

# VKA60xS

## 60 Watt Single Output Half Brick DC/DC Converter







- 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
- Continuout Short-Circuit Protection
- Thermal Shutdown
- Case Ground Pin

The VKA60xS Series DC/DC ideal for use in battery backup 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

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 configura-

The VKA60xS'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

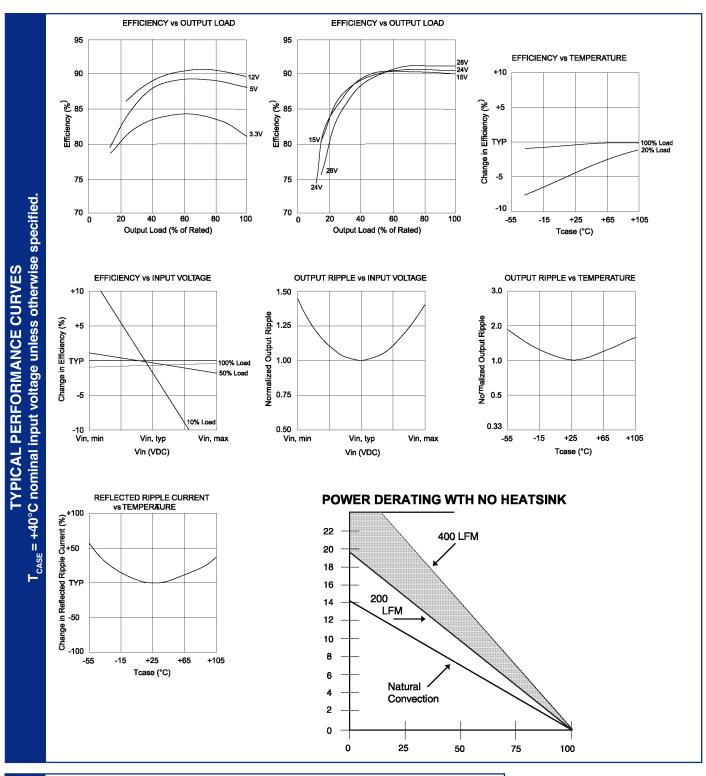
PRODUCT SELECTION CHART										
MODEL	INPUT VOLTAGE	VOUT (VDC)	IOUT (A)	EFFICIENCY MIN TYP						
VKA60LS03		3.3V	12.0	80	81					
VKA60LS05	24VDC	5.0V	12.0	85	86					
VKA60LS12		12.0V	5.0	87	88					
VKA60LS15	(18-36)	15.0V	4.0	88	89					
VKA60LS24		24.0V	2.5	89	90					
VKA60MS03		3.3V	12.0	81	82					
VKA60MS05	48VDC	5.0V	12.0	86	87					
VKA60MS12		12.0V	5.0	88	89					
VKA60MS15	(33-75)	15.0V	4.0	89	90					
VKA60MS24		24.0V	2.5	89	90					

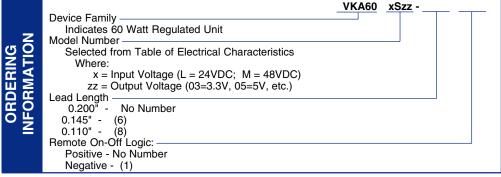
SPECIFICATIONS, ALL MODELS Specifications are at  $T_{\text{CASE}}$  = +40°C nominal input voltage unless otherwise specified.

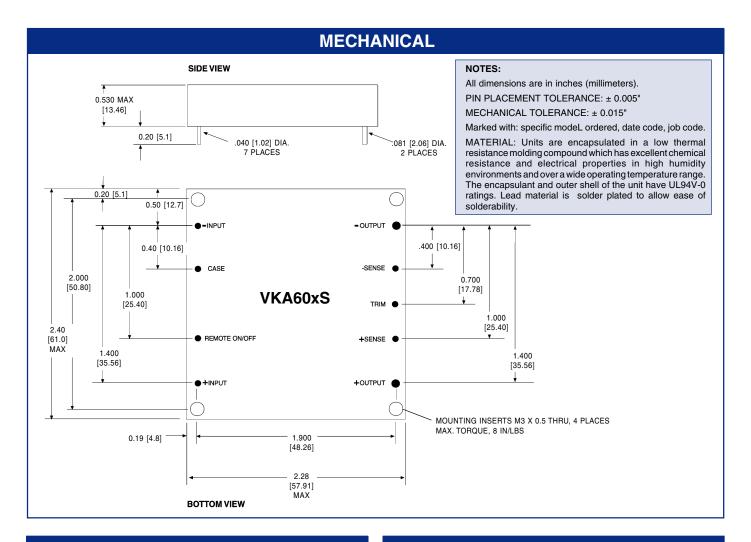
	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
		CONSTITUTE			III) DC	011110
	INPUT					
	Voltage Range VKA60LS		18	24	36	VDC
	VKA60MS		33	48	75	VDC
	Maximum Input Current		33	40	75	VDC
	VKA60LS	V <sub>IN</sub> = 16VDC			4.4	А
	VKA60MS	$V_{IN} = 10VDC$ $V_{IN} = 27VDC$			2.6	A
	Reflected Ripple Current	Peak - Peak		20	2.0	mA
5	Input Ripple Rejection	DC to 1KHz	50	60		dB
INPUT	No Load Input Current LS/MS	DO to TRUE	30	50/100		mA
Z	Power Dissipation LS/MS			30/100		ША
	No Load			3.6/4.8		W
	Standby, Primary On/Off Disable	d LS/MS		0.18/0.4		W
	Inrush Charge	$V_{IN} = V_{IN} max.$		0.10/0.1		**
	VKA60LS	IN = INTEX			0.520	mC
	VKA60MS				0.360	mC
	Quiescent Operating Current					=
	Primary On/Off Disabled			8	12	mA
	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
	OUTPUT					
	Rated Power		0		60	W
	Set point Accuracy				1	%
	Line Regulation	High Line to Low Line		0.02	0.05	%
$\vdash$	Load Regulation	No Load to Rated Load		0.02	0.05	%
	Output Temperature Drift			±.02		%/°C
욘	Output Ripple, p-p	DC to 20MHz BW		1%		V <sub>out</sub> , Nom
5	Output Current Limit Inception				130%	I <sub>OUT</sub> , Nom
OUTPUT	Output Short-Circuit Current (2)	test			110%	I <sub>OUT</sub> , Nom
	Output Overvoltage Limit			125%	135%	V
	Transient Response	50 to 100% Load Step				
	Peak Deviation	di/dt = 1.0A/μSec		2%		V <sub>out</sub> , Nom
	Settling Time	V <sub>OUT</sub> , 1% of Nominal Output		100		μSec
	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			MΩ
	Capacitance			2000		pF
	Leakage Current	V <sub>ISO</sub> = 240VAC, 60Hz		180		μA, rms
	GENERAL					
	Efficiency, Line, Load, Temp. (3)					
	Switching Frequency		400	420	440	KHz
4	Remote Sense Compensation	10)(01:1-(1)		500/ / 050/	0.5	V
GENERAL	Output Voltage Adjust Range	12V & higher(4)		-50% / +25%		V <sub>OUT</sub> , Nom
<b>"</b>	Remote On/Off Control Inputs	Open Collector/Drain				
ш	Primary Sink Current-Logic Low	Open Collector/Drain			1.0	m A
<u>ত</u>	Vlow				1.0 0.4	mA V
-	Vhigh				Open Collector	V
	Turn-on Time	Within 1% of Rated Output		10.0	12.5	mSec
	Weight	Traini 175 of Flatou Guspat		10.0	85 (3.0)	g (oz.)
	TEMPERATURE				()	J (/)
	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			7.1		°C/W
	Lead Solder Temperature	10 Seconds max			+300	°C
				1		

NOTES: (1) See Typical Performance Curves, page 3 (2) Continuous Mode

(3) See graphs for Efficiency vs. Output Load, V<sub>IN</sub>, T<sub>CASE</sub>
(4) 3.3V Models Limited in Trim Down Range
(5) Consult Factory for Details







## **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  $\Delta\%$ . Vo is output voltage prior to adjustment (3.3V, 5V, 12V, 15V, or 24V).

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

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

## **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.

C&D Technologies (Power Electronics) Ltd. Shannon, Co. Clare, Ireland

Tel: +353.61.474.133 Fax:+353.61.474.141

Power Electronics Division, United States 3400 E Britannia Drive, Tucson, Arizona 85706

Tel: 800.547.2537 Fax: 520.770.9369

C&D Technologies, (NCL)
Milton Keynes MK14 5BU UK

Tel: +44 (0)1908 615232 Fax: +44 (0)1908 617545

Any data, prices, descriptions or specifications presented herein are subject to revision by C&D Technologies, Inc. without notice. While such information is believed to be accurate as indicated herein, C&D Technologies, Inc. makes no warranty and hereby disclaims all warranties, express or implied, with regard to the accuracy or completeness of such information. Further, because the product(s) featured herein may be used under conditions beyond its control, C&D Technologies, Inc. hereby disclaims all warranties, either express or implied, concerning the fitness or suitability of such product(s) for any particular use or in any specific application or arising from any course of dealing or usage of trade. The user is solely responsible for determining the suitability of the product(s) featured herein for user's intended purpose and in user's specific application. C&D Technologies, Inc. does not warrant or recommend that any of its products be used in any life support or aviation or aerospace applications.