

Midcom



SwitchmodePower

Who is Wurth Electronics Midcom?

Wurth Electronics Midcom is a world leader in the production of standard and custom magnetics for communication and low power applications. Our products are used in a variety of electronic equipment ranging from personal computers and modems to telephone switching equipment, to credit card swiping machines, to high tech medical equipment and industrial controls. Wurth Electronics Midcom ships analog modem, digital telecom, switchmode power, and LAN magnetic products throughout North America and Internationally.

Several factors contribute to our tremendous success. Innovative designs, outstanding quality, and exceptional performance lead Wurth Electronics Midcom to every corner of the globe. The customer's complete satisfaction is the goal of our organization. It is achieved by our team working closely with our customer's team. High ethical standards and fairness are an integral part of our total effort. Our pride in workmanship, ingenuity in design, and strong work ethic help accomplish our aggressive goals.

Mission Statement of the Power Business Unit

The Wurth Electronics Midcom Power Business Unit will lead the low power switching magnetics industry by providing innovative solutions for our customers. We will accomplish this by providing standard inductor and transformer products, custom products as required, and outstanding technical support, all at a competitive cost.

Contact Information

Wurth Electronics Midcom, Inc. USA
 121 Airport Drive ~ PO Box 1330
 Watertown, SD 57201
 T: 605.886.4385 ~ F: 605.886.4486
www.we-online.com
sales@midcom-inc.com

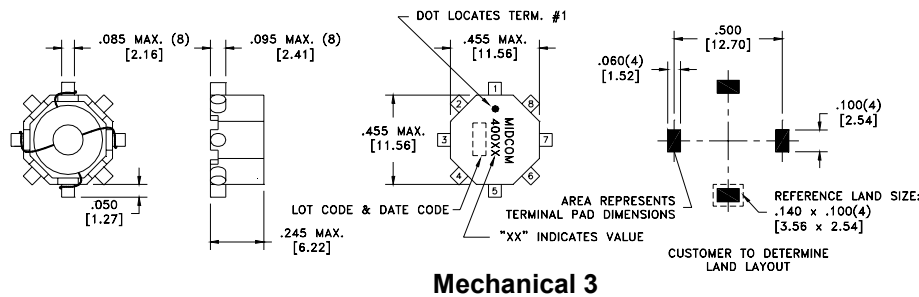
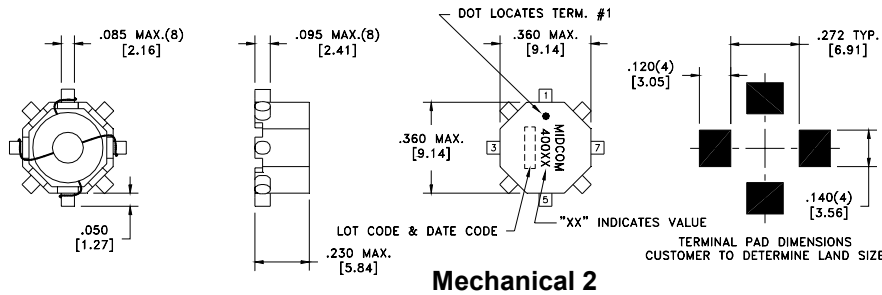
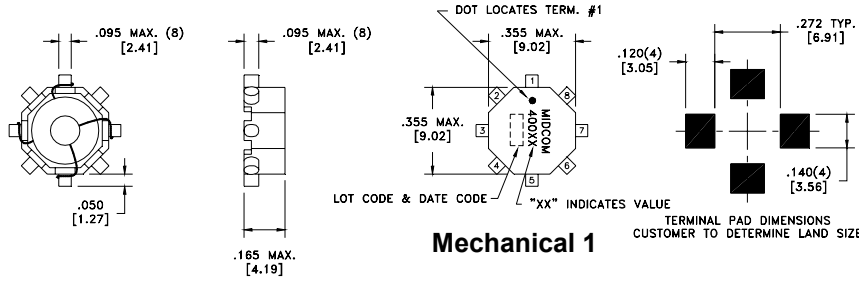
Wurth Electronics Midcom, Inc. China
 10/F Spectrum Tower ~ 53 Hung to Road
 Kwun Tong, Kowloon, HK
 T: 852.2320.4221 ~ F: 852.2352.3272
www.we-online.com
asiasales@midcom-inc.com

Table of Contents

Toroidal and Flatwire Inductors	
40K Series _____	3-5
FWS-5020 _____	6
GBI-2820 _____	7
GBI-4020 _____	8
LPI Series _____	9
SPI-5236 Series _____	10
TIW Series _____	11
Shielded Inductor Selector _____	12
Common Mode Chokes and Filters	
Tip and Ring Common Mode Filters _____	13
Toroidal Common Mode Chokes _____	14
ET20H Common Mode Chokes _____	15
UT20V Common Mode Chokes _____	16
Transformers	
LTTC-Low Power _____	17
<i>FLEX</i> former 15 _____	18
<i>FLEX</i> former 20 _____	19
Gemini 7 _____	20-21
Gemini 13 _____	22-23
Micro Power _____	24
Push-Pull _____	25
Flyback _____	26
Flyback PoE _____	27
Current Sense	
EE5 with Sense Wind _____	28
EP7 with Sense Wind _____	29
Toroidal without Sense Wind _____	30
Reference	
Switching Transformer Design Inquiry _____	31
Transformer Package Styles _____	32
Drum Core Inductor Cross Reference _____	33-34
40K SMD Toroidal Inductor Cross Reference _____	35
TIW SMD Toroidal Inductor Cross Reference _____	36
Switchmode Power Glossary _____	37-40
Inductor Part Number Meaning _____	41

SwitchmodePower

40K Series



Features

- Maximum power density
- Toroid design offers high efficiency
- Versatility
- Low EMI radiation
- Full load current range: 0.22 to 7.90 ADC
- Designed for pick and place
- Low Cost
- Dielectric strength to 500VDC

Applications

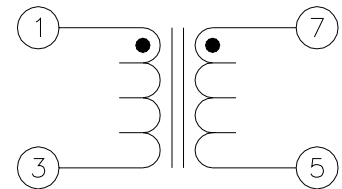
- Cellular, battery-powered, low-voltage power applications, pager, portable instruments.
- Sepic converters
- Buck and boost converters
- Switching voltage regulators
- Isolated 1:1 applications
- Pagers
- Portable instruments
- Coupled inductors
- Chokes

Environmental Specifications

- Operating temp range: -40° to +85°C
- Storage temp range: -50° to +125°C

Packaging

- EIA-481-2 embossed 24mm carrier tape
- Mechanical 1 parts: 800 pieces per 13" reel
- Mechanical 2 parts: 625 pieces per 13" reel
- Mechanical 3 parts: 600 pieces per 13" reel



Part Number	L +/-20% uH (1)	DCR Max. Ω Series (2)	DCR Max. Ω Parallel (3)	Isat ADC Parallel	L Min. (μH) Parallel (4)	Mech.
40000R	0.395	0.022	0.006	5.5	0.28	1
40034R	0.420	0.025	0.007	6.2	0.30	3
40017R	0.490	0.024	0.006	5.9	0.36	2
40051R	0.490	0.019	0.005	7.9	0.33	3
40001R	0.565	0.025	0.006	5.1	0.41	1
40035R	0.670	0.029	0.008	5.7	0.49	3
40052R	0.760	0.023	0.006	7.2	0.54	3
40018R	0.795	0.029	0.007	5.4	0.57	2
40036R	0.910	0.033	0.009	5.4	0.63	3
40002R	1.020	0.032	0.008	4.5	0.71	1
40053R	1.100	0.034	0.009	5.9	0.79	3

Note1: Inductance value at 100kHz, 100mV, 0ADC
 Note2: DCR limits at 20°C terminals 1-5, with terminals 3 and 7 tied.
 Note3: DCR limits at 20°C terminals 1-3, with terminals 1 and 7; and 3 and 5 tied.
 Note4: Terminals 1-3, with terminals 1 and 7; and 3 and 5 tied.

(Continued on the following page)

SwitchmodePower

40K Series (continued)

Part Number	L +/-20% uH (1)	DCR Max. Ω		Isat ADC Parallel	L Min. (μ H)		Mech.
		Series (2)	Parallel (3)		Parallel (4)	Parallel (4)	
40019R	1.14	0.034	0.009	5.0	0.82	2	
40037R	1.85	0.045	0.012	4.6	1.21	3	
40054R	1.92	0.055	0.014	4.6	1.38	3	
40003R	2.02	0.054	0.014	3.4	1.33	1	
40020R	2.03	0.056	0.014	3.9	1.52	2	
40038R	4.74	0.090	0.023	3.2	2.96	3	
40004R	4.83	0.161	0.040	2.0	3.29	1	
40021R	4.90	0.128	0.032	2.5	3.48	2	
40055R	5.15	0.107	0.027	3.3	3.47	3	
40022R	7.65	0.159	0.040	2.3	5.18	2	
40056R	7.81	0.131	0.033	3.0	5.02	3	
40005R	8.08	0.208	0.052	1.8	5.18	1	
40039R	8.16	0.119	0.030	2.8	4.78	3	
40006R	9.62	0.227	0.057	1.7	6.07	1	
40040R	9.79	0.132	0.033	2.7	5.57	3	
40023R	9.83	0.179	0.045	2.1	6.56	2	
40057R	9.88	0.187	0.047	2.5	6.53	3	
40041R	14.5	0.198	0.050	2.2	8.29	3	
40058R	14.8	0.228	0.057	2.3	9.28	3	
40007R	15.0	0.348	0.087	1.4	9.38	1	
40024R	15.0	0.339	0.085	1.6	10.3	2	
40025R	19.6	0.387	0.097	1.5	13.0	2	
40826R	20.0	0.188	0.047	3.0	10.0	3	
40042R	20.2	0.443	0.111	1.5	12.8	3	
40008R	20.5	0.634	0.159	1.0	13.8	1	
40059R	20.6	0.337	0.084	1.9	13.1	3	
40026R	24.8	0.436	0.109	1.4	16.2	2	
40043R	25.3	0.499	0.125	1.4	15.8	3	
40009R	25.4	0.708	0.177	0.9	16.6	1	
40060R	25.7	0.462	0.116	1.6	16.7	3	
40010R	32.3	1.000	0.250	0.8	21.7	1	
40044R	32.6	0.571	0.143	1.3	19.8	3	
40027R	32.7	0.503	0.126	1.3	21.2	2	

Note1: Terminals 1-3 @ 100kHz and 100mV.

Note2: DCR limits at 20°C terminals 1-5, with terminals 3 and 7 tied.

Note3: DCR limits at 20°C terminals 1-3, with terminals 1 and 7; and 3 and 5 tied.

Note4: Terminals 1-3, with terminals 1 and 7; and 3 and 5 tied @ 100kHz and 100mV.

Features

- Maximum power density
- Toroid design offers high efficiency
- Versatility
- Low EMI radiation
- Full load current range: 0.22 to 7.90 ADC
- Designed for pick and place
- Low Cost
- Dielectric strength to 500VDC

Applications

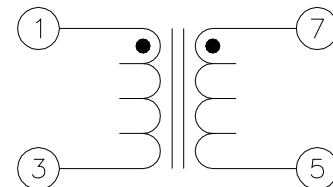
- Cellular, battery-powered, low-voltage power applications, pager, portable instruments.
- Sepic converters
- Buck and boost converters
- Switching voltage regulators
- Isolated 1:1 applications
- Pagers
- Portable instruments
- Coupled inductors
- Chokes

Environmental Specifications

- Operating temp range: -40° to +85°C
- Storage temp range: -50° to +125°C

Packaging

- EIA-481-2 embossed 24mm carrier tape
- Mechanical 1 parts: 800 pieces per 13" reel
- Mechanical 2 parts: 625 pieces per 13" reel
- Mechanical 3 parts: 600 pieces per 13" reel



(Continued on the following page)

SwitchmodePower

40K Series (continued)

Part Number	L +/-20% uH (1)	DCR Max. Ω		Isat ADC Parallel	L Min. (μ H) Parallel (4)	Mech.
		Series (2)	Parallel (3)			
40061R	33.2	0.67	0.166	1.30	22.4	3
40062R	48.8	0.81	0.201	1.20	31.4	3
40028R	49.1	1.22	0.305	0.82	34.4	2
40045R	50.0	1.11	0.277	0.92	32.2	3
40011R	50.5	1.26	0.316	0.70	32.7	1
40063R	67.4	0.96	0.238	1.10	42.0	3
40012R	68.4	1.49	0.373	0.66	42.6	1
40046R	68.8	1.31	0.328	0.84	43.0	3
40029R	68.9	1.45	0.362	0.76	46.7	2
40013R	99.0	2.23	0.557	0.54	62.0	1
40030R	99.1	2.16	0.541	0.62	67.8	2
40064R	99.1	2.26	0.565	0.72	67.8	3
40047R	101	2.01	0.502	0.68	63.9	3
40031R	148	2.66	0.665	0.56	97.6	2
40065R	149	2.78	0.696	0.64	98.9	3
40048R	150	2.48	0.621	0.64	88.7	3
40014R	151	3.38	0.844	0.44	94.2	1
40015R	198	4.83	1.210	0.36	128	1
40049R	200	2.93	0.732	0.60	114	3
40066R	200	3.24	0.810	0.60	128	3
40032R	202	3.80	0.951	0.46	135	2
40067R	299	4.01	1.000	0.54	183	3
40016R	300	6.40	1.530	0.32	185	1
40033R	300	4.70	1.180	0.42	193	2

Note1: Inductance value at 100kHz, 100mV, 0ADC

Note2: DCR limits at 20°C terminals 1-5, with terminals 3 and 7 tied.

Note3: DCR limits at 20°C terminals 1-3, with terminals 1 and 7; and 3 and 5 tied.

Note4: Terminals 1-3, with terminals 1 and 7; and 3 and 5 tied.

Features

- Maximum power density
- Toroid design offers high efficiency
- Versatility
- Low EMI radiation
- Full load current range: 0.22 to 7.90 ADC
- Designed for pick and place
- Low Cost
- Dielectric strength to 500VDC

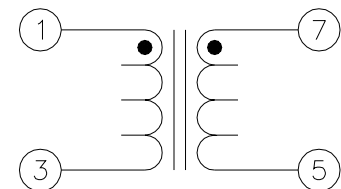
Applications

- Cellular, battery-powered, low-voltage power applications, pager, portable instruments.
- Sepic converters
- Buck and boost converters
- Switching voltage regulators
- Isolated 1:1 applications
- Pagers
- Portable instruments
- Coupled inductors
- Chokes

Environmental Specifications

- Operating temp range: -40° to +85°C
- Storage temp range: -50° to 125°C

- EIA-481-2 embossed 24mm carrier tape
- Mechanical 1 parts: 800 pieces per 13" reel
- Mechanical 2 parts: 625 pieces per 13" reel
- Mechanical 3 parts: 600 pieces per 13" reel



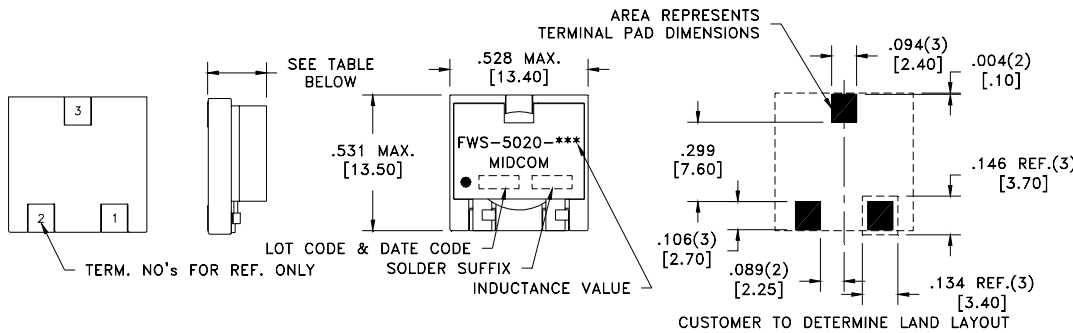
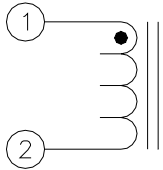
SwitchmodePower

Flatwire Inductors

FWS-5020 Series

Features

- Low Profile
- High Saturation Current
- Cost effective
- Low Resistance
- Flat top for pick and place operation
- Operating temperature range from -40°C to +85°C
- Other values optional

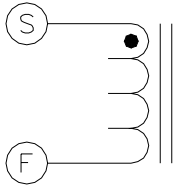


Part Number	Inductance uH (Note1)	DCR Max. mΩ	Isat ADC (Note2)	Lsat uH (Note3)	Icont ADC (Note4)	Max. Height (in.)
FWS-5020-1R0R	1.00	1.75	27.3	0.80	17.2	0.245
FWS-5020-1R0R-A	1.00	1.40	27.4	0.80	18.5	0.260
FWS-5020-3R1R	3.10	5.75	19.0	2.48	12.5	0.260
FWS-5020-4R2R	4.20	4.65	10.5	3.36	12.3	0.220

Note1: Inductance value at 100kHz, 100mV, 0ADC
 Note2: The saturating DC current for 20% rolloff from initial
 Note3: Inductance when subjected to Isat
 Note4: Current causing 40°C temp rise

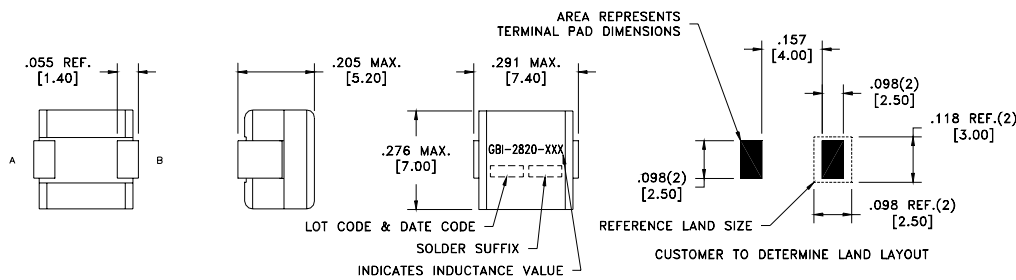
SwitchmodePower

Flatwire Inductors: GBI-2820 Series



Features

- Low Profile
- High Saturation Current
- Cost effective
- Low Resistance
- Flat top for pick and place operation
- Operating temperature range from -40°C to +125°C



Part Number	Inductance nH (Note1)	DCR Max. mΩ (@ 20°C)	Lsat nH (Note2)	Isat ADC	Icont ADC (Note3)
GBI-2820-720R	72	0.27	52	65	42
GBI-2820-101R	100	0.27	75	46	42
GBI-2820-151R	150	0.27	105	30	42
GBI-2820-181R	180	0.27	130	25	42
GBI-2820-251R	250	0.27	185	15	42

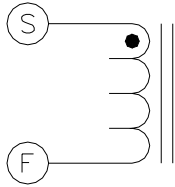
Note1: Inductance value ±15% at 1MHz, 100mV, 0ADC

Note2: Inductance when subjected to Isat

Note3: Current causing 40°C temp rise

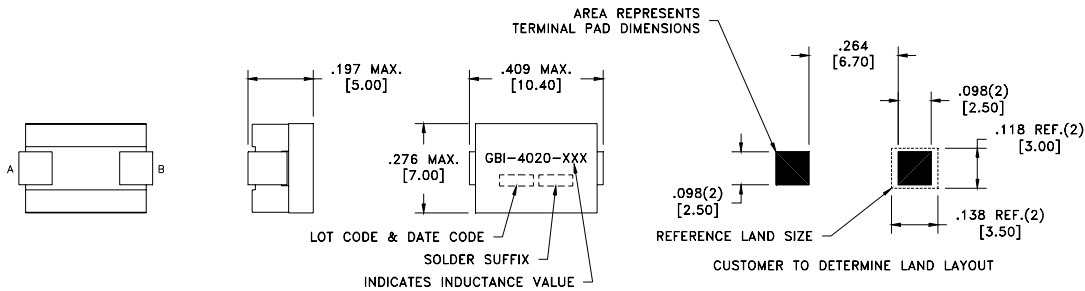
SwitchmodePower

**Flatwire Inductors:
GBI-4020 Series**



Features

- Low Profile
- High Saturation Current
- Cost effective
- Low Resistance
- Flat top for pick and place operation
- Operating temperature range from -40°C to +125°C



Part Number	Inductance nH (Note1)	DCR Max. mΩ (@ 20°C)	Lsat nH (Note2)	Isat ADC	Icont ADC (Note3)
GBI-4020-900R	90	0.35	65	70	40
GBI-4020-121R	125	0.35	87	54	40
GBI-4020-151R	150	0.35	108	40	40
GBI-4020-221R	220	0.35	155	33	40
GBI-4020-351R	350	0.35	265	16	40

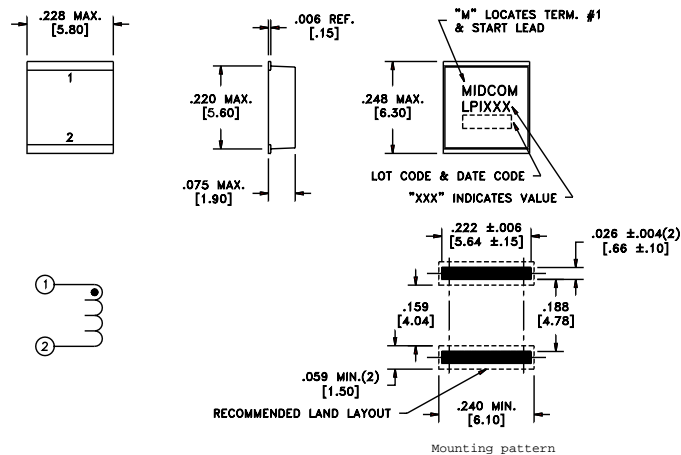
Note1: Inductance value ±15% at 1MHz, 100mV, 0ADC

Note2: Inductance when subjected to Isat

Note3: Current causing 40°C temp rise

SwitchmodePower

Low Profile Inductors: LPI-2207 Series



Features

- Low Profile Inductor (LPI) has 0.075" [1.9 mm] max height
- Economical, SMD, power inductor with extremely small size
- Rugged, molded package for durability
- Toroidal core provides very low EMI
- Inductance range of 0.47 uH through 47 uH, 10 values
- Continuous current to 2.08 A(dc)
- Frequency range up to 1MHz
- Manufactured with UL94 V-0 materials
- Flat top for pick and place handling
- Compatible with IR solder reflow processes to 240°C

Applications

- Low profile for PCMCIA applications
- Inductors for DC/DC conversion, useful in battery-powered, low-voltage converters
- Ideal for circuits in PDA, cell phones, pagers, etc.

Environmental Specifications

- Operating temperature range: -40°C to +85°C
- Storage temperature range: -50°C to +125°C

Packaging

- Parts are packaged in 16mm width embossed carrier tape per EIA-481-3
- 2000 pieces per 13" reel

Part Number	Inductance (uH ref)	Note 1 OCL uH +/- 25%	Note 2 DCR max (ohms)	Note 3 Isat (Adc)	Note 4 Icont (Adc)
LPI-2207-R47R	0.47	0.52	0.058	2.70	2.08
LPI-2207-1R0R	1.0	1.10	0.062	1.86	2.00
LPI-2207-2R2R	2.2	2.34	0.093	1.28	1.64
LPI-2207-4R7R	4.7	4.73	0.113	0.90	1.49
LPI-2207-100R	10	9.80	0.143	0.62	1.32
LPI-2207-150R	15	15.2	0.220	0.50	1.07
LPI-2207-220R	22	22.3	0.258	0.41	0.99
LPI-2207-270R	27	27.4	0.354	0.37	0.84
LPI-2207-330R	33	33.1	0.384	0.34	0.81
LPI-2207-470R	47	46.8	0.576	0.28	0.66

NOTES:

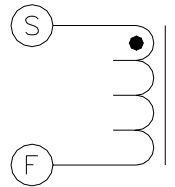
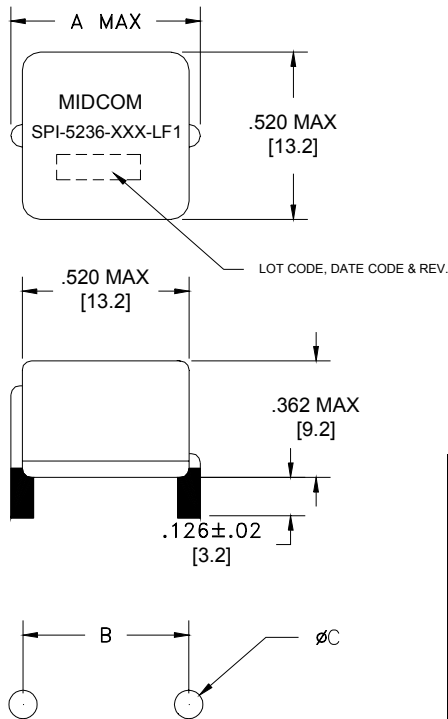
- 1 Open circuit inductance test at 100KHz 0.1 Vrms, 0.0Adc
- 2 DCR limits at 20°C
- 3 Saturating DC current for approximately 30% rolloff from initial inductance
- 4 Continuous DC current for approximate delta T of 40°C rise from a 25°C ambient

SwitchmodePower

High Current Inductors: SPI-5236 Series

Features

- Low Profile
- High Saturation Current
- Cost effective
- Low Resistance
- Flat top for pick and place operation
- Operating temperature range from -40°C to +125°C



P/N	A (mm/inch)	B (mm/inch)	C (mm/inch)
SPI-5236-221	16.00/.630	12.50/.492	2.20/.087
SPI-5236-351	16.00/.630	12.50/.492	2.20/.087
SPI-5236-451	15.70/.618	12.70/.500	1.60/.063
SPI-5236-601	15.70/.618	12.70/.500	1.60/.063
SPI-5236-801	13.00/.512	10.00/.394	1.30/.051
SPI-5236-102	13.00/.512	10.00/.394	1.30/.051
SPI-5236-132	14.00/.551	11.00/.433	1.30/.051
SPI-5236-152	14.00/.551	11.00/.433	1.30/.051
SPI-5236-182	14.00/.551	11.00/.433	1.30/.051

SUGGESTED PCB LAYOUT

Part Number	Inductance nH (Note1)	DCR Max. mΩ (@ 20°C)	Lsat nH (Note2)	Isat ADC	Icont ADC (Note3)
SPI-5236-221	220	0.60	200	60	45
SPI-5236-351	350	0.60	280	45	45
SPI-5236-451	450	1.45	420	55	29
SPI-5236-601	600	1.45	500	35	29
SPI-5236-801	800	2.40	720	40	23
SPI-5236-102	1000	2.40	850	38	23
SPI-5236-132	1300	3.00	1170	30	19
SPI-5236-152	1500	3.00	1280	24	19
SPI-5236-182	1800	3.00	1440	19	19

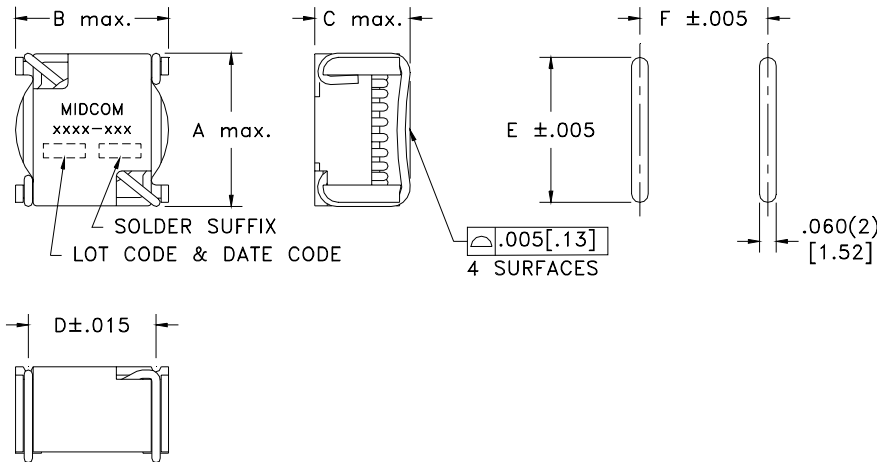
Note1: Inductance value ±20% at 100kHz, 100mV, 0ADC

Note2: Inductance ±20% when subjected to Isat

Note3: Current causing 40°C temp rise

SwitchmodePower

TIW Series: Surface Mount Toroidal Inductors – Self Ledged



Features

- Economical, reliable SMD inductors
- Variety of inductance values and current settings
- Four low-profile core sizes
- Toroidal geometry provides low radiated noise
- Designed for pick and place
- Compatible with 240°C reflow profiles

Applications

- DC/DC converter supplies
- Voltage regulation
- Filtering and chokes
- Distributed power

Environmental Specifications

- Operating temp range: -40° to +85°C
- Storage temp range: -50° to +125°C

Packaging

- EIA-481-3 embossed 24/32 mm carrier tape
- TIW-4436 – 450 pieces per 13" reel
- TIW-5736 – 350 pieces per 13" reel
- TIW-6239 – 250 pieces per 13" reel
- TIW-7039 – 250 pieces per 13" reel

Part Number	L(uH)±20% @ 0ADC (Note1)	L(uH)±20% @ I _{max} (Note2)	I _{max} ADC (Note 3)	DCR Max. Ω (Note4)	Size Code (Note5)
TIW-5736-3R8R	3.8	2.5	8.0	0.008	O
TIW-4436-5R2R	5.2	3.8	4.8	0.017	N
TIW-5736-7R5R	7.5	5.1	5.4	0.018	O
TIW-6239-7R9R	7.9	4.9	7.8	0.012	P
TIW-4436-120R	12.3	9.4	2.8	0.043	N
TIW-6239-140R	14.0	9.0	5.5	0.022	P
TIW-7039-160R	16.0	9.3	7.2	0.019	Q
TIW-5736-220R	21.9	16.2	2.7	0.063	O
TIW-7039-260R	25.9	16.1	5.1	0.032	Q
TIW-4436-350R	35.3	29.7	1.4	0.166	N
TIW-6239-410R	40.5	29.1	2.7	0.085	P
TIW-7039-730R	72.9	50.0	2.6	0.133	Q
TIW-5736-730R	73.0	58.1	1.3	0.290	O
TIW-4436-171R	167	114	0.94	0.380	N
TIW-5736-291R	292	192	0.90	0.560	O
TIW-5736-671R	672	383	0.72	0.862	O
TIW-6239-112R	1134	645	0.74	1.25	P
TIW-7039-202R	1950	1070	0.71	1.70	Q

Note1: Inductance value at 100kHz, 100mV, 0ADC

Note2: Inductance value at 100kHz, 100mV, I_{max}

Note3: Maximum, continuous DC current for approximate temp. rise of 50°C from a 25°C ambient

Note4: DCR limits a 20°C

Note5: Size code used to identify product dimensions in chart below







Size Code	A		B		C		D		E		F	
	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
N	0.44	11.18	0.44	11.18	0.36	9.14	0.35	8.89	0.40	10.16	0.36	9.14
O	0.56	14.22	0.57	14.48	0.36	9.14	0.45	11.43	0.52	13.21	0.48	12.19
P	0.59	14.99	0.62	15.75	0.39	9.91	0.50	12.70	0.55	13.97	0.51	12.95
Q	0.67	17.02	0.70	17.78	0.39	9.91	0.58	14.71	0.62	15.75	0.59	14.99

4/3/07 Details subject to change. Contact your Midcom sales representative for additional information. Dimensions: in/mm. All tolerances are ±.010/0.25 and electrical specifications are @ 25°C unless otherwise specified.

Shielded Inductor Selector



SwitchmodePower

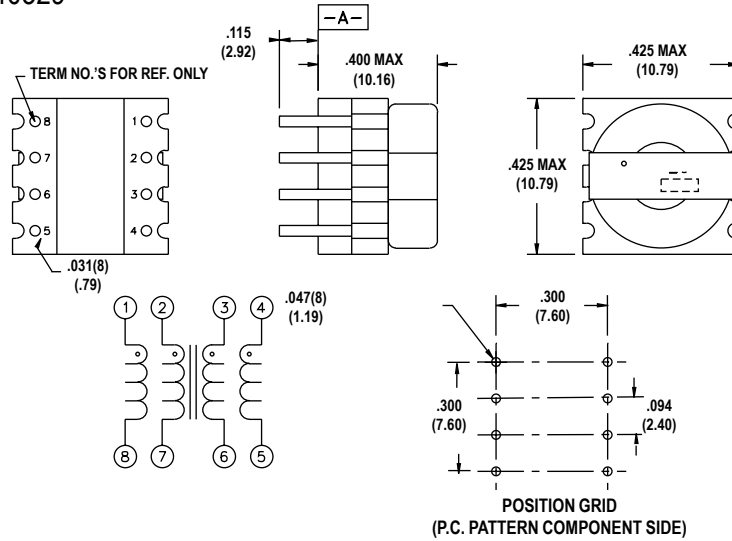
 121 Airport Drive Watertown, SD 57201 www.midcom-inc.com													
Series	40000 - 40016	LPI-2207	40017 - 40033	40034 - 40050	FWS-5020								
Inductor Type	Coupled	Single	Coupled	Coupled	Single								
Length (mm)	9.0	5.8	9.0	11.6	13.4								
Width (mm)	9.0	6.3	9.0	11.6	13.5								
Height (mm)	4.2	1.9	5.8	6.2	6.6								
Joule Rating (µJ)	9	10	16	20	200								
Suffix ¹	Approx. L (µH) ²	400xx Part ³	I _{MAX} (Amps)	DCR (mΩ)	400xx Part ³	I _{MAX} (Amps)	DCR (mΩ)	400xx Part ³	I _{MAX} (Amps)	DCR (mΩ)	400xx Part ³	I _{MAX} (Amps)	DCR (mΩ)
-R27	0.27	00	5.50	6									
-R33	0.33				17	5.90	6	34	6.20	7			
-R47	0.47	01	5.10	6	2.1	58		35	5.70	8			
-R56	0.56				18	5.40	7						
-R68	0.68	02	4.50	8				36	5.40	9			
-R82	0.82				19	5.00	9						
-1R0	1.0				2.0	62						17.2	2
-1R1	1.1												
-1R2	1.2	03	3.40	14				37	4.60	12			
-1R5	1.5							20	3.90	14			
-2R2	2.2				1.6	93							
-3R1	3.1											12.5	5.3
-3R3	3.3	04	2.00	40				21	2.50	32	38	3.20	23
-3R8	3.8												
-4R2	4.2											12.3	4.2
-4R7	4.7	05	1.80	52	1.5	113	22	2.30	40	39	2.80	30	
-5R2	5.2												
-5R6	5.6	06	1.70	57							40	2.70	33
-6R8	6.8							23	2.10	45			
-7R0	7.0												
-7R5	7.5												
-7R9	7.9												
-100	10	07	1.40	87	1.3	143	24	1.60	85	41	2.20	50	
-120	12	08	1.00	159			25	1.50	97	42	1.50	111	
-140	14												
-150	15	09	0.96	177	1.1	220	26	1.40	109	43	1.40	125	
-160	16												
-220	22	10	0.80	250	1.0	258	27	1.30	126	44	1.30	143	
-230	23												
-260	26												
-270	27				0.8	354							
-330	33	11	0.70	316	0.8	384	28	0.82	305	45	0.92	277	
-350	35												
-410	41												
-470	47	12	0.66	373	0.7	576	29	0.76	362	46	0.84	328	
-680	68	13	0.54	557			30	0.62	541	47	0.68	502	
-730	73												
-101	100	14	0.44	844			31	0.56	665	48	0.64	621	
-121	120	15	0.36	1210			32	0.46	951	49	0.60	732	
-171	170												
-181	180	16	0.32	1530			33	0.42	1180	50	0.50	926	
-291	290												
-381	380												
-671	670												
-112	1120												
-202	2000												

Note 1: an R behind the suffix denotes tape & reel packaging and a U denotes tubes.
 Note 2: Inductance is approximate only, please see specification sheet.
 Note 3: 400xx series parts do not have suffixes.

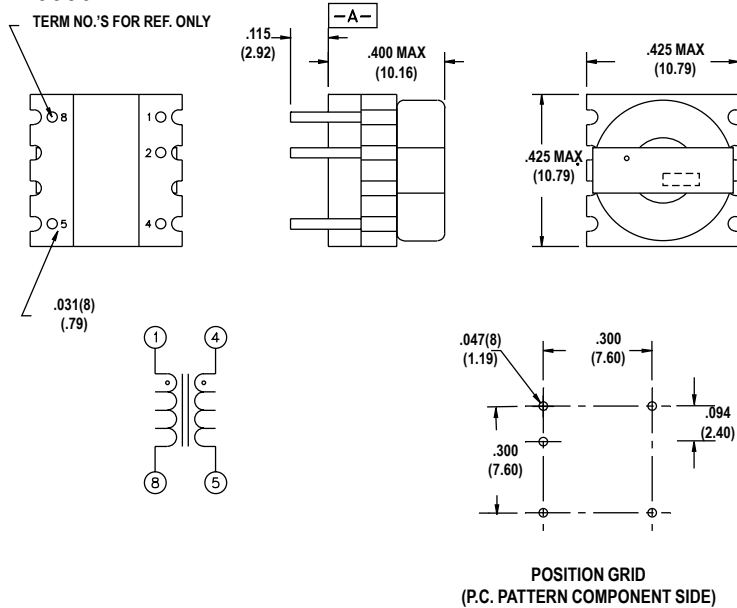
SwitchmodePower

Tip and Ring Common Mode Filters

40329



40330



Features

- Available in 2 wire or 4 wire versions
- Provides > 15dB attenuation of common mode noise over a frequency range of 3-300 MHz.
- Small footprint

Applications

- Filters in Telecommunications equipment circuits
- Common mode chokes for DC/DC converters

Environmental Specifications

- Operating temperature range: -40°C to +85°C
- Storage temperature range: -50°C to +125°C

Packaging

- Parts are packaged 500 per box

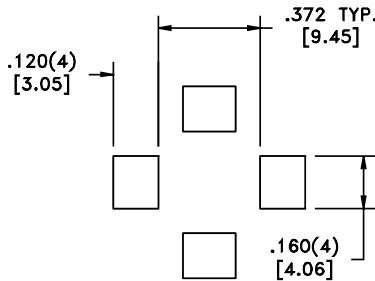
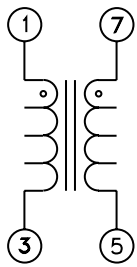
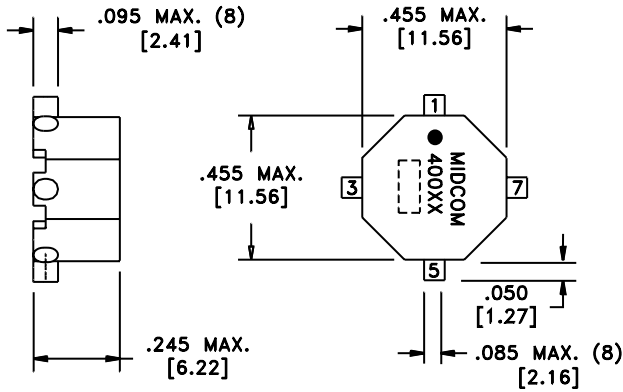
Part Number	Inductance uH Min.	Rated Current mA	DCR (ohms max)	Dielectric (1,2 - 3,4)Vrms
40329	20	250	0.065	1500
40330	20	250	0.065	1500

NOTES

- 1: Open circuit inductance test at 100KHz, Electrical specifications at 20°C

SwitchmodePower

Common Mode Chokes



MOUNTING PATTERN

Features

- Various inductance and current ratings
- Small footprint

Applications

- Designed for DC/DC converters
- Can be used for common mode rejection in any DC/DC supply

Environmental Specifications

- Operating temperature range: -40°C to +85°C
- Storage temperature range: -50°C to +125°C

Packaging

- Parts are packaged 600 pieces per 13" reel

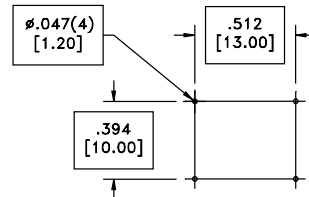
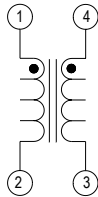
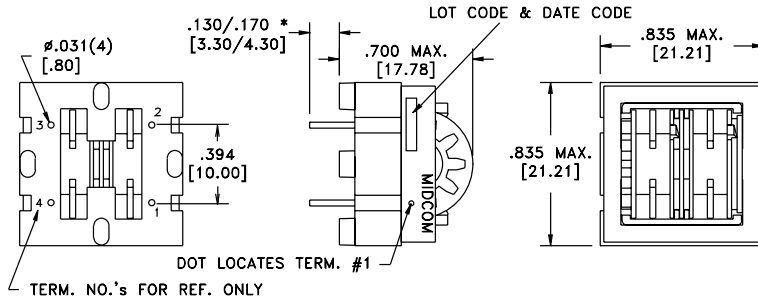
Part Number	Inductance uH +/-25%	Rated Current A	DCR (ohms max)	Dielectric (1,2 - 3,4)Vrms
40332R	1170	1.22	0.200	500
40352R	880	1.65	0.100	500

NOTES

1. Open circuit inductance test at 100KHz, 250mV. Electrical specifications at 20°C
2. DCR is for each winding.
3. Inductance is for each winding.
4. Rated current is for each winding.

SwitchmodePower

ET20H Common Mode Chokes



MOUNTING PATTERN

Features

- Various inductance and current ratings
- Reduced leakage
- Broad attenuation bandwidth
- Low DCR for better efficiency

Applications

- Designed for DC/DC converters
- Can be used for common mode rejection in any DC/DC supply

Environmental Specifications

- Operating temperature range: -25°C to +85°C
- Storage temperature range: -50°C to +125°C

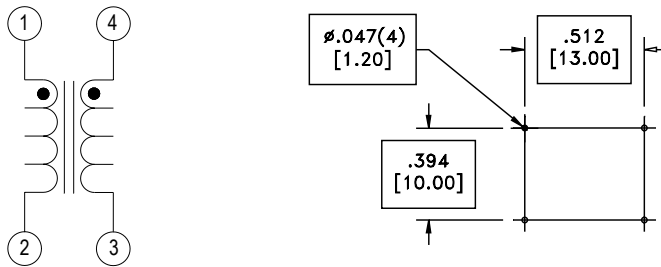
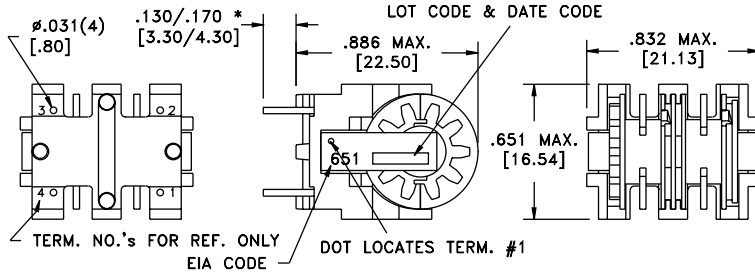
Midcom Part Number	Inductance (mH) min.	Rated Current A	DCR +/-10%(ohms max)
40395	0.82	2.0	0.065
40396	1.80	1.5	0.150
40397	2.70	1.2	0.225
40398	3.30	1.1	0.250
40399	3.90	1.0	0.280
40400	5.60	0.8	0.400
40401	6.80	0.8	0.480
40402	10.00	0.6	0.720
40403	18.00	0.5	1.170
40404	22.00	0.4	1.610
40405	33.00	0.3	2.000

NOTES

1. Open circuit inductance test at 100KHz, 100mV. Electrical specifications at 20°C
2. DCR is for each winding.
3. Inductance is for each winding.
4. Rated current is for each winding causing less than a 40°C temperature rise.
5. Dielectric between winding and core is 2KV.

SwitchmodePower

UT20V Common Mode Chokes



MOUNTING PATTERN

Features

- Various inductance and current ratings
- Good Performance at high frequencies
- Broad attenuation bandwidth
- Low DCR for better efficiency

Applications

- Designed for DC/DC converters
- Can be used for common mode rejection in any DC/DC supply

Environmental Specifications

- Operating temperature range: -25°C to +85°C
- Storage temperature range: -50°C to +125°C

Midcom Part Number	Inductance (mH) min.	Current Max (A rms)	DCR Resistance +/- 10% (ohms)
40406	0.82	2.0	0.065
40407	1.20	1.6	0.095
40408	1.80	1.5	0.120
40409	2.20	1.3	0.165
40410	2.70	1.2	0.187
40411	3.30	1.2	0.210
40412	3.90	1.0	0.277
40413	5.60	0.8	0.415
40414	6.80	0.7	0.467
40415	10.00	0.6	0.708
40416	18.00	0.5	1.200
40417	22.00	0.4	1.635
40418	33.00	0.3	2.500

NOTES

1. Open circuit inductance test at 100KHz, 100mV. Electrical specifications at 20°C
2. DCR is for each winding.
3. Inductance is for each winding.
4. Rated current is for each winding causing less than a 40°C temperature rise.
5. Dielectric between winding and core is 2KV.

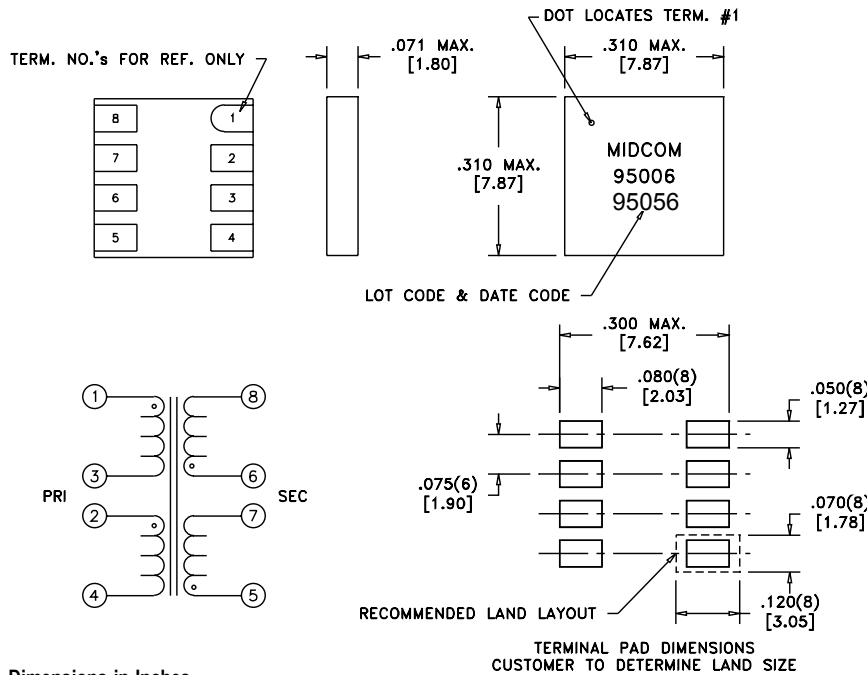
Details subject to change. Contact your Midcom sales representative for additional information. Dimensions: in/mm. All tolerances are +/- .010/0.25 and electrical specifications are @ 25°C unless otherwise specified.

Low Power Ceramic Transformers

95056-95063



SwitchmodePower



Features

- Low profile
- Rugged package
- Self shielding
- Combine windings to meet specific applications
- Frequency range 200 KHz - 1 MHz
- Designed for pick and place
- Compatible with solder reflow

Applications

- Isolated power supplies
- Noise-immunity communication interface
- Isolated data acquisition
- Bridging ground differences
- Isolated clock/sync interface
- Process Control

Dimensions in Inches

Midcom, Inc. NASCENTechnology division has developed a family of transformers to demonstrate what can be done with Low Temperature Co-fired Ceramic (LTCC) transformers. This includes a set of four transformers suitable for higher frequencies and with large turns ratios. A second set of four transformers is suitable for lower frequencies and have smaller turns ratios. Both sets have split primary and secondary windings that can be easily connected to match various circuit configurations or even to adjust the turns ratio. The parts are 0.300" [7.6mm] square and less than 0.078" [2mm] high. They are intended for low power applications and can pass as much as 1250mW of continuous power (with 40°C rise) with a 15-24VDC input. The dielectric breakdown voltage rating is 500Vrms. Typical operating frequency range is 200kHz to 1MHz.

This product is protected under Midcom's Intellectual Property Portfolio, specifically US Patents # 6,054,914, # 6,198,374 and other pending patents.

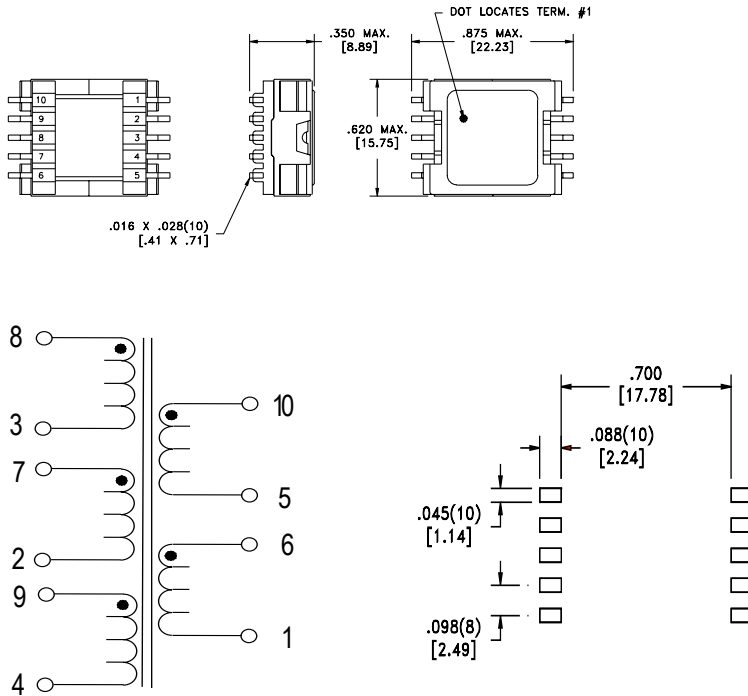
Part No	Turns Ratio	V-us Rating	Primary Resistance	Secondary Resistance	Primary Inductance	Secondary Inductance	Leakage Inductance
		↓	+/-20% ohms (1-4)	+/-20% ohms (5-8)	+/-20% uH (1-4)	+/-20% uH (5-8)	uH (1-4)
95056	1:1	4.5	.64	.64	60	60	5.4
95057	1:2	4.5	.64	1.25	46	170	3.7
95058	1:3	4.5	.68	4.24	56	450	3.5
95059	1:4	4.5	.66	7.09	66	910	3.2
95060	1:0.5	9.0	3.6	.66	280	72	17.4
95061	1:1	9.0	3.6	3.6	368	364	12.4
95062	1:1.5	9.0	3.8	4.3	280	550	9.5
95063	1:2	9.0	3.6	7.14	350	1230	8.3

Notes: Terminals 2-3, 6-7 joined.
AC measurements at 500kHz, 0.5Vac
Dielectric: 500Vac
Power rating: 250-1250mW

Specifications subject to change without notice.

SwitchmodePower

FLEXformer 15 Product Line



Features

- Economic, reliable SMD transformers and inductors
- Combine windings in series or parallel to meet your specific application
- Manufactured with UL94 V-O materials
- Pick and place compatible
- Compatible with solder reflow process to 240° C
- Power range: Typically 8 watts and below
- Frequency range up to 500kHz

Applications

- Ideal for use as inductors or transformers in DC/DC converters for the following topologies and applications:
 - Buck/Boost
 - Chokes
 - Filters
 - Coupled inductors
 - Flyback
 - Push-Pull
 - SEPIC
 - Cuk
 - Forward converters
 - Half/Full bridge

Environmental Specifications

- Operating temperature range: -40°C to +85°C
- Storage temperature range: -50°C to +155°C

Packaging

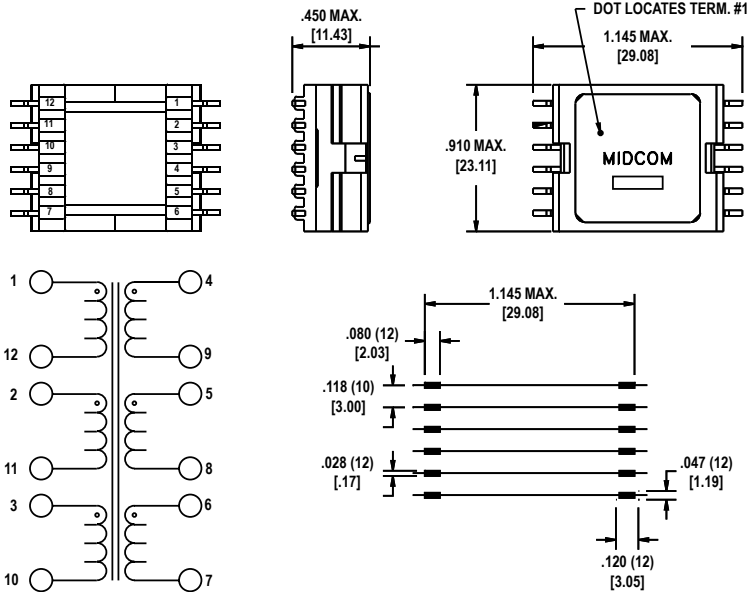
- Surface mount parts packaged in 24/32 mm embossed carrier tape per EIA-481-3
- 200 pieces per 13" reel

P/N	L _{Base} uH	I _{sat} ¹ mA	I _{rms} ² mA	DCR Max per wind ohms
31285R	25 +/- 10%	2000	400	0.210
31286R	40 +/- 15%	1500	400	0.210
31287R	64 +/- 15%	1000	400	0.210
31288R	100 +/- 25%	500	400	0.210
31289R	210 min	0	400	0.210

1 Amount of DC current that will result in approximately a 15% decrease in inductance.
 2 RMS current rating for each single wind based on 250 circular mils per amp.
 3 Maximum breakdown voltage between any 2 windings is 500VDC. Safety critical or high voltage designs are available upon request as a customized product.
 4 Turns ratio 1:1:1:1:1 +/- 1%.

SwitchmodePower

FLEXformer 20 Product Line



Features

- Economic, reliable SMD transformers and inductors
- Combine windings in series or parallel to meet your specific application
- Manufactured with UL94 V-O materials
- Pick and place compatible
- Compatible with solder reflow process to 240° C
- Power range: Typically 15 watts and below
- Frequency range up to 500kHz

Applications

- Ideal for use as inductors or transformers in DC/DC converters for the following topologies applications:
 - Buck/Boost
 - Chokes
 - Filters
 - Coupled inductors
 - Flyback
 - Push-Pull
 - SEPIC
 - Cuk
 - Forward converters
 - Half/Full bridge

Environmental Specifications

- Operating temperature range: -40°C to +85°C
- Storage temperature range: -50°C to +155°C

Packaging

- 125 pcs per 18" reel
- 44 mm pitch

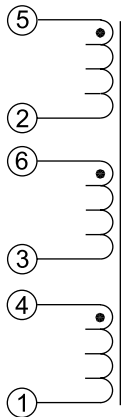
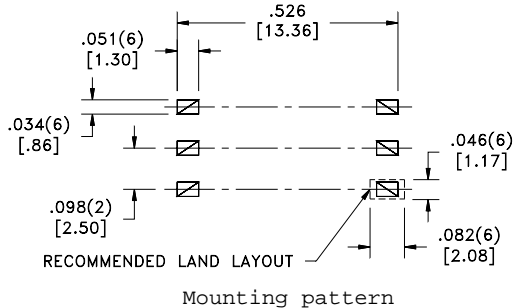
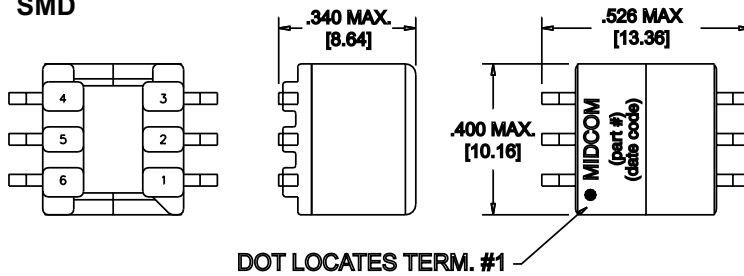
P/N	L _{Base} uH	Isat _{Base} ¹ A	I _{rms} _{Base} ² A	DCR Max per wind ohms
31368R	9.0 +/- 15%	5.5	1.6	.06
31369R	14.4 +/- 15%	4.25	1.6	.06
31370R	23.0 +/- 15%	3.25	1.6	.06
31371R	36.0 +/- 15%	2.5	1.6	.06
31372R	45.4 +/- 15%	1.75	1.6	.06
31373R	57.6 +/- 20%	1.25	1.6	.06
31374R	110 min	0	1.6	.06

1 Amount of DC current that will result in approximately a 15% or less decrease in inductance.
 2 RMS current rating for each single wind based on 200 circular mils per amp.
 3 Maximum breakdown voltage between any 2 windings is 500VDC. Safety critical or high voltage designs are available upon request as a customized product.
 4 Turns ratio 1:1:1:1:1 +/- 1%.

SwitchmodePower

Gemini 7 Transformers

SMD



Features

- Economic, reliable SMD or TH transformers or inductors
- Combine windings in series or parallel to meet your specific application
- Core geometry provides low radiated noise
- Manufactured with UL94 V-O Materials
- Surface mount products are pick and place compatible
- Compatible with solder reflow process to 240° C
- Off the shelf availability
- Power range: Typically 5 watts and below
- Frequency range up to 500kHz

Applications

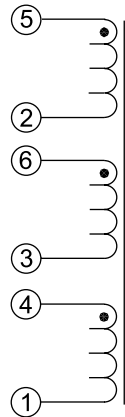
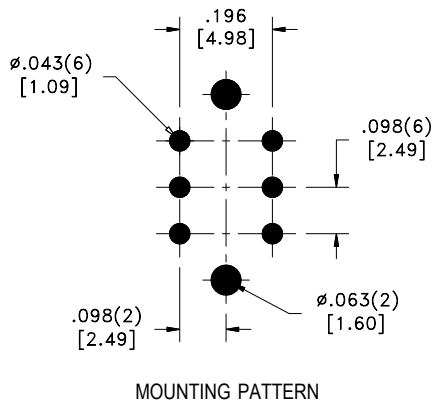
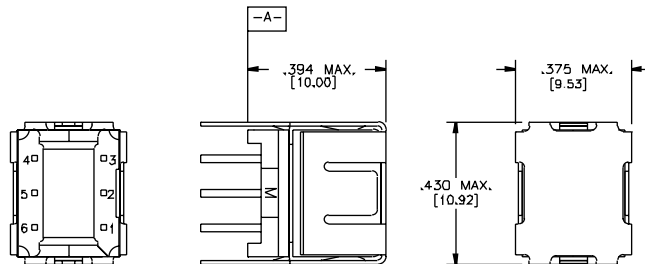
- Ideal for use as inductors or transformers in DC/DC converters for the following topologies:
 - Buck/Boost
 - Chokes
 - Filters
 - Coupled inductors
 - Flyback
 - Push-Pull
 - SEPIC
 - Cuk
 - Forward converters
 - Half/Full bridge

- 1 Inductance measured at 10kHz and 100mV. Tolerance is +/- 15%.
- 2 Amount of DC current that will result in approximately a 15% decrease in inductance.
- 3 RMS current rating for each single wind based on 250 circular mils per amp.
- 4 Maximum breakdown voltage between any 2 windings is 500VDC. Safety critical or high voltage designs are available upon request as a customized product.
- 5 Turns ratio 1:1:1 +/- 1%.

SwitchmodePower

Gemini 7 Transformers (continued)

TH



Features

Environmental Specifications

- Operating temperature range: -4°C to +85°C
- Storage temperature range: -50°C to +125°C

Packaging

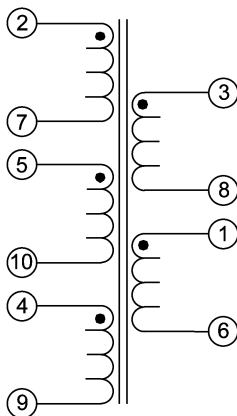
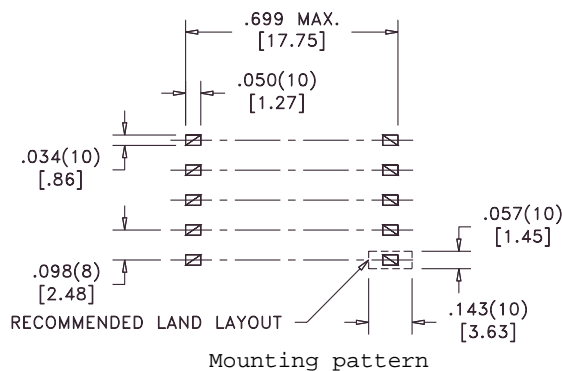
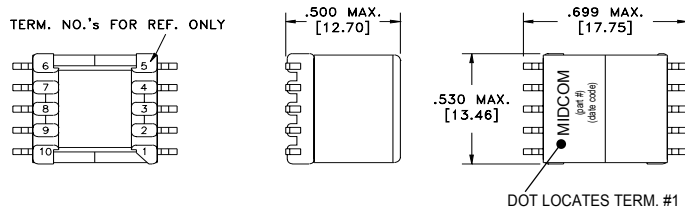
- Surface mount parts packaged in 24/32 mm embossed carrier tape per EIA-481-3
 - 400 pieces per 13" reel
- Through hole parts packaged in trays
 - 156 per tray/1092 per box

P/N SMD	P/N TH	L _{Base} ¹ uH	I _{sat} _{Base} ² mA	I _{rms} _{Base} ³ mA	DCR Max per wind ohms	Isolation between each wind VDC
31036R	31049	4.7	3000	250	0.170	500
31037R	31050	7.1	2000	250	0.170	500
31038R	31051	11.5	1000	250	0.170	500
31039R	31052	200 min	50	250	0.170	500

SwitchmodePower

Gemini 13 Transformers

SMD



NOTES:

- 1 Inductance measured at 10kHz and 100mV. Tolerance is +/- 15%.
- 2 Amount of DC current that will result in approximately a 15% decrease in inductance.
- 3 RMS current rating for each single wind based on 250 circular mils per amp.
- 4 Maximum breakdown voltage between any 2 windings is 500VDC. Safety critical or high voltage designs are available upon request as a customized product.
- 5 Turns ratio 1:1:1:1:1 +/- 1%.

Features

- Economic, reliable SMD or TH transformers or inductors
- Combine windings in series or parallel to meet your specific application
- Core geometry provides low radiated noise
- Manufactured with UL94 V-O materials
- SMD products are pick and place compatible
- Compatible with solder reflow process to 240° C
- Storage temperature from -50° to 155° C
- Power range: Typically 8 watts and below
- Frequency range up to 500kHz

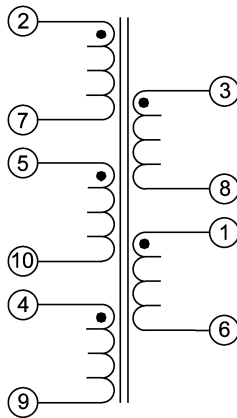
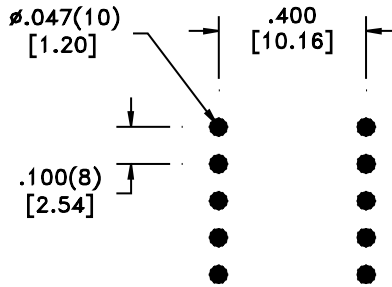
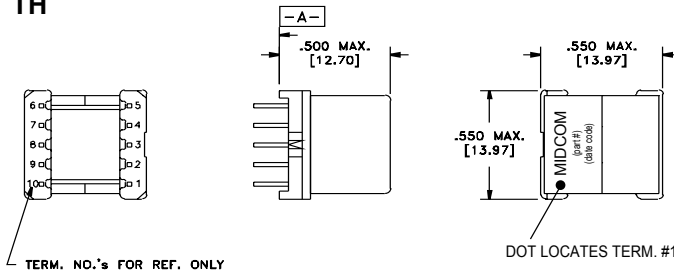
Applications

- Ideal for use as inductors or transformers in DC/DC converters for the following topologies:
 - Buck/Boost
 - Chokes
 - Filters
 - Coupled inductors
 - Flyback
 - Push-Pull
 - SEPIC
 - Cuk
 - Forward converters
 - Half/Full bridge

SwitchmodePower

Gemini 13 Transformers (continued)

TH



Environmental Specifications

- Operating temperature range: -40°C to +85°C
- Storage temperature range: -50°C to +125°C

Packaging

- SMD parts packaged in 24/32 mm embossed carrier tape per EIA-481-3
- 200 pieces per 13" reel
- TH parts packaged in trays
- 50 per tray/650 per box

P/N SMD	P/N TH	L_{Base}^1 uH	$I_{sat}^{Base}^2$ mA	$I_{rms}^{Base}^3$ mA	DCR Max per wind ohms	Isolation between each wind ⁴ VDC
31043R	31056	4.7	3000	250	0.200	500
31044R	31057	7.1	2000	250	0.200	500
31045R	31058	11.5	1000	250	0.200	500
31046R	31059	200 min	50	250	0.200	500

SwitchmodePower

Micro Power Transformers

Features

- Low profile
- Low cost
- SMD transformer
- Pick and place compatible
- 1250 VDC isolation
- 50KHz and up operating frequency applications

Applications

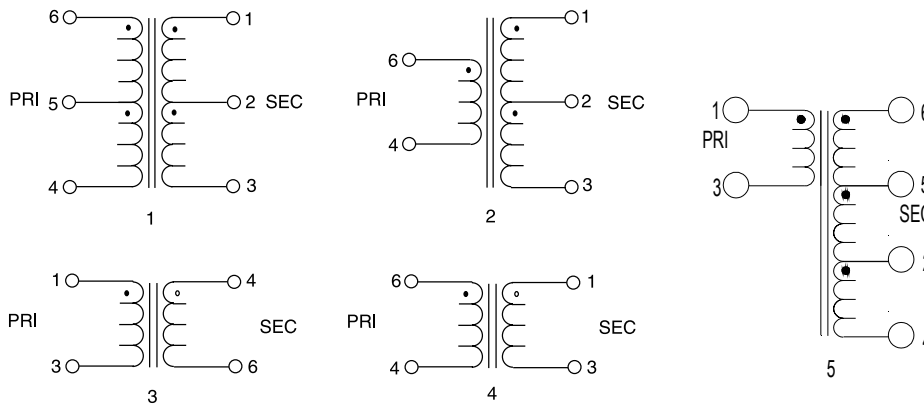
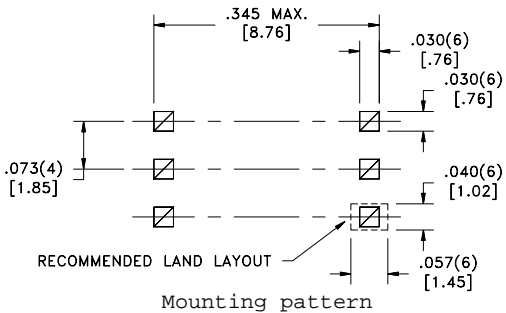
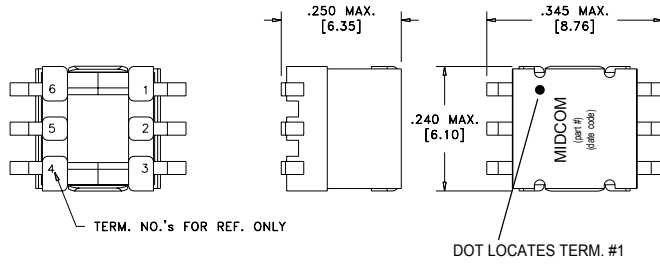
- Gate/Base drive
- Low power flyback
- DC/DC converter push-pull

Environmental Specifications

- Operating temperature range: -40°C to +85°C
- Storage temperature range: -50°C to +125°C

Packaging

- Parts packaged in 24/32 mm embossed carrier tape per EIA-481-3
- 800 parts per reel 13" reel



Midcom P/N	L _i (uH)	Leakage Ind. (uH typ.)	PRI DCR (ohms max)	SEC DCR (ohms max)	Schematic	Turns** Ratio PRI/SEC
***31032R	3.7 +/- 20%	0.275	0.9	12.25	3	1:12.04
31098R	17.2 +/- 20%	1.00	1.25	3.00	2	1:2CT
31099R	9.88 +/- 20%	0.500	1.00	3.25	4	1:3
31102R	10 +/- 25%	-	1.25	6.15	5	1:2:1:1.5
31103R	10 +/- 25%	-	1.00	3.37	5	1:0.64:1.461:1
31094R	880 min	3.00	3.50	3.50	1	1CT:1CT
31095R	390 min	1.5	2.25	4.50	1	1CT:2CT
31096R	390 min	1.5	2.25	6.00	1	1CT:2.5CT
30902R	2000 min	1.2	3.00	25.00	1	1CT:3CT
31204R	2000 min	1.2	2.75	2.75	2	1:1CT

NOTES:

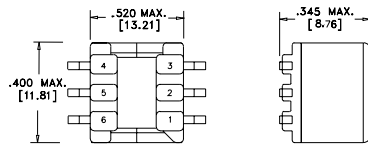
- * Inductance (OCL) measured at 10KHz, 100mVAC
- ** CT = Center Tap Winding
- *** Dielectric Rating 550VDC

Details subject to change. Contact your Midcom sales representative for additional information. Dimensions: in/mm. All tolerances are ± .010/0.25 and electrical specifications are @ 25°C unless otherwise specified. 4/3/07

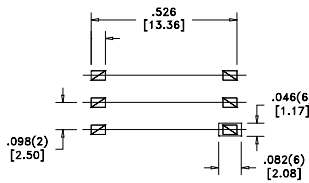
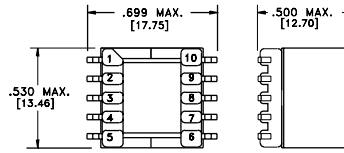
SwitchmodePower

Push-Pull Transformers

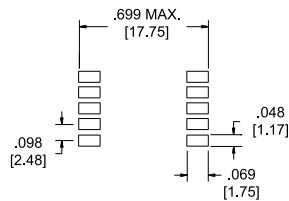
View A



View B

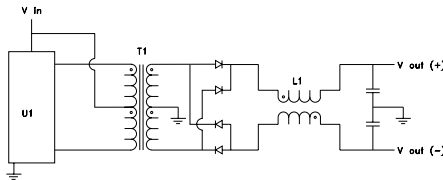


Mounting Pattern



Mounting Pattern

Basic application drawing



V _{IN}	V _{OUT}	I _{OUT rms} mA	T ₁	L ₁
5	+/- 12	150	30802R	30942R
5	+/- 15	120	30804R	30942R
5	+/- 5	350	30807R	30944R
12	+/- 5	900	30812R	30945R

T₁: Transformer specifications

Part Number	L _{MIN} ¹ uH	TURNS			View	Schematic
		PRI:SEC	PRI	SEC		
30802R	230	1:4.0	0.275	2.700	A	1
30804R	300	1:5.0	0.310	6.000	A	1
30807R	300	1:1.8	0.250	1.150	A	1
30812R	600	1:0.65	0.600	0.500	B	2

¹ Inductance (L) is measured at 10KHz, 100mVAC.

L₁: Coupled inductor specifications

Part Number	L ¹ uH	Turns ratio	I _{pk} mA	DCR ²	View	Schematic
30942R	500	1:1	250	1.000	A	3
30943R	800	1:1	200	2.500	A	3
30944R	100	1:1	600	0.3600	A	3
30945R	33	1:1	1500	0.210	A	3

¹ Inductance (L) is measured at 100KHz, 100mV. Tolerance is ± 10%.

² DCR is expressed in maximum ohms for each winding.

Features

- Design verified with Linear Tech IC LT1533
- Economical, reliable surface mount transformers and inductors
- Core geometry provides shielding for low switching noise
- Manufactured with UL94V-O materials
- Designed for pick and place applications
- Compatible with solder reflow process to 240°C

Applications

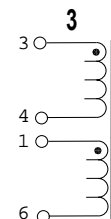
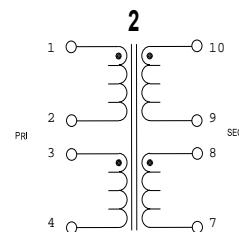
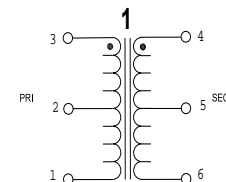
- Ideal for use in DC/DC converter, push-pull applications
- DC/DC converters for personal, industrial or test equipment
- Coupled inductors may also be used as flyback transformers and power inductors
- Low-power isolated power supplies

Environmental Specifications

- Operating temperature range: -40°C to +85°C
- Storage temperature range: -50°C to +125°C

Packaging

- Parts are packaged in 24/32 mm embossed carrier tape per EIA-481-3
- Most parts are 400 pieces per 13" reel; 30812R is 200 parts per 13" reel

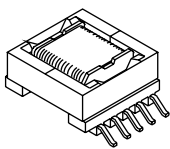


SwitchmodePower

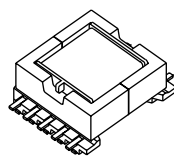
Standard Flyback Transformers

The table on this page summarizes EFD flyback power transformer offerings. If you do not find a transformer suitable for your application in this table, please use the inquiry form at the end of this publication to outline your requirements, and then call Midcom to talk to our engineering staff.

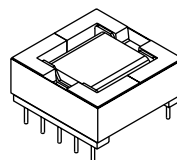
Switching frequency	Input voltage	Output power	Package Style	Output Voltages (V)			Midcom part number	Schematic	Packaging
				5	12	15			
100K-250kHz	4.75V-16V	5 watts	EFD15	5	5	5	30398R	A	225 pieces per 13" reel
				5	12	12	30399R		
				5	15	15	30400R		
				5	24	24	30401R		
100K-250kHz	16V-40V	10 watts	EFD15	5	5	5	30402R	A	225 pieces per 13" reel
				5	12	12	30403R		
				5	15	15	30404R		
				5	24	24	30405R		
100K-250kHz	16V-40V	15 watts	EFD20	5	5	5	30432R	B	125 pieces per 13" reel
				5	12	12	30434R		
				5	15	15	30436R		
				5	24	24	30438R		
100K-250kHz	16V-40V	20 watts	EFD25	5	5	5	30439	C	50 per tray 250 per box
				5	12	12	30440		
				5	15	15	30441		
				5	24	24	30442		
100K-250kHz	36V-85V	30 watts	EFD25	5	5	5	30443	C	50 per tray 250 per box
				5	12	12	30444		
				5	15	15	30445		
				5	24	24	30446		
40K-100kHz	4.75V-16V	5 watts	EFD20	5	5	5	30416R	D	125 pieces per 13" reel
				5	12	12	30418R		
				5	15	15	30420R		
				5	24	24	30422R		
40K-100kHz	16V-40V	10 watts	EFD20	5	5	5	30424R	E	125 pieces per 13" reel
				5	12	12	30426R		
				5	15	15	30428R		
				5	24	24	30430R		



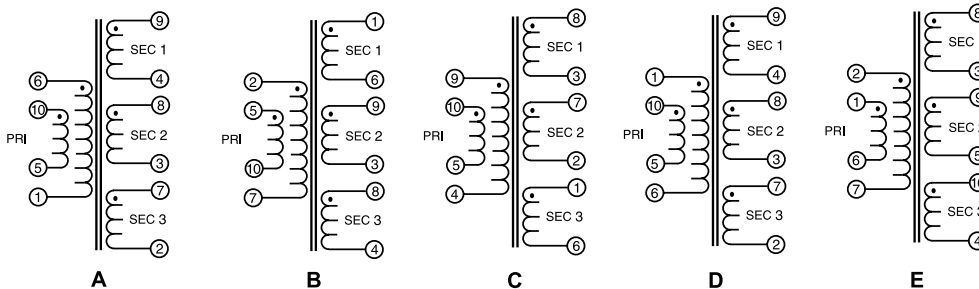
EFD15
surface mount



EFD20
surface mount



EFD25
through hole



Part numbers ending in "R" available in tape and reel packaging.

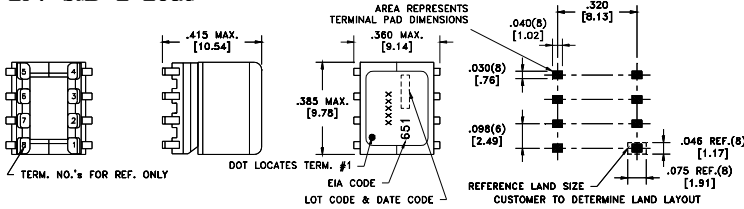
Details subject to change. Contact your Midcom sales representative for additional information. Dimensions: in/mm. All tolerances are ± .010/0.25 and electrical specifications are @ 25°C unless otherwise specified. 4/3/07



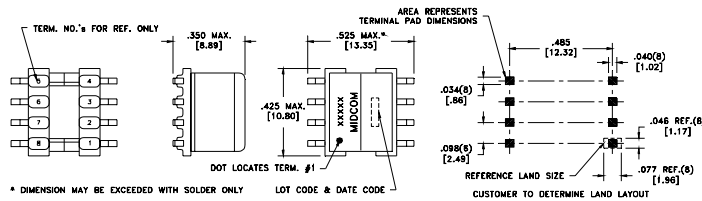
Power over Ethernet Flyback Transformers

SwitchmodePower

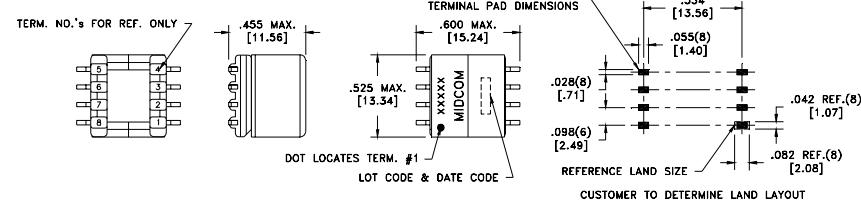
EP7 SMD L-Lead



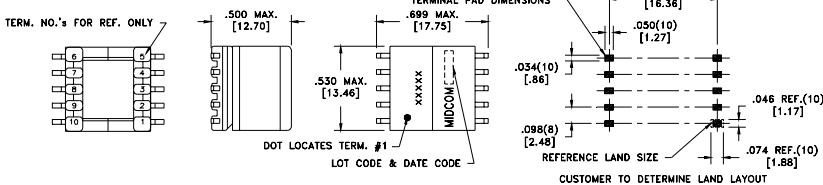
EP7 SMD Gull-wing



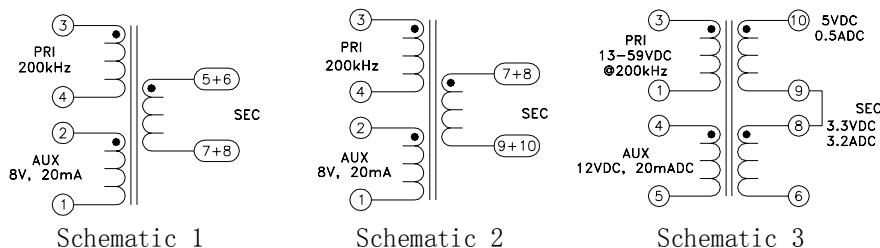
EP10 SMD



EP13 SMD

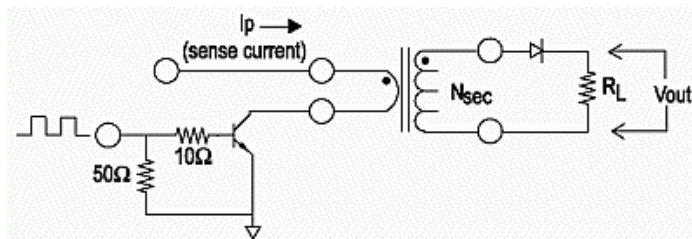
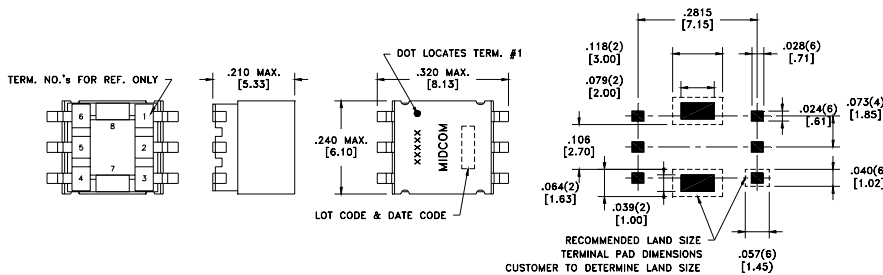


Part Number	V _{PRI} (Volts)	V _{SEC} (Volts)	P _{SEC} (Watts)	L _{PRI} (µH)	L _{LKG} (µH)	Turns Ratio (PRI:AUX:SEC)	Package	Schematic
32163R	33-57	3.3	3	500	7.5	12:2.5:1	EP7 SMD L-Lead	1
32165R	33-57	5	3	500	7.5	8:1.67:1	EP7 SMD L-Lead	1
32167R	33-57	12	3	521	7.5	4.9:1:1.4	EP7 SMD L-Lead	1
32162R	33-57	3.3	3	500	7.5	12:2.5:1	EP7 SMD Gull-Wing	1
32164R	33-57	5	3	500	7.5	8:1.67:1	EP7 SMD Gull-Wing	1
32166R	33-57	12	3	521	7.5	4.9:1:1.4	EP7 SMD Gull-Wing	1
750310027	9-50	3.3	10	20.4	1.5	3.5:1.4:1	EP10 SMD	1
32168R	33-57	3.3	7	253	7.5	4.5:2.5:1	EP10 SMD	1
32170R	33-57	12	7	264	7.5	12:2.5:1	EP10 SMD	1
32171R	33-57	3.3	13.5	127	7.5	12:2.5:1	EP13 SMD	2
32172R	33-57	5	13.5	127	7.5	8:1.67:1	EP13 SMD	2
32173R	33-57	12	13.5	127	7.5	4.8:1:1.4	EP13 SMD	2
32395R	13-59	3.3/5	13.1	37	5.0	5.25:2.75:1.5:1	EP13 SMD	3



SwitchmodePower

EE5 Current Sense Transformers



Features

- SMD Design
- Pick and place compatible
- 250kHz and above operating frequency
- Small footprint
- Custom designs available
- Designed for switching power supply applications

Applications

- Isolated current feedback in switching applications
- Load drop detection
- Circuit overload detection
- Motor operation monitoring
- Industrial equipment

Environmental Specifications

- Operating Temp: -40°C to +85°C
- Storage Temp: -40°C to +125°C

Packaging

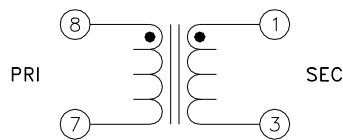
- Parts are packaged in 24/32mm embossed carrier tape per EIA-481-3
- 800 parts per 13" reel

Part Number	Turns Ratio (Pri:Sec)	L _{SEC} (μH) min	DCR _{SEC} (Ω) max	R _{L-Sec} (Ω) max	Schematic
31332R	1:125	3000	7.70	125	1
31333R	1:100	2000	5.87	100	1
31334R	1:70	980	4.75	70	1
31719R	1:50	580	1.66	50	2
31335R	1:40	320	1.35	40	1
31336R	1:30	180	1.00	30	1
31995R	1:20	80	0.55	20	1

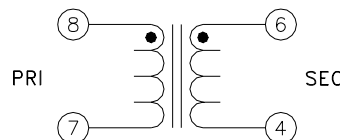
Notes:

Specifications at 25°C

1. Output=1Volt/Amp at rate R_L
2. 6 Amps max. peak sense current
3. 500VAC max. breakdown voltage between primary and secondary.



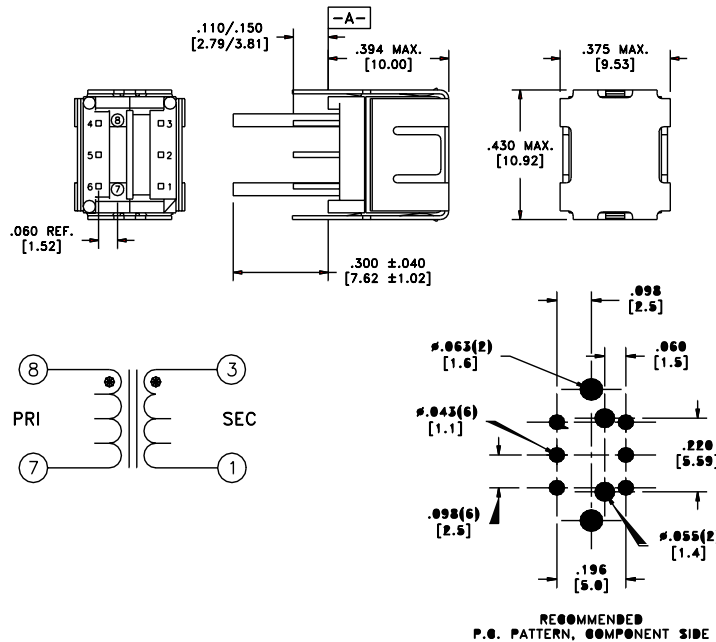
Schematic 1



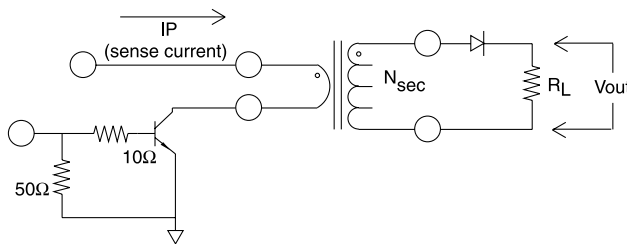
Schematic 2

SwitchmodePower

EP7 Current Sense with Sense Wind



TEST CIRCUIT



Part Number	Turns (1-3)	OCL (1-3) mH min	DCR (1-3) ohms max	RL (1-3) ohms max
31027	75	20.5	2	75
31028	100	36.4	5.57	100
31029	200	145.6	22.4	200

NOTES:

- Specifications at 25°C
- 1. Output=1Volt/Amp at Rate R_L
- 2. Peak Sense Current: 10 Amp Max.
- 3. Maximum breakdown voltage between primary and secondary is 750VDC

Features

- Compact size
- EP7 Form Factor
- 10KHz and above operating frequency
- Custom designs available

Applications

- Isolated current feedback in switching applications
- Load drop detection
- Circuit Overload Detection
- Motor Operation Monitoring
- Industrial equipment

Environmental Specifications

- Operating temperature range: -40°C to +85°C
- Storage temperature range: -50°C to +125°C

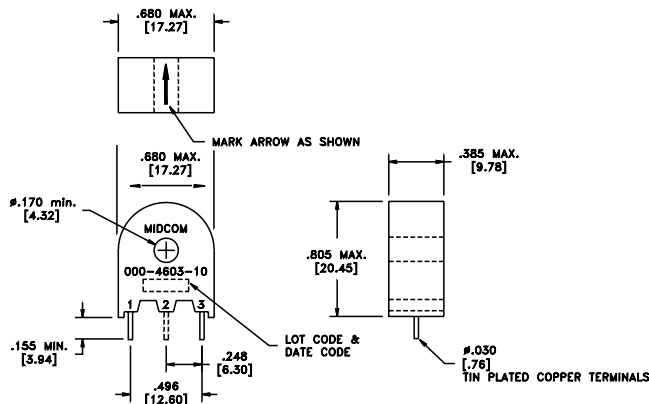
Packaging

- Parts are packaged 100 pieces per tray/300 pieces per box

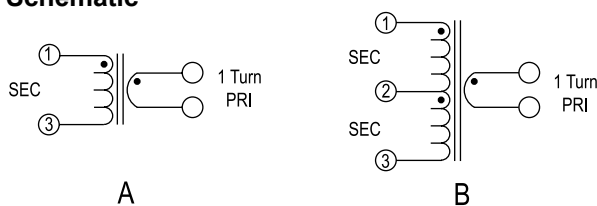
SwitchmodePower

Current Sense Transformers

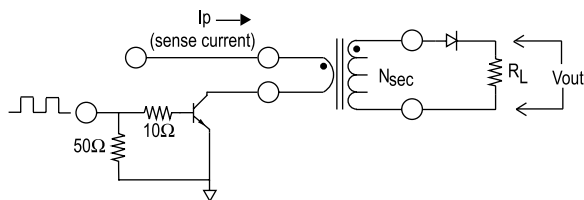
Dimensions



Schematic



Test Circuit



Part Number	Schematic	Turns 1-3 ²	L ¹ 1-3(mH) min	DCR 1-3 max	R _L (Ohms)
000-4600-10	A	50	5	0.70	50
000-4601-10	A	100	20	1.40	100
000-4602-10	A	200	80	4.50	200
000-4603-10	B ⁶	50CT	5	0.70	50
000-4604-10	B ⁶	100CT	20	1.40	100
000-4605-10	B ⁶	200CT	80	4.50	200

Notes:

- 1 Inductance (L) measured at 10KHz, 100mVAC, 0.0ADC
- 2 CT = Center Tapped winding
3. Output: 1 Volt/Amp at rated R_L
4. Peak Sense Current: 20 Amp Max
5. Maximum breakdown voltage between primary and secondary is 3000VAC
6. Includes pin # 2

Features

- Encapsulated construction
- Frequency range ≥10kHz

Applications

- Isolated current feedback in switching applications
- Load drop detection
- Circuit overload detection
- Motor operation monitoring
- Industrial equipment

Environmental Specifications

- Operating temperature range: -40°C to +85°C
- Storage temperature range: -50°C to +125°C

Packaging

- Parts are packaged 31 pieces per tube/1023 pieces per box

Switchmode Power Transformer Design Inquiry



Please complete this form and mail or fax it to Würth Electronics Midcom. You need only include the specifications you require.

Company Information

Company _____ Current Würth Electronics Midcom Customer? Yes No
 Name _____ Sales Contact _____
 Address _____ Phone _____ Fax _____
 City _____ E-mail _____
 State/Province _____ Postal Code _____ Samples Needed _____ Date Required _____
 Customer Number _____ Mass Production Date _____

Application

If product safety is an issue, please contact us immediately for technical consultation. Our products are not designed for aviation, medical, automotive or life supporting devices. Such applications require our written approval prior to use.

IC Manufacturer _____ IC Number/Name _____
 Switch Peak Current (A) _____ Switch Resistance (Ohms) _____

Specifications

Topology
 Continuous _____
 Discontinuous _____
 Total Output Power (W) _____

Input
 VDC (V max.) _____
 VDC (V min.) _____
 Operating Frequency (kHz) _____
 Maximum Duty Cycle (%) _____
 Minimum Duty Cycle (%) _____

Auxiliary
 VDC Out (V) _____
 I Out (A max.) _____

Temperature Range _____

Package Style _____ SMD TH

Cross Reference Manufacturer _____

Secondary 1
 VDC Out (V) _____
 Diode Drop (V) _____
 I Out Max. (A) _____ I Out Min. (A) _____

Secondary 2
 VDC Out (V) _____
 Diode Drop (V) _____
 I Out Max. (A) _____ I Out Min. (A) _____

Secondary 3
 VDC Out (V) _____
 Diode Drop (V) _____
 I Out Max. (A) _____ I Out Min. (A) _____

Secondary 4
 VDC Out (V) _____
 Diode Drop (V) _____
 I Out Max. (A) _____ I Out Min. (A) _____

Max. Size: L _____ W _____ H _____ in mm

Cross Reference Part Number _____

Agency Requirements

Regulatory Agencies: FCC IEC60950 BABT Austel Other _____
 Insulation Requirements: Functional Basic Supplementary Reinforced
 Dielectric Withstand Voltage _____ Operating Voltage _____

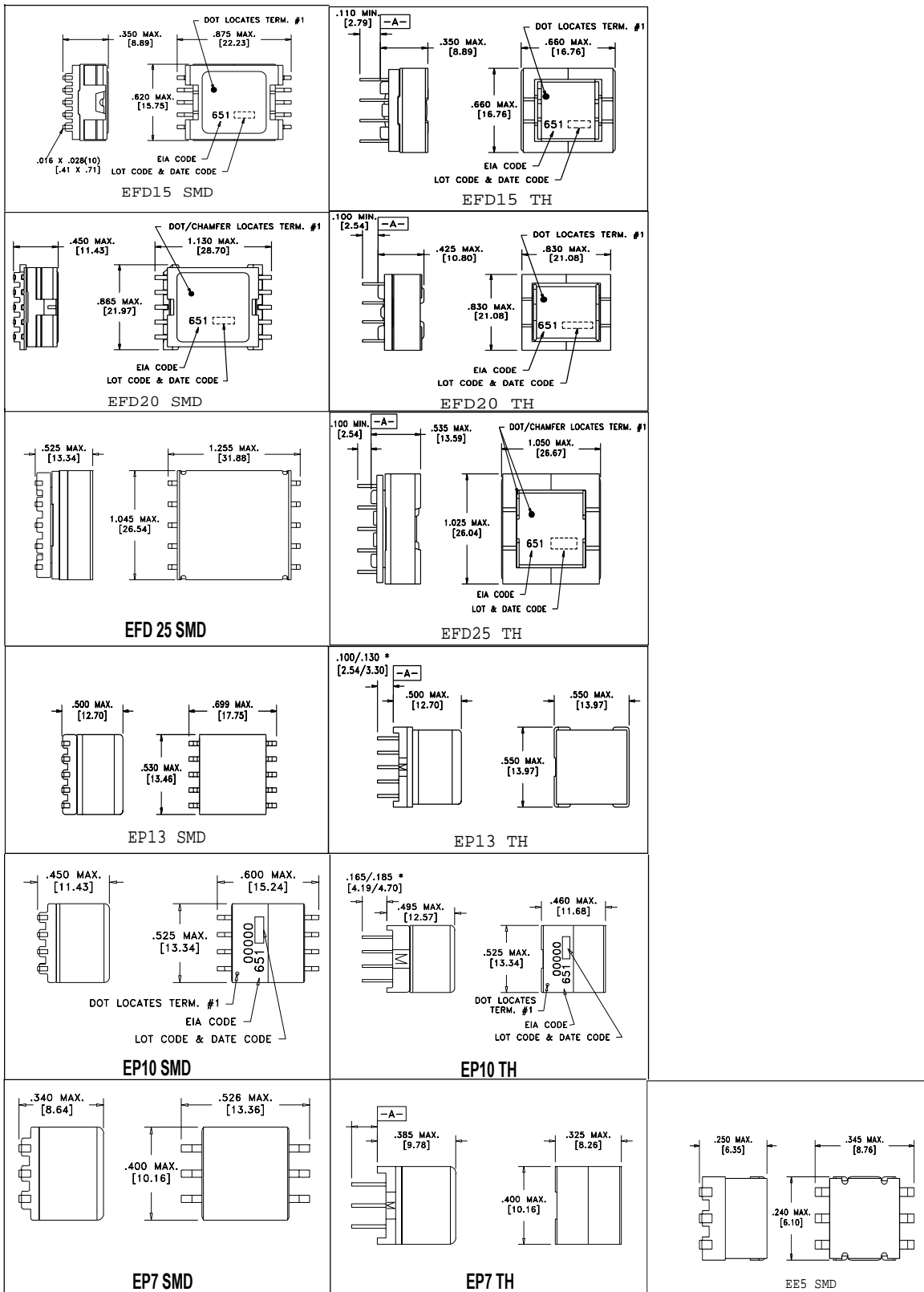
General

Target Price _____ at quantity _____ Attach additional notes and requirements as necessary.

Details subject to change. Contact Würth Electronics Midcom for additional information. Dimensions in/mm. All tolerances are ±.010/.25 and electrical specifications are @25°C unless specified otherwise.

Transformer Package Styles

SwitchmodePower



Details subject to change. Contact your Midcom sales representative for additional information. Dimensions: in/mm. All tolerances are ± .010/0.25 and electrical specifications are @ 25°C unless otherwise specified. 4/3/07

Cross References

Midcom DUS-2612 SERIES	
COILCRAFT PART	MIDCOM PART
DO1608C-102	DUS-2612-1R0R
DO1608C-103	DUS-2612-100R
DO1608C-104	DUS-2612-101R
DO1608C-105	DUS-2612-102R
DO1608C-152	DUS-2612-1R5R
DO1608C-153	DUS-2612-150R
DO1608C-154	DUS-2612-151R
DO1608C-222	DUS-2612-2R2R
DO1608C-223	DUS-2612-220R
DO1608C-224	DUS-2612-221R
DO1608C-332	DUS-2612-3R3R
DO1608C-333	DUS-2612-330R
DO1608C-334	DUS-2612-331R
DO1608C-472	DUS-2612-4R7R
DO1608C-473	DUS-2612-470R
DO1608C-474	DUS-2612-471R
DO1608C-682	DUS-2612-6R8R
DO1608C-683	DUS-2612-680R
DO1608C-684	DUS-2612-681R

Midcom DSS-2612 SERIES	
COILCRAFT PART	MIDCOM PART
DS1608C-102	DSS-2612-1R0R
DS1608C-103	DSS-2612-100R
DS1608C-104	DSS-2612-101R
DS1608C-105	DSS-2612-102R
DS1608C-106	DSS-2612-103R
DS1608C-152	DSS-2612-1R5R
DS1608C-153	DSS-2612-150R
DS1608C-154	DSS-2612-151R
DS1608C-155	DSS-2612-152R
DS1608C-222	DSS-2612-2R2R
DS1608C-223	DSS-2612-220R
DS1608C-224	DSS-2612-221R
DS1608C-225	DSS-2612-222R
DS1608C-332	DSS-2612-3R3R
DS1608C-333	DSS-2612-330R
DS1608C-334	DSS-2612-331R
DS1608C-335	DSS-2612-332R
DS1608C-472	DSS-2612-4R7R
DS1608C-473	DSS-2612-470R
DS1608C-474	DSS-2612-471R
DS1608C-475	DSS-2612-472R
DS1608C-682	DSS-2612-6R8R
DS1608C-683	DSS-2612-680R
DS1608C-684	DSS-2612-681R
DS1608C-685	DSS-2612-682R

The crosses listed above can be considered physically and electrically equivalent for most applications. Please see detailed specifications listed in this catalog for variations between crosses or contact Midcom Technical Support.

Cross References (continued)

Midcom DSB-2612 SERIES	
COILCRAFT PART	MIDCOM PART
DS1608BL-104	DSB-2612-R10R
DS1608BL-105	DSB-2612-1R0R
DS1608BL-106	DSB-2612-100R
DS1608BL-154	DSB-2612-R15R
DS1608BL-155	DSB-2612-1R5R
DS1608BL-224	DSB-2612-R22R
DS1608BL-225	DSB-2612-2R2R
DS1608BL-334	DSB-2612-R33R
DS1608BL-335	DSB-2612-3R3R
DS1608BL-474	DSB-2612-R47R
DS1608BL-475	DSB-2612-4R7R
DS1608BL-684	DSB-2612-R68R
DS1608BL-685	DSB-2612-6R8R

Midcom DUS-5121 SERIES	
COILCRAFT	MIDCOM
DO3316P-102	DUS-5121-1R0R
DO3316P-103	DUS-5121-100R
DO3316P-104	DUS-5121-101R
DO3316P-105	DUS-5121-102R
DO3316P-152	DUS-5121-1R5R
DO3316P-153	DUS-5121-150R
DO3316P-154	DUS-5121-151R
DO3316P-222	DUS-5121-2R2R
DO3316P-223	DUS-5121-220R
DO3316P-224	DUS-5121-221R
DO3316P-332	DUS-5121-3R3R
DO3316P-333	DUS-5121-330R
DO3316P-334	DUS-5121-331R
DO3316P-472	DUS-5121-4R7R
DO3316P-473	DUS-5121-470R
DO3316P-474	DUS-5121-471R
DO3316P-682	DUS-5121-6R8R
DO3316P-683	DUS-5121-680R
DO3316P-684	DUS-5121-681R

MIDCOM DHC-5121 SERIES	
COILCRAFT PART	MIDCOM PART
DO3316P-102HC	DHC-5121-1R0R
DO3316P-152HC	DHC-5121-1R5R
DO3316P-222HC	DHC-5121-2R2R
DO3316P-272HC	DHC-5121-2R7R
DO3316P-331HC	DHC-5121-R33R
DO3316P-332HC	DHC-5121-3R3R
DO3316P-472HC	DHC-5121-4R7R

The crosses listed above can be considered physically and electrically equivalent for most applications. Please see detailed specifications listed in this catalog for variations between crosses or contact Midcom Technical Support.

SwitchmodePower

Cross References (continued)

MIDCOM DSS-5121 SERIES	
COILCRAFT PART	MIDCOM PART
DS3316P-102	DSS-5121-1R0R
DS3316P-103	DSS-5121-100R
DS3316P-152	DSS-5121-1R5R
DS3316P-153	DSS-5121-150R
DS3316P-222	DSS-5121-2R2R
DS3316P-223	DSS-5121-220R
DS3316P-332	DSS-5121-3R3R
DS3316P-333	DSS-5121-330R
DS3316P-472	DSS-5121-4R7R
DS3316P-473	DSS-5121-470R
DS3316P-682	DSS-5121-6R8R

MIDCOM DUW-5523 SERIES	
COILTRONICS PART	MIDCOM PART
UP2B-1R0	DUW-5523-1R0R
UP2B-1R5	DUW-5523-1R5R
UP2B-2R2	DUW-5523-2R2R
UP2B-3R3	DUW-5523-3R3R
UP2B-4R7	DUW-5523-4R4R
UP2B-6R8	DUW-5523-6R8R
UP2B-100	DUW-5523-100R
UP2B-101	DUW-5523-101R
UP2B-150	DUW-5523-150R
UP2B-220	DUW-5523-220R
UP2B-330	DUW-5523-330R
UP2B-470	DUW-5523-470R
UP2B-680	DUW-5523-680R
UP2B-R47	DUW-5523-R47R

MIDCOM DUS-7328 SERIES	
COILCRAFT PART	MIDCOM PART
DO5022P-102	DUS-7328-1R0R
DO5022P-103	DUS-7328-100R
DO5022P-104	DUS-7328-101R
DO5022P-105	DUS-7328-102R
DO5022P-153	DUS-7328-150R
DO5022P-154	DUS-7328-151R
DO5022P-222	DUS-7328-2R2R
DO5022P-223	DUS-7328-220R
DO5022P-224	DUS-7328-221R
DO5022P-332	DUS-7328-3R3R
DO5022P-333	DUS-7328-330R
DO5022P-334	DUS-7328-331R
DO5022P-473	DUS-7328-470R
DO5022P-474	DUS-7328-471R
DO5022P-562	DUS-7328-5R6R
DO5022P-683	DUS-7328-680R
DO5022P-684	DUS-7328-681R

MIDCOM DHC-7328 SERIES	
COILCRAFT PART	MIDCOM PART
D05022P-103HC	DHC-7328-100R
D05022P-152HC	DHC-7328-1R5R
D05022P-222HC	DHC-7328-2R2R
D05022P-332HC	DHC-7328-3R3R
D05022P-471HC	DHC-7328-R47R
D05022P-472HC	DHC-7328-4R5R
D05022P-602HC	DHC-7328-6R8R
D05022P-781HC	DHC-7328-R82R

The crosses listed above can be considered physically and electrically equivalent for most applications. Please see detailed specifications listed in this catalog for variations between crosses or contact Midcom Technical Support.

Cross References (continued)

MIDCOM 40K SMD TOROIDAL INDUCTOR SERIES		
COILTRONICS		MIDCOM
CTX0.47-1P	CTX0.47-1	40000R
CTX0.47-2P	CTX0.47-2	40017R
CTX0.47-3P	CTX0.47-3	40034R
CTX0.47-4P	CTX0.47-4	40051R
CTX0.68-1P	CTX0.68-1	40001R
CTX0.68-2P	CTX0.68-2	40018R
CTX0.68-3P	CTX0.68-3	40035R
CTX0.68-4P	CTX0.68-4	40052R
CTX1-1P	CTX1-1	40002R
CTX1-2P	CTX1-2	40019R
CTX1-3P	CTX1-3	40036R
CTX1-4P	CTX1-4	40053R
CTX2-1P	CTX2-1	40003R
CTX2-2P	CTX2-2	40020R
CTX2-3P	CTX2-3	40037R
CTX2-4P	CTX2-4	40054R
CTX5-1P	CTX5-1	40004R
CTX5-2P	CTX5-2	40021R
CTX5-3P	CTX5-3	40038R
CTX5-4P	CTX5-4	40055R
CTX8-1P	CTX8-1	40005R
CTX8-2P	CTX8-2	40022R
CTX8-3P	CTX8-3	40039R
CTX8-4P	CTX8-4	40056R
CTX10-1P	CTX10-1	40006R
CTX10-2P	CTX10-2	40023R
CTX10-3P	CTX10-3	40040R
CTX10-4P	CTX10-4	40057R
CTX15-1P	CTX15-1	40007R
CTX15-2P	CTX15-2	40024R
CTX15-3P	CTX15-3	40041R
CTX15-4P	CTX15-4	40058R
CTX20-1P	CTX20-1	40008R
CTX20-2P	CTX20-2	40025R

MIDCOM 40K SMD TOROIDAL INDUCTOR SERIES		
COILTRONICS		MIDCOM
CTX20-3P	CTX20-3	40042R
CTX20-4P	CTX20-4	40059R
CTX25-1P	CTX25-1	40009R
CTX25-2P	CTX25-2	40026R
CTX25-3P	CTX25-3	40043R
CTX25-4P	CTX25-4	40060R
CTX33-1P	CTX33-1	40010R
CTX33-2P	CTX33-2	40027R
CTX33-3P	CTX33-3	40044R
CTX33-4P	CTX33-4	40061R
CTX50-1P	CTX50-1	40011R
CTX50-2P	CTX50-2	40028R
CTX50-3P	CTX50-3	40045R
CTX50-4P	CTX50-4	40062R
CTX68-1P	CTX68-1	40012R
CTX68-2P	CTX68-2	40029R
CTX68-3P	CTX68-3	40046R
CTX68-4P	CTX68-4	40063R
CTX100-1P	CTX100-1	40013R
CTX100-2P	CTX100-2	40030R
CTX100-3P	CTX100-3	40047R
CTX100-4P	CTX100-4	40064R
CTX150-1P	CTX150-1	40014R
CTX150-2P	CTX150-2	40031R
CTX150-3P	CTX150-3	40048R
CTX150-4P	CTX150-4	40065R
CTX200-1P	CTX200-1	40015R
CTX200-2P	CTX200-2	40032R
CTX200-3P	CTX200-3	40049R
CTX200-4P	CTX200-4	40066R
CTX300-1P	CTX300-1	40016R
CTX300-2P	CTX300-2	40033R
CTX300-3P	CTX300-3	40050R
CTX300-4P	CTX300-4	40067R

Details subject to change. Contact your Midcom sales representative for additional information. Dimensions: in/mm. All tolerances are $\pm .010/0.25$ and electrical specifications are @ 25°C unless otherwise specified. 4/3/07

Cross Reference (continued)

MIDCOM TIW SMD TOROIDAL INDUCTOR SERIES	
Pulse Part Number	Midcom Part Number
PE-53600	TIW-3427-7R0R
PE-53601	TIW-3427-230R
PE-53602	TIW-4436-350R
PE-53604	TIW-5736-730R
PE-53606	TIW-4436-171R
PE-53608	TIW-5736-291R
PE-53611	TIW-5736-671R
PE-53613	TIW-6239-112R
PE-53614	TIW-7039-202R
PE-53630	TIW-3427-1R1R
PE-53631	TIW-4436-120R
PE-53632	TIW-5736-220R
PE-53633	TIW-6239-410R
PE-53634	TIW-7039-730R
PE-53650	TIW-4436-5R2R
PE-53651	TIW-5736-7R5R
PE-53652	TIW-6239-140R
PE-53653	TIW-7039-260R
PE-53661	TIW-5736-3R8R
PE-53662	TIW-6239-7R9R
PE-53663	TIW-7039-160R

Switchmode Power Glossary

- amplifier, differential** An amplifier with two signal ports whose output voltage amplitude and polarity are proportional to the voltage difference and polarity between the voltages applied to the inverting and non-inverting input ports.
- auxiliary outputs** All outputs of a multiple supply other than the main output. Auxiliary outputs usually have a lower power rating and limited performance.
- bandwidth** A system's frequency response, normally the difference in frequency between the upper and lower "half power" or 3-dB-down frequencies. When applied to power supplies, this normally refers to the frequency band over which output ripple and noise components are to be measured or specified.
- brownout - GM** A drop in supply voltage to a value below the minimum normally specified by the supply authority, but above zero.
- choke** An inductor specifically designed to carry a large DC current component. (To prevent saturation, chokes will often have gapped cores or cores of especially low permeability material.)
- chokes, RFI** Chokes which are specifically designed to have a high self-resonant frequency, to provide maximum impedance at RF frequencies. Various space winding or wave winding techniques are used to minimize interwinding capacitance.
- choke, swinging** A choke whose inductance is designed to increase significantly as the DC current is reduced toward zero. The swinging choke has a more linear characteristic than the "nonlinear choke", the change in permeability being a function of the properties of the bulk core material.
- common-mode ripple and noise** The components of ripple and noise voltages or currents, which exist between input or output lines and defined ground plane.
- constant-current supply** Any high-impedance current source whose current is essentially constant regardless of the load resistance. Describes a type of power supply in which the major controlled parameter is the output current. Such supplies will maintain the output current constant for a range of load resistance, normally from zero to some maximum value defined by the compliance voltage.
- constant-voltage supply** A power source in which the main controlled parameter is the output voltage.
- control ICs** Dedicated integrated circuits used for the control of power supplies, both switchmode and linear.
- converter** A general term for any switchmode power supply which converts a DC voltage at the input to a DC voltage at the output while providing galvanic (often transformer) isolation. Where regulation is not provided, the term "DC transformer" is more correctly used. Where input-to-output isolation is not provided, the term "switchmode regulator" is normally used.
- cross regulation** The regulation effects measured on one output as a result of changes on other outputs. (Very often, in multiple-output supplies, the main output is fully regulated, and cross regulation would refer to the output voltage variations on the auxiliary outputs as a result of load changes on the main output.)
- current-mode control** A switchmode power supply control technique in which a fast-acting control loop defines the maximum current in the switching element on a pulse-by-pulse basis. In constant-voltage supplies, the fast current control loop is then adjusted by a slower form voltage control loop to provide a constant output voltage. The two control loops thus form a voltage-controlled current source. This method of control effectively eliminates the output filter inductor from the small-signal model, automatically improving the stability margin and small-signal dynamic performance. It also has the advantage of providing fast current limiting.
- DC current transformer** A type of current transformer in which a DC primary current controls the pulsating output current. (Very useful for isolated low-loss current limiting in high-current push-pull topologies).
- differential-mode ripple and noise** That part of the input or output ripple and noise voltage which exists between two supply or output lines with respect to each other. In multiple-output units, the ripple and noise voltage between output lines and a common return line.
- direct-off-line switcher** A switchmode power supply that provides isolated DC outputs from AC line inputs without using line frequency transformers.
- duty cycle** The ratio of operating time to total elapsed time for a device that operates intermittently. Usually expressed as a percentage.
- dynamic load** A load that is varying, an active load. An electronic load that can be rapidly changed to test transient response. May also refer to an adjustable constant-current electronic load used for test purposes.
- efficiency** Ratio of output power to input power as a percentage. (Note: True power must be used, with due allowance for power factor. (With capacitive input filters, often used for "off-line" SMPS).)
- EMI (Electromagnetic Interference)** Also referred to as RFI (radio-frequency interference). EMI levels, both radiated and conducted, are controlled by national and international standards.

Switchmode Power Glossary

- Faraday (electrostatic) shield** An electrostatic shield, usually copper, placed between a source of high-voltage noise and a low-noise area. Typical examples would be electrostatic screens in transformers and the screens between switching elements and heat sinks.
- FCC (Federal Communications Commission)** A US Federal regulatory body that, among other things, defines maximum permitted EMI conduction and radiation levels in the United States.
- filter** Normally refers to power level low-pass filters, intended to give nearly continuous DC output currents. Power filters differ from signal filters in that input and output impedance's are not matched and are often variable. Because of the need for energy storage, power filters are large.
- flyback** The property of an inductor that enables it to reverse its terminal voltage when the conducted current is interrupted. The term is often applied to transformers and diodes which utilize this flyback voltage property.
- flyback converter** The most popular low power (<100W) converter. A member of the buck, boost, buck-boost family of converters. Typically referred to as a flyback transformer but technically it is an energy storage device or inductor. The primary stores the energy and the secondary removes the energy.
- full-wave rectifier** A circuit that rectifies both half cycles of an AC input.
- ground loop** Normally refers to noise-generating current loops set up as a result of grounding the common output of the power supply at more than one place. (In switched power supplies, ground loops are normally minimized by grounding the common output of the supply at the output terminals. If the system demands other ground points, loop currents can be minimized by a common-mode inductor in the output leads).
- heat sink** A term generally used to describe a thermal shunt, normally metal, used to aid in the transfer of heat from a hot spot (often a semiconductor) to an "infinite heat sink" (often free air).
- inrush current** The peak uncut current that flows into the power supply when it is first switched on.
- inverter** A device that provides an AC output from a DC supply.
- line regulation** The change in the controlled output parameter as a result of an input line voltage change. Normally expressed as a percentage of change of output for a full-range input voltage change.
- linear regulator** A dissipate series or shunt regulator technique which gives continuous control of the regulated parameter. More commonly, these will be series transistor voltage regulators.
- load regulation** The change in the controlled output parameter as a result of a defined load change on the measured output. Usually given as a percentage change in output for the defined load change.
- main output** In multiple-output supplies, the principal output, often the highest-current or highest-power output. The control loop is normally closed to the "main output" and therefore it will have the best overall performance.
- master** The controlling power supply in a parallel "master slave" configuration.
- master slave operation** A method of interconnecting two or more units in such a way that a defined "master" unit controls the behavior of the remaining "slave" units. Normally power supplies must be specially designed for this mode of operation, if required.
- modulator** An electronic control device which varies one parameter in response to the changes of another, used as part of the control loop to vary the output of a power supply. A typical example would be a pulse-width modulator or current-mode control modulator in a switchmode supply.
- output impedance** The magnitude of the complex resistive and reactive components seen by looking into the power supply output terminals at frequencies other than DC. Normally measured by dividing the RMS output voltage change by the forced RMS load current change over the required range of frequency.
- overshoot** A transient excursion of the controlled parameter outside the regulation limits, as a result of initial turn-on or turn-off, or a sudden load variation.

Switchmode Power Glossary

post-regulator A regulator positioned in the output side of a DC/DC converter. Post regulators are often applied to multiple-output supplies to provide additional regulation on auxiliary outputs. Post-regulators may be linear or switching and, in high-power applications, magnetic amplifier or saturable reactor techniques are commonly used.

power factor - GM The ratio of real power to apparent power in AC supply applications. In direct-off-line power supplies with capacitive input filters, current flows only at the peak of the applied sine wave. The product of RMS input voltage and RMS current gives the input VA (apparent power, not true power). The power factor of a capacitive input is approximately $VA \times 0.63$ or $VA \times 0.9$. (To measure true input power accurately, a watt meter is required. This may be a dynamometer or digital type, but it should have a bandwidth exceeding 1 kHz for reasonably accurate results).

power supply A power source. Normally applied to the prime source, e.g., line supply, battery, or generator. More often, a unit that conditions a source of unregulated power to provide a regulated output. Not necessarily a prime source of power.

resolution The smallest increment of change that can be made in the controlled parameter.

response time The time taken for the controlled output parameter to change from 10 to 90 percent of its programmed change in response to a step change in the programming signal.

series regulator A regulator in which the active element is in series with the supply output. A term often applied to linear regulators

shunt regulator A method of control in which the power controller is in parallel with the output terminals. Shunt regulators have the advantage of absorbing minimum power when the output is fully loaded. A shunt-regulated output can source or sink current and is useful for servomotor control during overrun conditions.

snubber (1) A network used to reduce the stress on a switching component. (2) A network used to reduce the rate of change of voltage on diodes or switching devices to minimize RF components and dv/dt stress.

soft start A method of controlling the initial rate of increase in duty ratio in a switchmode power supply during the turn-on transient. (Used to reduce the stress on internal components and to prevent transformer saturation.)

switching regulators A switchmode DC/DC regulator in which input and output share a common line.

Inductor Part Number Meaning

First three letters identify the style:

- DXX = Drum Core
- DUS = Unshielded Soldered Terminal
- DSS = Shielded Soldered Terminal
- DSB = Shielded Backlight Applications
- DHC = High Current Soldered Terminal
- DUW = Unshielded Wrapped Terminal
- TIW = Toroidal Inductor Wrapped Terminals
- LPI = Low Profile Inductor

Middle Numbers Designate Size (4 digits):

Length X Height in hundredths of inches

Next three Digits Designate Inductance Value:

- ❖ Standard Inductance Coding:
 - Number = inductance
 - R = decimal point
 - Numbers after R = number of zeros to be added

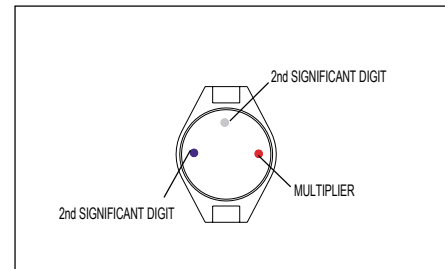
For Example

 - ◆ 1R0 = 1.0 uH
 - ◆ 471 = 470 uH
 - ◆ R47 = 0.47 uH
- ❖ Color Coding:
 - Left and top dots = inductance value
 - Right dot = multiplier (# of 0s to add)
 - Inductance in nH; convert to uH

For Example

 - ◆ Left dot = blue = 6;
 - ◆ Top dot = gray = 8;
 - ◆ Right dot = red = 2; so 6800 nH
or 6.8 uH;
 - ◆ The suffix of this part number is -6R8R

R at the end designates Tape and Reel packaging



0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	VIOLET
8	GRAY
9	WHITE

COLOR TABLE