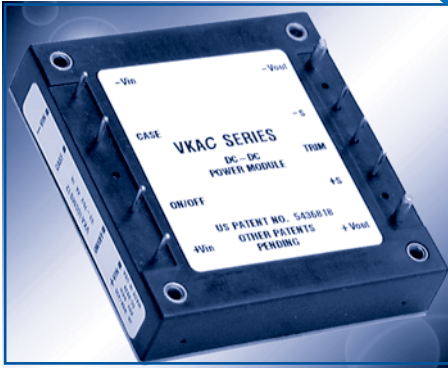


# OBSOLETE PRODUCT VKA60xSC

Contact Factory for Replacement Model 60 Watt Single-Output Half-Brick DC/DC Converter



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

The VKA60xSC 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 VKA60xSC'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	
VKA60LS03C	24VDC	3.3V	12.0	80	81	
VKA60LS05C		5.0V	12.0	85	86	
VKA60LS12C		12.0V	5.0	87	88	
VKA60LS15C		15.0V	4.0	88	89	
VKA60LS24C	(18-36)	24.0V	2.5	89	90	
VKA60MS03C		3.3V	12.0	81	82	
VKA60MS05C		5.0V	12.0	86	87	
VKA60MS12C		12.0V	5.0	88	89	
VKA60MS15C		15.0V	4.0	89	90	
VKA60MS24C		(33-75)	24.0V	2.5	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.



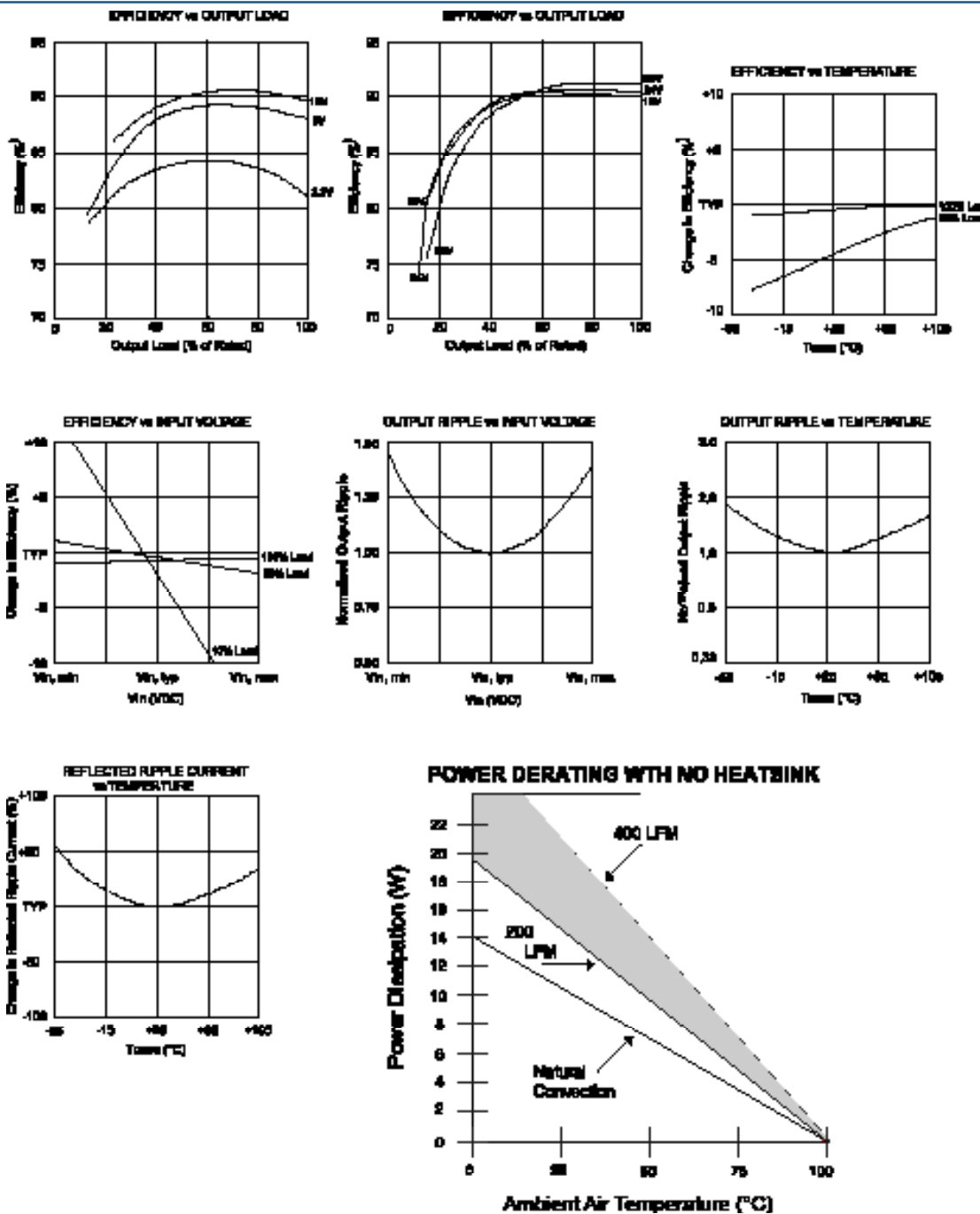
### SPECIFICATIONS, ALL MODELS

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

INPUT					
<b>INPUT</b>					
Voltage Range					
VKA60LS		18	24	36	VDC
VKA60MS		33	48	75	VDC
Maximum Input Current					
VKA60LS	$V_{IN} = 16VDC$			4.4	A
VKA60MS	$V_{IN} = 27VDC$			2.6	A
Reflected Ripple Current	Peak - Peak		20		mA
Input Ripple Rejection	DC to 1KHz	50	60		dB
No 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	$V_{IN} = V_{IN,max}$				
VKA60LS				0.520	mC
VKA60MS				0.360	mC
Quiescent Operating Current					
PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
OUTPUT					
<b>OUTPUT</b>					
Rated Power		0		60	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			$\pm 0.2$		$^{\circ}C$
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				
Peak Deviation	$di/dt = 1.0A/\mu Sec$		2%		$V_{OUT}$ Nom
Settling Time	$V_{OUT}$ 1% of Nominal Output		100		$\mu Sec$
PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
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	$V_{ISO} = 240VAC, 60Hz$		180		$\mu A, rms$
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
$V_{low}$				0.4	V
$V_{high}$				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	$^{\circ}C$

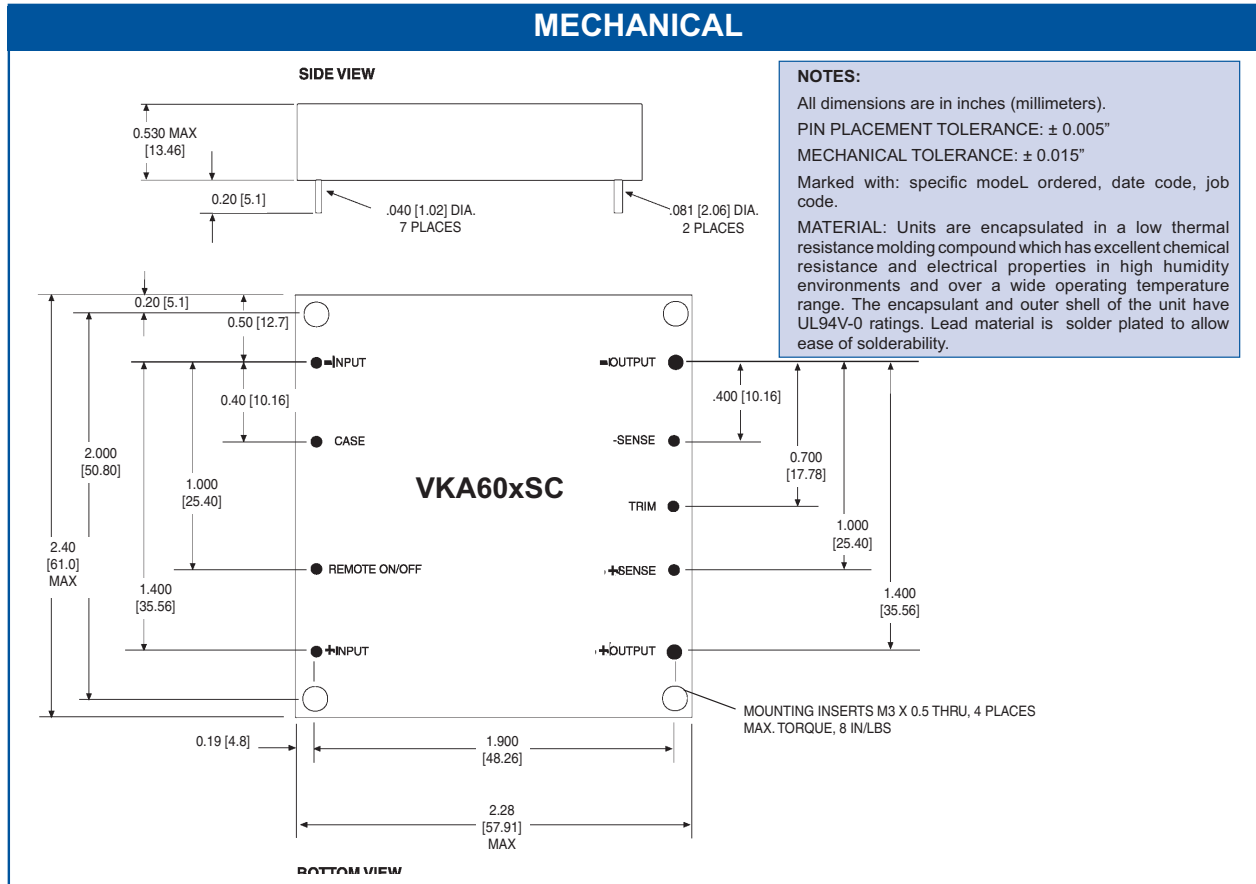
- NOTES:** (1) See Typical Performance Curves, page 3  
 (2) Continuous Mode  
 (3) See graphs for Efficiency vs. Output Load,  $V_{IN}$ ,  $T_{CASE}$   
 (4) 3.3V Models Limited in Trim Down Range  
 (5) Consult Factory for Details

TYPICAL PERFORMANCE CURVES  
T<sub>CASE</sub> = +40°C nominal input voltage unless otherwise specified.



ORDERING INFORMATION

Device Family VKA60 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.