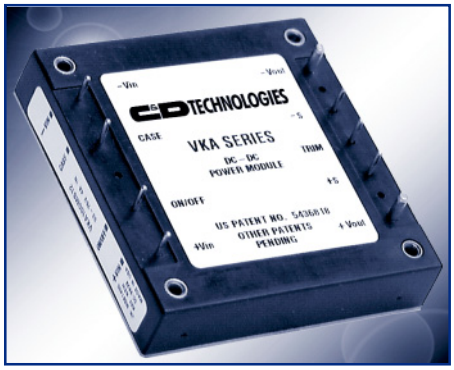
C&D TECHNOLOGIES
Power Solutions

Corporate: www.cdtechno.com
Product: www.cdpoweronline.com

VKA150MS

150 Watt Single Output Half Brick DC/DC Converter



- 33 - 75V Input Range
- High Efficiency: 85% Typical at 5V
- 100µS Transient Response 50-100% Load Step
- 420 kHz Fixed-Frequency Operation
- Remote Sense
- UL/CUL 1950, VDE EN60950
- Operation to +100°C Baseplate Temperature
- Primary Remote On/Off, Choice of Pos/Neg Logic
- Adjustable Output Voltage
- Continuout Short-Circuit Protection
- Thermal Shutdown
- Case Ground Pin

The VKA150MS Series DC/DC converters present an economical and practical solution for distributed power system architectures which require high power density and efficiency while maintaining system modularity and upgradeability. With the ability to operate over a wide input voltage range of 33 to 75 volts, these modules are ideal for use in battery backup applications common in todays' telecommunication and electronic data processing applications. The output is fully isolated from the input, allowing for a variety of polarity and grounding configurations.

The VKA150MS's proprietary control circuitry responds to 50-100% load steps in 100µSeconds to within 1% nominal Vout.

The patented fixed frequency architecture combined with surface mount technology results in a compact, efficient and reliable solution to DC/DC conversion requirements. Safety approvals per UL/CUL 1950, EN 60950

PRODUCT SELECTION CHART

MODEL	INPUT VOLTAGE	VOUT (VDC)	IOUT (A)	EFFICIENCY	
				MIN	TYP
VKA150MS05	48VDC	5.0V	30.0	84	85
VKA150MS12	48VDC	12.0V	12.5	88	89
VKA150MS15	48VDC	15.0V	10.0	88	89
VKA150MS24	48VDC	24.0V	6.25	89	90

ORDERING INFORMATION

VKA150 MSzz - ___ ___

Device Family
Indicates 150 Watt Regulated Unit
Model Number
Selected from Table of Electrical Characteristics
Where:
zz = Output Voltage (05=5V, 12=12V,15=15V,etc.)
Lead Length
0.200" - No Number
0.145" - (6)
0.110" - (8)
Remote On-Off Logic:
Positive - No Number
Negative - (1)

SPECIFICATIONS, ALL MODELS

Specifications are at T_{CASE} = +40°C Nominal Input Voltage unless otherwise specified.

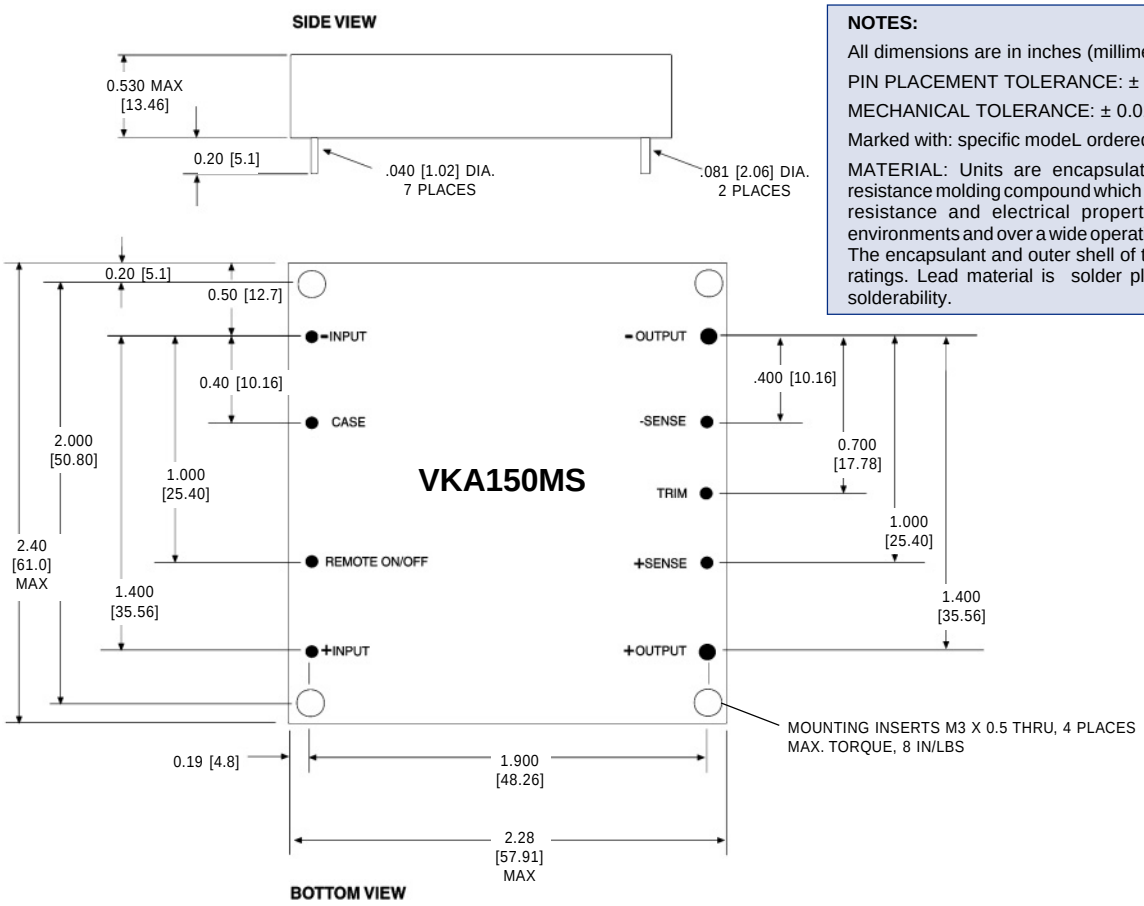
	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
INPUT	**INPUT**					
	Voltage Range			48	75	V_{DC}
	Maximum Input Current	V_{IN} = 30V_{DC}			6.6	A
	Reflected Ripple Current	Peak - Peak			550	mA
	Input Ripple Rejection	DC to 1KHz	50	60		dB
	No Load Input Current MS			100		mA
	Power Dissipation MS					
	No Load			4.8		W
	Standby, Primary On/Off Disabled MS			0.4		W
	Inrush Charge	V_{IN} = V_{IN}max			0.360	mC
	Quiescent Operating Current					
	Primary On/Off Disabled			8	12	mA

	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
OUTPUT	**OUTPUT**					
	Rated Power				150	W
	Set point Accuracy				1	%
	Line Regulation	High Line to Low Line		0.02	0.05	%
	Load Regulation	No Load to Rated Load		0.2	0.5	%
	Output Temperature Drift			±.02	±.05	%/°C
	Output Ripple, p-p	DC to 20MHz BW			1.5%	V_{OUT}, Nom
	Output Current Limit Inception		105%		130%	I_{OUT}, Nom
	Output Short-Circuit Current		120%		135%	I_{OUT}, Nom
	Output Overvoltage Limit		120%		140%	V_{OUT}, Nom
	Transient Response	50 to 100% Load Step				
	Peak Deviation	di/dt = 0.1A/µSec		2	3%	V_{OUT}, Nom
	Settling Time	V_{OUT}, 1% of Nominal Output		75	100	µSec

	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
GENERAL	**ISOLATION**					
	Input to Output	Peak Test for 2 Seconds	1500			V_{DC}
	Input to Baseplate		1500			V_{DC}
	Output to Baseplate		500			V_{DC}
	Resistance		10			MΩ
	Capacitance			2000		pF
	Leakage Current	V_{ISO} = 240V_{AC}, 60Hz		180		µA, rms
	GENERAL					
	Switching Frequency		400	420	440	KHz
	Remote Sense Compensation				0.5	V
	Output Voltage Adjust Range	5V		-40% / +10%		V_{OUT}, Nom
		12V		-50% / +10%		V_{OUT}, Nom
		15V		-50% / +10%		V_{OUT}, Nom
		24V		-50% / +10%		V_{OUT}, Nom
	Remote On/Off Control Inputs					
	Primary	Open Collector/Drain				
	Sink Current-Logic Low				1.0	mA
	Vlow				0.4	V
	Vhigh				Open Collector	
	Turn-on Time	Within 1% of Rated Output		5.0	8.0	mSec
	Weight				3 (85)	oz (g)
	TEMPERATURE					
	Operation/Specification	Case Temperature	-40	+25	+100	°C
	Storage	Case Temperature	-55	+25	+125	°C
	Shutdown Temperature	Case Temperature	+100		+115	°C
	Thermal Impedance, case-ambient			8.2		°C/W
	Lead Solder Temperature	10 Seconds max			+300	°C

NOTES: (1) See Typical Performance Curves, page 3
(2) Continuous Mode
(3) See graphs for Efficiency vs. Output Load, V_{IN}, T_{CASE}
(4) 3.3V Models Limited in Trim Down Range
(5) Consult Factory for Details

MECHANICAL



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.

OUTPUT ADJUST VOLTAGE

This feature allows the user to accurately adjust the module's output voltage set point to a specified level. This is achieved by connecting a resistor or potentiometer from the TRIM terminal to either the +Vout terminal (for increased Vout) or the -Vout terminal (for decreased Vout). The formulae below describe the trim resistor value to obtain a Vout change of Δ%. V_O is output voltage prior to adjustment (3.3V, 5V, 12V, 15V, or 24V).

$$\text{Radj - up} = \left(\frac{Vo(100 + \Delta\%)}{1.225\Delta\%} - \frac{(100 + 2\Delta\%)}{\Delta\%} \right) \text{k}\Omega$$

$$\text{Radj - down} = \left(\frac{100}{\Delta\%} - 2 \right) \text{k}\Omega$$

OVP NOTE

Special attention should be given to the peak voltage deviation during a dynamic load step when trimming the output above the original set point to avoid tripping the overvoltage protection circuit. Should an OVP condition occur, the converter will go into a latch condition and must be externally reset before it will return to normal operation.

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