

NON-ISOLATED DC/DC CONVERTERS

6.0Vdc – 13.8 Vdc Input 0.6Vdc – 1.52Vdc, 135 A/20 A Output



Jan. 19, 2011

Bel Power Inc., a subsidiary of Bel Fuse Inc.

SRNE-C6ED10 RoHS Compliant PRELIMINARY Rev.E

Features

- Dual Output
- High Efficiency
- High Power Density
- Wide Input Range (6.0-13.8V)
- Output Current Monitor
- Input Under-voltage Lockout
- Output Overvoltage Protection
- Class 1, Category 2, Non-Isolated DC/DC Converter (refer to IPC-9592)
- Thermal Warning
- Remote ON/OFF
- 2-Wire Remote Sense
- OCP/SCP
- Over Temperature Protection
- SVID
- VR12.0 Compliant

Applications

- Networking
- Computers and peripherals
- Telecommunications

Description

The SRNE-C6ED10 has dual non-isolated step down dc/dc converters providing up to 135 A/20 A of output current and designed to be compatible with the Intel VRM12 requirements. Standard features include remote on/off, over current protection, remote sense, VR_Hot signal and a power good signal. This product also makes use of adaptive positioning to improve transient response performance. These products may be used almost anywhere low-voltage silicon is being employed and a nominal 12 Vdc source is available. Typical applications include file servers, work stations and other computing applications.

Part Selection

Output Voltage	Input Voltage	Max. Output Current	Max. Output Power	Typical Efficiency	Model Number Active High
0.6Vdc – 1.52Vdc	6.0 Vdc – 13.8 Vdc	135 A/20A	205W	TBD	SRNE-C6ED10

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

Part Number Explanation

S R NE – C6 E D1 0
1 2 3 4 5 6 7

- 1---Surface mount
- 2---RoHS 6, change “R” to “7” means RoHS 5
- 3---Series name
- 4---Series code
- 5--- Input range (6.0-13.8V)
- 6---Output voltage (0.6-1.52V)
- 7---Suffix

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Absolute Maximum Ratings

Parameter	Min	Typ	Max	Unit	Notes
Continuous non-operating Input Voltage	-0.3	-	13.8	V	
Input Transient Voltage	-	-	15	V	100mS maximum
Remote On/Off	-0.3	-	5.25	V	
Ambient Temperature	0	-	70	°C	
Storage Temperature	-40	-	125	°C	

Note: Ratings used beyond the maximum ratings may cause a reliability degradation of the converter or may permanently damage the device.

Input Specifications

Parameter	Min	Typ	Max	Unit	Notes
Operating Input Voltage	6	12	13.8	V	
Input Current (full load)	-	-	TBD	A	
Input Current (no load)	-	600	800	mA	Vin=12V, PS=00h Vcore=1.0V, Vsa=0.9V
	-	270	500	mA	Vin=12V, PS=01h Vcore=1.0V, Vsa=0.9V
	-	180	250	mA	Vin=12V, PS=10h or 11h Vcore=1.0V, Vsa=0.9V
Remote Off Input Current	-	65	100	mA	
Turn-on Voltage Threshold	6.3	6.5	6.8	V	
Turn-off Voltage Threshold	5.2	5.6	6	V	

CAUTION: This converter is not internally fused. An input line fuse must be used in application.

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

Output Specifications

Parameter	Min	Typ	Max	Unit	Notes
Output Voltage Set Point	0.6/0.6	-	1.52/1.52	V	Vin=12V, Io=50% load at 25C ambient.
Line Regulation	-	4/4	6/10	mV	
Ripple and Noise (pk-pk)	-	30/TBD	-	mV	Vin=12V, PS=00h Vcore_set=1.0V, Vsa_set=0.9V, 0-20MHz BW, with a 1µF ceramic capacitor and a 10uF Tantalum cap at output.
Output Current	0/0	-	135/20	A	Thermal design Peak current rating
	0/0	-	165/24	A	
Output DC Current Limit	-	185/29	195/35	A	
Output Capacitance	-	2650/590	-	µF	Recommended: for core rail - 470uF Polymer 7m-Ohm x 5 + 100uF X5R x 2 + 10uF X5R x 10 for sa rail - 470uF Polymer 7m-Ohm x 1 + 100uF X5R x 1 + 10uF X5R x 2

Note: 1. The specifications before slash are for core rail and these after slash are for sa rail.

2. All specifications are typical at nominal input, full load at 25°C unless otherwise stated.

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General Specifications

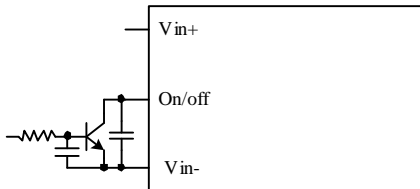
Parameter	Min	Typ	Max	Unit	Notes
Weight	-	69	-	g	

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

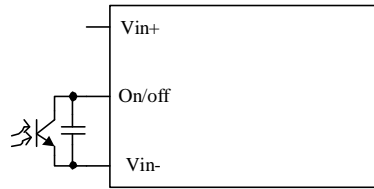
Remote On/Off

Parameter	Min	Typ	Max	Unit	Notes
Signal Low (Unit Off)	-0.3	-	0.77	V	The remote on/off pin open, Unit off.
Signal High (Unit On)	0.875	-	5	V	
Current Sink	0	-	1	mA	

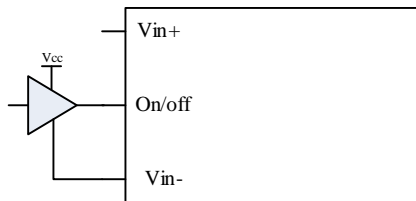
Recommended remote on/off circuit for active high



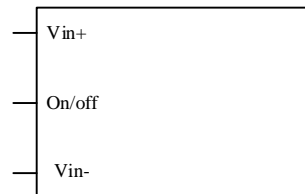
Control with open collector/drain circuit



Control with photocoupler circuit



Control with logic circuit



Permanently off

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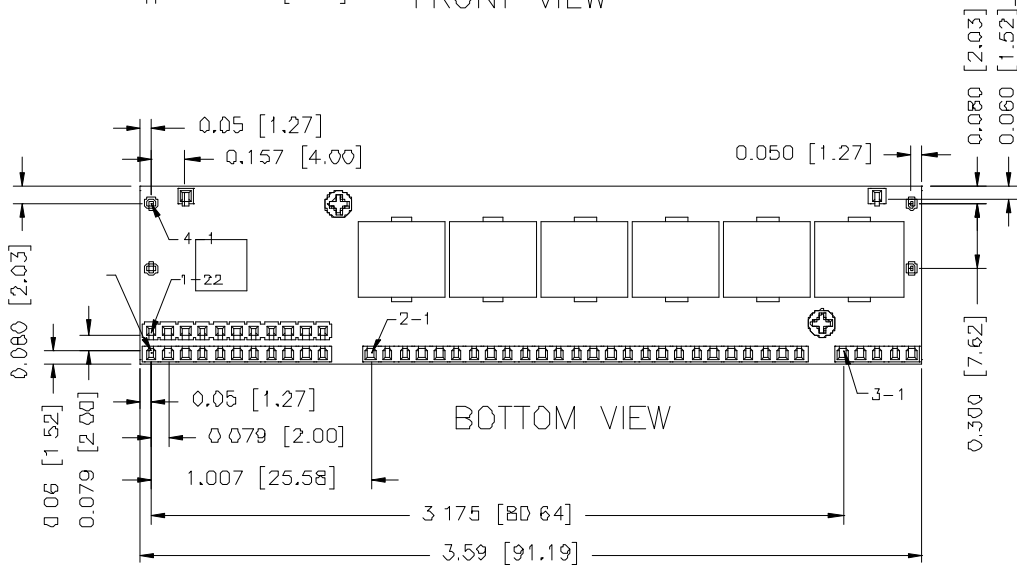
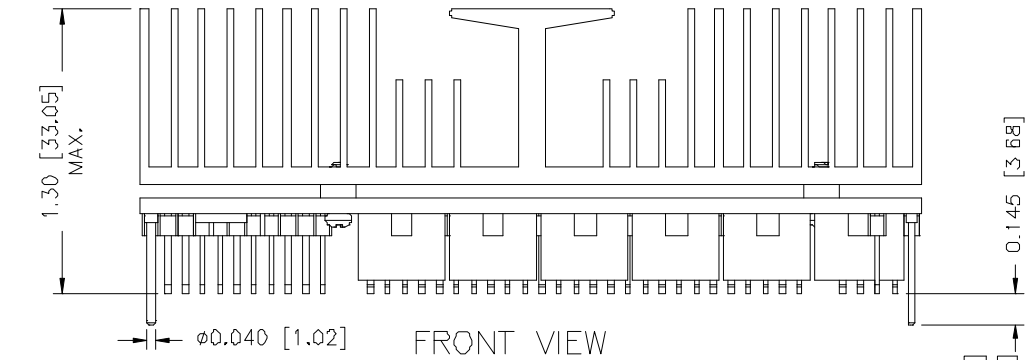
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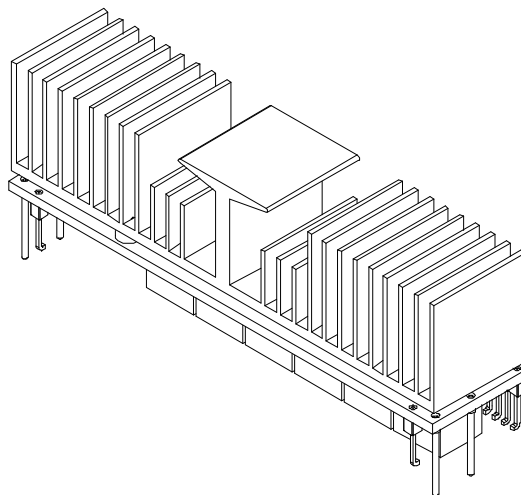
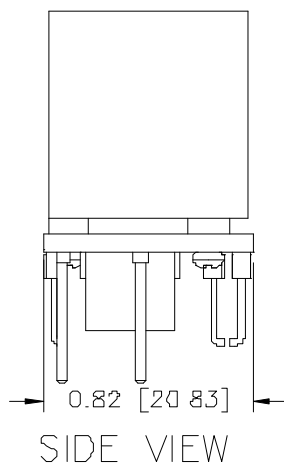
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Mechanical Outline



UNIT: INCH[MM]



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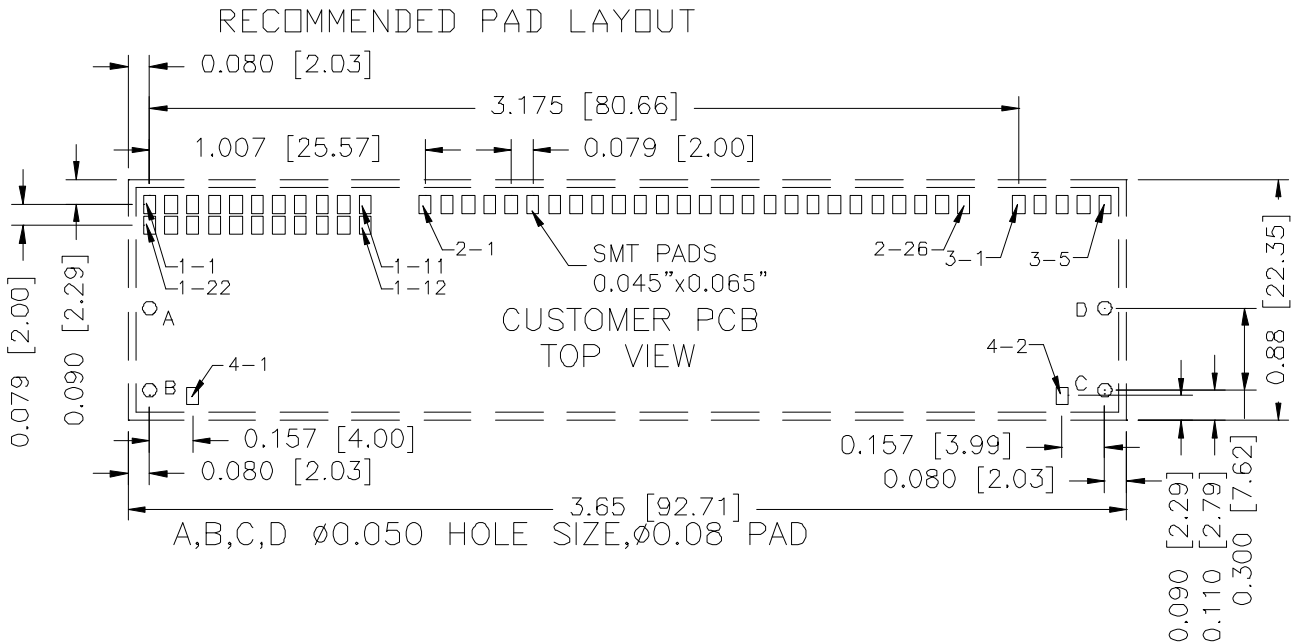
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Mechanical Outline (continued)



Pin	Function	Pin	Function	Pin	Function	Pin	Function	Pin	Function
1-1	SVID_CLOCK	1-12	RS2(-)	2-1	Vout1(+)	2-14	Vout1(+)	3-1	Vout2(-)
1-2	SVID_DATA	1-13	VR_READY_2	2-2	Vout1(+)	2-15	Vout1(-)	3-2	Vout2(-)
1-3	SVID_ALERT#	1-14	VR_READY_1	2-3	Vout1(+)	2-16	Vout1(-)	3-3	Vout2(+)
1-4	VR_HOT#	1-15	VC2_ADDR1	2-4	Vout1(-)	2-17	Vout1(-)	3-4	Vout2(+)
1-5	VR12_OUTEN	1-16	PMBUS_ADDRM	2-5	Vout1(-)	2-18	Vout1(+)	3-5	Vout2(-)
1-6	VRM_ID	1-17	PMBUS_ADDRL	2-6	Vout1(+)	2-19	Vout1(+)		
1-7	VCCP	1-18	VR_FAULT#	2-7	Vout1(+)	2-20	Vout1(-)	4-1	Mechanical
1-8	VCC1_ADDR1	1-19	VRM_PRES#	2-8	Vout1(+)	2-21	Vout1(-)	4-2	Mechanical
1-9	RS1(+)	1-20	PMBUS_ALERT#	2-9	Vout1(-)	2-22	Vin(+)	A	Mechanical
1-10	RS1(-)	1-21	PMBUS_DATA#	2-10	Vout1(-)	2-23	Vin(+)	B	Mechanical
1-11	RS2(+)	1-22	PMBUS_CK#	2-11	Vout1(-)	2-24	Vin(-)	C	Mechanical
				2-12	Vout1(+)	2-25	Vin(-)	D	Mechanical
				2-13	Vout1(+)	2-26	Vin(+)		

Note: This module is recommended and compatible with Pb-Free Reflow Soldering and must be soldered using a reflow profile with a peak temperature of no more than 260°C for less than 5 seconds.

Note:

- 1) All Pins: Material - Copper Alloy;
Finish – 3 micro inches minimum Gold over 50 micro inches minimum Nickel plate.
- 2) Undimensioned components are shown for visual reference only.
- 3) All dimensions in inches (mm); Tolerances: x.xx +/-0.02 in. (x.x +/-0.5mm) x.xxx +/-0.010 in. (x.xx +/-0.25mm).

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Revision History

Date	Revision	Changes Detail	Approval
2010-09-01	PA	First release	YF Sun
2010-09-27	PB	Update mechanical outline and pin-out.	YF Sun
2010-12-09	PC	1. Update input voltage, input current (no load), turn-on/off voltage threshold in input specifications. 2. Update line regulation, ripple and noise, output capacitance in output specifications.	YF Sun
2010-12-22	PD	Update MD.	YF Sun
2011-01-19	PE	1. Update input current (no load) in input specifications. 2. Update line regulation, output DC current limit in output specifications. 3. Add weight in general specifications.	YF Sun

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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