

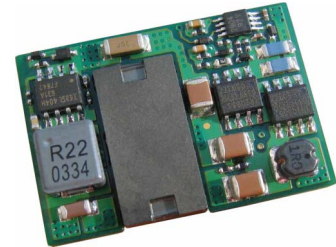
## ISOLATED DC/DC CONVERTERS

48 V Input 12 V/8.5 A Output, 1/16 Brick Bus Converter

**bel**  
POWER PRODUCTS

### S7CA-08S12L

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



### Description

The S7CA-08S12L is an isolated dc/dc bus converter that operates from a nominal 48 V 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 100 W of output power from a nominal 48V 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
12 V	36 V – 55 V	8.5 A	100 W	95%	S7CA-08S12L

**Note:** Add “G” suffix at the end of the model number to indicate Tray Packaging.

### 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	-	55 V	
Input Current (full load)	-	-	2.5 A	
Input Current (no load)	-	-	120 mA	
Remote Off Input Current	-	4 mA	10 mA	Active Low
Input Reflected Ripple Current (pk-pk)	-	40 mA	100 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 <sup>2</sup> t Inrush Current Transient	-	0.039 A <sup>2</sup> s	0.062 A <sup>2</sup> s	
Turn On Voltage Threshold	-	35 V	-	
Turn Off Voltage Threshold	31.5V	33 V	34.5 V	

# ISOLATED DC/DC CONVERTERS

48 V Input 12 V/8.5 A Output, 1/16 Brick Bus Converter



## Output Specifications

Parameter	Min	Typ	Max	Notes		
Output Voltage Set Point				I <sub>out</sub> =no load		
V <sub>in</sub> =36 V	8.8 V	9 V	9.2 V			
V <sub>in</sub> =48 V	11.8 V	12 V	12.2 V			
V <sub>in</sub> =55 V	13.5 V	13.75 V	13.95 V			
Line Regulation	-	4.75 V	5.0 V			
Load Regulation						
V <sub>in</sub> =36 V	-	0.6 V	0.8 V			
V <sub>in</sub> =48 V	-	0.6 V	0.8 V			
V <sub>in</sub> =55 V	-	0.6 V	0.8 V			
Regulation Over Temperature (-40 °C to +85 °C)	-	100 mV	200 mV			
Output Current	0 A	-	8.5 A			
Current Limit Threshold	9 A	-	14 A			
Short Circuit Surge Transient	-	1.3 A <sup>2</sup> s	2.1 A <sup>2</sup> s			
Ripple and Noise (rms)	-	30 mV	60 mV	Test conditions: 0-20 MHz BW, with a 1 uF ceramic capacitor and a 10 uF Tantalum capacitor at the output; V <sub>in</sub> =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			
<b>Transient Response</b>						
50% ~ 75% Max Load	Overshoot	V <sub>in</sub> =48V	-	150 mV	350 mV	Test conditions: di/dt = 0.5 A/uS, V <sub>in</sub> =48 V
	Settling Time		-	30 uS	100 uS	
75% ~ 50% Max Load	Overshoot		-	150 mV	350 mV	
	Settling Time		-	30 uS	100 uS	

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

## General Specifications

Parameter	Min	Typ	Max	Notes
Efficiency	93%	95%	-	V <sub>in</sub> =48V, I <sub>o</sub> =I <sub>o,max</sub>
Switching Frequency	160 kHz	190 kHz	220 kHz	
Over Temperature Protection	-	115 °C	-	Average PCB temperature will not exceed 115 °C.
MTBF	3,008,073 hours			Calculated Per Bell Core TR-332 (I <sub>o</sub> =80% full load; V <sub>o</sub> =12 V; T <sub>a</sub> = 25 °C)
Dimensions				
Inches (L × W × H)	1.3 x 0.9 x 0.4			
Millimeters (L × W × H)	33.0 x 22.9 x 10.2			
Weight	-	14.5 g	-	

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

# ISOLATED DC/DC CONVERTERS

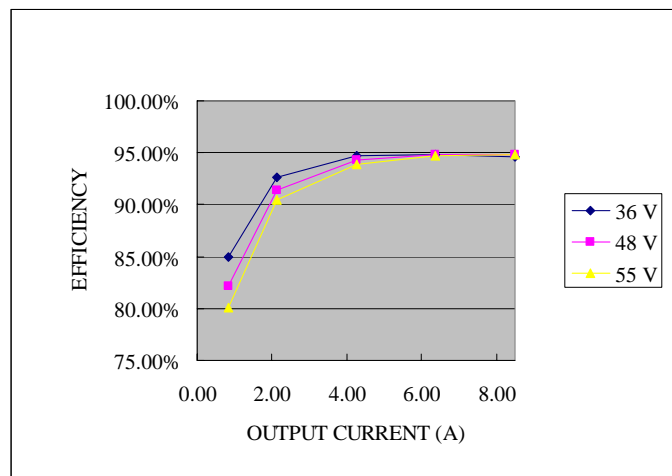
48 V Input 12 V/8.5 A Output, 1/16 Brick Bus Converter



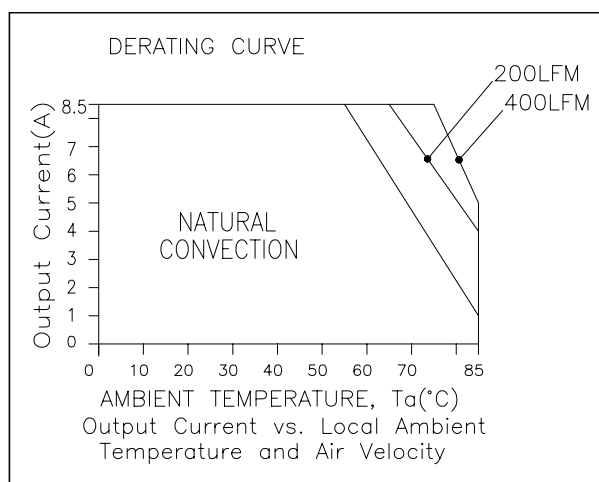
## Control Specifications

Parameter	Min	Typ	Max	Notes
<b>Remote On/Off</b>				
Signal Low (Unit On)	Active Low	-0.3 V	-	S7CA-08S12L. The remote on/off pin open, Unit off.
Signal High (Unit Off)		2.4 V	-	

## Efficiency Data

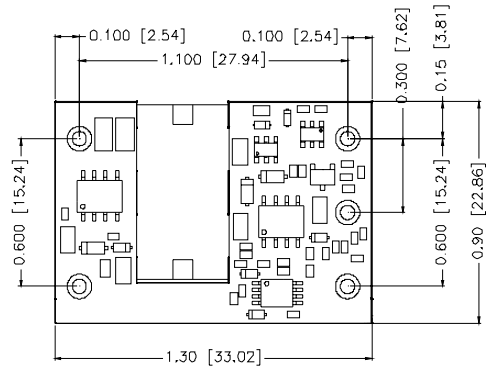
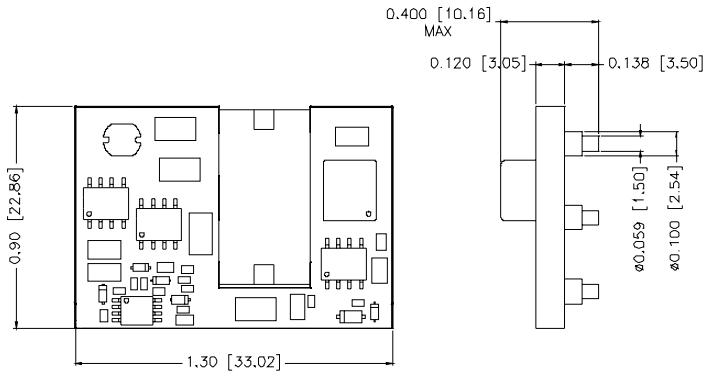


## Thermal Derating Curve

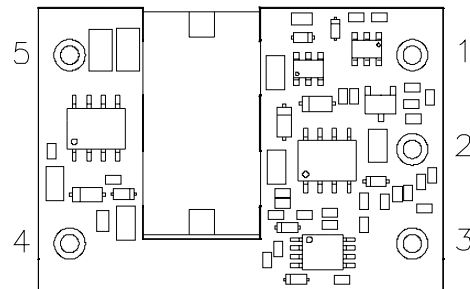
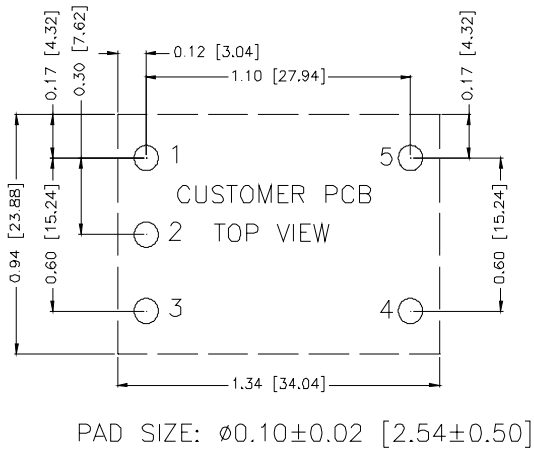


**Note:** Derating curve is tested at nominal input voltage.

**ISOLATED DC/DC CONVERTERS**  
 48 V Input 12 V/8.5 A Output, 1/16 Brick Bus Converter



RECOMMENDED PAD LAYOUT



**Pin Connections**

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

©2005 Bel Fuse Inc. Specifications subject to change without notice. 040705

**CORPORATE**

**Bel Fuse Inc.**  
 206 Van Vorst Street  
 Jersey City, NJ 07302  
 Tel 201-432-0463  
 Fax 201-432-9542  
[www.belfuse.com](http://www.belfuse.com)

**FAR EAST**

**Bel Fuse Ltd.**  
 8F/ 8 Luk Hop Street  
 San Po Kong  
 Kowloon, Hong Kong  
 Tel 852-2328-5515  
 Fax 852-2352-3706  
[www.belfuse.com](http://www.belfuse.com)

**EUROPE**

**Bel Fuse Europe Ltd.**  
 Preston Technology Management Centre  
 Marsh Lane, Suite G7, Preston  
 Lancashire, PR1 8UD, U.K.  
 Tel 44-1772-556601  
 Fax 44-1772-888366  
[www.belfuse.com](http://www.belfuse.com)