES 4-03 & 4-04



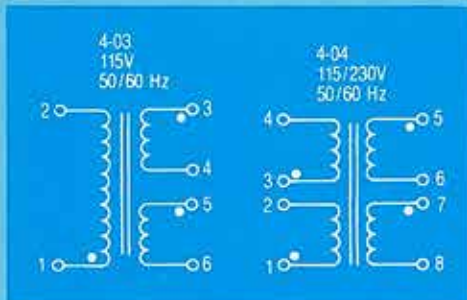
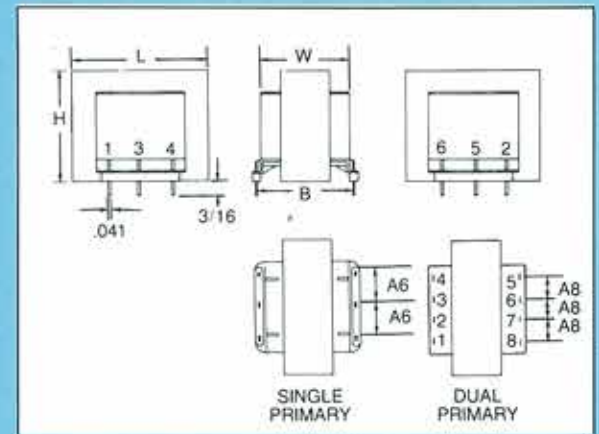
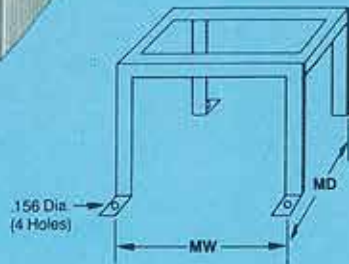
UL
Recognized Component
Underwriters Labs, Inc.
File # E86403



File # LR80864

1,500-volt RMS Hipot, available in a variety of sizes. Maximum operating temperature 130°C. Available with dual 115/230V primary. MCI's pin configuration is designed for ease of connection in printed circuit boards. Adaptations of standard transformers are also available. Dots on schematics shown below indicate like polarity.

"Slide On"
Bracket for
Sizes 4 & 5



To determine part number for specific transformer to be ordered:

1. Locate the column, in the table, for the required voltage.
2. In the voltage column, locate the required current rating.
3. Moving left from the current rating, find the number indicating required primary—single 115V primary or dual 115/230V.
4. Derive part number by combining digits identifying required primary and digits at top of column giving required voltage.

Size	VA	DIMENSIONS						OPTIONAL BRACKET*			
		L	W	H	A-6 (C Pin)	A-8 (8 Pin)	B	WT. (oz.)	No.	MW	MD
1	1.0	1	1-3/8	0.83	0.250	0.200	1.200	2.5	—	—	—
2	1.2	1-3/8	1-1/8	1-3/16	0.312	0.200	1.000	3.0	—	—	—
3	4.4	1-5/8	1-1/4	1-3/8	0.400	0.250	1.100	5.0	—	—	—
4	10.0	1-7/8	1-7/16	1-5/8	0.400	0.250	1.300	9.0	9-14 9901	1-41/64	1-1/8
5	24.0	1-5/8	2-1/4	1-3/8	0.400	0.250	2.100	12.0	9-14 9902	1-3/8	2

CURRENT RATINGS (AMPS RMS)														
Last 3 Digits of Part Number:		-010	-012	-016	-020	-024	-028	-034	-040	-056	-088	-120	-180	-230
First 4 Digits:		SERIES CONNECTION						SECONDARY VOLTAGE						
Single 115V Primary	Dual 115/230V Primary	10V C.T.	12.6V C.T.	16V C.T.	20V C.T.	24V C.T.	28V C.T.	34V C.T.	40V C.T.	56V C.T.	88V C.T.	120V C.T.	180V C.T.	230V C.T.
4-03-1	4-04-1	.090	.070	.055	.045	.035	.030	.025	.020	.015	.010	.008		
4-03-2	4-04-2	.120	.100	.075	.060	.050	.040	.035	.030	.020	.015	.010	.006	.005
4-03-3	4-04-3	.440	.350	.260	.220	.180	.160	.125	.110	.080	.050	.035	.024	.020
4-03-4	4-04-4	1.000	.800	.640	.500	.450	.360	.300	.250	.180	.120	.085	.055	.040
4-03-5	4-04-5	2.400	2.000	1.500	1.200	1.000	.800	.700	.600	.420	.270	.200	.130	.100
		PARALLEL CONNECTION						SECONDARY VOLTAGE						
		5V	6.3V	8V	10V	12V	14V	17V	20V	28V	44V	60V	90V	115V
4-03-1	4-04-1	.180	.140	.110	.090	.070	.060	.050	.040	.030	.020	.016		
4-03-2	4-04-2	.240	.200	.150	.120	.100	.080	.070	.060	.040	.030	.020	.012	.010
4-03-3	4-04-3	.880	.700	.520	.440	.360	.320	.250	.220	.160	.100	.070	.048	.040
4-03-4	4-04-4	2.000	1.600	1.280	1.000	.900	.720	.600	.500	.360	.240	.170	.110	.080
4-03-5	4-04-5	4.800	4.000	3.000	2.400	2.000	1.600	1.400	1.200	.840	.540	.400	.260	.200

SERIES 4-05

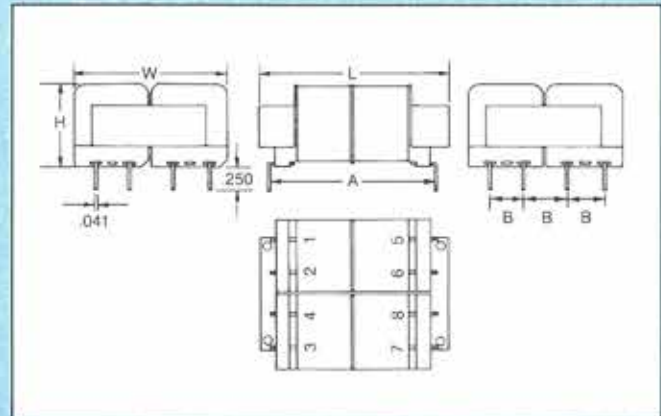
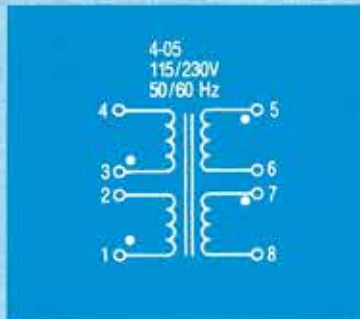
LOW PROFILE PC TRANSFORMERS



UL
Recognized Component
Underwriters Labs, Inc.
File # E86403

SP
File # LR80864

1,500-volt RMS Hipot, available in a variety of sizes. Maximum operating temperature 130°C. Available with dual 115/230V primary. MCI's pin configuration is designed for ease of connection in printed circuit boards. Adaptations of standard transformers are also available. Dots on schematics shown below indicate like polarity.



DIMENSIONS

Size	VA	L	W	H	A	B	OZ
1	2.5	1-7/8	1-9/16	0.650	1.600	0.375	5
2	6.0	1-7/8	1-9/16	0.850	1.600	0.375	7
3	12.0	2-1/2	2	1.065	2.000	0.500	11

To determine part number for specific transformer to be ordered:

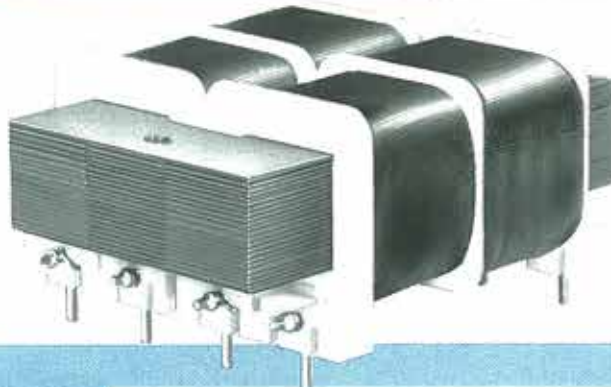
1. Locate the column, in the table, for the required voltage.
2. In the voltage column, locate the required current rating.
3. Moving left from the current rating, find the number indicating required primary— dual 115/230V.
4. Derive part number by combining digits identifying required primary and digits at top of column giving required voltage.

CURRENT RATING (AMPS RMS)

Last 3 Digits of Part Number:	-010	-012	-016	-020	-024	-034	-040	-056	-088	-120	-230	
First 4 Digits Dual 115/230V Primary:	SERIES CONNECTION							SECONDARY VOLTAGE				
	10V C.T.	12.6V C.T.	16V C.T.	20V C.T.	24V C.T.	34V C.T.	40V C.T.	56V C.T.	88V C.T.	120V C.T.	230V C.T.	
	4-05-1	.250	.200	.156	.125	.104	.073	.062	.044	.028	.020	.010
	4-05-2	.600	.450	.350	.300	.250	.170	.150	.100	.065	.050	.025
4-05-3	1.200	.900	.700	.600	.500	.340	.300	.200	.130	.100	.050	
First 4 Digits Dual 115/230V Primary:	PARALLEL CONNECTION							SECONDARY VOLTAGE				
	5V	6.3V	8V	10V	12V	17V	20V	28V	44V	60V	115V	
	4-05-1	.500	.400	.312	.250	.208	.146	.124	.088	.056	.040	.020
	4-05-2	1.200	.900	.700	.600	.500	.340	.300	.200	.130	.100	.050
4-05-3	2.400	1.800	1.400	1.200	1.000	.680	.600	.400	.260	.200	.100	

NEW LARGER LOW PROFILE TRANSFORMER

SERIES 4-05

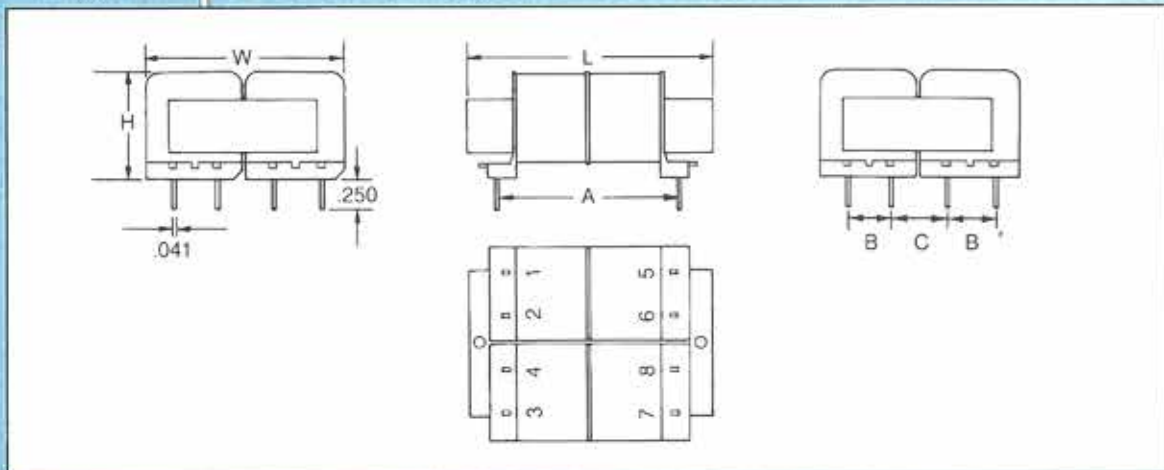


The demand for larger low profile transformers has led MCI to expand our 4-05 series to include a 24VA + 48VA transformer.

These new transformers have the same 1,500 volt hipot, 130°C insulated system and split winding construction.

 Recognized Component
Underwriters Labs, Inc.
File # E86403

 File # LR80864



To determine part number for specific transformer to be ordered:

1. Locate the column, in the table, for the required voltage.
2. In the voltage column, locate the required current rating.
3. Moving left from the current rating, find the number indicating required primary— dual 115/230V.
4. Derive part number by combining digits identifying required primary and digits at top of column giving required voltage.

Part No.:	DIMENSIONS								ML	OZ
	VA	L	W	H	A	B	C			
4-05-4___	24	2-7/8	2-1/4	1-1/4	1.900	.600	.530	2-13/32 (with 2 holes for #4 screws)	15	
4-05-5___	48	3-1/8	2-1/2	1-3/8	2.180	.600	.660	2-5/8 (with 2 holes for #6 screws)	21	

Last 3 Digits of Part Number:	CURRENT RATINGS (AMPS RMS)											
	-010	-012	-016	-020	-024	-030	-034	-040	-056	-088	-120	-230
First 4 Digits: Dual 115/230V Primary	SERIES CONNECTION							SECONDARY VOLTAGE				
	10VCT	12.6VCT	16VCT	20VCT	24VCT	30VCT	34VCT	40VCT	56VCT	88VCT	120VCT	230VCT
4-05-4___	2.400	1.900	1.500	1.200	1.000	.800	.700	.600	.425	.275	.200	.100
4-05-5___	4.800	3.800	3.000	2.400	2.000	1.600	1.400	1.200	.850	.550	.400	.200
	PARALLEL CONNECTION							SECONDARY VOLTAGE				
	5V	6.3V	8V	10V	12V	15V	17V	20V	28V	44V	60V	115V
4-05-4___	4.800	3.800	3.000	2.400	2.000	1.600	1.400	1.200	.850	.550	.400	.200
4-05-5___	9.600	7.600	6.000	4.800	4.000	3.200	2.800	2.400	1.700	1.100	.800	.400

SERIES 4-06 & 4-07

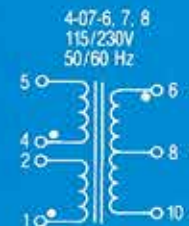
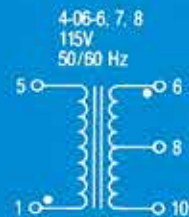
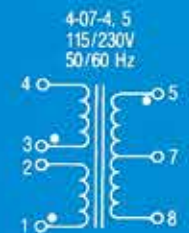
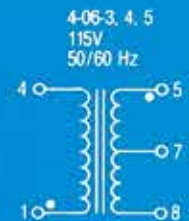
QUICK CONNECT POWER TRANSFORMERS



File # LR80864



Recognized Component
Underwriters Labs, Inc.
File # E86403



To determine part number for specific transformer to be ordered:

1. Locate the column, in the table, for the required voltage.
2. In the voltage column, locate the required current rating.
3. Moving left from the current rating, find the number indicating required primary—single 115V primary or dual 115/230V.
4. Derive part number by combining digits identifying required primary and digits at top of column giving required voltage.

CURRENT RATINGS (AMPS RMS)

Last 3 Digits of Part Number:		-010	-012	-016	-020	-024	-028	-036	-048	-056	-120
First 4 Digits: Single 115V Primary	Dual 115/230V Primary	SECONDARY VOLTAGE									
		10V C.T.	12.6V C.T.	16V C.T.	20V C.T.	24V C.T.	28V C.T.	36V C.T.	48V C.T.	56V C.T.	120V C.T.
4-06-3		.250	.200	.150	.120	.100	.085	.065	.050	.045	.020
4-06-4	4-07-4	.600	.500	.400	.300	.250	.200	.170	.125	.110	.050
4-06-5	4-07-5	1.200	1.000	.800	.600	.500	.420	.350	.250	.220	.100
4-06-6	4-07-6	3.000	2.500	2.000	1.500	1.250	1.100	.850	.630	.540	.250
4-06-7	4-07-7	5.000	4.000	3.500	2.800	2.400	2.000	1.500	1.200	1.000	.500
4-06-8	4-07-8	10.000	8.000	6.250	5.000	4.000	3.600	2.800	2.000	1.800	.850

QUICK CONNECT POWER TRANSFORMERS

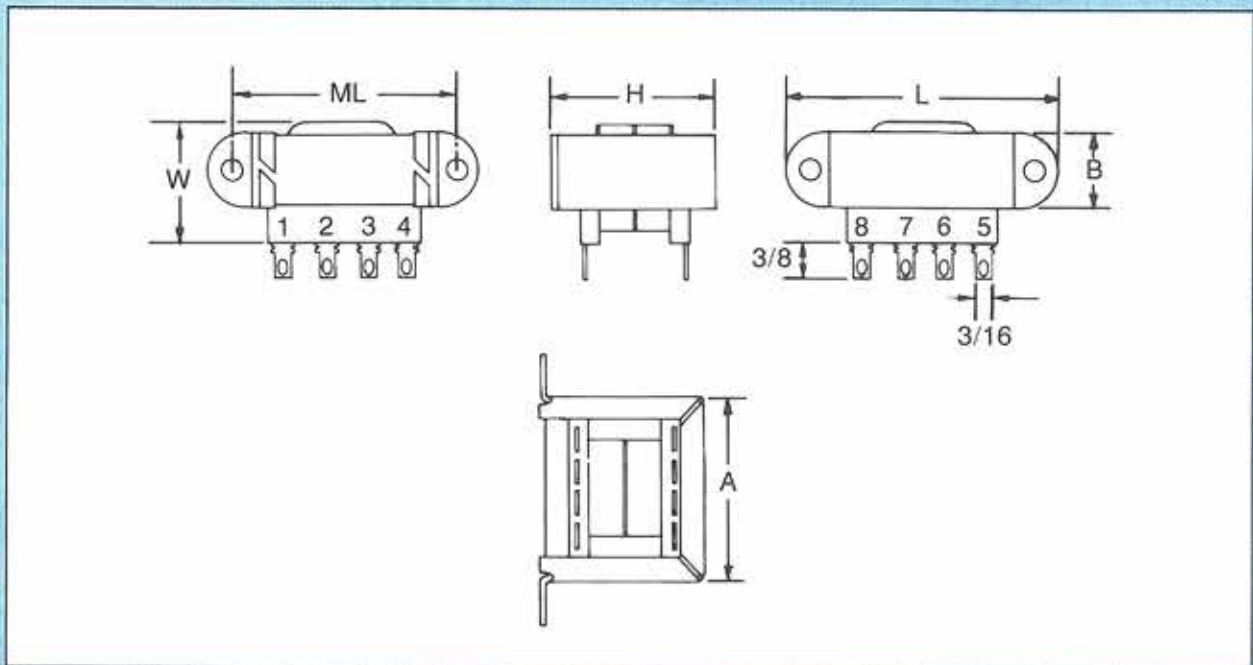
SERIES 4-06 & 4-07

2,500 Volt RMS Hipot in a variety of practical sizes. Maximum operating temperature 130°C available with either single 115 or dual 115/230V primary (for all but 2.4 VA size).

MCI's split bobbin and non-concentric winding provide better insulation and high signal isolation,

thus eliminating the need for electrostatic shielding.

Adaptations of standard transformers are also available. Dots on schematics shown below indicate like polarity.



DIMENSIONS								
Size	VA	L	W	H	A	B	ML	Lbs.
3	2.4	2-1/16	1-1/16	1-3/16	1-7/16	9/16	1-3/4	0.25
4	6	2-3/8	1-1/4	1-3/8	1-11/16	11/16	2	0.44
5	12	2-13/16	1-3/8	1-5/8	1-15/16	13/16	2-3/8	0.7
6	30	3-1/4	1-11/16	1-15/16	2-5/16	1-1/16	2-13/16	1.1
7	56	3-11/16	1-13/16	2-1/4	2-11/16	1-1/16	3-1/8	1.7
8	100	4-1/32	2-1/4	2-9/16	3-1/16	1-5/16	3-9/16	2.75

SERIES 4-06-X5 4-07-X5

QUICK CONNECT TRIPLE OUTPUT TRANSFORMERS



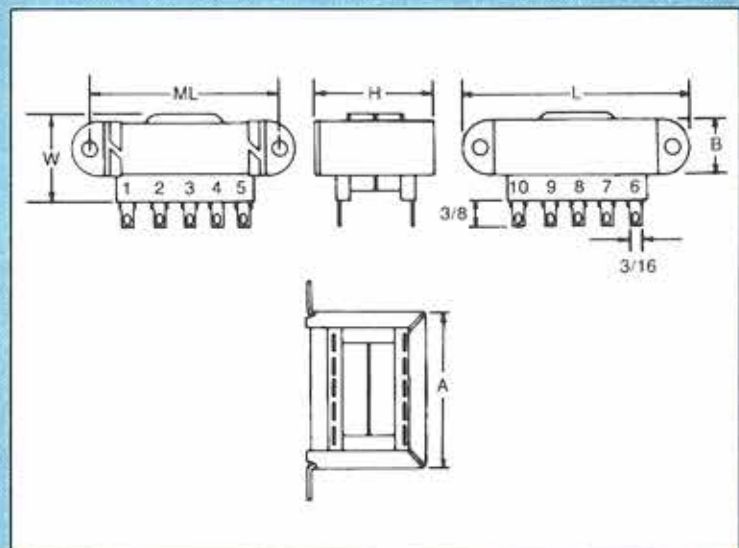
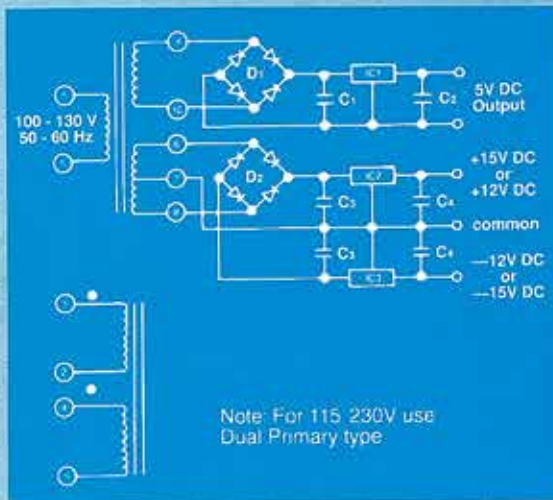
Recognized Component
Underwriters Labs, Inc.
File # E86403



MCI has added these transformers to our product line for our customers with a need for one transformer to supply either 5VDC and ± 12 VDC or 5VDC and ± 15 VDC, in 3 power ratings of 35, 22.4, and 13.8 watts DC regulated.

There are 2 primary voltages available. Our 4-06 series which is for 100-130 volts, and our 4-07 series which is for either 100-130 volts or 200-260 volts.

The additional components necessary are supplied in the chart below.



To determine part number for specific transformer to be ordered:

1. Locate the column, in the table, for the required voltage.
2. In the voltage column, locate the required current rating.
3. Moving left from the current rating, find the number indicating required primary—single 115V primary or dual 115/230V.
4. Derive part number by combining digits identifying required primary and digits at top of column giving required voltage.

DIMENSIONS								
SIZE	REGULATED POWER WATTS	L	W	H	A	B	ML	lbs.
6	13.8	3-1/4	1-3/4	1-15/16	2-5/16	1-1/16	2-13/16	1.1
7	22.4	3-11/16	1-13/16	2-1/4	2-11/16	1-1/16	3-1/8	1.7
8	35.0	4-1/32	2-1/4	2-9/16	3-1/16	1-5/16	3-9/16	2.75

SPECIFICATION												
MCI PART NO. PRIMARY 50/60 Hz		DC OUTPUT		SIZE	REGULATED POWER	SUGGESTED COMPONENTS C2, C4, See Note ①						
115V	115/230V	OUTPUT 1	OUTPUT 2		WATTS	D1 ②	C1	IC1 ③	D2 ④	C3	IC2 ⑤	IC3 ⑥
4-06-6512	4-07-6512	5V @ 1.75A	± 12 V @ 210MA	6	13.8	3N253	10 KMFD @ 20VDC	LM 323K-5	3N247	1.5 KMFD @ 50 VDC	LM 340K-12	LM 320K-12
4-06-6515	4-07-6515		± 15 V @ 175MA								LM 340K-15	LM 320K-15
4-06-7512	4-07-7512	5V @ 2.8A	± 12 V @ 350MA	7	22.4	MDA-400	15 KMFD @ 20VDC	LM 323K-5	3N247	2 KMFD @ 50 VDC	LM 340K-12	LM 320K-12
4-06-7515	4-07-7515		± 15 V @ 280MA								LM 340K-15	LM 320K-15
4-06-8512	4-07-8512	5V @ 4A	± 12 V @ 600MA	8	35.0	MDA-800	26 KMFD @ 20VDC	LM-338 ⑦	3N247	3.1 KMFD @ 50 VDC	LM 340K-12	LM 320K-12
4-06-8515	4-07-8515		± 15 V @ 500MA								LM 340K-15	LM 320K-15

Note ① : Output capacitors C2 and C4 are required to stabilize regulators. Values can be 1 MFD min. tantalum or 10 MFD min. electrolytic, 20V min.
 Note ② : LM-338 is an adjustable regulator and MFR's specifications (National Semiconductor) should be consulted for values of external components.
 Note ③ : All IC's are National Semiconductor types.
 Note ④ : All diodes are Motorola types.

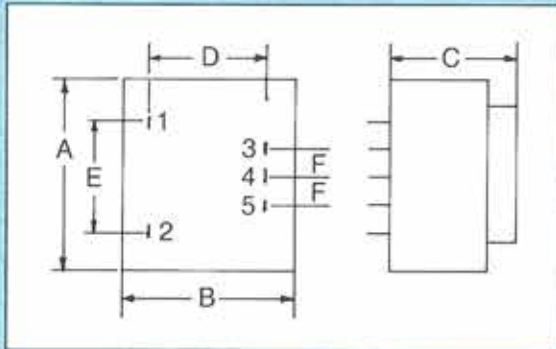
HORIZONTAL PC ENCAPSULATED TRANSFORMERS

SERIES 4-11 & 4-12



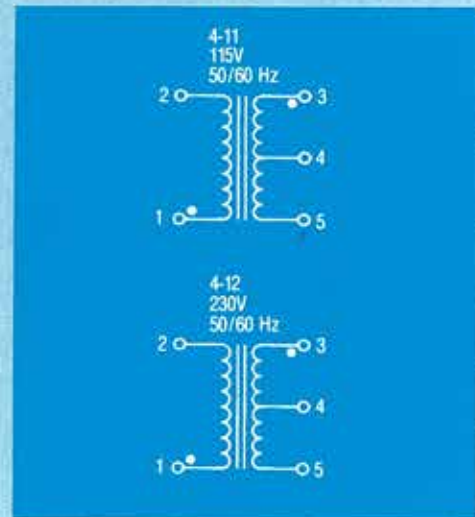
UL
Recognized Component
Underwriters Labs, Inc.
File # E86403

Our encapsulated design offers high reliability because of its mechanical strength, electrical insulation and moisture resistance. The internal construction consists of a split bobbin which isolates the primary and secondary thereby eliminating any need for an electrostatic shield. The construction will pass requirements of U.L., C.S.A. and V.D.E.



To determine part number for specific transformer to be ordered:

1. Locate the column, in the table, for the required voltage.
2. In the voltage column, locate the required current rating.
3. Moving left from the current rating, find the number indicating required primary—single 115V primary or 230V.
4. Derive part number by combining digits identifying required primary and digits at top of column giving required voltage.



DIMENSIONS								
Size	VA	A	B	C	D	Primary E	Secondary F	Wt. (Lb.)
2	1.0	1.280	1.080	.885	.800	.800	.200	.16
3	1.2	1.280	1.080	.970	.800	.800	.200	.19
4	1.8	1.280	1.080	1.085	.800	.800	.200	.21
5	2.2	1.280	1.080	1.185	.800	.800	.200	.25
6	3.2	1.660	1.415	1.125	1.000	.800	.200	.33
7	4.5	1.780	1.500	1.300	1.000	1.000	.300	.44

CURRENT RATING (AMPS RMS)											
Last 3 Digits of Part Number:		-010	-012	-016	-020	-024	-028	-036	-048	-056	-120
First 4 Digits: Single 115V Primary	Single 230V Primary	SECONDARY VOLTAGE									
		10V C.T.	12.6V C.T.	16V C.T.	20V C.T.	24V C.T.	28V C.T.	36V C.T.	48V C.T.	56V C.T.	120V C.T.
4-11-2	4-12-2	.100	.080	.065	.050	.045	.035	.030	.020	.018	.008
4-11-3	4-12-3	.120	.095	.075	.060	.050	.045	.035	.025	.021	.010
4-11-4	4-12-4	.180	.145	.115	.090	.075	.065	.050	.038	.032	.015
4-11-5	4-12-5	.220	.175	.140	.110	.095	.080	.060	.045	.040	.018
4-11-6	4-12-6	.320	.255	.200	.160	.135	.115	.090	.067	.057	.027
4-11-7	4-12-7	.450	.360	.280	.225	.190	.160	.125	.095	.080	.038

SERIES 4-24

P.C. MOUNT TRANSFORMERS

UL CLASS 2 UL1585 / 5085 & TUV-CE CERTIFIED
UL60601-1 and CSA-C22.2 601.1-M90 certified construction.
Certified to UL2097 double insulation.

NOW AVAILABLE WITH LEAD WIRES!

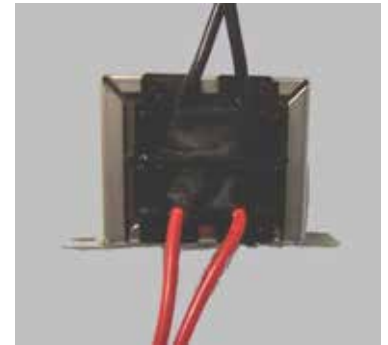
SINGLE 115V OR 230V PRIMARY
OR
DUAL 115/230 PRIMARIES



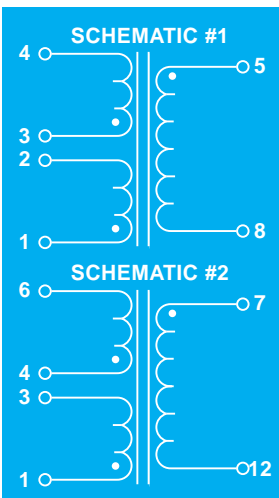
FILE #E120827 & E178395
UL Recognized to UL5085/UL506



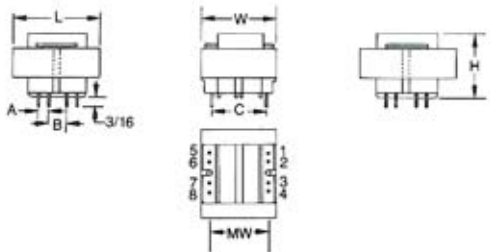
PASSED EN61558



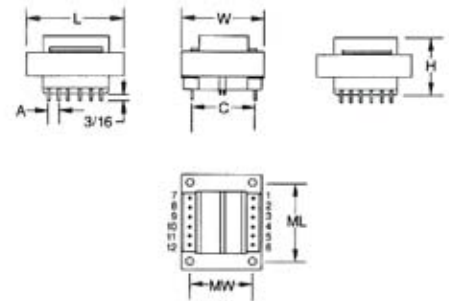
4,000-Volt RMS Hipot, in a variety of sizes. Maximum operating temperature 155°C. Available with 115/230V primary. MCI's split bobbin and non-concentric winding provide better insulation and high signal isolation, thus eliminating the need for electrostatic shielding. These transformers are designed to pass CE's strict creepage distance requirements. Adaptations of standard transformers are also available. Dots on schematics shown below indicate like polarity.



MOUNTING STYLE A



MOUNTING STYLE B



DIMENSIONS

Transformer	VA	Schematic	Mounting Style	L	W	H	A	B	C	Pin Dimensions	MW	ML	Screw Size	Maximum Number Terminals	Lbs.
4-24-3	2.5	1	A	1-5/8	1-7/16	1-1/8	.200	.250	1.000	.025 sq.	1-1/16		4	8	.25
4-24-4	5.0	1	A	1-5/8	1-7/16	1-3/8	.200	.400	1.000	.025 sq.	1-1/16		4	8	.37
4-24-5	10.0	1	A	1-7/8	1-9/16	1-3/8	.200	.400	1.140	.036 sq.	1-1/4		4	8	.53
4-24-6	20.0	2	A	2-1/4	1-7/8	1-5/8	.400	.400	1.460	.036 sq.	1-1/2		4	12	.90
4-24-7	30.0	2	B	2-5/8	2-3/16	1-9/16	.275		1.680	.045 sq.	1-3/4	2-3/16	6	12	1.15
4-24-8	56.0	2	B	3	2-1/2	1-13/16	.300		1.900	.045 sq.	2	2-1/2	6	12	1.70

P.C. MOUNT TRANSFORMERS

SERIES 4-24

To determine part number for specific transformer to be ordered:

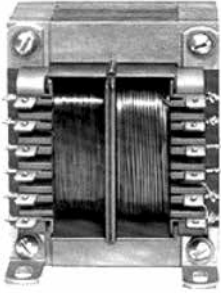
- Locate the column, in the table, for the required VA size
- In the voltage column, locate the required voltage rating
- Locate the Model number in the column to the left of the voltage
- Locate the fuse required in the fuse column

Most models also available with channel mount and lead wires.

VA SIZE	MODEL NUMBER	VOLTAGE	CURRENT	FUSE
2.5VA	4-24-3 __			
	4-24-3010	10	.25A	Not Required
	4-24-3012	12	.20A	Not Required
	4-24-3016	16	.15A	Not Required
	4-24-3020	20	.12A	Not Required
	4-24-3024	24	.10A	Not Required
5VA	4-24-4 __			
	4-24-4010	10	.50A	Not Required
	4-24-4012	12	.40A	Not Required
	4-24-4016	16	.31A	Not Required
	4-24-4020	20	.25A	Not Required
10VA	4-24-4024	24	.21A	Not Required
	4-24-5 __			
	4-24-5010	10	1.A	Not Required
	4-24-5012	12	.80A	Not Required
	4-24-5016	16	.62A	Not Required
20VA	4-24-5020	20	.50A	Not Required
	4-24-5024	24	.42A	Not Required
	4-24-6 __			
	4-24-6010	10	2A	Not Required
	4-24-6012	12	1.6A	Not Required
30VA	4-24-6016	16	1.25A	Not Required
	4-24-6020	20	1.0A	Not Required
	4-24-6024	24	.83A	Not Required
	4-24-7 __			
	4-24-7012	12	2.4A	3A FUSE*
56VA	4-24-7016	16	1.9A	Not Required
	4-24-7020	20	1.5A	Not Required
	4-24-7024	24	1.25A	Not Required
	4-24-8 __			
4-24-8012	12	4.66A	5A FUSE*	
4-24-8024	24	2.33A	2.5A FUSE*	

*Non-inherently limited maximum allowed fuse specified. All primaries are 115/230 volts 50/60Hz.

SERIES 4-29



QUICK CONNECT TRANSFORMERS

UL CLASS 2 UL 1585 / 5085 & TUV-CE CERTIFIED
UL60601-1 and CSA-C22.2 601.1-M90 certified construction.
Meets UL1097 double insulation requirements.
Also available with lead wires.



FILE # E120827 & E178395

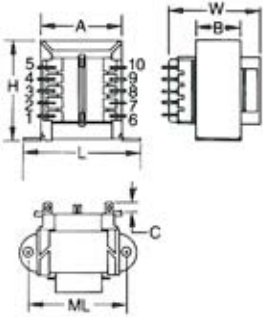
UL Recognized to UL5085 / UL506



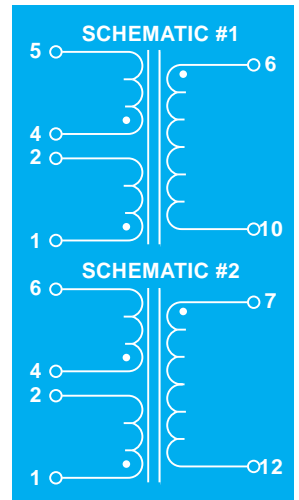
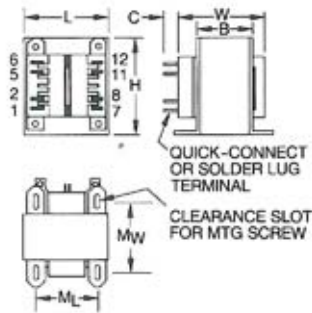
PASSED EN61558

These UL 1585 / 5085 (Class 2) designs cover a wider range of voltage and power levels than other manufacturers. This UL and CE-TUV certified line ensures your product will meet the requirement of agencies around the world. All versions have a class F(155C) insulation system and are rated for 4000V hipot.

MOUNTING STYLE C



MOUNTING STYLE D



DIMENSIONS

Transformer	VA	Schematic	Mounting Style	L	W	H	A	B	C	Terminals	ML	MW	Screw Size	Maximum Number Terminals	Lbs.
4-29-4	25	1	C	2-13/16	1-7/8	2-5/16	2	1-1/8	5/16	3/16	2-3/8		6	10	1.25
4-29-5	40	1	C	3-1/8	2-1/16	2-11/16	2-1/4	1-1/8	3/16	13/16	2-13/16		6	10	1.60
4-29-6	80	2	D	2-1/2	2-3/8	3		1-3/8	5/16	3/16	2	2-3/16	6	12	2.80

To determine part number for specific transformer to be ordered:

- Locate the column, in the table, for the required VA size
- In the voltage column, locate the required voltage rating
- Locate the model number in the column to the left of the voltage
- Locate the fuse required in the fuse column

CURRENT RATINGS (AMPS RMS)

VA SIZE	MODEL NUMBER	VOLTAGE	CURRENT	FUSE REQUIRED ON SECONDARY
25VA	4-29-4			
	4-29-4012	12	2.1A	2.5A**
	4-29-4024	24	1.0A	NA*
40VA	4-29-5			
	4-29-5012	12	3.33A	4.0A**
	4-29-5024	24	1.66A	2.0A**
80VA	4-29-6			
	4-29-6024	24	3.33A	4.0A**

* Inherently limited

** Non-inherently limited maximum allowed fuse specified. All primaries are 115/230 volts 50/60Hz.

VDE P.C. MOUNT TRANSFORMERS

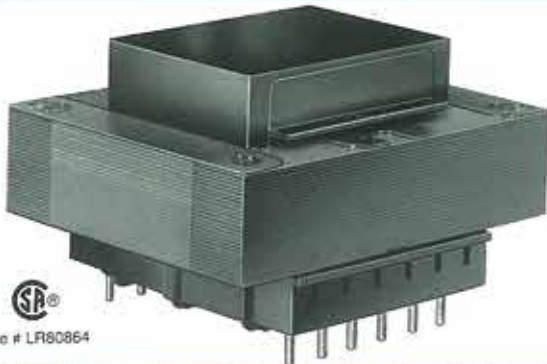
SERIES 4-44



Recognized Component
Underwriters Labs, Inc.
File # E86403



Has passed strict
requirements of
EN 60742



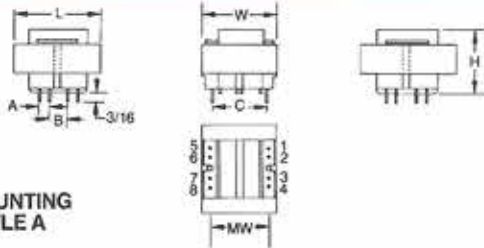
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4,000 Volt RMS Hipot. In a variety of sizes. Maximum operating temperature 130°C. Available with either 115V or dual 115/230V primary.

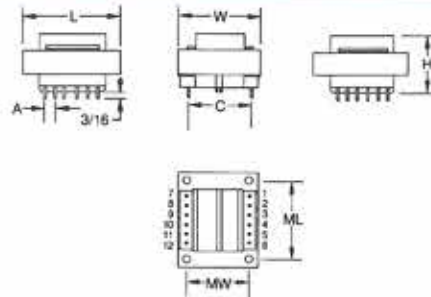
MCI's split bobbin and non-concentric winding provide better insulation and high signal isolation, thus eliminating the need for electrostatic shielding.

These transformers are designed to pass VDE's strict creepage distance requirements.

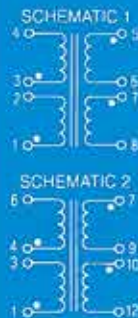
Adaptations of standard transformers are also available. Dots on schematics shown below indicate like polarity.



MOUNTING STYLE A



MOUNTING STYLE B



To determine part number for specific transformer to be ordered:

1. Locate the column, in the table, for the required voltage.
2. In the voltage column, locate the required current rating.
3. Moving left from the current rating, find the number indicating required primary— dual 115/230V.
4. Derive part number by combining digits identifying required primary and digits at top of column giving required voltage.

DIMENSIONS

Transformer	VA	Schematic	Mounting Style	Mounting Style			Pin Dimensions			MW	Screw Size	Maximum Number Terminals	Lbs.		
				L	W	H	A	B	C						
4-44-3	2.5	1	A	1-5/8	1-7/16	1-1/8	.200	.250	1.000	.025 sq.	1-1/16	4	8	.25	
4-44-4	5.0	1	A	1-5/8	1-7/16	1-3/8	.200	.400	1.000	.025 sq.	1-1/16	4	8	.37	
4-44-5	10.0	1	A	1-7/8	1-9/16	1-3/8	.200	.400	1.140	.036 sq.	1-1/4	4	8	.53	
4-44-6	20.0	2	A	2-1/4	1-7/8	1-5/8	.400	.400	1.460	.036 sq.	1-1/2	4	12	.90	
4-44-7	30.0	2	B	2-5/8	2-3/16	1-9/16	.275		1.680	.045 sq.	1-3/4	2-3/16	6	12	1.15
4-44-8	56.0	2	B	3	2-1/2	1-13/16	.300		1.900	.045 sq.	2	2-1/2	6	12	1.70

CURRENT RATING (AMPS RMS)

Last 3 Digits of Part No.	SERIES CONNECTION							SECONDARY VOLTAGE						
	-010	-012	-016	-020	-024	-028	-036	10V C.T.	12.6V C.T.	16V C.T.	20V C.T.	24V C.T.	28V C.T.	36V C.T.
4-44-3	.25	.20	.15	.12	.10	.09	.07							
4-44-4	.50	.40	.31	.25	.21	.18	.14							
4-44-5	1.00	.80	.62	.50	.42	.36	.28							
4-44-6	2.00	1.60	1.25	1.00	.83	.72	.56							
4-44-7	3.00	2.40	1.90	1.50	1.25	1.06	.82							
4-44-8	5.60	4.40	3.50	2.80	2.33	2.00	1.56							

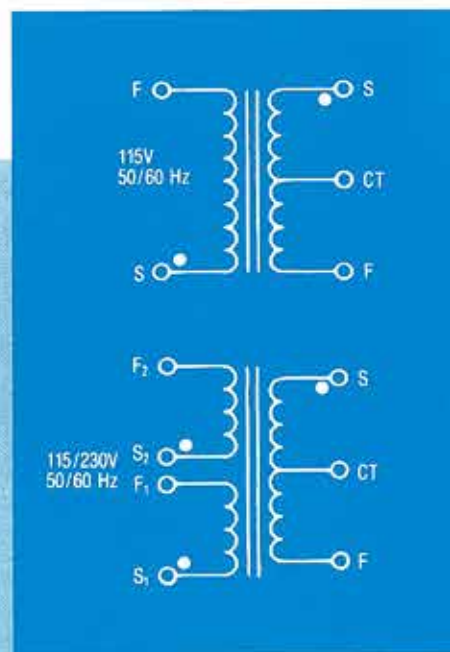
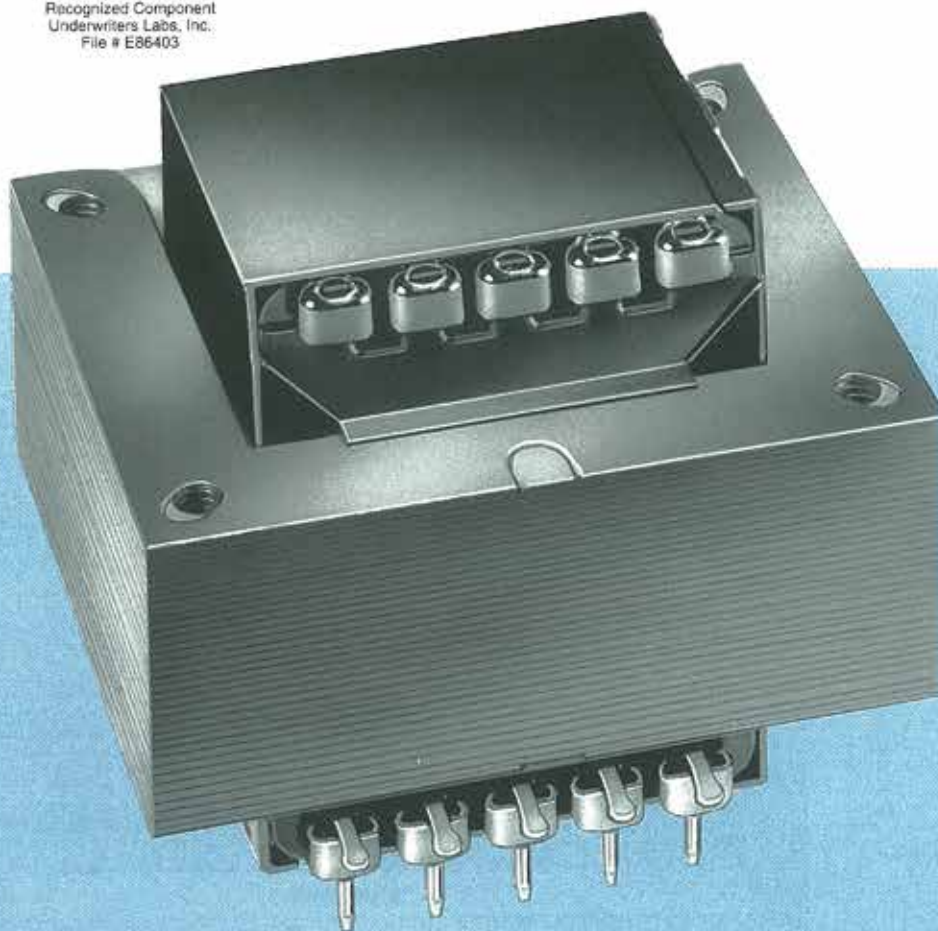
First 4 Digits:	PARALLEL CONNECTION				SECONDARY VOLTAGE			
	5V	6.3V	8V	10V	12V	14V	18V	
4-44-3	.50	.40	.30	.24	.20	.18	.14	
4-44-4	1.00	.80	.62	.50	.42	.36	.28	
4-44-5	2.00	1.60	1.25	1.00	.84	.73	.56	
4-44-6	4.00	3.20	2.50	2.00	1.66	1.44	1.12	
4-44-7	6.00	4.80	3.80	3.00	2.50	2.12	1.64	
4-44-8	11.20	8.80	7.00	5.60	4.66	4.00	3.12	

SERIES 4-41 & 4-42

VDE HORIZONTAL P.C. TRANSFORMERS



Recognized Component
Underwriters Labs, Inc.
File # E86403



CURRENT RATING (AMPS RMS)

Last 3 Digits of Part Number:	-010	-012	-016	-020	-024	-028	-036	-048	-056	-120
First 4 Digits: of Part Number:	SECONDARY VOLTAGE									
	10V C.T.	12.6V C.T.	16V C.T.	20V C.T.	24V C.T.	28V C.T.	36V C.T.	48V C.T.	56V C.T.	120V C.T.
Single 115V Primary										
Dual 115/230V Primary										
4-41-2	1.000	.800	.625	.500	.420	.360	.280	.210	.180	.085
4-41-3	2.000	1.600	1.250	1.000	.840	.720	.560	.420	.360	.170
4-41-4	3.000	2.400	1.875	1.500	1.250	1.075	.835	.625	.540	.250
4-41-5	4.500	3.600	2.815	2.250	1.875	1.610	1.250	.940	.805	.375

VDE HORIZONTAL P.C. TRANSFORMERS

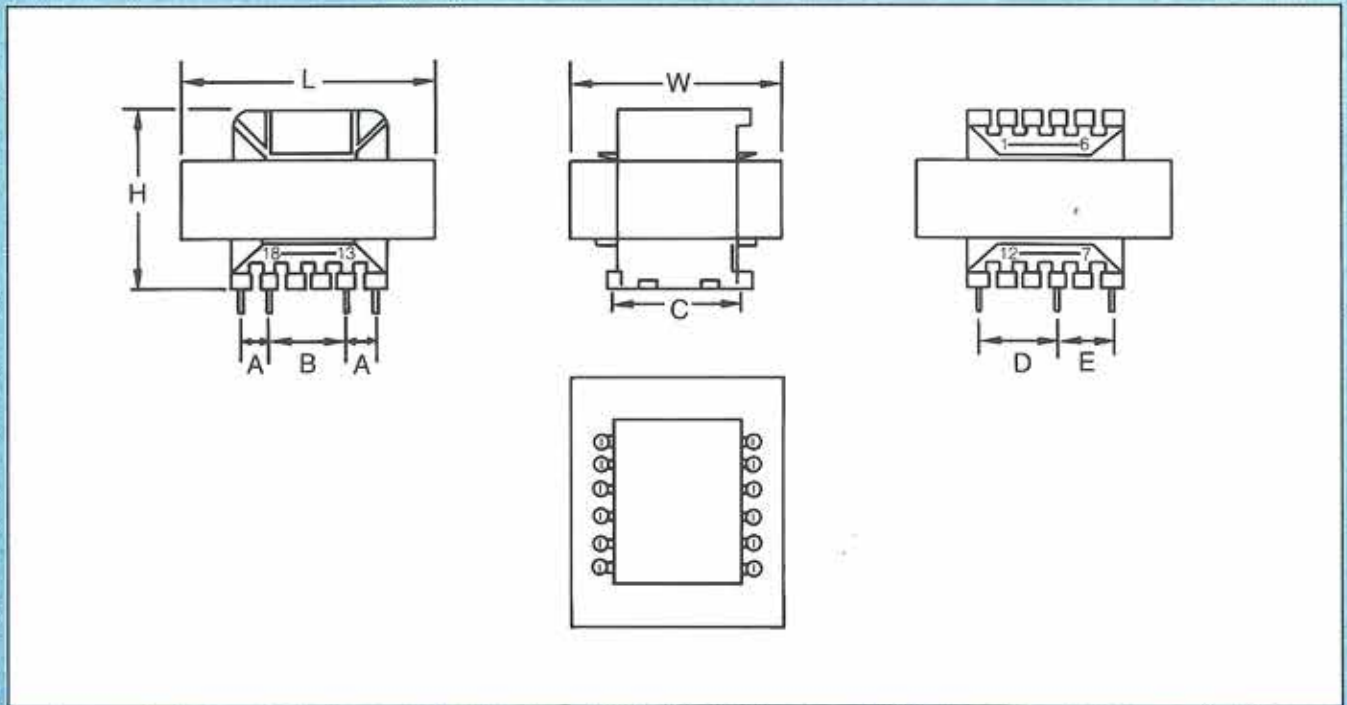
SERIES 4-41 & 4-42

4,000 Volt RMS Hipot. In a variety of sizes.
Maximum operating temperature 130°C.
Available with either 115V or dual 115/230V primary.

MCI's split bobbin and non-concentric winding provide better insulation and high signal isolation, thus eliminating the need for electrostatic shielding.

These transformers are designed to pass VDE's strict creepage distance requirements.

Adaptations of standard transformers are also available. Dots on schematics shown below indicate like polarity.



TERMINAL POSITIONS										
	4-41				4-42					
	115V Primary		115/230V Primary		Secondary					
	S	F	S1	F1	S2	F2	S	C.T.	F	
2	13	18	13	14	17	18	7	9	12	
3	11	15	11	12	14	15	6	8	10	
4	11	15	11	12	14	15	6	8	10	
5	11	15	11	12	14	15	6	8	10	

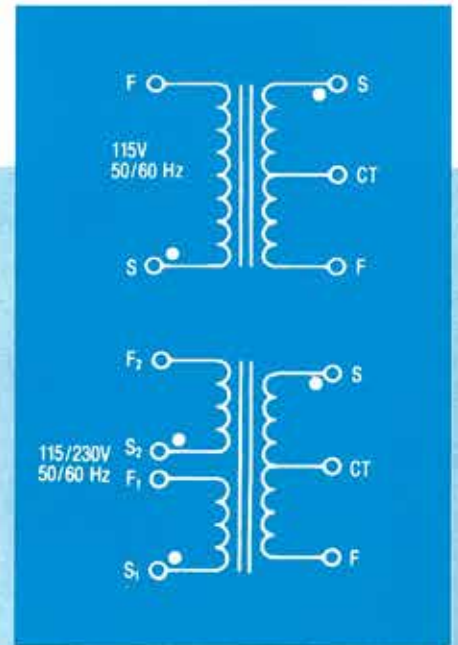
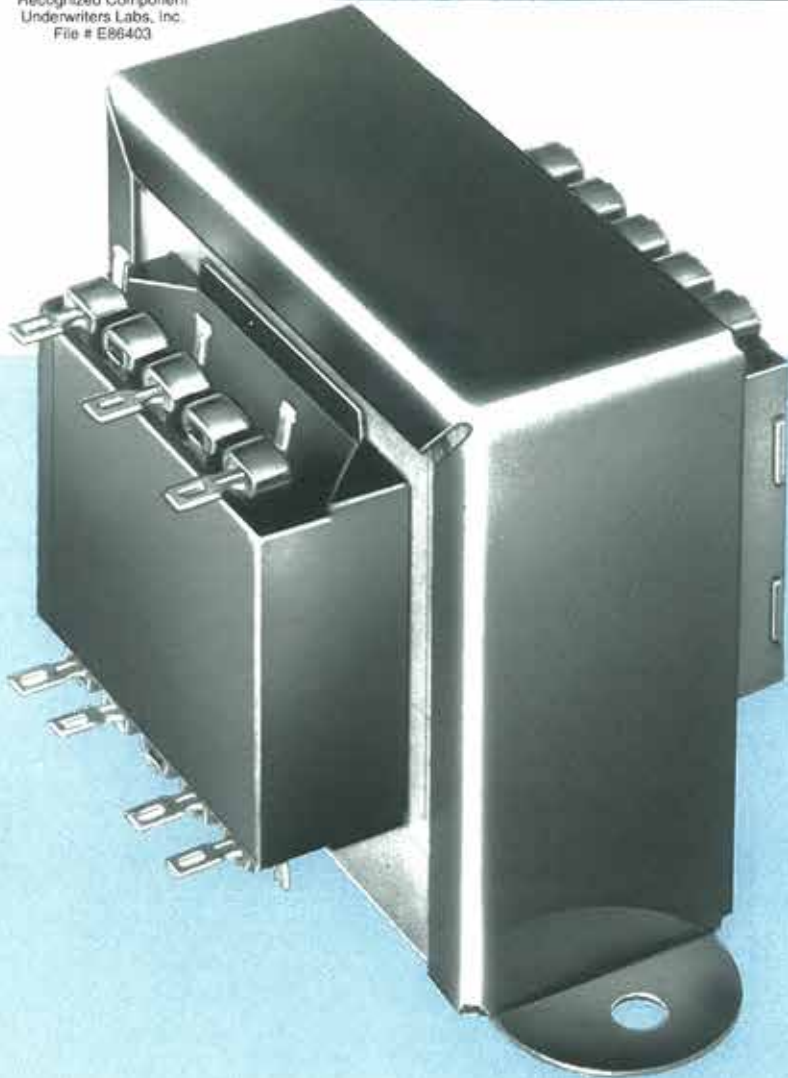
SIZE	VA	L	W	H	A	B	C	D	E	Lbs.
2	10	1 7/8	1 1/16	1 1/2	.200	.600	1.000	.600	.400	.57
3	20	2 1/4	1 7/8	1 3/16	.300	.600	1.200	.600	.600	.97
4	30	2 1/4	1 7/8	2 1/16	.300	.600	1.200	.600	.600	1.20
5	45	2 5/8	2 3/16	2 1/32	.300	.600	1.400	.600	.600	1.40

SERIES 4-46 & 4-47



Recognized Component
Underwriters Labs, Inc.
File # E96403

VDE QUICK CONNECT POWER TRANSFORMERS



CURRENT RATING (AMPS RMS)

Last 3 Digits of Part Number:		-010	-012	-016	-020	-024	-028	-036	-048	-056	-120
First 4 Digits of Part Number:		SECONDARY VOLTAGE									
		10V C.T.	12.6V C.T.	16V C.T.	20V C.T.	24V C.T.	28V C.T.	36V C.T.	48V C.T.	56V C.T.	120V C.T.
Single 115V Primary	Dual 115/230V Primary										
4-46-2	4-47-2	1.000	.800	.625	.500	.420	.360	.280	.210	.180	.085
4-46-3	4-47-3	2.000	1.600	1.250	1.000	.840	.720	.560	.420	.360	.170
4-46-4	4-47-4	3.000	2.400	1.875	1.500	1.250	1.075	.835	.625	.540	.250
4-46-5	4-47-5	4.500	3.600	2.815	2.250	1.875	1.610	1.250	.940	.805	.375
4-46-6	4-47-6	5.600	4.500	3.500	2.800	2.335	2.000	1.560	1.170	1.000	.470
4-46-7	4-47-7		5.560	4.375	3.500	2.290	2.500	1.950	1.460	1.250	.585
4-46-8	4-47-8			5.000	4.000	3.335	2.860	2.225	1.670	1.430	.670
4-46-9	4-47-9				5.000	4.170	3.575	2.780	2.090	1.790	.835

VDE QUICK CONNECT POWER TRANSFORMERS

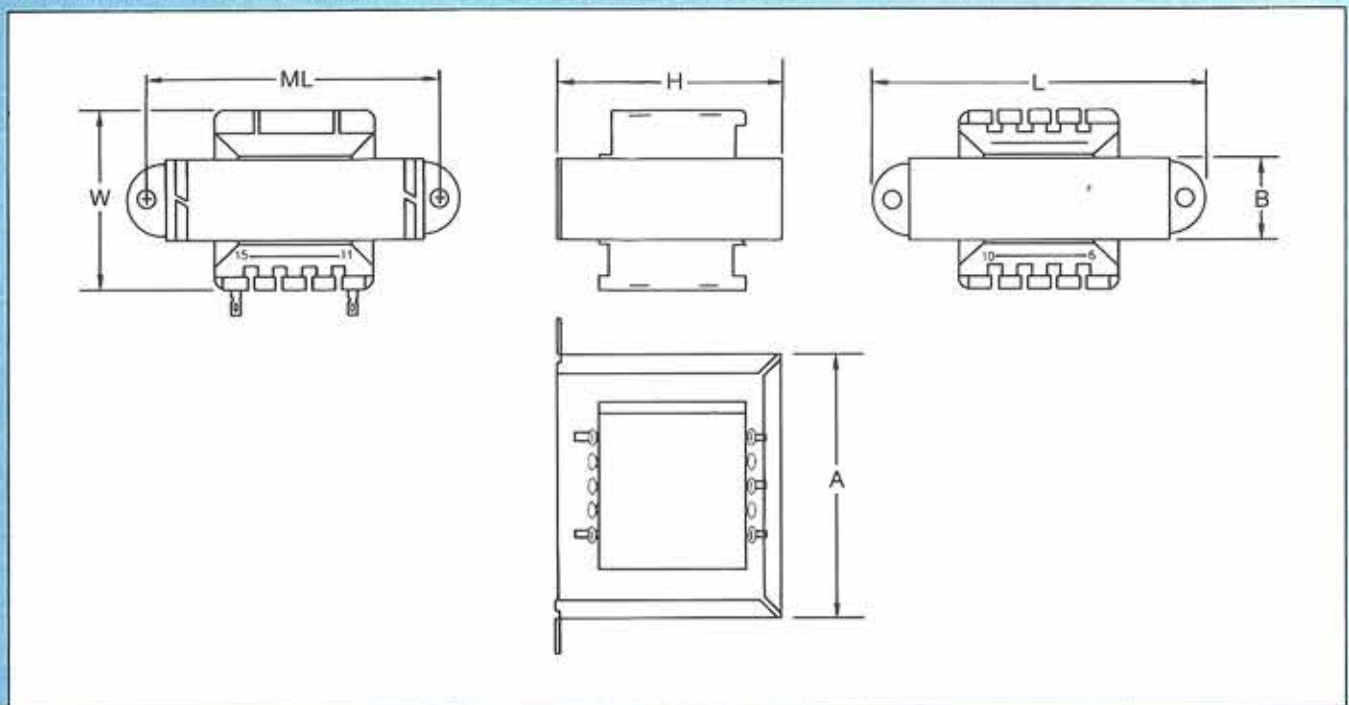
SERIES 4-46 & 4-47

4,000 Volt RMS Hipot. In a variety of sizes.
Maximum operating temperature 130°C.
Available with either 115V or dual 115/230V
primary.

MCI's split bobbin and non-concentric winding
provide better insulation and high signal isolation,
thus eliminating the need for electrostatic
shielding.

These transformers are designed to pass VDE's
strict creepage distance requirements.

Adaptations of standard transformers are also
available. Dots on schematics shown below
indicate like polarity.



TERMINAL POSITIONS

	4-46		4-47				Secondary		
	115V Primary		115/230V Primary				S	C.T.	F
	S	F	S1	F1	S2	F2			
2	13	18	13	14	17	18	7	9	12
3	11	15	11	12	14	15	6	8	10
4	11	15	11	12	14	15	6	8	10
5	11	15	11	12	14	15	6	8	10
6	11	15	11	12	14	15	6	8	10
7	13	18	13	14	17	18	7	9	12
8	13	18	13	14	17	18	7	9	12
9	13	18	13	14	17	18	7	9	12

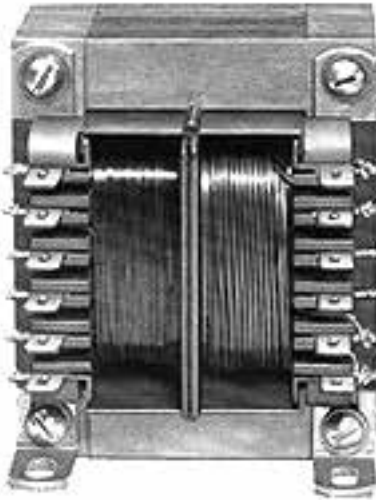
SIZE	VA	L	W	H	A	B	ML	Lbs.
2	10	2 ¹³ / ₁₆	1 ¹ / ₂	1 ⁵ / ₈	1 ¹⁵ / ₁₆	1 ¹ / ₁₆	2 ³ / ₈	.57
3	20	3 ¹ / ₄	1 ³ / ₁₆	1 ¹⁵ / ₁₆	2 ⁵ / ₁₆	7 ¹ / ₈	2 ¹³ / ₁₆	.97
4	30	3 ³ / ₄	2 ¹ / ₃₂	1 ¹⁵ / ₁₆	2 ⁵ / ₁₆	1 ¹ / ₈	2 ¹³ / ₁₆	1.20
5	45	3 ¹ / ₁₆	2 ¹ / ₃₂	2 ¹ / ₄	2 ¹ / ₁₆	1	3 ¹ / ₈	1.40
6	56	3 ¹ / ₁₆	2 ⁵ / ₃₂	2 ¹ / ₄	2 ¹ / ₁₆	1 ¹ / ₈	3 ¹ / ₈	1.70
7	70	4 ¹ / ₃₂	2 ⁹ / ₃₂	2 ⁹ / ₁₆	3 ¹ / ₁₆	1 ¹ / ₁₆	3 ⁹ / ₁₆	2.40
8	80	4 ¹ / ₃₂	2 ¹ / ₂	2 ⁹ / ₁₆	3 ¹ / ₁₆	1 ⁵ / ₁₆	3 ⁹ / ₁₆	2.80
9	100	4 ¹ / ₂	2 ¹ / ₃₂	2 ¹ / ₁₆	3 ¹³ / ₃₂	1 ⁷ / ₃₂	4	3.20

SERIES 4-49

TUV-CE QUICK CONNECT TRANSFORMERS

UL60601-1 and CSA-C22.2 601.1-M90 certified construction.
Meets UL1097 double insulation requirements.

NEW 400VA MODEL



FILE # E86403 & E178395

UL Recognized to
UL5085 / UL506

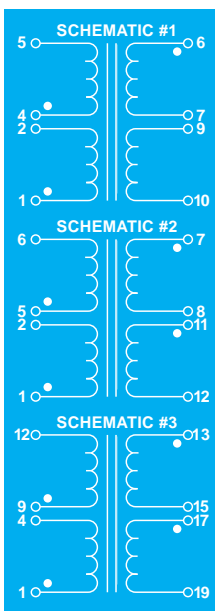


PASSED EN61558

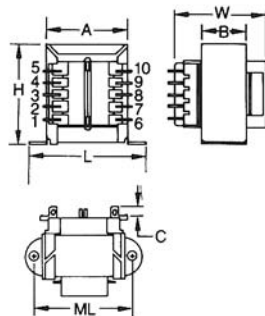


FILE #LR80864

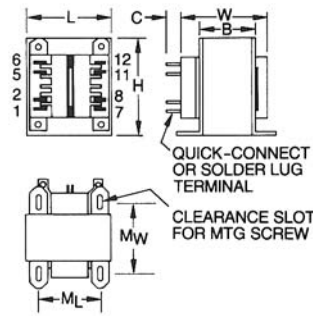
4,000-Volt RMS Hipot. In a variety of sizes. Maximum operating temperature 155°C. Available with either 115V or dual 115/230V primary. MCI's split bobbin and non-concentric winding provide better insulation and high signal isolation, thus eliminating the need for electrostatic shielding. These transformers are designed to pass VDE's strict creepage distance requirements. Adaptations of standard transformers are also available. Dots on schematics shown below indicate like polarity.



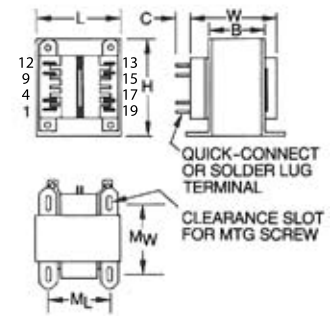
MOUNTING STYLE C



MOUNTING STYLE D



MOUNTING STYLE E



TUV-CE QUICK CONNECT TRANSFORMERS

SERIES 4-49

DIMENSIONS

Transformer	VA	Schematic	Mounting Style	L	W	H	A	B	C	Terminals	ML	MW	Screw Size	Maximum Number Terminals	Lbs.
4-49-4__	25	1	C	2-13/16	1-7/8	2-5/16	2	1-1/8	5/16	3/16	2-3/8		6	10	1.25
4-49-5__	43	1	C	3-1/8	2-1/16	2-11/16	2-1/4	1-1/8	3/16	13/16	2-13/16		6	10	1.60
4-49-6__	80	2	D	2-1/2	2-3/8	3		1-3/8	5/16	3/16	2	2-3/16	6	12	2.80
4-49-7__	130	2	D	2-13/16	2-7/8	3-3/8		1-5/8	3/8	1/4	2-1/4	2-1/2	8	12	4.10
4-49-8__	175	2	D	3-1/8	2-7/8	3-3/4		1-5/8	3/8	1/4	2-1/2	2-1/2	8	12	5.50
4-49-9__	200	3	E	3-1/8	3-3/8	3-3/4		1-7/8	3/8	1/4	2-1/2	2-3/4	8	20	6.10
4-49-0__	250	3	E	3-1/8	3-7/8	3-3/4		2-5/16	3/8	1/4	2-1/2	3-3/16	8	20	7.00
*4-49-1__	400	3	E	3-7/16	4-1/4	4-1/8		2-9/10	3/8	1/4	2-3/4	3-11/16	8	20	10.70

To determine part number for specific transformer to be ordered:

1. Locate the column, in the table, for the required voltage
2. In the voltage column, locate the required current rating
3. Moving left from the current rating, find the number indicating required primary-dual 115/230V
4. Derive part number by combining digits identifying required primary and digits at top of column giving required voltage

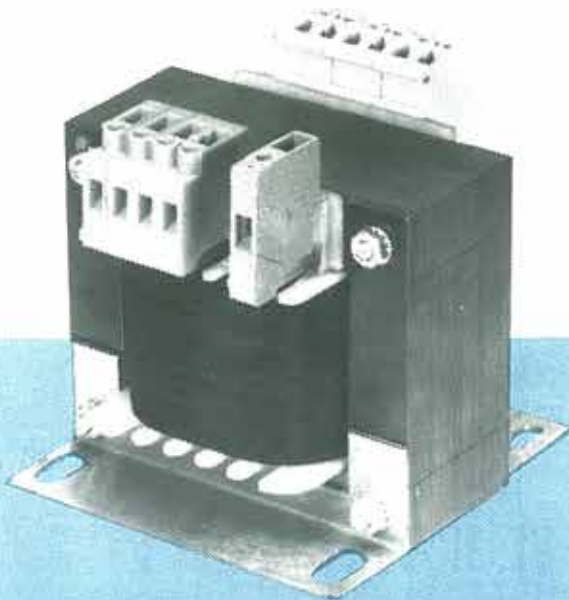
CURRENT RATINGS (AMPS RMS)

Last 3 Digits of Part Number:	-010	-012	-016	-020	-024	-028	-036	-048	-56	-120	-230	
	SERIES CONNECTION						SECONDARY VOLTAGE					
First 4 Digits:	10V CT	12.6V CT	16V CT	20V CT	24V CT	28V CT	36V CT	48V CT	56V CT	120V CT	230V CT	
4-49-4__	2.50	2.00	1.60	1.25	1.00	.90	.70	.50	.45	.20	.11	
4-49-5__	4.30	3.40	2.70	2.20	1.80	1.50	1.20	.90	.75	.35	.19	
4-49-6__	8.00	6.30	5.00	4.00	3.30	2.80	2.20	1.65	1.40	.65	.35	
4-49-7__	13.00	10.30	8.10	6.50	5.40	4.60	3.60	2.70	2.30	1.10	.57	
4-49-8__	17.50	14.00	11.00	8.80	7.30	6.25	4.80	3.65	3.10	1.45	.76	
4-49-9__	20.00	15.00	12.50	10.00	8.00	7.00	5.50	4.00	3.50	1.60	.85	
4-49-0__	25.00	20.00	15.50	12.00	10.00	8.90	6.90	5.20	4.46	2.00	1.0	
*4-49-1__	N/A	N/A	N/A	N/A	16.60	14.30	11.10	8.30	7.15	3.30	1.75	
	PARALLEL CONNECTION						SECONDARY VOLTAGE					
	5V	6.3V	8V	10V	12V	14V	18V	24V	28V	60V	115V	
4-49-4__	5.00	4.00	3.20	2.50	2.00	1.86	1.40	1.00	.90	.40	.22	
4-49-5__	8.60	6.80	5.40	4.40	3.60	3.00	2.40	1.80	1.50	.70	.38	
4-49-6__	16.00	12.60	10.00	8.00	6.60	5.60	4.40	3.30	2.80	1.30	.70	
4-49-7__	26.00	20.60	16.20	13.00	10.80	9.20	7.20	5.40	4.60	2.10	1.14	
4-49-8__	35.00	28.00	22.00	17.60	14.60	12.50	9.60	7.20	6.20	2.80	1.52	
4-49-9__	40.00	31.00	25.00	20.00	16.60	14.00	11.00	8.00	7.00	3.30	1.70	
4-49-0__	50.00	40.00	31.00	25.00	20.00	17.80	13.80	10.00	8.90	4.00	2.00	
4-49-1__	N/A	N/A	N/A	N/A	33.30	28.60	22.20	16.60	14.30	6.60	3.50	

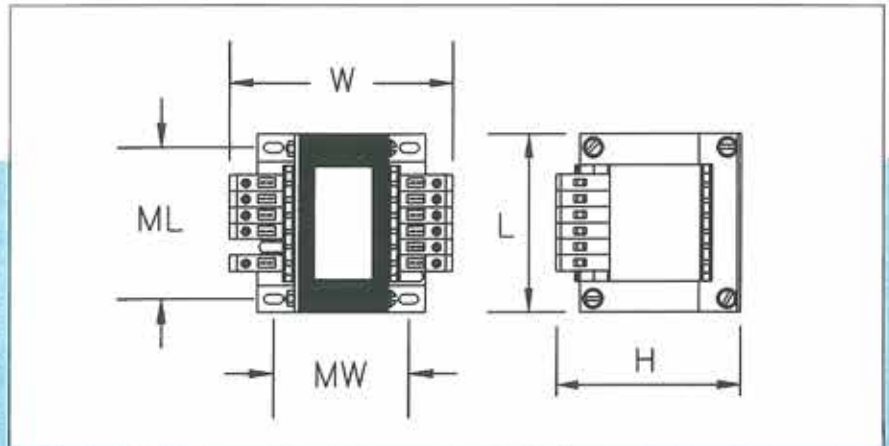
*4-49-1__ are certified as cULus and Tuv

SERIES 4-50

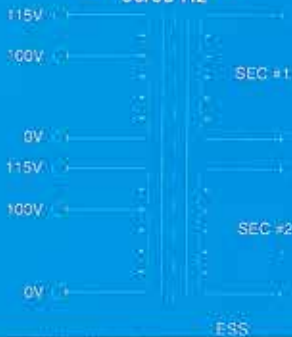
INTERNATIONAL STYLE TRANSFORMERS



MCI's new American manufactured 4-50 Series transformers meet the requirements of UL506, CSA22.2 #6, EN 60742, and IEC 742. These transformers are 100% tested, including a 4000 VRMS Hipot. Rugged or fast on screw type shock proof terminals handle high current and provide insulated field connection. MCI's 4-50 series is designed with better than 7.5% regulation and low leakage current for medical applications.



SCHEMATIC 50/60 Hz



MECHANICAL DIMENSIONS

Size	L	W	H	ML	MW	WGT
200VA	3.750"	4.203"	3.720"	3.250"	2.800"	6.22 lbs
250VA	4.125"	3.898"	4.000"	3.625"	2.601"	6.76 lbs
300VA	4.125"	4.223"	4.000"	3.625"	2.915"	7.80 lbs
400VA	4.125"	4.805"	4.000"	3.625"	3.505"	9.82 lbs
650VA	5.250"	4.430"	4.800"	4.500"	3.415"	14.83 lbs
900VA	5.250"	5.197"	4.800"	4.500"	4.205"	19.84 lbs

CURRENT RATINGS (AMPS RMS)

Last 3 Digits of Part Number:	-010	-012	-016	-020	-024	-028	-036	-040	-048	-230
First 4 Digits:	SERIES CONNECTION					SECONDARY VOLTAGE				
	10V C.T.	12.0V C.T.	16V C.T.	20V C.T.	24V C.T.	28V C.T.	36V C.T.	40V C.T.	48V C.T.	230V C.T.
4-50-1	20.0	16.7	12.5	10.0	8.3	7.1	5.6	5.0	4.2	.87
4-50-2	25.0	20.8	15.6	12.5	10.4	8.9	6.9	6.3	5.2	1.1
4-50-3	30.0	25.0	18.8	15.0	12.5	10.7	8.3	7.5	6.3	1.3
4-50-4	40.0	33.3	25.0	20.0	16.7	14.3	11.1	10.0	8.3	1.7
4-50-5	65.0	54.2	40.6	32.5	27.1	23.2	18.1	16.3	13.5	2.8
4-50-6	90.0	75.0	56.3	45.0	37.5	32.1	25.0	22.5	18.8	3.9
	PARALLEL CONNECTION					SECONDARY VOLTAGE				
	5V	6.0V	8V	10V	12V	14V	18V	20V	24V	115V
4-50-1	40.0	33.3	25.0	20.0	16.7	14.2	11.2	10.0	8.3	1.7
4-50-2	50.0	41.7	31.2	25.0	20.8	17.9	13.8	12.6	10.4	2.2
4-50-3	60.0	50.0	37.6	30.0	25.0	21.4	16.7	15.0	12.6	2.6
4-50-4	80.0	66.6	50.0	40.0	33.3	28.6	22.2	20.0	16.7	3.4
4-50-5	130.0	108.4	81.2	65.0	54.2	46.4	36.2	32.6	27.1	5.6
4-50-6	180.0	150.0	112.5	90.0	75.0	64.2	50.0	45.0	37.5	7.8

INDUSTRIAL CONTROL TRANSFORMERS

NEW! SERIES 4-54

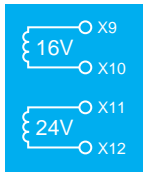
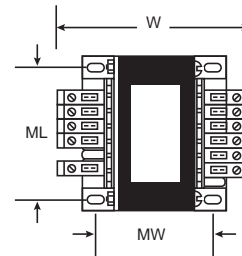
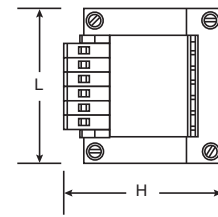
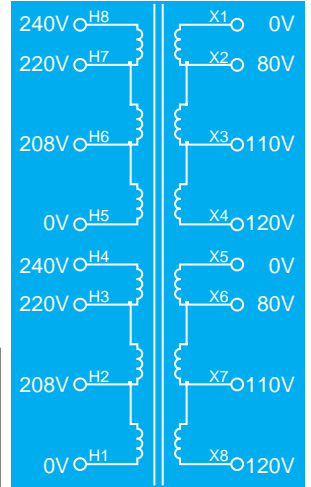


TUV-EN61558

Shown with optional fuse holder bracket and optional 100Va & 50Va windings

Primary 208V, 220V, 240V, 416V, 440V, 460V, 480V
Secondary 80V, 110V, 120V, 160V, 220V, 240V

***3KVA & 5KVA MODELS - UL PENDING**



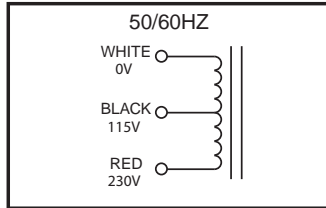
MECHANICAL DIMENSIONS

Size	L	W	H	ML	MW	MT HOLE	WGT
250VA	3.75"	3.70"	3.65"	3.125"	3.35"	.3" X .575"	9.50 lbs.
500VA- 650VA	5.25"	4.84"	5.88"	4.00"	3.38"	.3" X .575"	15.04lbs.
750VA-900VA	5.25"	5.40"	5.10"	4.00"	4.12"	.3" X .575"	19.58 lbs.
1KVA-1.15KVA	6.75"	5.00"	5.87"	5.50"	3.38"	.3" X .575"	24.12 lbs.
1.5KVA-1.65KVA	6.75"	5.75"	5.87"	5.50"	4.12"	.3" X .575"	31.44 lbs.
2.KVA-2.15KVA	6.75"	7.90"	6.05"	5.50"	5.87"	.315 X .5"	51.65 lbs.
3KVA-3.15KVA	9.00"	10.15"	7.95"	7.625"	6.12"	.315 X .5"	91.62 lbs
5KVA	9.00"	11.15"	7.95"	7.625"	7.12"	.315 X .5"	106.45 lbs

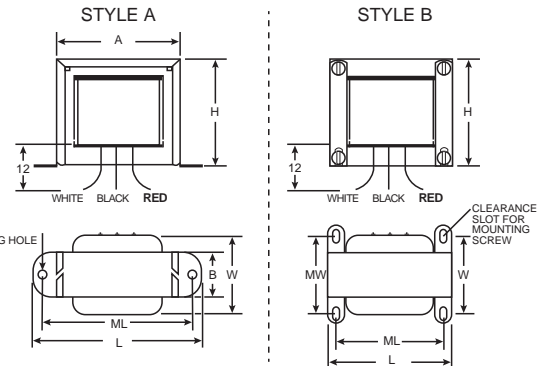
PART NUMBER	VA RATING	PRIMARY VOLTAGE						SECONDARY VOLTAGE						OPTIONAL WINDINGS	
		208V	220V	240V	416V	440V	480V	80V	110V	120V	160V	220V	240V	16V	24V
		PRIMARY CURRENT IN AMPS						SECONDARY CURRENT IN AMPS						CURRENT IN AMPS	
4-54-0200	250	1.20	1.36	1.04	.60	.57	.52	3.12	2.28	2.08	1.56	1.13	1.04	NA	NA
4-54-0500	500	2.40	2.27	2.08	1.20	1.14	1.04	6.25	4.55	4.17	3.13	2.27	2.08		
4-54-0516	550	2.64	2.50	2.29	1.32	1.25	1.15	6.25	4.55	4.17	3.13	2.27	2.08	3.13	
4-54-0524	600	2.88	2.73	2.50	1.44	1.36	1.25	6.25	4.55	4.17	3.13	2.27	2.08	3.13	4.17
4-54-0540	650	3.13	2.95	2.71	1.56	1.48	1.35	6.25	4.55	4.17	3.13	2.27	2.08	3.13	4.17
4-54-0700	750	3.61	3.41	3.13	1.80	1.70	1.56	9.38	6.82	6.25	4.69	3.41	3.13		
4-54-0716	800	3.85	3.64	3.33	1.92	1.82	1.67	9.38	6.82	6.25	4.69	3.41	3.13	3.13	
4-54-0724	850	4.09	3.86	3.54	2.04	1.93	1.77	9.38	6.82	6.25	4.69	3.41	3.13	3.13	4.17
4-54-0740	900	4.33	4.09	3.75	2.16	2.05	1.88	9.38	6.82	6.25	4.69	3.41	3.13	3.13	4.17
4-54-1000	1000	4.81	4.55	4.17	2.40	2.27	2.08	12.50	9.09	8.33	6.25	4.55	4.17		
4-54-1016	1050	5.05	4.77	4.38	2.52	2.39	2.19	12.50	9.09	8.33	6.25	4.55	4.17	3.13	
4-54-1024	1100	5.29	5.00	4.58	2.64	2.50	2.29	12.50	9.09	8.33	6.25	4.55	4.17	3.13	4.17
4-54-1040	1150	5.53	5.23	4.79	2.76	2.61	2.40	12.50	9.09	8.33	6.25	4.55	4.17	3.13	4.17
4-54-1500	1500	7.21	6.82	6.25	3.61	3.41	3.13	18.75	13.64	12.50	9.38	6.82	6.25		
4-54-1516	1550	7.45	7.05	6.46	3.73	3.52	3.23	18.75	13.64	12.50	9.38	6.82	6.25	3.13	
4-54-1524	1600	7.69	7.27	6.67	3.85	3.64	3.33	18.75	13.64	12.50	9.38	6.82	6.25	3.13	4.17
4-54-1540	1650	7.93	7.50	6.88	3.97	3.75	3.44	18.75	13.64	12.50	9.38	6.82	6.25	3.13	4.17
4-54-2000	2000	9.62	9.09	8.33	4.81	4.55	4.17	25.00	18.18	16.67	12.50	9.09	8.33		
4-54-2016	2050	9.86	9.32	8.54	4.93	4.66	4.27	25.00	18.18	16.67	12.50	9.09	8.33	3.13	
4-54-2024	2100	10.10	9.55	8.75	5.05	4.77	4.38	25.00	18.18	16.67	12.50	9.09	8.33	3.13	4.17
4-54-2040	2150	10.34	9.77	8.96	5.17	4.89	4.48	25.00	18.18	16.67	12.50	9.09	8.33	3.13	4.17
*4-54-3000	3000	14.42	13.64	12.5	7.21	6.82	6.25	37.50	27.27	25.00	18.75	13.63	12.50		
*4-54-3016	3050	14.66	13.86	12.7	7.33	6.93	6.35	37.50	27.27	25.00	18.75	13.63	12.50	3.13	
*4-54-3024	3100	14.90	14.10	12.9	7.45	7.05	6.46	37.50	27.27	25.00	18.75	13.63	12.50	3.13	4.17
*4-54-3040	3150	15.14	14.32	13.12	7.57	7.15	6.56	37.50	27.27	25.00	18.75	13.63	12.50	3.13	4.17
*4-54-5000	5000	24.00	22.72	20.83	12.02	11.36	10.41	62.50	45.45	41.66	31.25	22.72	20.80		
*4-54-5016	5000	24.00	22.72	20.83	12.02	11.36	10.41	61.87	45.00	41.25	30.94	22.50	20.62	3.13	
*4-54-5024	5000	24.00	22.72	20.83	12.02	11.36	10.41	61.25	44.55	40.83	30.62	22.27	20.41	3.13	4.17
*4-54-5040	5000	24.00	22.72	20.83	12.02	11.36	10.41	60.62	44.10	40.42	30.31	20.04	20.21	3.13	4.17

SERIES 4-52 & 4-53

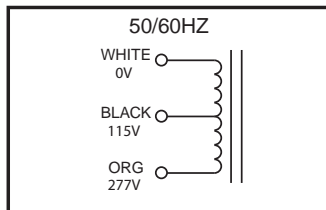
CHASSIS MOUNT STEP UP OR STEP DOWN AUTOTRANSFORMERS



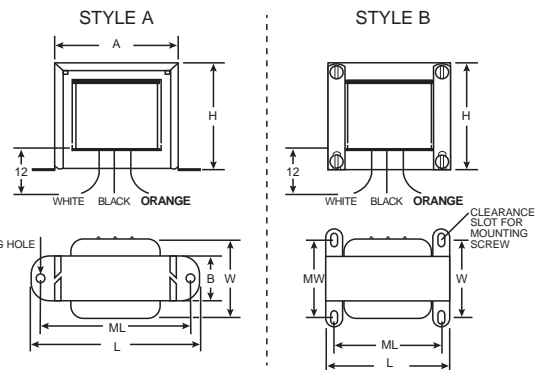
Series 4-52 (For 4-53 see below) Autotransformers provide the most cost effective solution for voltage conversion when electrical isolation is not required. Standard products range from 50VA to 5000VA and can either step up 115V to 230V or step down 230V to 115V 50/60hz (Bi-Directional). These open frame transformers are provided with color coded stranded lead wires 12" long and stripped 1/2 inch from lead end to make installation in any equipment easy. All models are made with Class F (155 degree C) insulation consistent with high temperature construction. Dielectric strength 2500VRMS Hipot Mounting options include Channel frame style for lower VA sizes and "L" Brackets for larger sizes. Other voltage combinations and additional power ratings are available on a special order basis.



Part Number	VA	L	H	W	ML	MW	A	B	Lead UL3271	Length	WT (lb)	Style
4-52-0050	50	3.25	1.98	1.70	2.81	-	2.4	0.9	18 AWG	12"	1.0	A
4-52-0100	100	3.25	1.98	2.20	2.81	-	2.4	1.4	18 AWG	12"	1.6	A
4-52-0250	250	3.38	2.81	2.60	2.81	2.25	-	-	18 AWG	12"	3.7	B
4-52-0500	500	3.75	3.13	3.70	3.13	3.00	-	-	18 AWG	12"	6.6	B
4-52-1000	1000	5.25	4.38	4.10	4.38	3.13	-	-	14 AWG	12"	14.3	B
4-52-2000	2000	5.25	4.38	6.00	4.38	5.13	-	-	12 AWG	12"	25.5	B
4-52-3000	3000	7.50	6.25	6.00	6.75	3.72	-	-	12 AWG	12"	36.0	B
4-52-5000	5000	7.50	6.25	7.70	6.75	5.46	-	-	8 AWG	12"	57.2	B



Series 4-53 Autotransformers provide the most cost effective solution for voltage conversion when electrical isolation is not required. Standard products range from 50VA to 5000VA and can either step up 115V to 277V or step down 277V to 115V 50/60hz (Bi-Directional). These open frame transformers are provided with color coded stranded lead wires 12" long and stripped 1/2 inch from lead end to make installation in any equipment easy. All models are made with Class F (155 degree C) insulation consistent with high temperature construction. Dielectric strength 2500VRMS Hipot Mounting options include Channel frame style for lower VA sizes and "L" Brackets for larger sizes. Other voltage combinations and additional power ratings are available on a special order basis.



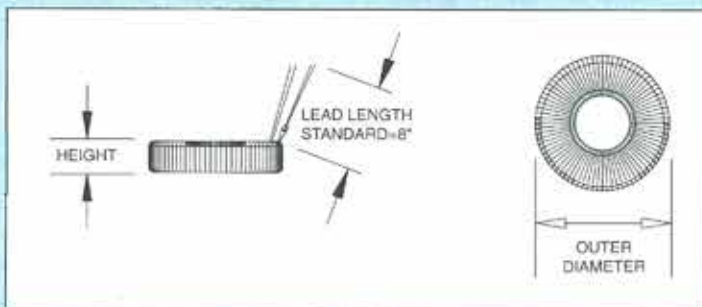
Part Number	VA	L	H	W	ML	MW	A	B	Lead UL3271	Length	WT (lb)	Style
4-53-0050	50	3.25	1.98	1.70	2.81	-	2.4	0.9	18 AWG	12"	1.0	A
4-53-0100	100	3.25	1.98	2.20	2.81	-	2.4	1.4	18 AWG	12"	1.6	A
4-53-0250	250	3.38	2.81	2.60	2.81	2.25	-	-	18 AWG	12"	3.7	B
4-53-0500	500	3.75	3.13	3.70	3.13	3.0	-	-	18 AWG	12"	6.6	B
4-53-1000	1000	5.25	4.38	4.10	4.38	3.13	-	-	14 AWG	12"	14.3	B
4-53-2000	2000	5.25	4.38	6.00	4.38	5.13	-	-	12 AWG	12"	25.5	B
4-53-3000	3000	7.50	6.25	6.00	6.75	3.72	-	-	12 AWG	12"	36.0	B
4-53-5000	5000	7.50	6.25	7.70	6.75	5.46	-	-	8 AWG	12"	57.2	B

TOROIDS



Toroidal Transformers can be manufactured to pass UL, CSA, and TUV requirements for medical, audio, instrument, industrial, video, and compact power supplies. Toroids have substantially lower levels of stray field radiation, audible noise, and a lower height than conventional laminated transformers. Toroids also offer lower weight, easier mounting configuration and improved efficiency.

MCI has standard toroidal sizes but can manufacture a transformer with many different dimensions.



MOUNTING WASHER WITH RUBBER PADS
The most economical method of mounting the TOROID horizontally is using a metal washer with rubber pads. Mounting is done with one screw through the center.

SIZE	"A"	"B"	"C"
1	2.0	0.31	0.31
2	2.8	0.31	0.31
3	3.5	0.31	0.31
4	4.3	0.31	0.31
5	5.3	0.31	0.31

MAX. POWER (VA)	NO LOAD LOSS (WATTS)	DIMENSIONS		
		O.D. (INCHES)	HEIGHT (INCHES)	WEIGHT (LBS)
150	0.88	4.2	1.5	3.5
165	0.92	4.3	1.6	3.8
190	1.32	4.4	1.8	4.5
225	1.33	4.5	1.9	4.5
300	1.51	5.1	1.9	5.7
360	1.91	5.1	2.0	6.2
500	2.25	5.2	2.4	8.5
600	2.81	5.3	2.8	10.0
800	3.81	6.4	2.3	12.5
1000	4.76	6.5	2.7	15.5
1200	5.71	6.5	3.2	18.0
1400	5.50	7.9	2.5	20.4
1700	6.62	7.9	3.0	24.2
2100	7.94	8.6	3.4	28.5
2500	9.05	8.7	3.0	33.0
3000	10.8	8.7	3.3	39.0
3600	14.1	10.2	3.1	45.0
4500	15.3	10.2	3.6	55.0
5400	19.0	10.5	3.9	62.0
6000	22.3	11.5	4.5	68.0
6600	25.8	12.0	4.7	76.0
7600	23.4	12.7	4.7	83.0
8500	26.2	13.0	4.9	93.0
10000	33.5	13.0	5.4	115.0

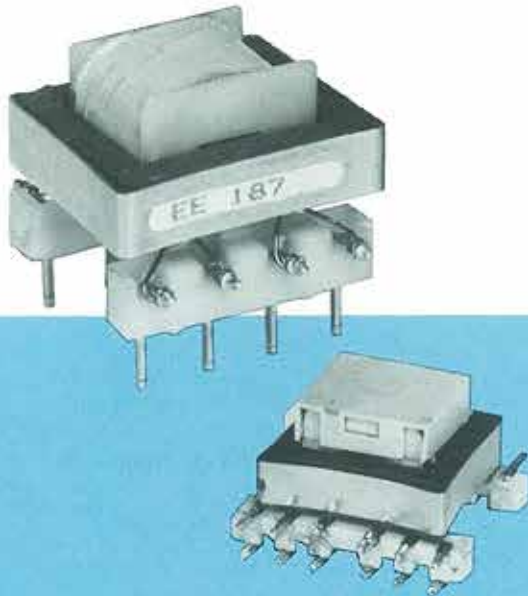
***CAUTION:** Be sure not to form a closed loop with the screw and the chassis when mounting the transformer. This will form a shorted turn on the transformer.

ADDITIONAL OPTIONS

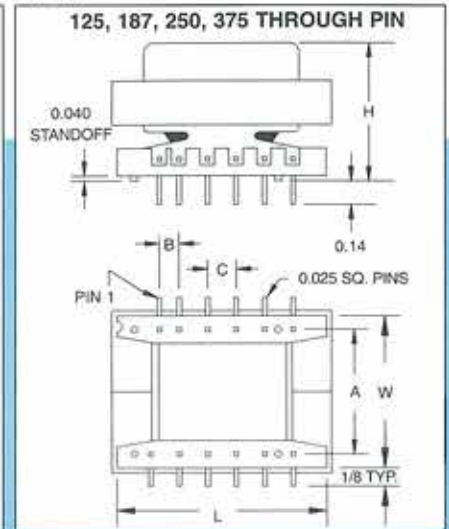
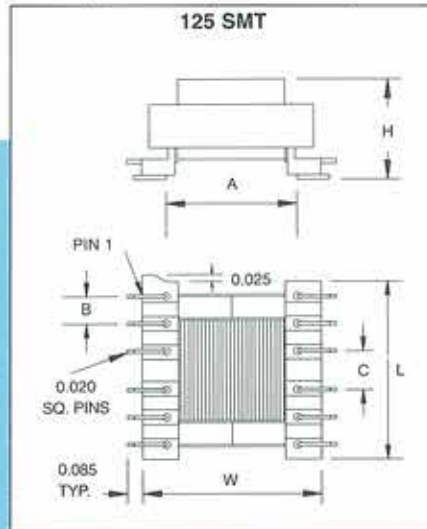
- **THERMAL PROTECTION:**
A thermal fuse or breaker can be added to protect circuitry.
- **ELECTROSTATIC SHIELDING:**
To reduce electrostatic coupling, a 0.002 in. copper tape will be added between windings.
- **MEDICAL INSULATION:**
For those who need low leakage current, due to patient hook-up, additional insulation can be added to meet safety standards.
- **MAGNETIC SHIELDING:**
To further reduce stray magnetic fields, a metal belly band can be added to the toroid.

SERIES 4-81

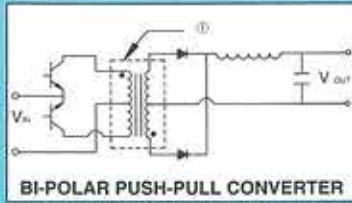
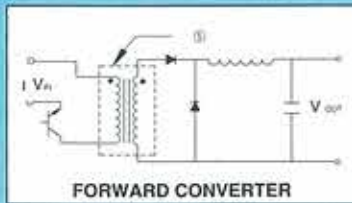
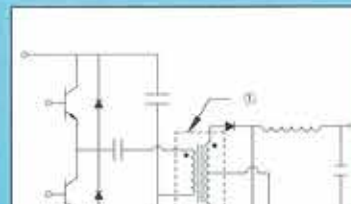
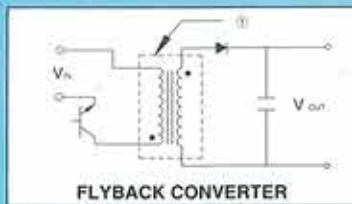
HORIZONTAL P.C. MOUNT SWITCHMODE TRANSFORMERS



Standard EE Style switchmode transformers for customers who need cost effective solutions to switching magnetics requirements. Applications for these transformers are DC-DC and rectified offline switchers using flyback, forward, pushpull, halfbridge, or full bridge topologies. These transformers are designed to meet UL and CSA requirements and are Hipot tested at 1000VRMS standard with higher voltages available. MCI's 4-81 Series utilizes standard materials for quick turnaround of custom variations. MCI's "State of the art" manufacturing facilities provide automatic assembly and 100% final testing to guarantee a high quality part. Our design engineers are knowledgeable regarding switchmode magnetics and can provide many solutions for your switching application.



Maximum Output Power @ 100KHZ											
SIZE CODE	FLYBACK, FORWARD	PUSHPULL BRIDGE	CORE SIZE	L	W	H	A	B	C	# OF PINS	WT. (GRAM)
4-81-1	5	6	125SMT	.68	.55	.43	.40	.10TYP	.150	12	3.6
4-81-2	5	6	125	.68	.55	.43	.40	.10TYP	.150	12	3.6
4-81-3	10	12	187	.75	.71	.68	.51	.15	.20TYP	8	14.0
4-81-4	24	29	250	1.03	.82	.85	.62	.15	.20TYP	10	20.0
4-81-5	110	132	375	1.47	1.08	1.04	.87	.15	.20TYP	12	55.0



The above transformers can be used in four topologies, flyback, forward, pushpull, and bridge converters. For supplies in the 5-110 watt range the flyback is recommended. It has the least parts count, only one input switching devices, and no output inductor or freewheeling diode. It also exhibits excellent tracking between multiple outputs.

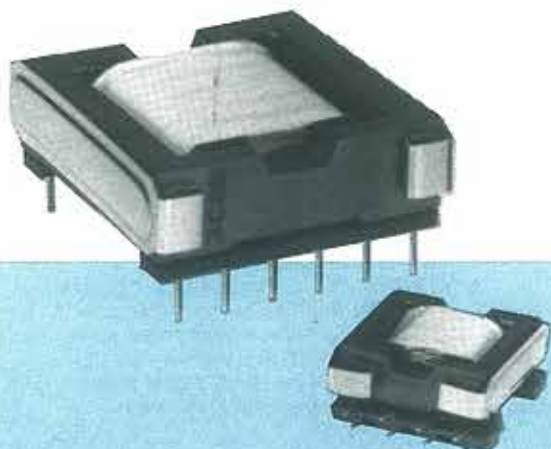
Information required to order a 4-81-Series Transformer:

- Input voltage and range
- Operating frequency
- Maximum duty cycle
- Topology Desired
- Application of transformer
- Output voltages
- Operating current and range for each output
- Switching regulator chip (if known)
- Safety agency approval transformer needs to meet

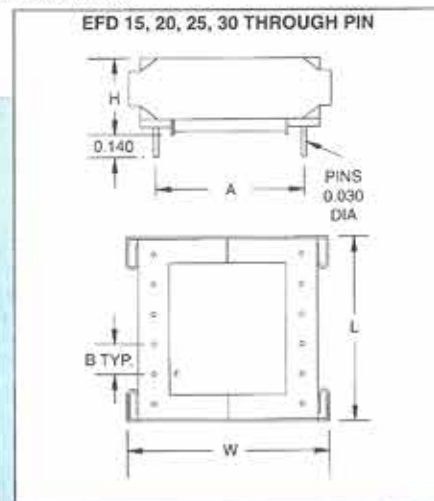
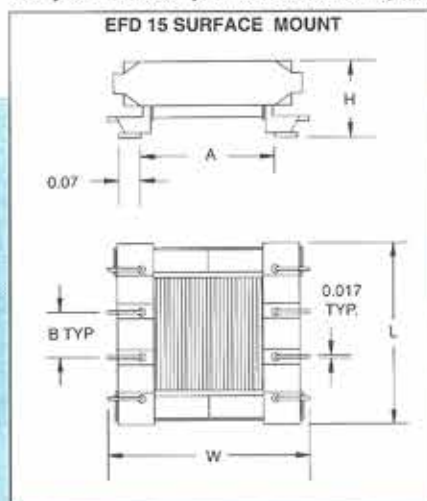
①: SWITCHMODE TRANSFORMER

LOW PROFILE SWITCHMODE TRANSFORMERS

SERIES 4-82

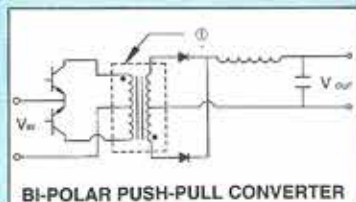
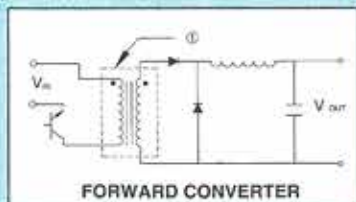
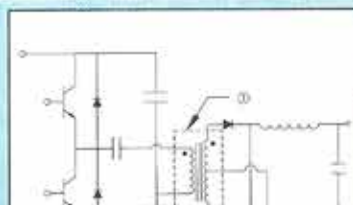
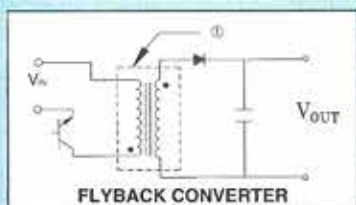


Standard EFD Core sizes for low profile surface mount and PC Board mount transformers that are economically manufactured on our automatic winding and assembly equipment. For customers who need low profile switching transformers, MCI's 4-82 Series packs up to 110 watts into a transformer only one half an inch high. By using superior grades of core material, MCI's 4-82 series transformers are suited to operate at switching frequencies up to 1MHz. These transformers are designed to meet UL and CSA requirements and are Hipot tested at 1000VRMS standard with higher voltages available. MCI's 4-82 Series utilizes standard materials for quick turnaround of custom variations. MCI's "State of the art" manufacturing facilities provide automatic assembly and 100% final testing to guarantee a high quality part. Our design engineers are knowledgeable regarding switchmode magnetics and can provide many solutions for your overall switching power application.



Maximum Output Power @ 100KHZ

SIZE CODE	FLYBACK, FORWARD	PUSHPULL, BRIDGE	CORE SIZE	W	L	H	A	B	# OF PINS	WT. (GRAMS)
4-82-1	10	12	EFD15SMT	.81	.65	.32	.53	.150	8	6.0
4-82-2	10	12	EFD15	.75	.65	.32	.54	.150	8	6.0
4-82-3	50	60	EFD20	.95	.85	.38	.69	.200	8	15.0
4-82-4	70	84	EFD25	1.15	1.05	.50	.89	.200	10	24.0
4-82-5	110	132	EFD30	1.35	1.26	.50	1.08	.200	12	39.0



The above transformers can be used in four topologies, flyback, forward, pushpull, and bridge converters. For supplies in the 5-110 watt range the flyback is recommended. It has the least parts count, only one input switching devices, and no output inductor or freewheeling diode. It also exhibits excellent tracking between multiple outputs.

Information required to order a 4-82-Series Transformer:

- Input voltage and range
- Operating frequency
- Maximum duty cycle
- Topology Desired
- Application of transformer
- Output voltages
- Operating current and range for each output
- Switching regulator chip (if known)
- Safety agency approval transformer needs to meet

Ⓢ: SWITCHMODE TRANSFORMER

BASIC POWER SUPPLY APPLICATION GUIDE

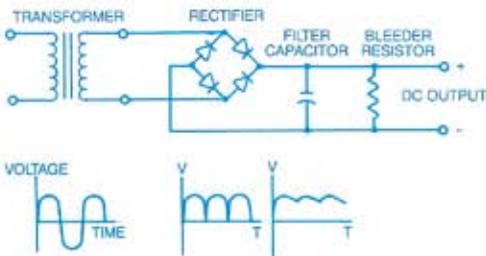
There are four basic types of power supplies used:

- 1) Unregulated Linear
- 2) Regulated Linear
- 3) Ferroresonant
- 4) Switch Mode

The differences between the four types include constant voltage output, cost, efficiency, size, weight, and ripple. We will explain each type of supply, describe the principle of operation, and the advantages and disadvantages of each.

1) Unregulated Linear Power Supply

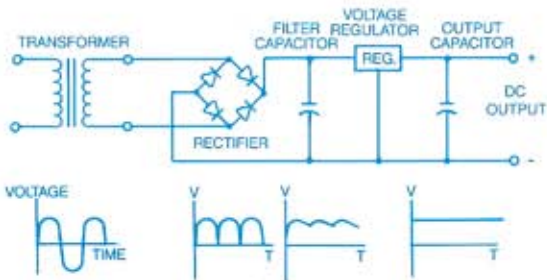
Unregulated power supplies contain four basic components: a transformer, rectifier, filter capacitor, and a bleeder resistor.



This type of power supply, because of its simplicity, is the least costly and most reliable for low power requirements. The disadvantage is that the output voltage is not constant. It will vary with the input voltage and the load current, and the ripple is not suitable for electronic applications. The ripple can be reduced by changing the filter capacitor to an LC (inductor-capacitor) filter but the cost to make this change would make use of the regulated linear power supply a more economical choice.

2) Regulated Linear Power Supply

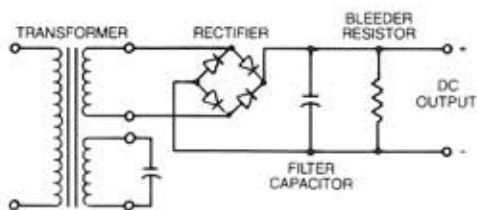
A regulated linear power supply is identical to the unregulated linear power supply except that a 3-terminal regulator is used in place of the bleeder resistor.



The regulated linear power supply solves all of the problems of the unregulated supply, but is not as efficient because the 3-terminal regulator will dissipate the excess power in the form of heat which must be accommodated in the design of the supply. The output voltage has negligible ripple, very small load regulation, and high reliability, thus making it an ideal choice for use in low power electronic applications.

3) Ferroresonant Power Supplies

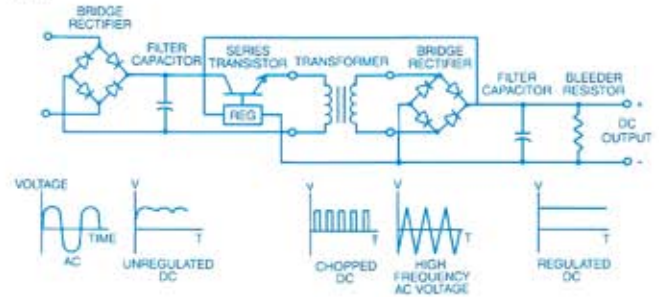
A ferroresonant power supply is very similar to an unregulated power supply except for the characteristics of the ferroresonant transformer.



The ferroresonant transformer will supply a constant output voltage over a wide variation of the transformer input voltage. The problems with using a ferroresonant power supply include that it is very sensitive to slight changes in line frequency and would not be switchable from 50 Hz to 60 Hz, and that the transformers dissipate more heat than conventional transformers. These power supplies are heavier and will have more audible noise from the transformer resonance than regulated linear power supplies.

4) Switch Mode Power Supplies

The switch mode power supply has a rectifier, filter capacitor, series transistor, regulator, transformer, but is more complicated than the other power supplies that we have discussed. The schematic below is a simple block diagram and does not represent all of the components in the power supply.



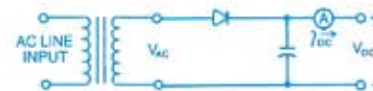
The AC voltage is rectified to an unregulated DC voltage, with the series transistor and the regulator. This DC is chopped to a constant high frequency voltage which enables the size of the transformer to be dramatically reduced, and allows for a much smaller power supply. The disadvantages of this type of supply are that all of the transformers have to be custom-made and the complexity of the power supply does not lend itself to low production or economical low power applications.

RECTIFICATION CIRCUITS FOR REGULATED LINEAR POWER SUPPLIES

From our previous description, a regulated linear power supply is the most economical design for lower power, low ripple, and low regulation which is suitable for electronic applications. In this section we will explain the four basic rectification circuits that are used:

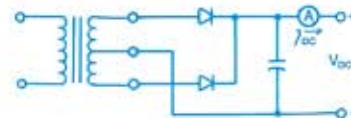
- 1) Half Wave
- 2) Full Wave Center Tapped
- 3) Full Wave Bridge
- 4) Dual Complementary

1) Half Wave Circuits



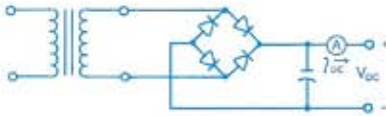
Since a capacitor input filter only draws current from the rectification circuit in short pulses, the frequency of the pulses is half that of a full-wave circuit, therefore the peak current of those pulses is so high that this circuit would not be recommended for DC power more than 1/2 watt.

2) Full Wave Center Tapped Circuits



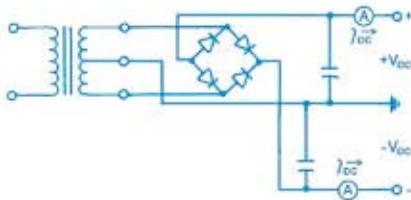
A full-wave rectifier uses only one-half of the transformer winding at a time. The transformer secondary rated current should be 1.2 times the DC current of the power supply. The transformer secondary voltage should be approximately .8 times the DC voltage of the unregulated power supply per side of the center tap or the transformer should be 1.6 times V_{DC} center tapped.

3) Full Wave Bridge



The full-wave bridge rectification circuit is the most cost effective because it requires a lower VA rated transformer than a full-wave tapped rectifier. In a full-wave bridge, the entire transformer secondary is used on each half cycle, unlike the full-wave center tapped which only uses one-half the secondary on each half cycle. The transformer secondary rated current should be 1.8 times the DC current of the power supply. The transformer secondary voltage should be approximately .8 times the DC voltage of the unregulated power supply.

4) Dual Complementary Rectifier



A dual complementary rectifier is used to supply a positive and negative DC output of the same voltage. In most cases, the negative current is significantly less than the positive current requirements so the AC voltage and current relationship to the DC voltage and current should be the same as the full-wave center tapped described earlier.

Possible choices for the transformer are:

4-02-6020	UL PC mount
4-05-4020	Low profile
4-07-6020	UL Chassis mount
4-42-3020	VDE PC mount
4-44-6020	VDE PC mount
4-47-3020	VDE Chassis mount
4-49-4020	VDE Chassis mount

Full-Wave Bridge

$$V_{ac} = 1.046 \times V_{dc} + 5.23 \quad I_{ac} = I_{dc} \times 1.8$$

$$V_{ac} = 1.046 \times 5 + 5.23 \quad I_{ac} = 1 \times 1.8$$

$$V_{ac} = 10.46 \quad I_{ac} = 1.8$$

$$VA = 10.46 \times 1.8 = 18.83$$

Possible choices for the transformer are:

4-02-6010	UL PC mount
4-05-4010	Low profile
4-07-6010	UL Chassis mount
4-42-3010	VDE PC mount
4-44-6010	VDE PC mount
4-47-3010	VDE Chassis mount
4-49-4010	VDE Chassis mount

#2: A regulated linear power supply is needed for 12VDC at 250MA DC with a single primary voltage 115V and a full-wave bridge is the rectification circuits that you will use.

Full-Wave Bridge

$$V_{ac} = 1.046 \times V_{dc} + 4.04 \quad I_{ac} = I_{dc} \times 1.8$$

$$V_{ac} = 1.046 \times 12 + 4.04 \quad I_{ac} = .25 \times 1.8$$

$$V_{ac} = 16.59 \quad I_{ac} = .45$$

$$VA = 16.59 \times .45 = 7.47$$

Possible choices for the transformer are:

4-01-5020	UL PC mount
4-03-4020	UL PC mount
4-05-3020	UL Low Profile PC mount
4-06-5020	UL Chassis mount,
4-41-2020	VDE PC mount
4-44-5020	VDE PC mount
4-46-2020	VDE Chassis mount

With power supplies, be sure that the regulator chosen is adequately heat sunk to dissipate the power at high line full load.

#3: A regulated linear power supply is needed for ± 15VDC at 50MA with a 115 volt primary.

Dual Complementary:

$$V_{ac} C.T. = 2.092 \times V_{dc} \times 8.08 \quad I_{ac} = I_{dc} \times 1.8$$

$$V_{ac} C.T. = 2.092 \times 15 + 8.08 \quad I_{ac} = .050 \times 1.8$$

$$V_{ac} C.T. = 39.46 \quad I_{ac} = .090$$

$$VA = 39.46 \times .090 = 3.55$$

Possible choices for the transformer are:

4-01-4036	UL PC mount
4-03-3040	UL PC mount
4-05-2040	UL Low Profile PC mount
4-06-4036	UL Chassis mount
4-44-4036	VDE PC mount

Let us now look at how the regulator will dissipate heat in worst case conditions high line (≈ 130V) and full load. The regulator dissipates the excess power in the form of heat. A regulator has only a maximum amount of power it can dissipate before the internal thermal protection shuts it down. If a 5VDC, 1AMP power supply can operate at 95V RMS, the regulator will have to dissipate 5.95 watts at full load high line (see calculation below).

Regulator dissipated heat:

$$\text{Watts} = I_{dc} \left(\frac{V_{highline}}{V_{lowline}} (V_{dc} + V_{reg}) - V_{reg} \right) =$$

$$= 1 \left(\frac{130}{95} (5 + 3) - 5 \right)$$

$$= 1 (10.95 - 5)$$

$$= 5.95 \text{ watts}$$

It is important that the regulator has proper heat sinking for this purpose.

HOW TO SPECIFY THE TRANSFORMER

The use of a regulated linear power supply is to provide a constant output voltage over a variety of loads and also a variation of the input voltage. All of our calculations to determine the correct transformer will assume that the input voltage can vary from 95 to 130V and not change the output of our supply.

The formula used to determine the AC voltage required from the transformer is as follows:

$$V_{ac} = \frac{V_{dc} + V_{reg} + V_{rec} + V_{rip}}{.9} \times \frac{V_{nom}}{V_{lowline}} \times \frac{1}{\sqrt{2}}$$

V_{dc} = Output voltage
 V_{reg} = Voltage drop of the regulator ≈ 3V
 V_{rec} = Voltage drop across diodes ≈ 1.25V
 V_{rip} = Ripple voltage ≈ 10% of V_{dc}
 V_{nom} = 115V
 $V_{lowline}$ = 95V
 $.9$ = Rectifier efficiency

We have summarized all of the calculations for the three basic rectification circuits in the table below:

RECTIFICATION CIRCUIT	RMS VOLTAGE (VOLTS)	RMS CURRENT (AMPS)
Full-Wave Center Tap	$V_{AC} C.T. = 2.092 \times V_{DC} + 8.08$	$I_{AC} = I_{DC} \times 1.2$
Full-Wave Bridge	$V_{AC} = 1.046 \times V_{DC} + 4.04$	$I_{AC} = I_{DC} \times 1.8$
Dual Complementary	$V_{AC} C.T. = 2.092 \times V_{DC} + 8.08$	$I_{AC} = I_{DC} \times 1.8$

There are low loss regulators which have .5V drop instead of 3V but they are not being considered at this time because of availability.

EXAMPLES:

#1: A regulated linear power supply is needed for 5VDC at 1ADC with a primary of either 115V or 230V and you do not know whether it should be full-wave center tapped or a full-wave bridge.

Full-Wave Center Tap

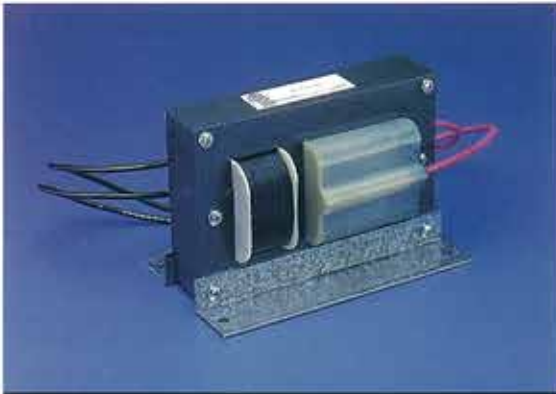
$$V_{ac} C.T. = 2.092 \times V_{dc} + 8.08 \quad I_{ac} = I_{dc} \times 1.2$$

$$V_{ac} C.T. = 2.092 \times 5 + 8.08 \quad I_{ac} = 1 \times 1.2$$

$$V_{ac} C.T. = 18.54 C.T. \quad I_{ac} = 1.2$$

$$VA = 18.54 \times 1.2 = 22.25$$

OTHER MCI TRANSFORMER PRODUCTS



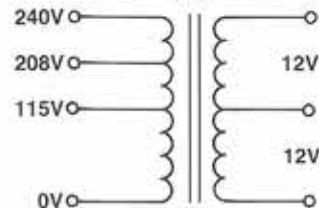
HIGH VOLTAGE IGNITION/POTENTIAL TRANSFORMERS

The MCI Multi Section HV coil is encapsulated in epoxy to provide the maximum reliability at minimum cost. Many variations of standard designs can be produced with up to 10,000V output.

Designs presently CSA certified are 120 V in with 5,000 or 6,000 Volts out, current limited to 19 ma.



CLASS 2 UNIVERSAL INPUT VOLTAGE UL & CSA



P/N 2-51-4024 IS 24V C/T AT 40VA
2-51-7024 IS 24V AT 80 VA



VERY LOW PROFILE 55 VA 1.21" Height

This unique MCI design satisfies goals to streamline products and maintain cost objectives while meeting UL/CSA/VDE requirements. 14 output pins provide secure mounting along with availability of many isolated output windings.



INDUSTRY STANDARD LOW PROFILE FOR VDE/IEC APPLICATIONS

Industry standard 2.5 VA & 6 VA designs encapsulated to meet VDE and IEC rqrmts. See page 6 for current and voltage ratings. Add E to part number for encapsulated version.