

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 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 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 VKA60xS's proprietary control circuitry responds to 50-100%

load steps in $100\mu Seconds$ to within 1% nominal Vout.

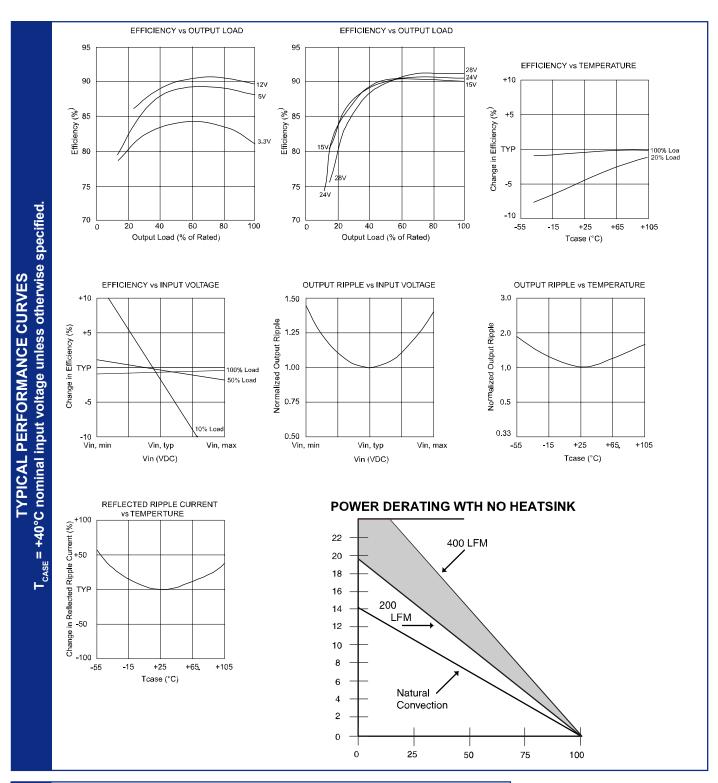
The patented fixed frequency architecture combined with surface mount technology results in a compact, efficient and reliable solution to DC/DC conversion requirements. Safety per UL1950, EN 60950 and CSA 22.2 #234

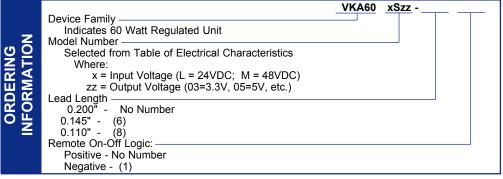
PRODUCT SELECTION CHART										
MODEL	INPUT VOLTAGE	VOUT (VDC)	IOUT (A)	EFFICIE MIN	FICIENCY					
VKA60LS03		3.3V	12.0	80	81					
VKA60LS05	24VDC	5.0V	12.0	85	86					
VKA60LS12		12.0V	5.0	87	88					
VKA60LS15	(18-36)	15.0V	4.0	88	89					
VKA60LS24		24.0V	2.5	89	90					
VKA60MS03		3.3V	12.0	81	82					
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					

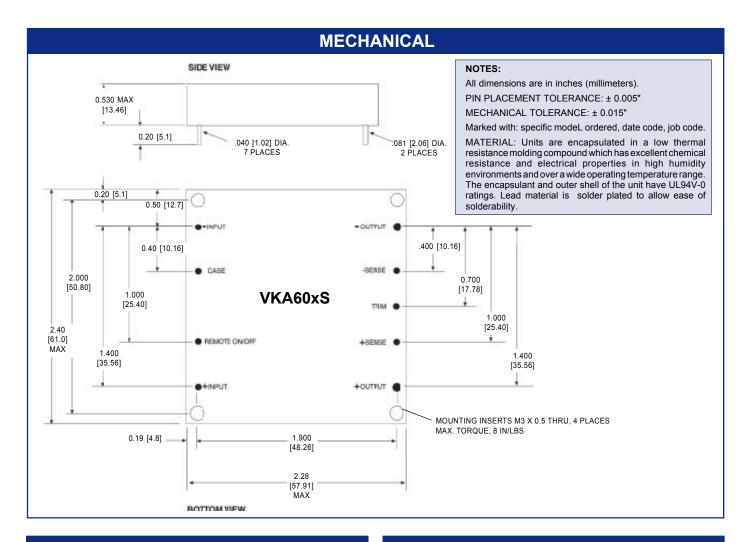
SPECIFICATIONS, ALL MODELS Specifications are at T_{CASE} = +40°C nominal input voltage unless otherwise specified.

- ,	CAGE	C Hominal input voltage ui		-	MAY	LINUTO
	PARAMETER	CONDITIONS	MIN	ТҮР	MAX	UNITS
	INPUT					
	Voltage Range					
	VKA60LS		18	24	36	VDC
	VKA60MS		33	48	75	VDC
	Maximum Input Current					
	VKA60LS	V _{IN} = 16VDC			4.4	Α
	VKA60MS	V _{IN} = 27VDC			2.6	Α
\vdash	Reflected Ripple Current	Peak - Peak		20		mA
	Input Ripple Rejection	DC to 1KHz	50	60		dB
INPUT	No Load Input Current LS/MS			50/100		mA
\leq	Power Dissipation LS/MS					
	No Load			3.6/4.8		W
	Standby, Primary On/Off Disable			0.18/0.4		W
	Inrush Charge	$V_{IN} = V_{IN} max.$				
	VKA60LS				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	%
5	Load Regulation	No Load to Rated Load		0.2	0.5	%
7	Output Temperature Drift			±.02		%/°C
OUTPUT	Output Ripple, p-p	DC to 20MHz BW		1%	4.500/	V _{OUT} , Nom
	Output Current Limit Inception			130%	150%	I _{OUT} , Nom
0	Output Short-Circuit Current (2)	test		120%	150%	I _{OUT} , Nom V
	Output Overvoltage Limit	50 to 4000/ Lond Otom		125%	135%	V
	Transient Response Peak Deviation	50 to 100% Load Step di/dt = 1.0A/μSec		2%		\/ Nom
	Settling Time	V _{OUT} , 1% of Nominal Output		100		V _{ουτ} , Nom μSec
	PARAMETER	CONDITIONS	MINI	TYP	MAX	
	ISOLATION	CONDITIONS	MIN	ITP	WAA	UNITS
		Dook Took for 2 Coopeds	4500			VDC
	Input to Output	Peak Test for 2 Seconds	1500			VDC VDC
	Input to Baseplate		1500			
	Output to Baseplate Resistance		500 10			VDC
-	Capacitance		10	2000		MΩ pF
	Leakage Current	V _{ISO} = 240VAC, 60Hz		180		·
	GENERAL	V _{ISO} = 240VAC, 60Hz		100		μA, rms
	Efficiency, Line, Load, Temp. (3)					
	Switching Frequency		400	420	440	KHz
	Remote Sense Compensation		100	120	0.5	V
GENERAL	Output Voltage Adjust Range	12V & higher(4)		-50% / +25%		V _{out} , Nom
шī.	Remote On/Off Control Inputs	3 ()				0017
Z	Primary .	Open Collector/Drain				
Щ	Sink Current-Logic Low				1.0	mA
G	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	°C
	Storage	Case Temperature	-55	+25	+125	°C
	Shutdown Temperature	Case Temperature	+100	7.4	+115	°C
	Thermal Impedance, case-ambient Lead Solder Temperature	10 Seconds max		7.1	+300	°C/W
	Leau Soluei Temperature	10 Octobius Illax			+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







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.

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