

SRBL-C0A1A0

Non-Isolated DC-DC Converter

Power Block Series

The Bel SRBL-C0A1A0 is a non-isolated DC-DC converter. Rated at 100 A maximum output current and 215 W maximum output power, this converter can provide output voltage ranging from 0.6 to 3.3 VDC with the operating input voltage varying from 7 VDC to 13.2 VDC.

This converter contains two channels of power stage and can be configured to provide single output and dual outputs.

The converter is available in a SMD package, along with small dimensions (1.00' x 0.50' x 0.48'), to make it less space-consuming.



Key Features & Benefits

- Input Voltage 7-13.2 VDC
- Output Voltage Range 0.6-3.3 VDC / 100 A
- Non-Isolated
- Low Cost
- High Efficiency
- High Power Density
- Class 2, Category 2, Isolated DC/DC Converter (refer to IPC-9592B)

Applications

- Networking
- Computers and Peripherals
- Telecommunications



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1. MODEL SELECTION

MODEL NUMBER	OUTPUT VOLTAGE	INPUT VOLTAGE	MAX. OUTPUT CURRENT	MAX. OUTPUT POWER	TYPICAL EFFICIENCY
SRBL-C0A1A0	0.6-3.3VDC	7-13.2 VDC	100A	215 W	90.1% (1Vo / 100A @ 11Vin)

NOTE: Add "G" or "R" suffix at the end of the model number to indicate packaging.

PART NUMBER EXPLANATION

S	R	BL	-	C0	A	1A	0	x
Mounting Type	RoHS Status	Series Name		Output Power	Input Range	Output Voltage	Active Logic	Package Type
Surface mount	RoHS	Power Block		215 W	7-13.2 V	0.6-3.3 V	Reserved	G – Tray package R – Tape and reel package

2. ABSOLUTE MAXIMUM RATINGS

PARAMETER	DESCRIPTION	MIN	TYP	MAX	UNITS
Continuous Input Voltage	Non-operating	-0.3	-	15	V
Voltage at Pin4 (+7 V)		-0.3	-	7.7	V
Voltage at Pin12 (PWM1) and Pin10 (PWM2)		-0.3	-	7	V
Operating Temperature		-40	-	85	°C
Storage Temperature		-40	-	125	°C
Altitude		-500	-	10000	Feet
Relative Humidity	Operating, Non-Condensing	10	-	90	%

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

3. INPUT SPECIFICATIONS

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

PARAMETER	DESCRIPTION	MIN	TYP	MAX	UNIT
Operating Input Voltage		7	11	13.2	V
Input Current (full load)	At Vin = 7 V Vo = 3.3 V Io = 65 A	-	-	33	A
Input Current (no load)	200 LFM @ 25°C	-	-	300	mA
	Operating	6.7	7	7.3	V
	Under-voltage lockout, rising	-	-	4.15	V
	+7 V (Pin5) Under-voltage lockout, falling	3.5	11	-	V
	Hysteresis		0.2		V
	Current (switching at 450 kHz), 200 LFM @ 25°C			150	mA
PWM1 (Pin12) PWM2 (Pin10)	High	2.6	-	-	V
	Low	-	-	0.6	V
	Tri-state Voltage	1.2	-	2.0	V

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



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4. OUTPUT SPECIFICATIONS

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

PARAMETER	DESCRIPTION	MIN	TYP	MAX	UNIT
Output Voltage Set Point		0.6	-	3.3	V
Output Current Range	Vout = 0.6 V to 1.0 V in Single output Mode	0	-	100	A
	Vout = 0.6 V to 1.0 V in Dual outputs Mode	0	-	50	A
	Vout = 1.8 V in Single output Mode	0	-	80	A
	Vout = 1.8 V in Dual outputs Mode	0	-	40	A
	Vout = 2.5 V in Single output Mode	0	-	70	A
	Vout = 2.5 V in Dual outputs Mode	0	-	35	A
	Vout = 3.3 V in Single output Mode	0	-	65	A
	Vout = 3.3 V in Dual outputs Mode	0	-	32.5	A
Inductor	Inductance	-	140	-	nH
	Isat (125°C)	Peak value at temperature of 100°C	-	60	-
Current Sense Resistor Value		-	0.25	-	mΩ
Current Sense Resistor Tolerance		-2	-	2	%
Current Sense Resistor Temperature Coefficient		-	200	-	ppm/°C

5. GENERAL SPECIFICATIONS

PARAMETER	DESCRIPTION	MIN	TYP	MAX	UNIT
Efficiency	Vo = 1.0 V Vin = 11 V, Io = 100 A	-	90.1	-	%
	Vo = 1.8 V Vin = 11 V, Io = 80 A	-	93.8	-	%
	Vo = 2.5 V Vin = 11 V, Io = 70 A	-	95.0	-	%
	Vo = 3.3 V Vin = 11 V, Io = 65 A	-	95.9	-	%
Switching Frequency		-	450	-	kHz
Weight		-	TBD	-	g
MTBF		-	TBD	-	-
Dimensions (L × W × H)			1.00 × 0.50 × 0.48 25.40 × 12.70 × 12.19		in mm

6. EFFICIENCY DATA

7 V to 13.2 V input, switching at 450 kHz, with 200LFM at 25°C.

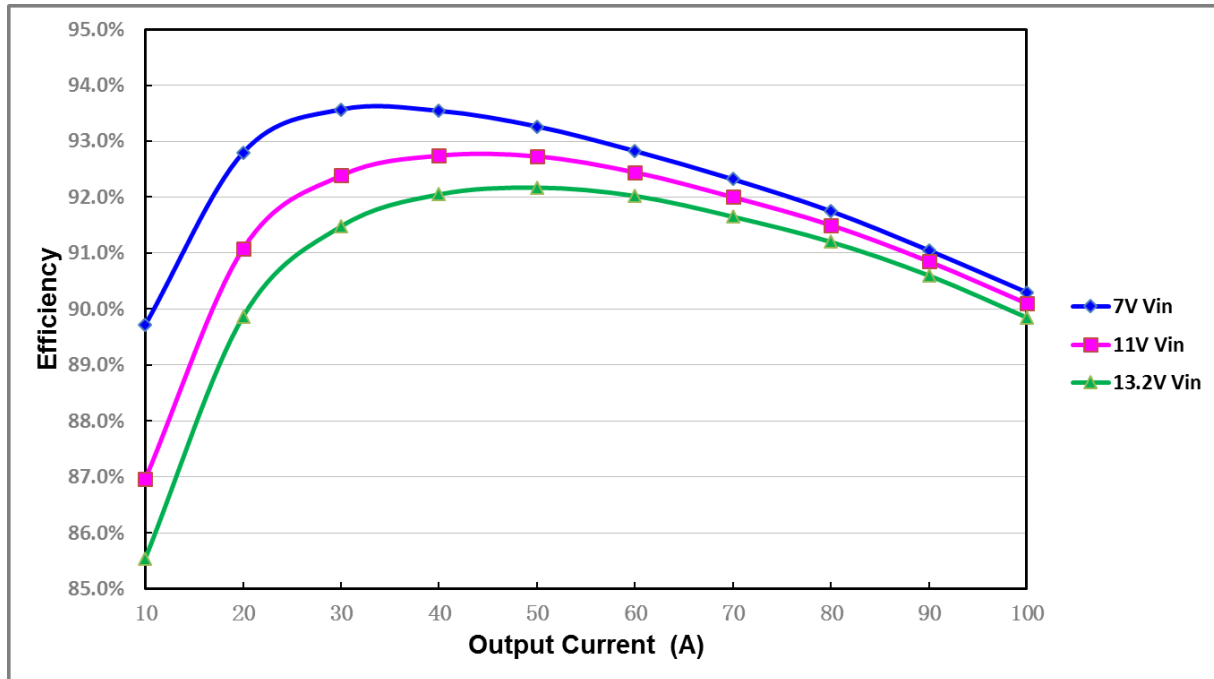


Figure 1. Vout = 1.0 V

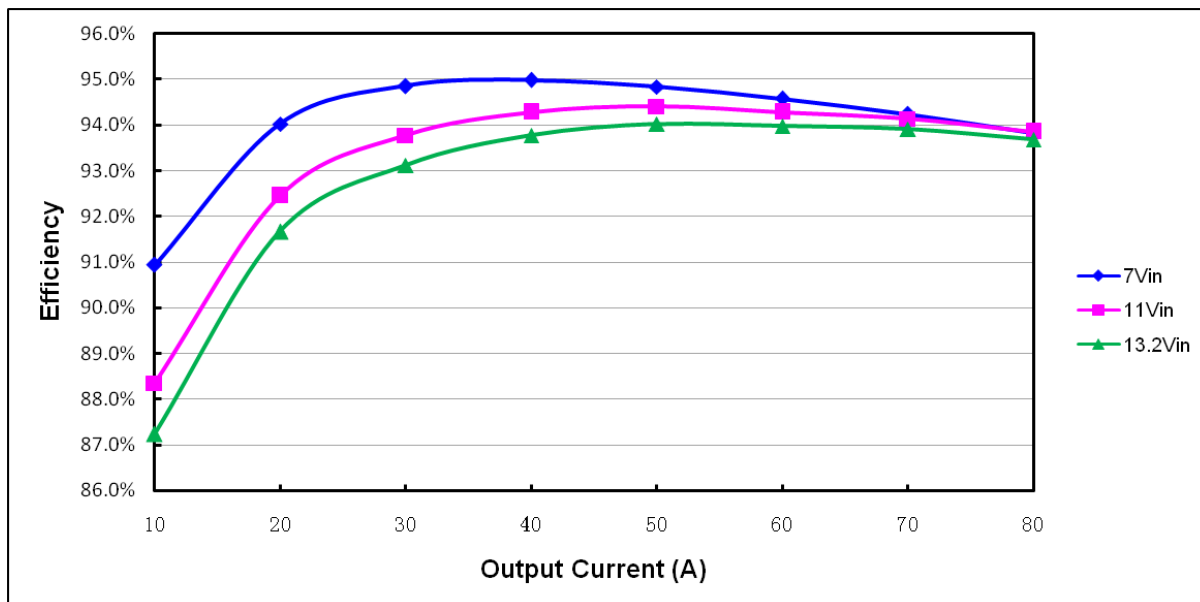


Figure 2. Vout = 1.8 V

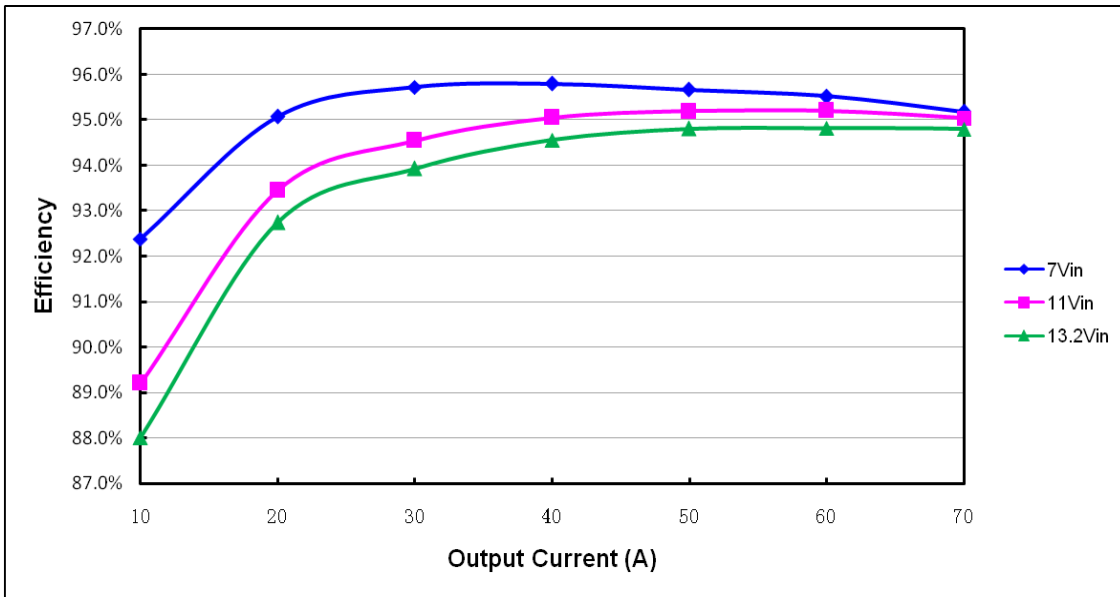


Figure 3. Vout = 2.5 V

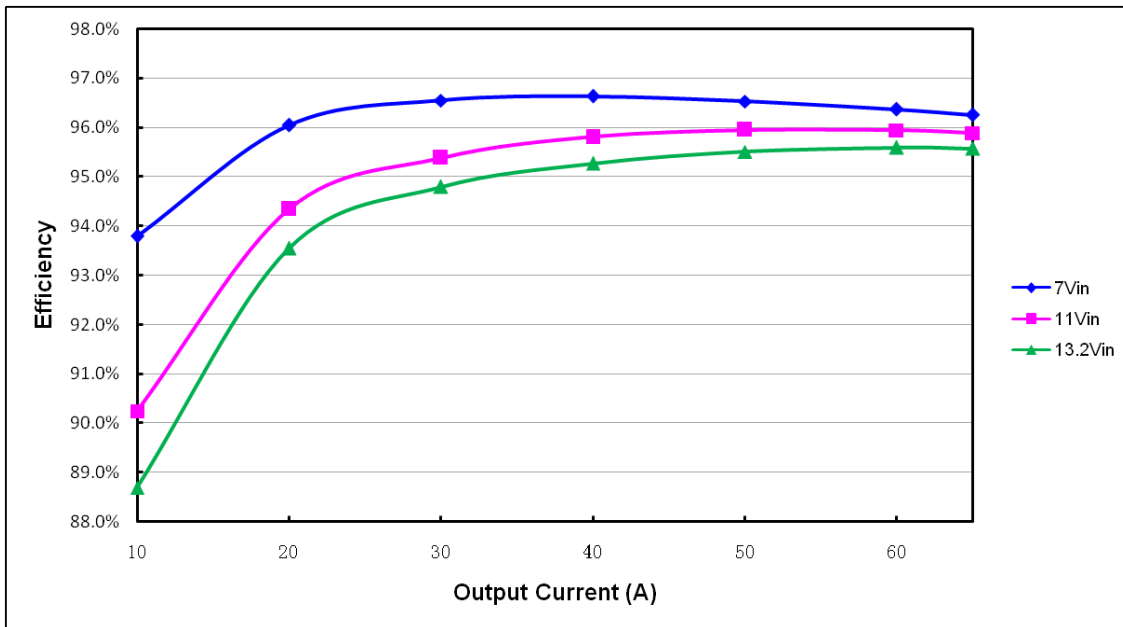


Figure 4. Vout = 3.3 V

7. THERMAL DERATING CURVE

TBD

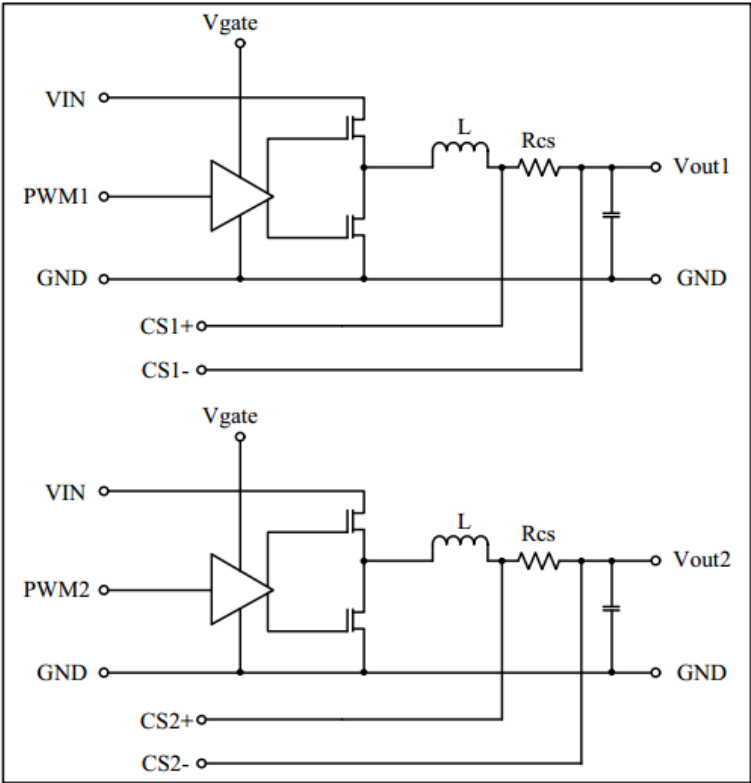


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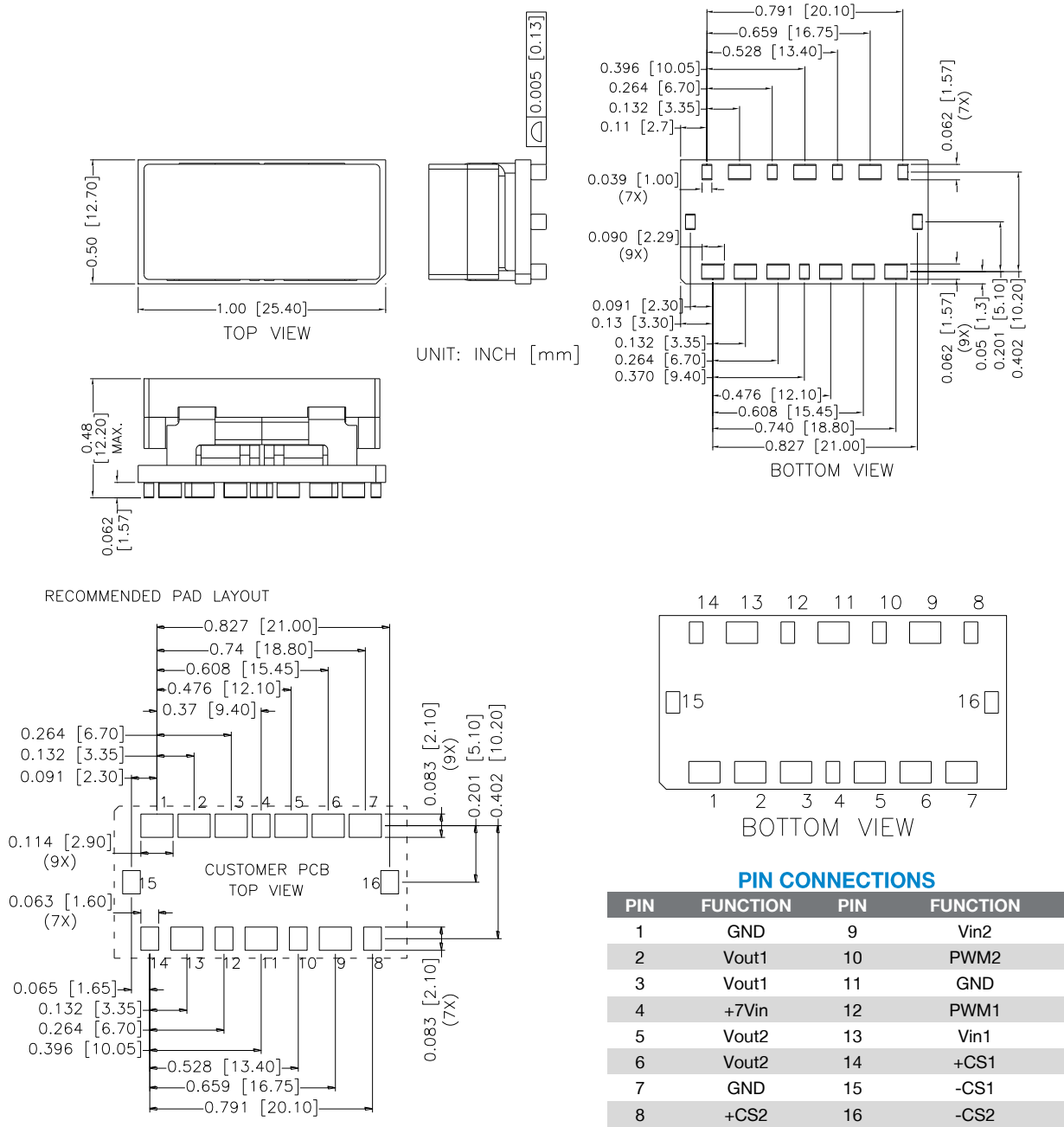
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8. BLOCK DIAGRAM



9. MECHANICAL DIMENSIONS



NOTE: These parts are not however compatible with the higher temperatures associated with lead free solder processes and must be soldered using a reflow profile with a peak temperature of no more than 245 °C.

NOTES:

All Pins: Material - Copper Alloy;
 Finish - 3 micro inches minimum Gold over 50 micro inches minimum Nickel plate.

- 1) Undimensioned components are shown for visual reference only.
- 2) All dimensions in inches; Tolerances: x.xx +/-0.02 in [0.5 mm]. x.xxx +/-0.010 in [0.25 mm].



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10. REVISION HISTORY

DATE	REVISION	CHANGES DETAIL	APPROVAL
2015-12-05	AA	First release	Zhao Tang

For more information on these products consult: tech.support@psbel.com

NUCLEAR AND MEDICAL APPLICATIONS - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.

TECHNICAL REVISIONS - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.



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