

OBSOLETE PRODUCT

VKA50xSC

DC/DC Converter

Contact Factory for Replacement Model



- RoHS Compliant
- Operation to 100°C Baseplate Temperature
- 18-36 V & 33 - 75V Input Range
- High Efficiency: 87% Typical at 5V
- Primary Remote On/Off, Choice of Pos/Neg Logic
- 100µS Transient Response 50-100% Load Step
- Adjustable Output Voltage
- 420 kHz Fixed-Frequency Operation
- Continouot Short-Circuit Protection
- Remote Sense
- Thermal Shutdown
- Case Ground Pin



The VKA50xSC 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 18 to 36 and 33 to 75 volts, these modules are ideal for use in battery

backup applications common in today's telecommunication and electronic data processing applications. The output is fully isolated from the input, allowing for a variety of polarity and grounding configurations.

The VKA50xSC'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 per UL1950, EN 60950 and CSA 22.2 #234.

PRODUCT SELECTION CHART

MODEL	INPUT VOLTAGE	VOUT (VDC)	IOUT (A)	EFFICIENCY	
				MIN	TYP
VKA50LS03C		3.3V	10.0	80	81
VKA50LS05C	24VDC	5.0V	10.0	85	86
VKA50LS12C		12.0V	4.2	87	88
VKA50LS15C	(18-36)	15.0V	3.3	88	89
VKA50LS24C		24.0V	2.1	89	90
VKA50MS03C		3.3V	10.0	81	82
VKA50MS05C	48VDC	5.0V	10.0	86	87
VKA50MS12C		12.0V	4.2	88	89
VKA50MS15C	(33-75)	15.0V	3.3	89	90
VKA50MS24C		24.0V	2.1	89	90

THROUGH-HOLE SOLDERING INFORMATION

These devices are intended for wave soldering or manual soldering. They are not intended to be subject to surface mount processes under any circumstances.

The normal wave soldering process can be used with these devices where the device is subjected to a maximum wave temperature of 260°C for a period of no more than 10 seconds. Within this time and temperature range, the integrity of the device's plastic body will not be compromised and internal temperatures within the converter will not exceed 175°C. Care should be taken to control manual soldering limits identical to that of wave soldering.



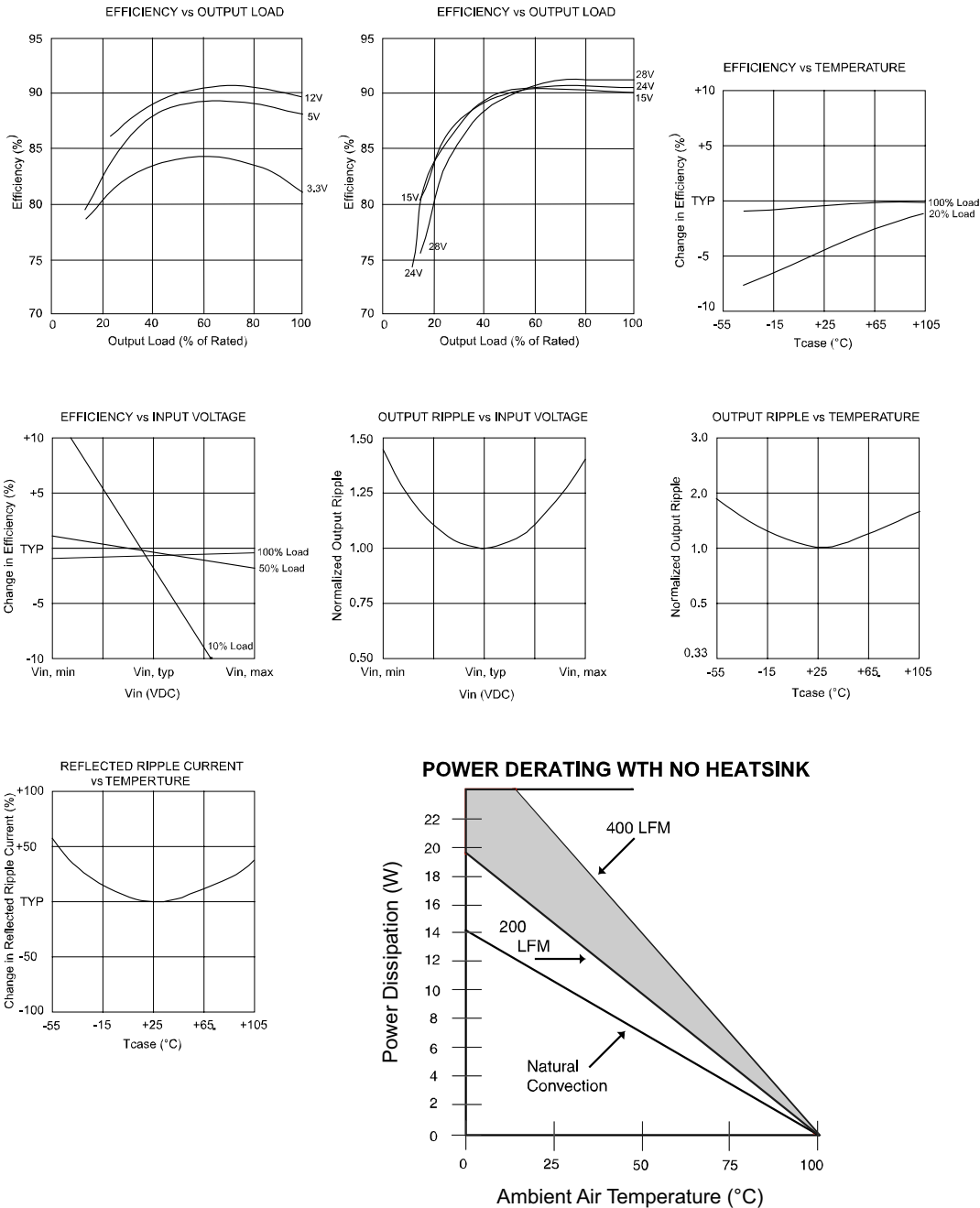
SPECIFICATIONS, ALL MODELS

Specifications are at $T_{CASE} = +40^{\circ}C$ nominal input voltage unless otherwise specified.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
INPUT					
Voltage Range	18	24	36	VDC	
	33	48	75	VDC	
Maximum Input Current					
VKA50LS	$V_{IN} = 16VDC$			3.7	A
VKA50MS	$V_{IN} = 27VDC$			2.2	A
Reflected Ripple Current	Peak - Peak		20		mA
Input Ripple Rejection	DC to 1KHz	50	60		dB
Load Input Current LS/MS			50/100		mA
Power Dissipation LS/MS					
No Load			3.6/4.8		W
Standby, Primary On/Off Disabled LS/MS			0.18/0.4		W
Inrush Charge	$V_{IN} = V_{IN,max}$				
VKA50LS				0.520	mC
VKA50MS				0.360	mC
Quiescent Operating Current					
Primary On/Off Disabled			8	12	mA
OUTPUT					
Rated Power		0		50	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			± 0.2		$^{\circ}C$
Output Ripple, p-p	DC to 20MHz BW		1%		V_{OUT} , Nom
Output Current Limit Inception			130%	150%	I_{OUT} , Nom
Output Short-Circuit Current (2)	test		120%	150%	I_{OUT} , Nom
Output Overvoltage Limit			125%	135%	V
Transient Response	50 to 100% Load Step $di/dt = 1.0A/\mu Sec$		2%		V_{OUT} , Nom
Peak Deviation					
Settling Time	V_{OUT} , 1% of Nominal Output		100		μSec
ISOLATION					
Input to Output	Peak Test for 2 Seconds	1500			VDC
Input to Baseplate		1500			VDC
Output to Baseplate		500			VDC
Resistance		10			$M\Omega$
Capacitance			2000		pF
Leakage Current	$V_{ISC} = 240VAC, 60Hz$		180		μA , rms
GENERAL					
Efficiency, Line, Load, Temp. (3)					
Switching Frequency		400	420	440	KHz
Remote Sense Compensation				0.5	V
Output Voltage Adjust Range	12V & higher(4)		-50% / +25%		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		10.0	12.5	mSec
Weight				85 (3.0)	g (oz.)
TEMPERATURE					
Operation/Specification	Case Temperature	-40	+25	+100	$^{\circ}C$
Storage	Case Temperature	-55	+25	+125	$^{\circ}C$
Shutdown Temperature	Case Temperature	+100		+115	$^{\circ}C$
Thermal Impedance, case-ambient			7.1		$^{\circ}C/W$
Lead Solder Temperature	10 Seconds max			+300	$^{\circ}C$

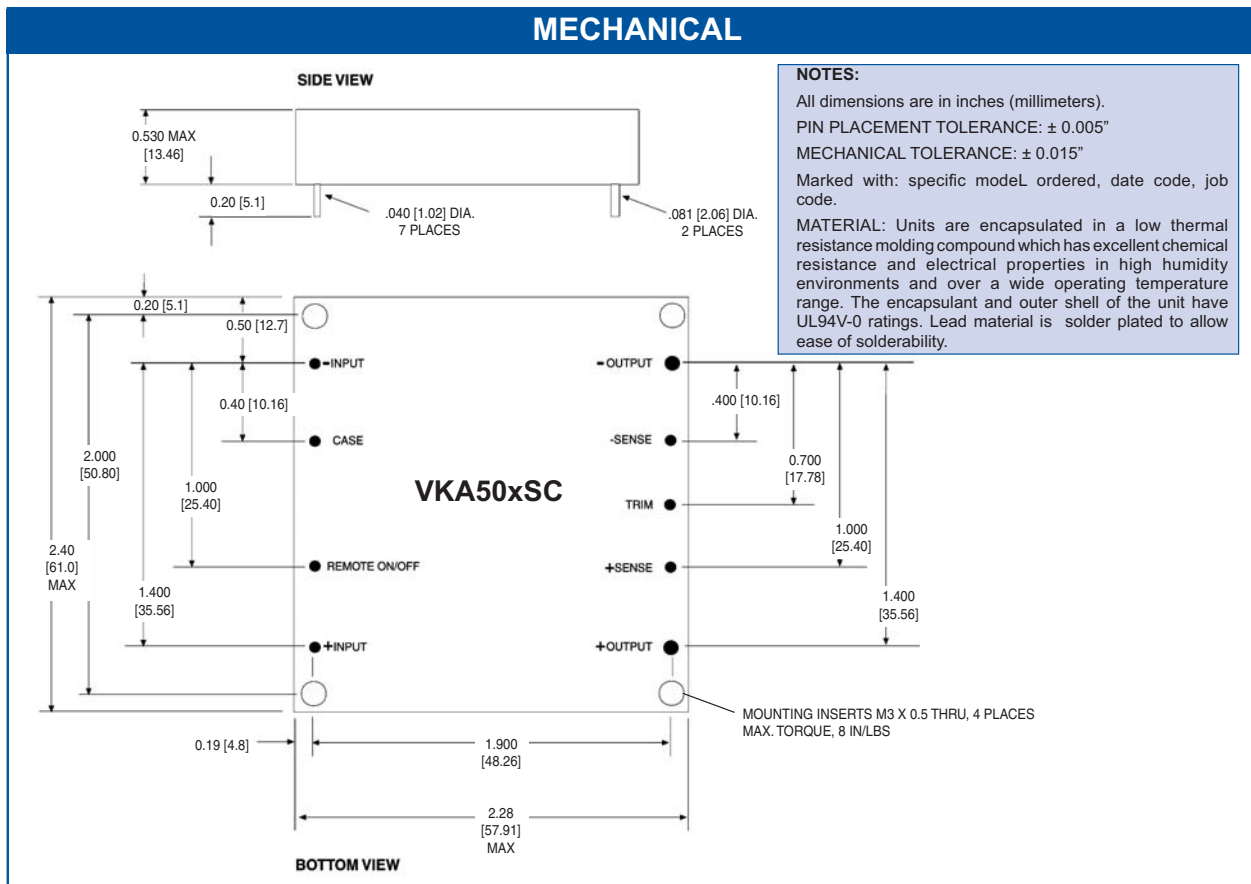
- NOTES:**
- 1) See Typical Performance Curves, page 3
 - 2) Continuous Mode
 - 3) See graphs for Efficiency vs. Output Load, V_{IN} , T_{CASE}
 - 4) 3.3V Models Limited in Trim Down Range
 - 5) Consult Factory for Details

TYPICAL PERFORMANCE CURVES
T_{CASE} = +40°C nominal input voltage unless otherwise specified.



ORDERING INFORMATION

Device Family VKA50 xSzz C
 Indicates 50 Watt Regulated Unit
 Model Number _____
 Selected from Table of Electrical Characteristics
 Where:
 x = Input Voltage (L = 24VDC; M = 48VDC)
 zz = Output Voltage (03=3.3V, 05=5V, etc.)
 Lead Length _____
 0.200" - No Number
 0.145" - (6)
 0.110" - (8)
 Remote On-Off Logic: _____
 Positive - No Number
 Negative - (1)
 RoHS Compliant _____



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%. Vo is output voltage prior to adjustment (3.3V, 5V, 12V, 15V, or 24V).

$$R_{adj - up} = \left(\frac{V_o(100 + \Delta\%)}{1.225\Delta\%} - \frac{(100 + 2\Delta\%)}{\Delta\%} \right) \Omega$$

$$R_{adj - down} = \left(\frac{100}{\Delta\%} - 2 \right) \Omega$$

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.