

ISOLATED DC/DC CONVERTERS

48 Vdc Input 9.6 Vdc/16 A Output, 1/16 Brick Bus Converter

bel
POWER PRODUCTS

SRCA-16S10L

RoHS Compliant

Rev.A

- Isolated
- Fixed Frequency
- High Efficiency
- High Power Density
- Low Cost
- Input Under Voltage Lockout
- Input Over Voltage Shutdown
- OCP/SCP
- Thermal shutdown
- Remote On/Off



Description

The SRCA-16S10L is an isolated dc/dc bus converter that operates from a nominal 48 Vdc source. This converter is intended to provide isolation and step down to generate an intermediate bus for the purpose of powering non-isolated Point-of-Load (POL) converters. This unit will provide up to 160 W of output power from a nominal 48 Vdc input. This unit is designed to be highly efficient and cost effective. The downstream POL converters will provide the precise regulation required by the load. Features include remote on/off, over current protection and under-voltage lockout. This converter is provided in an industry standard sixteenth-brick package.

Part Selection

Output Voltage	Input Voltage	Max. Output Current	Max. Output Power	Typical Efficiency	Model Number Active Low
9.6 V	36 V - 60 V	16 A	153 W	95%	SRCA-16S10L

Notes: 1. Add "G" suffix at the end of the model number to indicate Tray Packaging.
2. All part numbers above indicate RoHS 6. Change the second letter "R" to "7" for RoHS 5 part numbers.

Absolute Maximum Ratings

Parameter	Min	Typ	Max	Notes
Input Voltage (continuous)	-0.3 V	-	80 V	
Remote On/Off	-0.3 V	-	18 V	
Ambient Temperature	-40 °C	-	85 °C	
Storage Temperature	-40 °C	-	125 °C	

Input Specifications

Parameter	Min	Typ	Max	Notes
Input Voltage	36 V	-	60 V	
Input Current (full load)	-	-	3.5 A	
Input Current (no load)	-	-	100 mA	
Remote Off Input Current	-	4 mA	10 mA	Active Low
Input Reflected Ripple Current (pk-pk)	-	40 mA	120 mA	Tested with simulated source impedance of 10 uH, 5 Hz to 20 MHz; use a 100 uF/100 V electrolytic capacitor and 1 uF/100 V ceramic capacitor at the input.
Input Reflected Ripple Current (rms)	-	10 mA	30 mA	
I ² t Inrush Current Transient	-	0.039 A ² s	0.062 A ² s	
Input Over-Voltage Protection Threshold	-	63 V	-	
Turn On Voltage Threshold	-	35 V	-	
Turn Off Voltage Threshold	-	30 V	-	

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Output Specifications

Parameter		Min	Typ	Max	Notes	
Output Voltage Set Point					Io=no load	
	Vin=36 V	7.0 V	7.2 V	7.4 V		
	Vin=48 V	9.4 V	9.6 V	9.8 V		
	Vin=60 V	11.8 V	12 V	12.2 V		
Line Regulation		-	4.8 V	5.5 V		
Load Regulation						
	Vin=36 V	-	0.6 V	0.9 V		
	Vin=48 V	-	0.6 V	0.9 V		
	Vin=60 V	-	0.6 V	0.9 V		
Regulation Over Temperature (-40 °C to +85 °C)		-	120 mV	200 mV		
Output Current		0 A	-	16 A		
Current Limit Threshold		19 A	-	26 A		
Short Circuit Surge Transient		-	1.3 A ² s	2.1 A ² s		
Ripple and Noise (rms)		-	10 mV	30 mV	Test conditions: 0-20 MHz BW, with a 1 uF ceramic capacitor and a 10 uF Tantalum capacitor at the output; Vin=48 V.	
Ripple and Noise (pk-pk)		-	90 mV	150 mV		
Turn on Time		-	10 mS	20 mS		
Overshoot at Turn on		-	0%	3%		
Output Capacitance		0 uF	-	2000 uF		
Transient Response						
50% ~ 75% Max Load	Overshoot	Vin=48 V	-	120 mV	250 mV	Test conditions: di/dt = 0.5 A/uS, Vin=48 V and external load capacitance Co=2*270 uF OS-CAN capacitor at the output.
	Settling Time		-	100 uS	250 uS	
75% ~ 50% Max Load	Overshoot		-	120 mV	250 mV	
	Settling Time		-	100 uS	250 uS	

Note: All specifications are typical at 25 °C unless otherwise stated.

General Specifications

Parameter	Min	Typ	Max	Notes
Efficiency	93%	95%	-	Vin=48 V, full load
Switching Frequency	140 kHz	160 kHz	180 kHz	
Isolation Capacitance	-	1500 pF	-	
Isolation Voltage	-	500 V	-	
Over Temperature Protection	-	115 °C	-	
MTBF	1,774,032 hours			Calculated Per Bell Core SR-332 (Io=80% full load; Vo=12 V; Ta = 25 °C)
Dimensions				
Inches (L × W × H)	1.30 x 0.90 x 0.445			
Millimeters (L × W × H)	33.02 x 22.86 x 11.32			
Weight	-	16.6 g	-	

Note: All specifications are typical at 25 °C unless otherwise stated.

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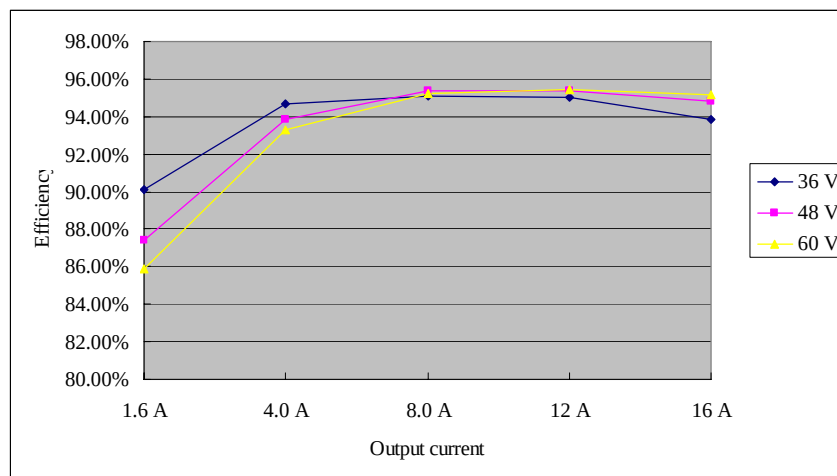
48 Vdc Input 9.6 Vdc/16 A Output, 1/16 Brick Bus Converter



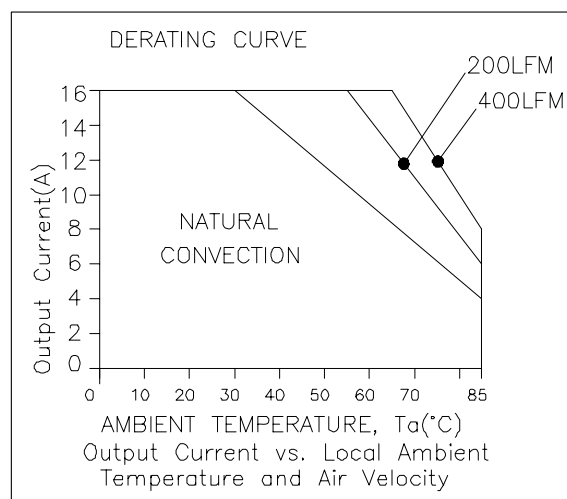
Control Specifications

Parameter	Min	Typ	Max	Notes
Remote On/Off				
Signal Low (Unit On)	Active Low	-	0.8 V	SRCA-16S10L. The remote on/off pin open, Unit off.
Signal High (Unit Off)			18 V	

Efficiency Data



Thermal Derating Curve



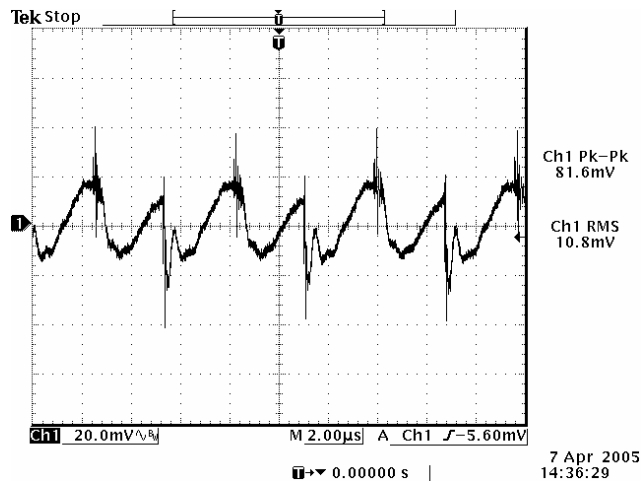
Note: Maximum output power derating curves vs. ambient air temperature for airflow rates of 0 LFM through 400 LFM with air flowing from input to output (nominal input voltage).

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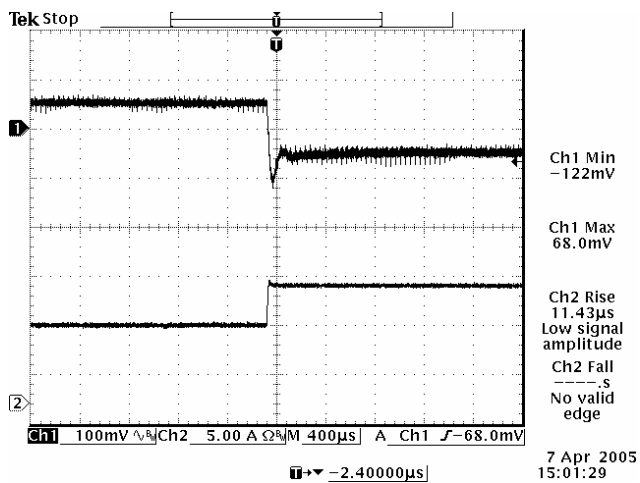
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Ripple and Noise Waveform

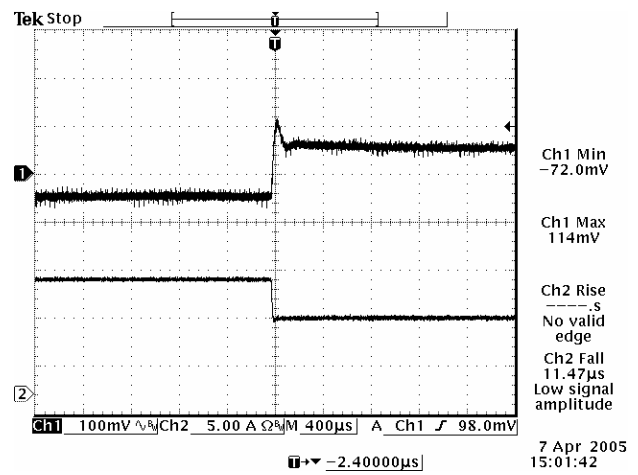


Note: Ripple and noise at full load, 48 V input and $T_a=25$ deg C, and with a 10 μ F tantalum capacitor and 1 μ F ceramic capacitor at the output.

Transient Response Waveforms



50% to 75% load Transient at 48 V input



75% to 50% load Transient at 48 V input

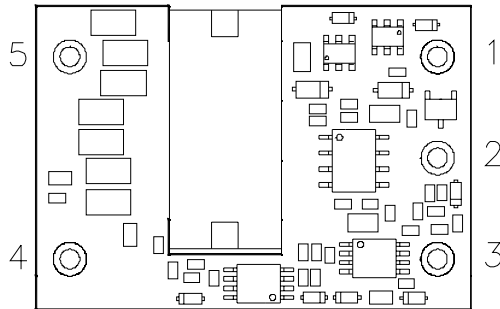
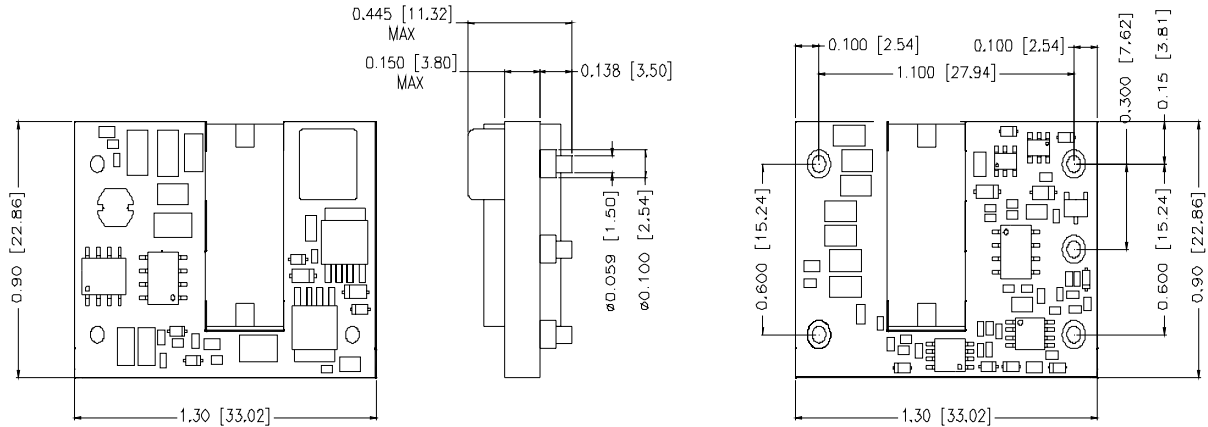
Note: Transient Response at $di/dt=0.5$ A/ μ S, $C_{out}=2*270$ μ F OS-CAN CAP, and $T_a=25$ deg C.

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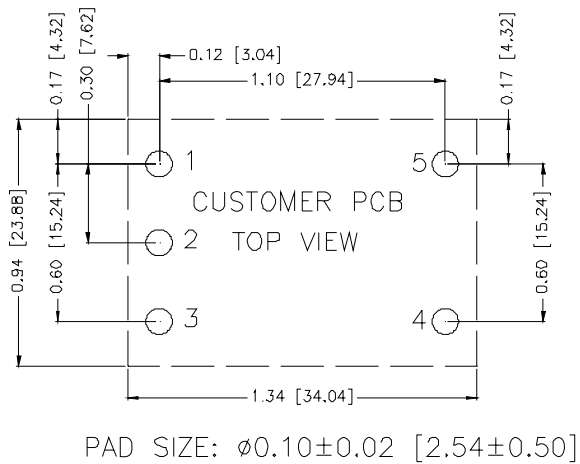
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Mechanical Outline



RECOMMENDED PAD LAYOUT



Pin Connections

Pin	Function
1	Vin+
2	Remote On/Off
3	Vin-
4	Vout-
5	Vout+

RoHS Compliance

Complies with the European Directive 2002/95/EC, calling for the elimination of lead and other hazardous substances from electronic products.



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