OBSOLETE PRODUCT
Contact Factory for Replacement Model

VKP100MTC Series

100 Watt, Dual/Triple Output, Half Brick DC/DC Converter



FEATURES

- RoHS COMPLIANT
- 33 - 75V INPUT RANGE
- 2.3" X 2.4" X 0.5"
- USER CONFIGURABLE AS A SINGLE, DUAL OR TRIPLE OUTPUT
- EACH CHANNEL INDEPENDENTLY CURRENT LIMITED
- EXCELLENT CROSS REGULATION
- 500VDC CHANNEL TO CHANNEL ISOLATION
- HIGH EFFICIENCY: 88% TYPICAL
- FIXED-FREQUENCY OPERATION
- OPERATION TO +100°C BASEPLATE TEMPERATURE
- 50µS TRANSIENT RECOVERY, 0-90% LOAD STEP
- PRIMARY & SECONDARY REMOTE ON/OFF
- ADJUSTABLE OUTPUT VOLTAGE
- EXTERNAL SYNCHRONIZATION
- APPROVED TO UL/CUL1950, EN 60950

DESCRIPTION

The VKP100MTC Series are members of the VK high density DC/DC converter family. They are multiple output DC/DC converters offered in a 33-75 input voltage range. Their versatile architecture featuring fully isolated channels enables the system designer to utilize the converter in either a single, dual or triple output scheme without excessive minimum load requirements or cross regulation degradation.

The VKP100MTC's architecture results in an economical and practical solution for use in distributed power schemes for today's demanding telecommunication and electronic data processing applications requiring ground separation between noise sensitive digital logic and bipolar analog components. The VKP100xTC's proprietary control circuity responds to 50-100% load steps in 35µSeconds to within 1% of nominal Vout. The peak deviation will not exceed 10% of Vout for pulsed load slew rates in excess of 75 Amps per microsecond.

The VKP100MTC is ideal for electronic data processing applications utilizing modern disk drives and low voltage microprocessors that require dynamic load current response while maintaining tight output voltage tolerances.

AGENCY APPROVALS

c UL us VDE CE

PRODUCT SELECTION CHART

MODEL	INPUT VOLTAGE (VDC)	VOUT RATED OUTPUT VOLTAGE (VDC) Output 1 (±)	Output 2 (±)	Output 3 (±)	IOUT RATED MAXIMUM OUTPUT CURRENT (A) Output 1	Output 2	Output 3
VKP100MT312C	48	3.3	12	12	30	4.2	4.2
VKP100MT315C		3.3	15	15	30	3.4	3.4
VKP100MT512C	(33-75)	5.1	12	12	20	4.2	4.2
VKP100MT515C		5	15	15	20	3.4	3.4

RoHS COMPLIANT 2002/95/EC

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For full details go to www.murata-ps.com/rohs

ISO9001 CERTIFIED

INPUT SPECIFICATIONS, ALL MODELS

Specifications are at T_{CASE} = +40°C nominal input voltage unless otherwise specified.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Fusing				10	A
Voltage Range					
VKP100MTC Series		33	48	75	VDC
Reflected Ripple Current	Peak - Peak			370	mA
Input Ripple Rejection	DC to 1KHz	50	60		dB
Maximum Input Current	Output Power = 100W				
VKP100MTC Series	V_{IN} = 30V			5	A
No Load Power Dissipation	P_{OUT} = 0, $V_{IN, Min}$<V_{IN}<$V_{IN, Max}$			6	W
Inrush Charge					
VKP100MTC Series				0.247	mC
Quiescent Operating Current					
Primary On/Off Disabled			7.5	10	mA
Secondary On/Off Disabled			15	20	mA

COMMON SPECIFICATIONS, ALL MODELS

Specifications are at T_{CASE} = +40°C nominal input voltage unless otherwise specified.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
ISOLATION					
Input to Each Output	Peak Test	1500			VDC
Input to Baseplate		1500			VDC
Channel to Channel	Any Channel to Any Channel	500			VDC
Resistance, Input - Output		10			MΩ
Capacitance, Input - Output			2000		pF
Leakage Current	V_{ISO} = 240VAC, 60Hz		180		µA, rms
GENERAL					
Set Point Accuracy	V_{IN} = Nominal, 50% Load			1	%
Turn-on Time	Within 1% of Nominal V_{OUT}		3.5	5	mSec
Remote On/Off Control Inputs					
Primary	Open Collector/Drain				
Sink Current-Logic Low	V_{IN} = V_{MAX}			7	mA
Vlow				0.8	V
Vhigh				Open Collector	
Secondary	Open Collector/Drain				
Sink Current-Logic Low				100	µA
Vlow				0.4	V
Vhigh				Open Collector	
External Synchronization Input					
Frequency		440		520	KHz
Pulse Width		150		320	nSec
Source Impedence				47	Ω
Input High Voltage		4		5	V
Input Low Voltage		0		1	V
Input Impedance			470		Ω
Switching Frequency		470	480	490	KHz
Weight				3 (85)	oz (g)
TEMPERATURE	Case Temperature				
Operation/Specification		-40		+100	°C
Storage		-55		+125	°C
Shutdown		+100		+115	°C
Thermal Inpedance	Case to Ambient		8.2		°C/W

VKP100MT312C OUTPUT SPECIFICATIONS

Specifications are at T_{CASE} = +40°C nominal input voltage unless otherwise specified.

		OUTPUT 1			OUTPUT 2			OUTPUT 3			
PARAMETER	CONDITIONS	Min	Nom	Max	Min	Nom	Max	Min	Nom	Max	UNITS
Output Power	Total Combined O/P Power = 100 Watts Max		50	100		25	50		25	50	W
Set Point Voltage	$I_{O\ Nom}$		3.3			12.2			12.2		V
Output Current, I_{OUT}		0.5	15	30.0	0	2.1	4.2	0	2.1	4.2	A
Output Ripple, p-p	DC to 20MHz*		100	200		150	500		150	500	mV
Output Adjust Range	*	3.15		3.80	Dependent on V1						V
Output Temperature Drift			.02	.05		.02	.05		.02	.05	%/°C
Line Regulation	$V_{IN, Min}$≤V_{IN}≤$V_{IN, Max}$										
	I_O = $I_{O, Nom}$		0.05	0.10		1.0	2.0		1.0	2.0	%
Load Regulation	Min Load to Rated Load		0.50	1.00	See Regulation Curves			See Regulation Curves			%
Current Limit Inception	Other Outputs Min Load		38			6.0			6.0		A
Short-Circuit Current			30	38		5.0	6.0		5.0	6.0	A
Transient Response	50 to 100% Load Step										
Peak Deviation			150	250							mV
Settling Time	V_{OUT}, 1% of $V_{OUT, Nom}$		35	50							µSec
Overvoltage Limit		4.2		5.0							V
Efficiency	I_{OUT1}=15A, (I_{OUT2}+I_{OUT3})= 4.2A F.L. V_{IN}=Nominal	85	86								%

VKP100MT315C OUTPUT SPECIFICATIONS

Specifications are at T_{CASE} = +40°C nominal input voltage unless otherwise specified.

PARAMETER	CONDITIONS	OUTPUT 1 Min	OUTPUT 1 Nom	OUTPUT 1 Max	OUTPUT 2 Min	OUTPUT 2 Nom	OUTPUT 2 Max	OUTPUT 3 Min	OUTPUT 3 Nom	OUTPUT 3 Max	UNITS
Output Power	Total Combined O/P Power = 100 Watts Maximum		50	100		25	50		25	50	W
Set Point Voltage	$I_{O\ Nom}$		3.3			15.85			15.85		V
Output Current, I_{OUT}		0.5	15	30.0	0	1.66	3.33	0	1.66	3.33	A
Output Ripple, p-p	DC to 20MHz*		100	200		125	500		125	500	mV
Output Adjust Range	*	3.15		3.80	Dependent on V1						V
Output Temperature Drift			.02	.05		.02	.05		.02	.05	%/°C
Line Regulation	$V_{IN,\ Min} \leq V_{IN} \leq V_{IN,\ Max}$, $I_O = I_{O,\ Nom}$		0.05	0.10		1.0	2.0		1.0	2.0	%
Load Regulation	Min Load to Rated Load		0.50	1.0	See Regulation Curves			See Regulation Curves			%
Current Limit Inception	Other Outputs Min Load		38			5.0			5.0		A
Short-Circuit Current			30	38		4.0	5.0		4.0	5.0	A
Transient Response	50 to 100% Load Step										
Peak Deviation			150	250							mV
Settling Time	V_{OUT}, 1% of $V_{OUT,\ Nom}$		35	50							µSec
Overvoltage Limit		4.2		5.0							V
Efficiency	I_{OUT1}=15A, (I_{OUT2}+I_{OUT3}) = 3.4A F.L. V_{IN}=Nominal	85	86								%

VKP100MT512C OUTPUT SPECIFICATIONS

Specifications are at T_{CASE} = +40°C nominal input voltage unless otherwise specified.

PARAMETER	CONDITIONS	OUTPUT 1 Min	OUTPUT 1 Nom	OUTPUT 1 Max	OUTPUT 2 Min	OUTPUT 2 Nom	OUTPUT 2 Max	OUTPUT 3 Min	OUTPUT 3 Nom	OUTPUT 3 Max	UNITS
Output Power	Total Combined O/P Power = 100 Watts Combined		50	100		25	50		25	50	W
Set Point Voltage	$I_{O\ Nom}$		5.1			12			12		V
Output Current, I_{OUT}		0.5	10	20	0	2.1	4.2	0	2.1	4.2	A
Output Ripple, p-p	DC to 20MHz*		100	150		150	500		150	500	mV
Output Adjust Range	*	4.75		5.50	Dependent on V1						V
Output Temperature Drift			.02	.05		.02	.05		.02	.05	%/°C
Line Regulation	$V_{IN,\ Min} \leq V_{IN} \leq V_{IN,\ Max}$, $I_O = I_{O,\ Nom}$		0.05	0.10		1.0	2.0		1.0	2.0	%
Load Regulation	Min Load to Rated Load		0.50	1.0	See Regulation Curves			See Regulation Curves			%
Current Limit Inception	Other Outputs Min Load		26.0			6.0			6.0		A
Short-Circuit Current			20.0	26.0		5.0	6.0		5.0	6.0	A
Transient Response	50 to 100% Load Step										
Peak Deviation			200	300							mV
Settling Time	V_{OUT}, 1% of $V_{OUT,\ Nom}$		35	50							µSec
Overvoltage Limit		6.0		7.0							V
Efficiency	I_{OUT1}=10A, (I_{OUT2}+I_{OUT3}) = 4.2A F.L. V_{IN}=Nominal	86	87								%

VKP100MT515C OUTPUT SPECIFICATIONS

Specifications are at T_{CASE} = +40°C nominal input voltage unless otherwise specified.

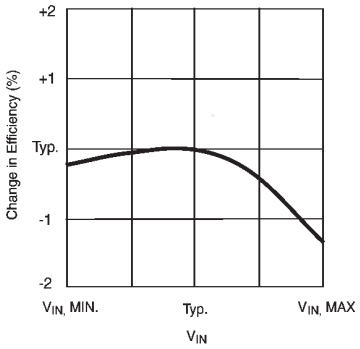
PARAMETER	CONDITIONS	OUTPUT 1 Min	OUTPUT 1 Nom	OUTPUT 1 Max	OUTPUT 2 Min	OUTPUT 2 Nom	OUTPUT 2 Max	OUTPUT 3 Min	OUTPUT 3 Nom	OUTPUT 3 Max	UNITS
Output Power	Total Combined O/P Power = 100 Watts Max		50	100		25	50		25	50	W
Set Point Voltage	$I_{O\ Nom}$		5.0			15.3			15.3		V
Output Current, I_{OUT}		0.5	10	20	0	1.66	3.33	0	1.66	3.33	A
Output Ripple, p-p	DC to 20MHz*		100	150		125	500		125	500	mV
Output Adjust Range	*	4.60		5.50	Dependent on V1						V
Output Temperature Drift			.02	.05		.02	.05		.02	.05	%/°C
Line Regulation	$V_{IN,\ Min} \leq V_{IN} \leq V_{IN,\ Max}$, $I_O = I_{O,\ Nom}$		0.05	1.0		1.0	2.0		1.0	2.0	%
Load Regulation	Min Load to Rated Load		0.05	1.0	See Regulation Curves			See Regulation Curves			%
Current Limit Inception	Other Outputs Min Load		26.0			5.0			5.0		A
Short-Circuit Current			20.0	26.0		4.0	5.0		4.0	5.0	A
Transient Response	50 to 100% Load Step										
Peak Deviation			200	300							mV
Settling Time	V_{OUT}, 1% of $V_{OUT,\ Nom}$		35	50							µSec
Overvoltage Limit		6.0		7.0							V
Efficiency	I_{OUT1}=10A, (I_{OUT2}+I_{OUT3}) = 4.2A F.L. V_{IN}=Nominal	86	87								%

*See Application Notes available on the web at www.cd4power.com

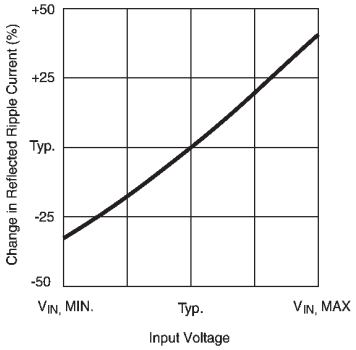
TYPICAL PERFORMANCE CURVE

T_{CASE} = +40°C, nominal input voltage, nominal load, recommended external components applied, unless otherwise specified.
(Refer to Application Note DCAN-9 at www.cd4power.com)

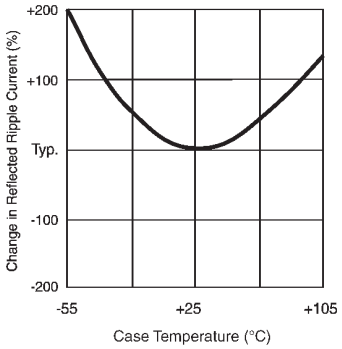
EFFICIENCY vs INPUT VOLTAGE



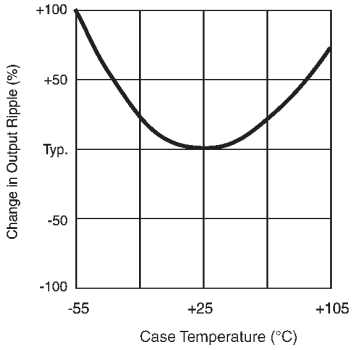
REFLECTED RIPPLE CURRENT vs INPUT VOLTAGE



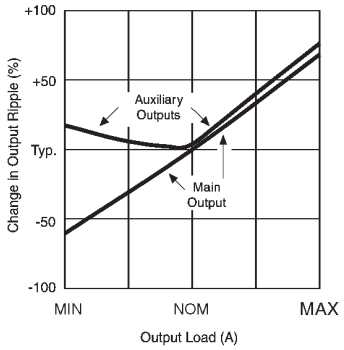
REFLECTED RIPPLE CURRENT vs TEMPERATURE



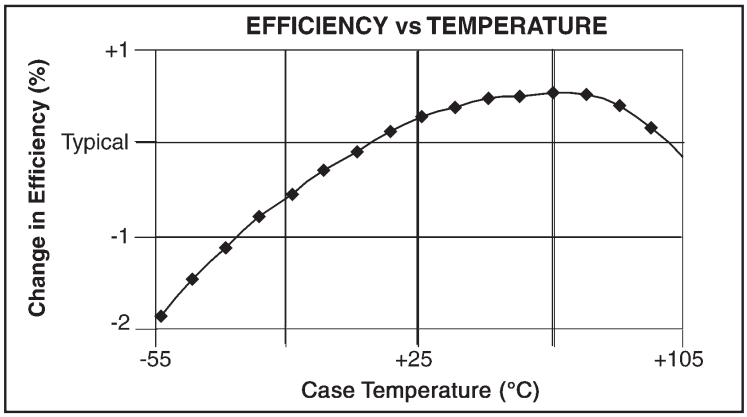
OUTPUT RIPPLE vs TEMPERATURE



OUTPUT RIPPLE vs LO AD



EFFICIENCY vs TEMPERATURE



ABSOLUTE MAXIMUM RATINGS

Output Short-Circuit Duration	Continuous
Baseplate Temperature	+100°C
Lead Temperature (soldering, 10 seconds max)	+300°C
Storage Temperature	+125°C
Input to Output Isolation	1500 VDC

ORDERING INFORMATION

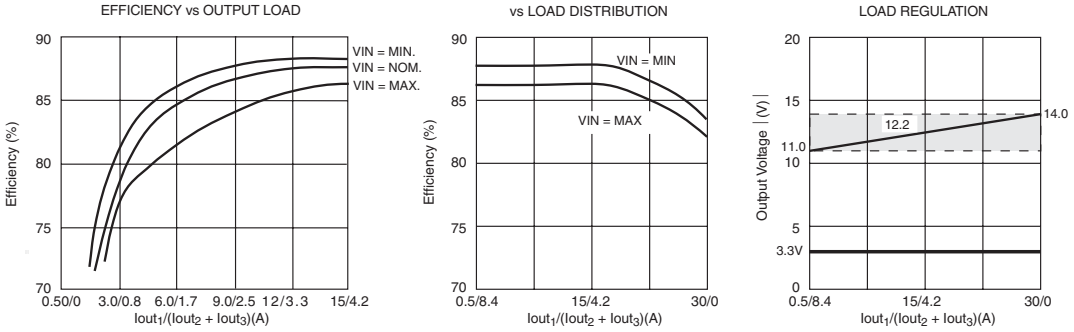
VKP100 MTYZ - L C

Device Family
  Indicates 100 Watt Regulated Unit
Model Number
  Selected from Table of Electrical Characteristics
    Where:
      X = Input Voltage (M = 48VDC)
      T = Number of Outputs (Triple "T")
      Y = 3 for 3.3V, 5 for 5V
      Z = 12 for 12V, 15 for 15V
Lead Length
  0.250" - No Number
  0.145" - (6)
  0.110" - (8)
RoHS Compliant

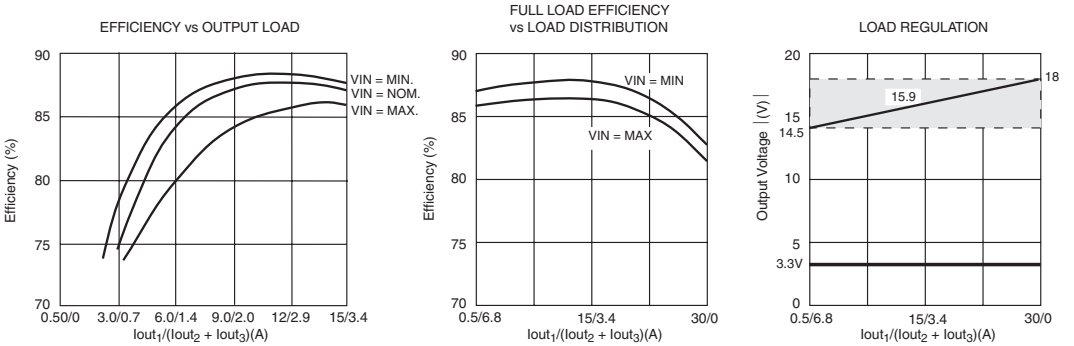
TYPICAL PERFORMANCE CURVE

T_{CASE} = +40°C, nominal input voltage, nominal load,
recommended external components applied, unless otherwise specified.
(Refer to Application Note DCAN-9 at www.cd4power.com)

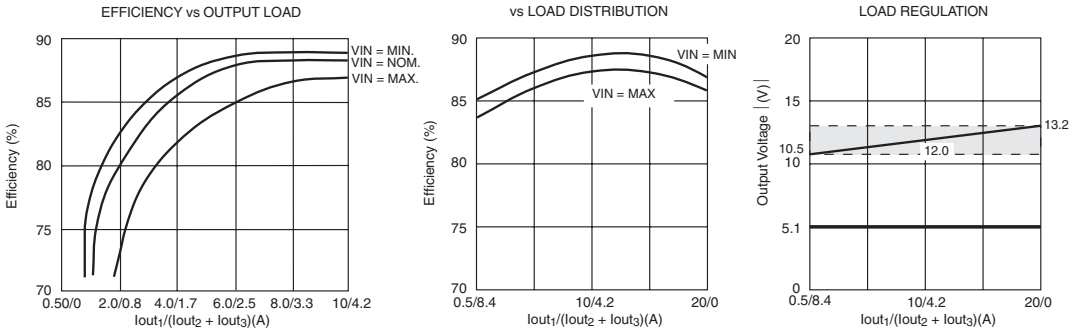
VKP100xT312C



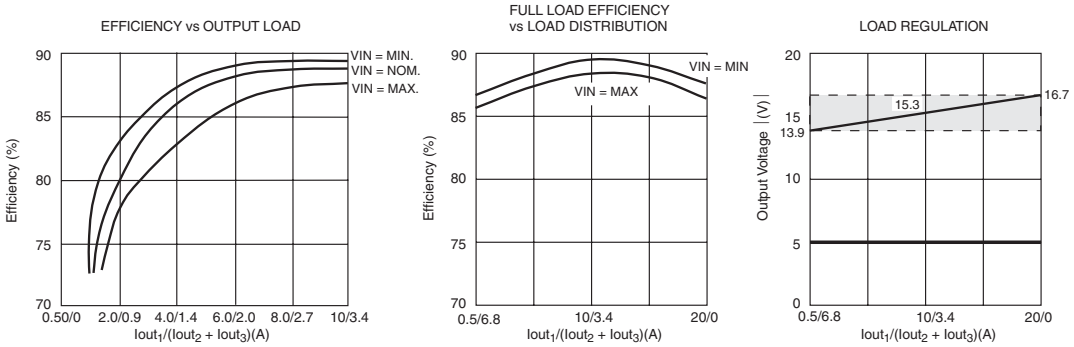
VKP100xT315C



VKP100xT512C

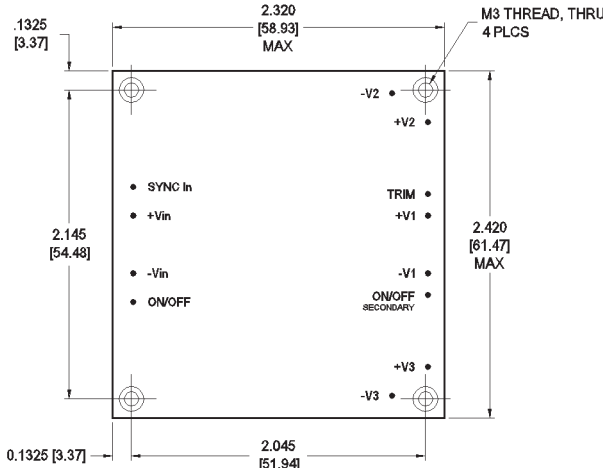


VKP100xT515C

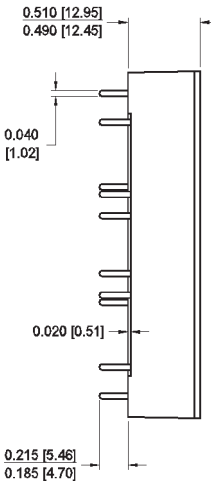


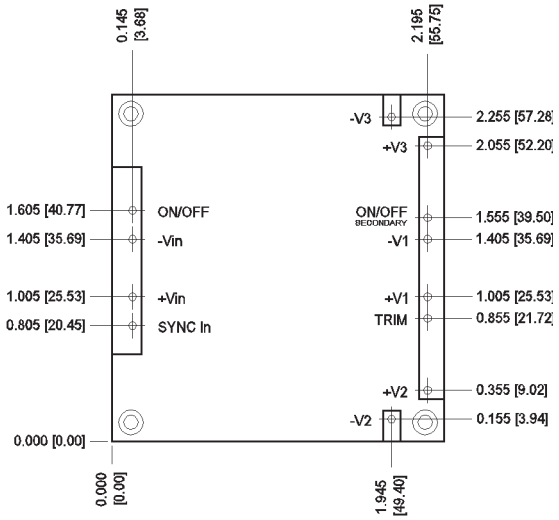
MECHANICAL

TOP VIEW



SIDE VIEW





NOTES:
All dimensions are in inches (millimeters).
PIN PLACEMENT TOLERANCE: ± 0.005"
MECHANICAL TOLERANCE: ± 0.015"
Marked with: specific model ordered, date code, job code.

MATERIAL: Units are encapsulated in a low thermal resistance molding compound which has excellent chemical resistance and electrical properties in high humidity environments and over a wide operating temperature range. The encapsulant and outer shell of the unit have UL94V-0 ratings. Lead material is solder plated to allow ease of solderability.

*See Ordering Information on page 4 for available lead lengths.

PIN CONNECTIONS	
1	PRIMARY ON/OFF
2	-VIN
3	+VIN
4	SYNC IN
5	-V2
6	+V2
7	TRIM
8	+V1
9	-V1
10	SECONDARY ON/OFF
11	+V3
12	-V3

Murata Power Solutions

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07/28/08

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