



PRODUCT OVERVIEW

The VKA75xSC 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 VKA75xSC's proprietary control circuitry responds to 50-100% load steps in 100mSeconds 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.

FEATURES

- RoHS Compliant
- 18-36 V & 33 - 75V Input Range
- High Efficiency: 87% Typical at 5V
- 100mS 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
- UL/CUL 60950, VDE EN60950

PRODUCT SELECTION CHART

MODEL	INPUT VOLTAGE	VOUT (VDC)	IOUT (A)	EFFICIENCY	
				MIN	TYP
VKA75LS02C	18-36Vdc	2.0V	15.0	75	76
VKA75LS03C	18-36Vdc	3.3V	15.0	80	81
VKA75LS05C	18-36Vdc	5.0V	15.0	85	86
VKA75LS12C	18-36Vdc	12.0V	6.3	87	88
VKA75LS15C	18-36Vdc	15.0V	5.0	88	89
VKA75LS24C	18-36Vdc	24.0V	3.1	89	90
VKA75MS02C	33-75Vdc	2.0V	15.0	76	77
VKA75MS03C	33-75Vdc	3.3V	15.0	81	82
VKA75MS05C	33-75Vdc	5.0V	15.0	86	87
VKA75MS12C	33-75Vdc	12.0V	6.3	88	89
VKA75MS15C	33-75Vdc	15.0V	5.0	89	90
VKA75MS24C	33-75Vdc	24.0V	3.1	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.



For full details go to
www.murata-ps.com/rohs

SPECIFICATIONS, ALL MODELS

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

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
INPUT					
Voltage Range					
VKA75LS		18	24	36	VDC
VKA75MS		33	48	75	VDC
Maximum Input Current					
VKA75LS	$V_{IN} = 16\text{VDC}$			5.5	A
VKA75MS	$V_{IN} = 27\text{VDC}$			3.3	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
No Load	Power Dissipation LS/MS		3.6/4.8		W
Standby, Primary On/Off Disabled LS/MS			0.18/0.4		W
Inrush Charge	$V_{IN} = V_{IN\text{ max.}}$				
VKA75LS				0.520	uC
VKA75MS				0.360	uC
Quiescent Operating Current					
Primary On/Off Disabled			8	12	mA
OUTPUT					
Rated Power		0		75	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		%/°C
Output Ripple, p-p	DC to 20MHz BW		1%		$V_{OUT\text{ Nom}}$
Output Current Limit Inception			130%	150%	$I_{OUT\text{ Nom}}$
Output Short-Circuit Current (2)	test		120%	150%	$I_{OUT\text{ Nom}}$
Output Overvoltage Limit			125%	135%	V
Transient Response	50 to 100% Load Step				
Peak Deviation	$di/dt = 1.0\text{A}/\mu\text{Sec}$		2%		$V_{OUT\text{ Nom}}$
Settling Time	$V_{OUT\text{ 1\% of Nominal Output}}$		100		μSec
GENERAL					
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	$V_{ISO} = 240\text{VAC}, 60\text{Hz}$		180		μA, rms
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%		$V_{OUT\text{ Nom}}$
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	μSec
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		+115	°C
Thermal Impedance, case-ambient			7.1		°C/W
Lead Solder Temperature	10 Seconds max			+300	°C

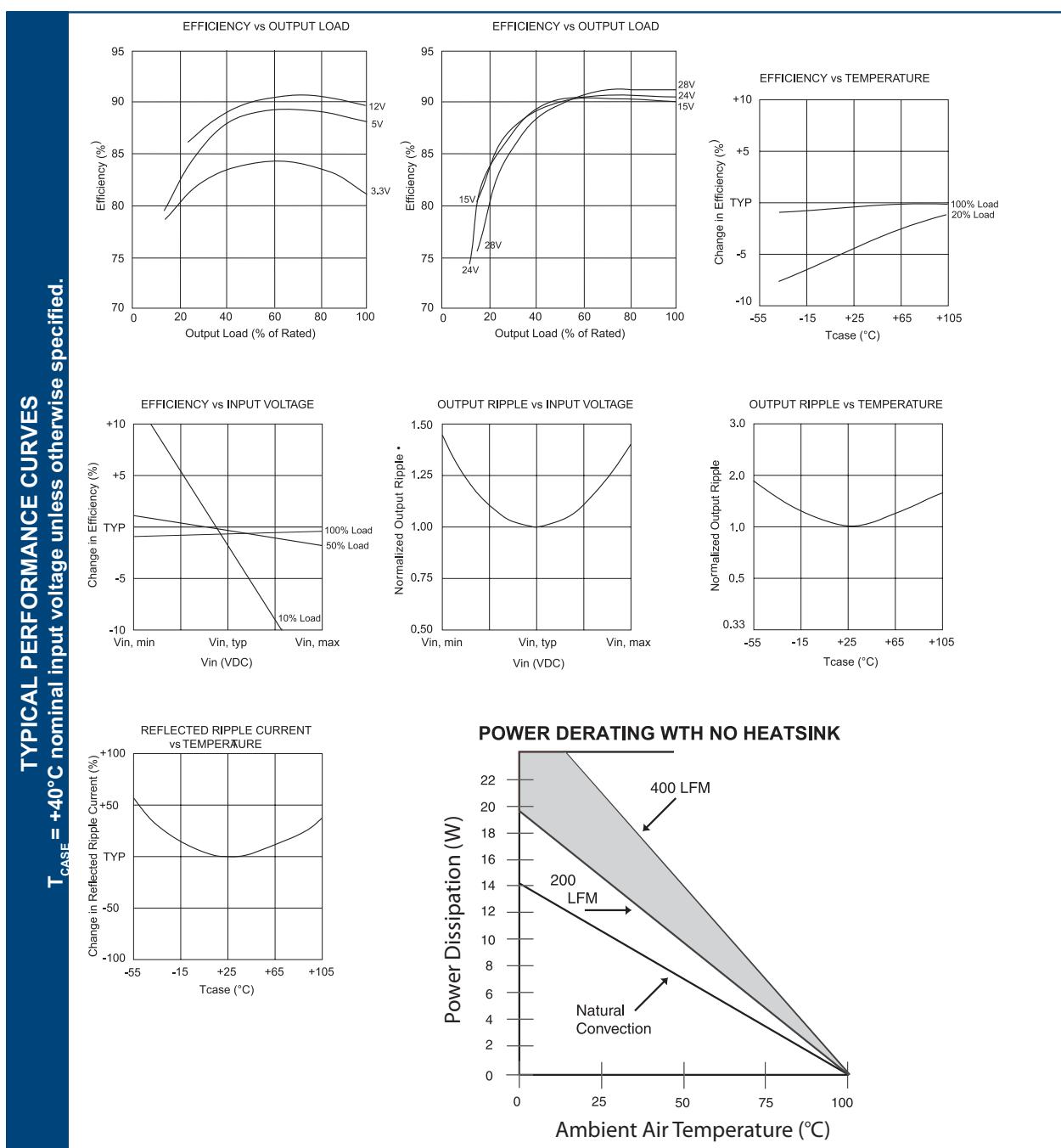
NOTES: (1) See Typical Performance Curves, page 3

(2) Continuous Mode

(3) See graphs for Efficiency vs. Output Load, V_{IN} , T_{CASE}

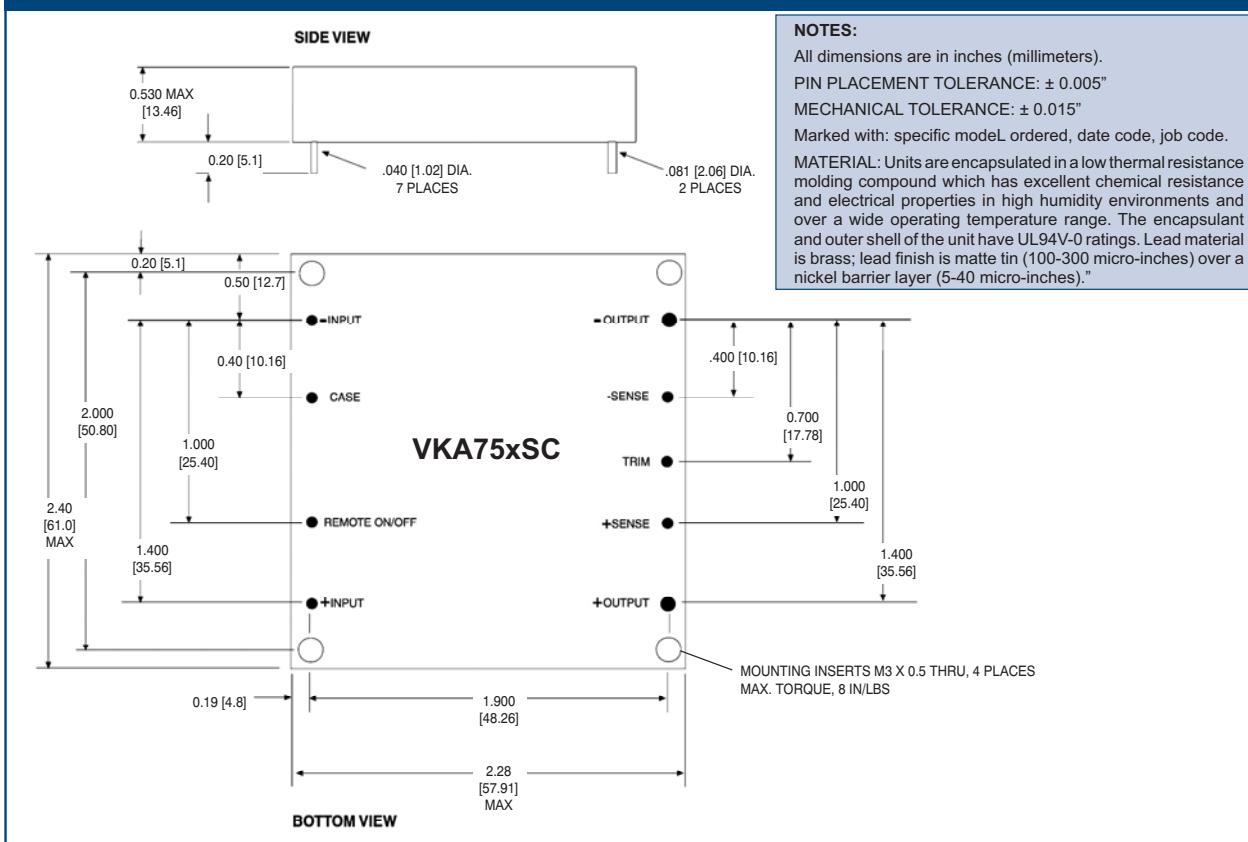
(4) 3.3V Models Limited in Trim Down Range

(5) Consult Factory for Details



ORDERING INFORMATION	Device Family _____	VKA75	xSzz	-	C	Not all model configurations are available. The following are the defined and active models: VKA75LS05-1C VKA75LS05C VKA75LS12-1C VKA75LS12C VKA75LS15C VKA75LS24C VKA75MS03C VKA75MS05C VKA75MS12C VKA75MS24C
	Indicates 75 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 _____					

MECHANICAL



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).

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

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

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.

Mouser Electronics

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