







High Effi

100mS 1 100% Load Step

- 420 kHz Fixed-Frequency Operation
- Remote Sense

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

e **FLI**us





The VKA100xSC 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 VKA100xSC'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. Safety Per UL1950, EN 60950 and CSA 22.2 #234

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	PRODUCT SELECTION CHART							
MODEL	INPUT VOUT IOUT EFFI							
	VOLTAGE	(VDC)	(A)	MIN	TYP			
VKA100LS02C		2.0V	20.0	75	76			
VKA100LS02FC		2.0V	30.0	73	74			
VKA100LS2V5FC		2.5V	30.0	75	76			
VKA100LS03C		3.3V	20.0	80	81			
VKA100LS03FC		3.3V	30.0	80	81			
VKA100LS05C	24VDC	5.0V	20.0	85	86			
VKA100LS12C		12.0V	8.3	87	88			
VKA100LS15C	(18-36)	15.0V	6.7	88	89			
VKA100LS24C		24.0V	4.2	89	90			
VKA100MS02C		2.0V	20.0	76	77			
VKA100MS02FC		2.0V	30.0	74	75			
VKA100MS2V5FC		2.5V	30.0	77	78			
VKA100MS03C		3.3V	20.0	81	82			
VKA100MS03FC		3.3V	30.0	81	82			
VKA100MS05C	48VDC	5.0V	20.0	86	87			
VKA100MS12C		12.0V	8.3	88	89			
VKA100MS15C	(33-75)	15.0V	6.7	89	90			
VKA100MS24C		24.0V	4.2	89	90			







SPECIFICATIONS, ALL MODELS

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

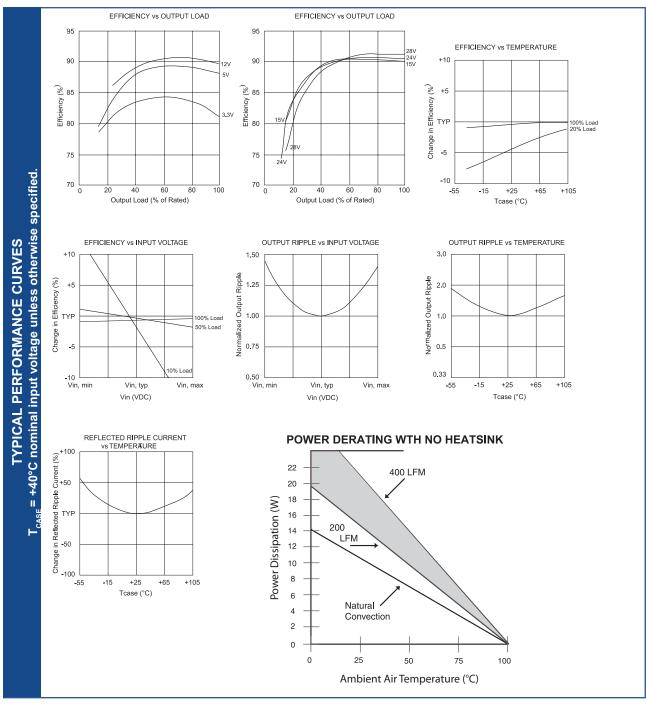
	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
	INPUT					
	Voltage Range					
	VKA100LS		18	24	36	VDC
	VKA100MS		33	48	75	VDC
	Maximum Input Current					
	VKA100LS	V _{IN} = 16VDC			7.4	Α
	VKA100MS	V _{IN} = 27VDC			4.4	Α
<u> </u>	Reflected Ripple Current	Peak - Peak		20		mA
	Input Ripple Rejection	DC to 1KHz	50	60		dB
<u>a</u>	No Load Input Current LS/MS			140/80		mA
Z						
	No Load	Power Dissipation LS/MS		3.4/3.8		W
	Standby, Primary On/Off Disabled LS/MS			0.12/0.24		W
	Inrush Charge	V _{IN} = V _{IN} max.		0112/0121		
	VKA100LS	IN INTERES			0.520	mC
	VKA100MS				0.360	mC
	Quiescent Operating Current					
	Primary On/Off Disabled			5	12	mA
,	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
	Rated Power	CONDITIONS	0		100	W
	Set point Accuracy		0		1	%
	Line Regulation	High Line to Low Line		0.02	0.05	%
_	Load Regulation	No Load to Rated Load		0.02	0.5	%
5	Output Temperature Drift	140 Edda to Nated Edda		±.02	0.0	%/°C
OUTPU	Output Ripple, p-p	DC to 20MHz BW		1%		V _{OUT} , Nom
	Output Current Limit Inception	DO TO ZOWIT IZ BVV		130%	150%	I _{OUT} , Nom
	Output Short-Circuit Current (2)	test		120%	150%	I _{OUT} , Nom
0	Output Overvoltage Limit	1031		125%	135%	V
	Transient Response	50 to 100% Load Step		12070	10070	·
	Peak Deviation	di/dt = 0.1A/µSec		2%		V _{out} , Nom
				100		
	Settling Time	V _{оит} , 1% of Nominal Output	MIN	100	MAX	μSec
	Settling Time PARAMETER		MIN		MAX	
	Settling Time PARAMETER ISOLATION	V _{OUT} , 1% of Nominal Output CONDITIONS		100	MAX	μSec UNITS
,	Settling Time PARAMETER ISOLATION Input to Output	V _{оит} , 1% of Nominal Output	1500	100	MAX	μSec UNITS VDC
	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate	V _{OUT} , 1% of Nominal Output CONDITIONS	1500 1500	100	MAX	μSec UNITS VDC VDC
	PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate	V _{OUT} , 1% of Nominal Output CONDITIONS	1500	100	MAX	μSec UNITS VDC VDC VDC
	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance	V _{OUT} , 1% of Nominal Output CONDITIONS	1500 1500 500	100 TYP	MAX	μSec UNITS VDC VDC VDC MΩ
	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance	V _{OUT} , 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds	1500 1500 500	100	MAX	μSec UNITS VDC VDC VDC MΩ pF
	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance	V _{OUT} , 1% of Nominal Output CONDITIONS	1500 1500 500	100 TYP	MAX	μSec UNITS VDC VDC VDC MΩ
	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL	V _{OUT} , 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds	1500 1500 500	100 TYP	MAX	μSec UNITS VDC VDC VDC MΩ pF
	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3)	V _{OUT} , 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds	1500 1500 500	100 TYP	MAX 440	μSec UNITS VDC VDC VDC MΩ pF
Th.	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL	V _{OUT} , 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds	1500 1500 500 10	100 TYP		μSec UNITS VDC VDC VDC MΩ pF μA, rms
RAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency	V _{OUT} , 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds	1500 1500 500 10	100 TYP	440	μSec UNITS VDC VDC VDC MΩ pF μA, rms
ERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation	V _{OUT} , 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz	1500 1500 500 10	100 TYP	440	μSec UNITS VDC VDC VDC MΩ pF μA, rms
NERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range	V _{OUT} , 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz	1500 1500 500 10	100 TYP	440	μSec UNITS VDC VDC VDC MΩ pF μA, rms
SENERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range Remote On/Off Control Inputs	V _{OUT} 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz 12 V & higher(4)	1500 1500 500 10	100 TYP	440	μSec UNITS VDC VDC VDC MΩ pF μA, rms
GENERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range Remote On/Off Control Inputs Primary Sink Current-Logic Low Vlow	V _{OUT} 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz 12 V & higher(4)	1500 1500 500 10	100 TYP	440 0.5 1.0 0.4	μSec UNITS VDC VDC VDC MΩ pF μA, rms KHz V V _{OUT} Nom
GENERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range Remote On/Off Control Inputs Primary Sink Current-Logic Low Vlow Vhigh0	V _{OUT} 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz 12 V & higher(4)	1500 1500 500 10	100 TYP 2000 180 420 -50% / +25%	440 0.5 1.0 0.4 Open Collector	μSec UNITS VDC VDC VDC MΩ pF μA, rms KHz V V OUT Nom
GENERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range Remote On/Off Control Inputs Primary Sink Current-Logic Low Vlow	V _{OUT} 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz 12 V & higher(4)	1500 1500 500 10	100 TYP	440 0.5 1.0 0.4	μSec UNITS VDC VDC VDC MΩ pF μA, rms KHz V V OUT Nom
GENERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range Remote On/Off Control Inputs Primary Sink Current-Logic Low Vlow Vhigh0 Turn-on Time Weight	V _{OUT} 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz 12 V & higher(4) Open Collector/Drain	1500 1500 500 10	100 TYP 2000 180 420 -50% / +25%	440 0.5 1.0 0.4 Open Collector	μSec UNITS VDC VDC VDC MΩ pF μA, rms KHz V V V _{OUT} , Nom
GENERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range Remote On/Off Control Inputs Primary Sink Current-Logic Low Vlow Vhigh0 Turn-on Time	V _{OUT} 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz 12 V & higher(4) Open Collector/Drain	1500 1500 500 10	100 TYP 2000 180 420 -50% / +25%	440 0.5 1.0 0.4 Open Collector 12.5	μSec UNITS VDC VDC VDC MΩ pF μA, rms KHz V V V _{OUT} Nom mA V
GENERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range Remote On/Off Control Inputs Primary Sink Current-Logic Low Vlow Vhigh0 Turn-on Time Weight	V _{OUT} 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz 12 V & higher(4) Open Collector/Drain	1500 1500 500 10	100 TYP 2000 180 420 -50% / +25%	440 0.5 1.0 0.4 Open Collector 12.5	μSec UNITS VDC VDC VDC MΩ pF μA, rms KHz V V V _{OUT} Nom mA V
GENERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range Remote On/Off Control Inputs Primary Sink Current-Logic Low Vlow Vhigh0 Turn-on Time Weight TEMPERATURE Operation/Specification Storage	V _{OUT} 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz 12 V & higher(4) Open Collector/Drain Within 1% of Rated Output	1500 1500 500 10	100 TYP 2000 180 420 -50% / +25%	1.0 0.4 Open Collector 12.5 85 (3.0)	μSec UNITS VDC VDC VDC MΩ pF μA, rms KHz V V V _{OUT} , Nom mA V mSec g (oz.)
GENERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range Remote On/Off Control Inputs Primary Sink Current-Logic Low Vlow Vhigh0 Turn-on Time Weight TEMPERATURE Operation/Specification Storage Shutdown Temperature	V _{OUT} 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz 12 V & higher(4) Open Collector/Drain Within 1% of Rated Output Case Temperature Case Temperature Case Temperature Case Temperature	1500 1500 500 10 400	100 TYP 2000 180 420 -50% / +25% 10.0 +25 +25	1.0 0.4 Open Collector 12.5 85 (3.0) +100	μSec UNITS VDC VDC VDC MΩ pF μA, rms KHz V V OUT Nom mA V mSec g (oz.) °C °C °C
GENERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range Remote On/Off Control Inputs Primary Sink Current-Logic Low Vlow Vhigh0 Turn-on Time Weight TEMPERATURE Operation/Specification Storage Shutdown Temperature Thermal Impedance, case-ambient	V _{OUT} 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz 12 V & higher(4) Open Collector/Drain Within 1% of Rated Output Case Temperature Case Temperature Case Temperature Case Temperature	1500 1500 500 10 400 -40 -55	100 TYP 2000 180 420 -50% / +25% 10.0	440 0.5 1.0 0.4 Open Collector 12.5 85 (3.0) +100 +125	μSec UNITS VDC VDC VDC MΩ pF μA, rms KHz V V OUT Nom mA V mSec g (oz.) °C °C °C °C/W
GENERAL	Settling Time PARAMETER ISOLATION Input to Output Input to Baseplate Output to Baseplate Resistance Capacitance Leakage Current GENERAL Efficiency, Line, Load, Temp. (3) Switching Frequency Remote Sense Compensation Output Voltage Adjust Range Remote On/Off Control Inputs Primary Sink Current-Logic Low Vlow Vhigh0 Turn-on Time Weight TEMPERATURE Operation/Specification Storage Shutdown Temperature	V _{OUT} 1% of Nominal Output CONDITIONS Peak Test for 2 Seconds V _{ISO} = 240VAC, 60Hz 12 V & higher(4) Open Collector/Drain Within 1% of Rated Output Case Temperature Case Temperature Case Temperature Case Temperature	1500 1500 500 10 400 -40 -55	100 TYP 2000 180 420 -50% / +25% 10.0 +25 +25	440 0.5 1.0 0.4 Open Collector 12.5 85 (3.0) +100 +125	μSec UNITS VDC VDC VDC MΩ pF μA, rms KHz V V OUT Nom mA V mSec g (oz.) °C °C °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



Device Family
Indicates 100 Watt Regulated Unit

Model Number
Selected from Table of Electrical Characteristics
Where:

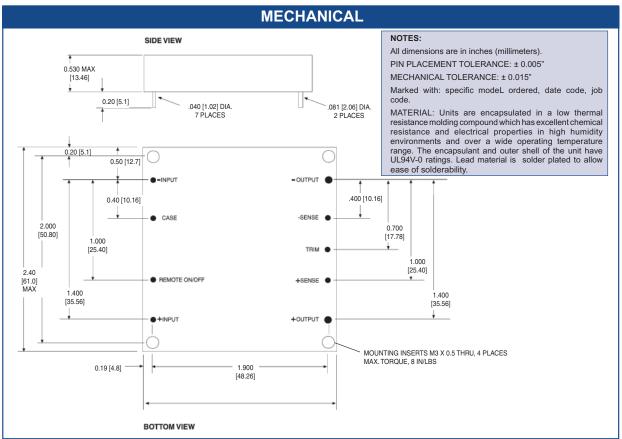
x = Input Voltage (L = 24VDC; M = 48VDC)

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)



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).

$$Radj - up = \left(\begin{array}{c} Vo(100 + \Delta\%) \\ \hline 1.225\Delta\% \end{array} \right) \ \frac{(100 + 2\Delta\%)}{\Delta\%} \ \right) k\Omega$$

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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ISO 9001 and 14001 REGISTERED

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