Distributed By: B.J. Wolfe Enterprises, Inc
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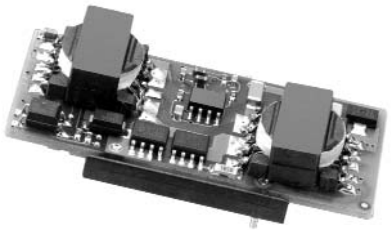
2000 SN series

Single Output DC/DC Converter



Features

- Up to 90% Efficiency
- Single Output, 20 watt converter
- 36-75 VDC Input
- Remote On/Off, Output Voltage Trim
- Output Over Voltage Protection
- Short Circuit Protection

Descriptions

The 2000SN, single output power modules are 9 to 20 watt DC/DC converters featuring a 2 - 1 input range and available in a single output configuration providing 1.5 VDC to 5.0 VDC outputs. These synchronized rectified, switching converters are available in 48 VDC inputs and achieve up to 90% efficiency. Advanced surface mount construction allows these converters to achieve outstanding thermal performance eliminating the need for thermal potting compounds and thereby enhancing manufacturing efficiency to reduce costs.

Input Characteristics

	Min	Typ	Max	Units/Comments
Input Voltage	36	48	75	VDC
Switching Frequency	360	400	440	kHz; Factory set
Remote Shut Down (Optional)				
Off	0		0.80	VDC;Ref. to input(-)
On	3.5			VDC or open;Referenced to input(-)
Input - Output Capacitance		1000		pF
Input Filter				PI type
Isolation Voltage	1500			VDC
Isolation Resistance	1000			MOhms

Output Characteristics

	Min	Typ	Max	Unit/Comments
Output Voltage Set Point			±3	% Output voltage at nominal line & FL
Line Regulation			±3	% Output voltage measured from min. input line to max.
Load Regulation			±0.5	% Output voltage measured from FL to 10% load
Temperature Coefficient			±0.02	% per degree C
Ripple/Noise			75	mV p-p measured at 20 MHz bandwidth with ext. 1 µf cap.
Load Transient Response			±4	% Deviation of Vout voltage for a 25% load change for 250µS
Short Circuit Protection				Indefinite, Automatic Recovery
Output Voltage Trim			±10	% of nominal output voltage

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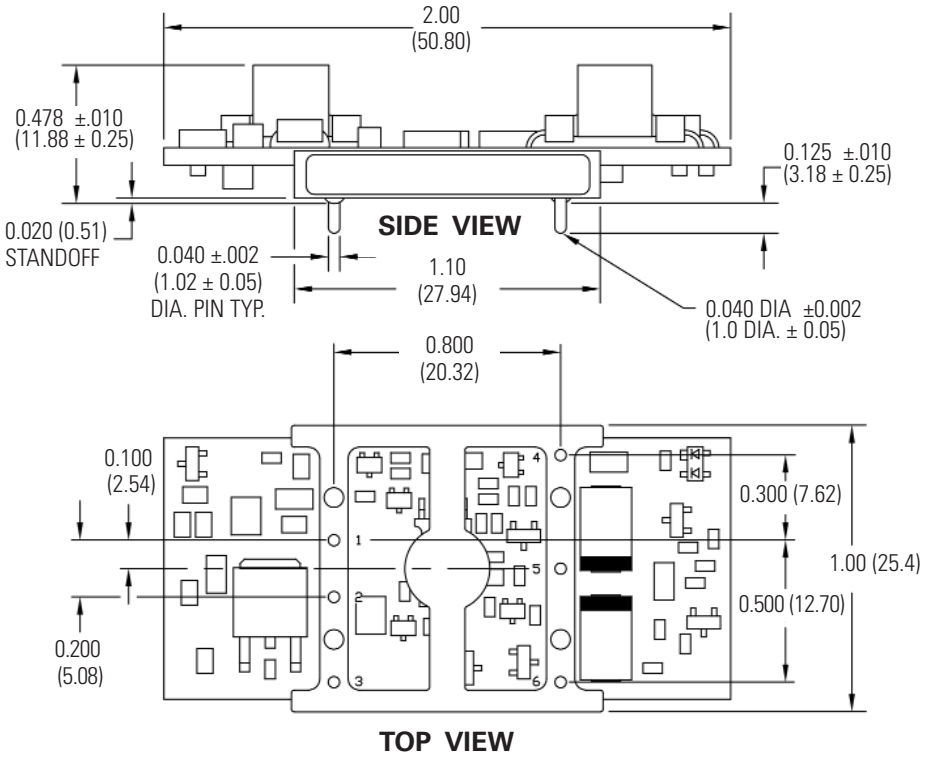
General Characteristics

	Min	Typ	Max	Unit/Comments
Operating Temp. Range	-40		+95	°C; measured at baseplate
Storage Temp. Range	-40		+105	°C; measured at baseplate
Material Flammability				UL94V-0
Altitude: Operating			10,000	Feet
Non-Operating			40,000	Feet
Relative Humidity	5		95	% Humidity, non-condensing
MTBF	590,000			Hours
Weight			13	Grams
Size				See Outline Dwg
Case Material				Open frame construction
Agency Approvals				UL/CUL1950, TUV, EN60950

Outline Drawing



Pin Out Chart

Pins	FUNCTION
1	+ INPUT
2	- INPUT
3	*ON/OFF CONTROL
4	+ OUTPUT
5	*TRIM
6	- OUTPUT

* = Optional feature

Notes:
1. Pins 3 & 5 are only installed if an option is specified, no pin otherwise.
2. Unless otherwise specified dimensions are in inches (mm).
3. Tolerances

Inches	mm
X.XX = ±0.02	X.X = ±0.5
X.XXX= ±0.010	X.XX = ±0.25

All specifications are typical at nominal input, nominal load and 25° C unless otherwise specified.
External, low ESR, 10 microfarad (minimum) capacitor across output is recommended for operation.

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How To Order

How to Order

20 0 XXX S XX SN - R - Y

- 20 — Wattage
- XXX — Output Voltage (e.g. 2.5 VDC is written as 2V5, 5 Vdc is written as 5)
- S — Single Output
- XX — Input Voltage
- SN — Hi-Density, Non-Encap
- R — Options
- Y — RoHS Compliant

R Option: Additional pin to add the toggle remote on/off feature to the converter. To order please add a "-R" at the end of the part number (positive logic).

T Option: Output voltage trim feature allows output voltage to be adjusted +/-10% by use of additional, external resistor. To order please add a "-T" at the end of the part number (requires additional pin).

RT Option: To order both remote on/off and output voltage trim please add a "-RT" at the end of the part number (positive logic).

Model Selection Chart

Model	Nominal Input Voltage (VDC)	Input Voltage Range (VDC)	Input Current @ FL (A)	Input Fuse Slow BLow Type (A)	Output Voltage (VDC)	Full Load Output Current (mA)	Output Power (W)	OVP (VDC)	Typ. Eff @ FL (%)
2005S48SN	48	36 - 75	0.631	1.5	5.0	4.00	20.0	6.2	90
2003V3S48SN	48	36 - 75	0.479	1	3.3	4.50	14.85	3.9	88
2002V5S48SN	48	36 - 75	0.409	1	2.5	5.00	12.5	3.9	87
2002V0S48SN	48	36 - 75	0.335	0.75	2.0	5.00	10.0	2.7	85
2001V8S48SN	48	36 - 75	0.335	0.75	1.8	5.50	9.9	2.5	84
2001V5S48SN	48	36 - 75	0.309	0.75	1.5	6.00	9.0	2.1	83

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Derating Curves For 2000SN

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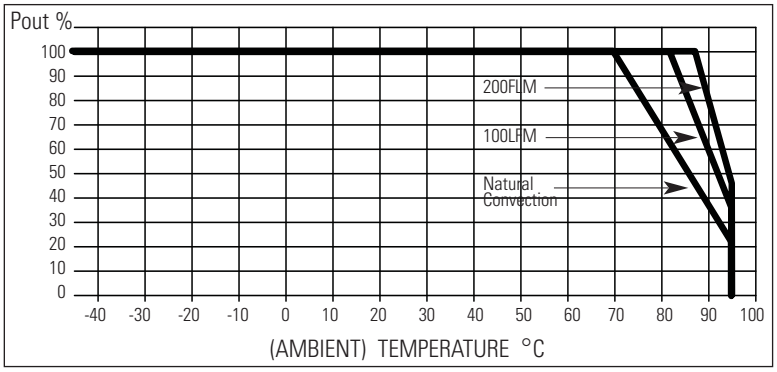
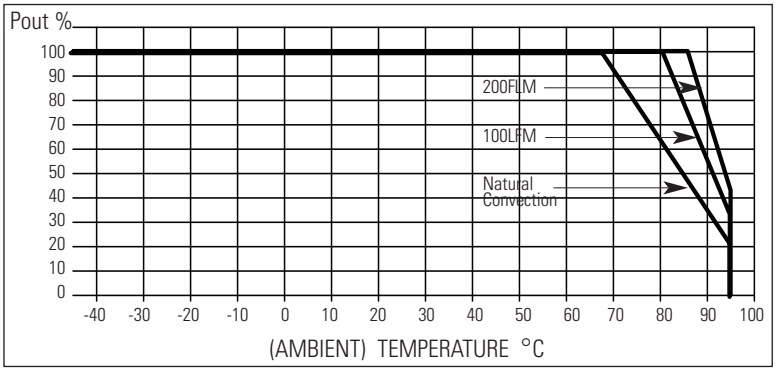
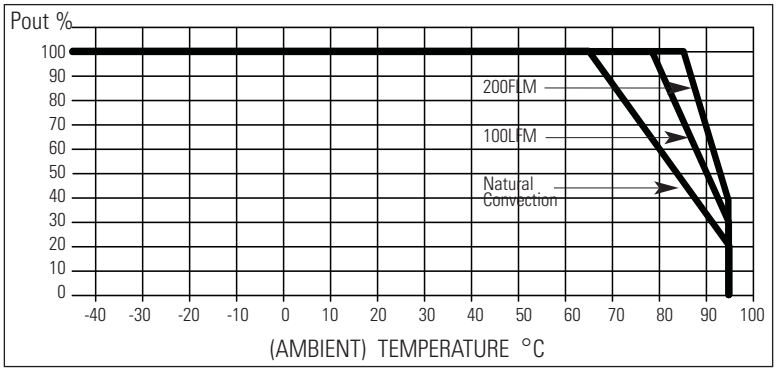
1.5, 1.8 and 2.0V Output Models



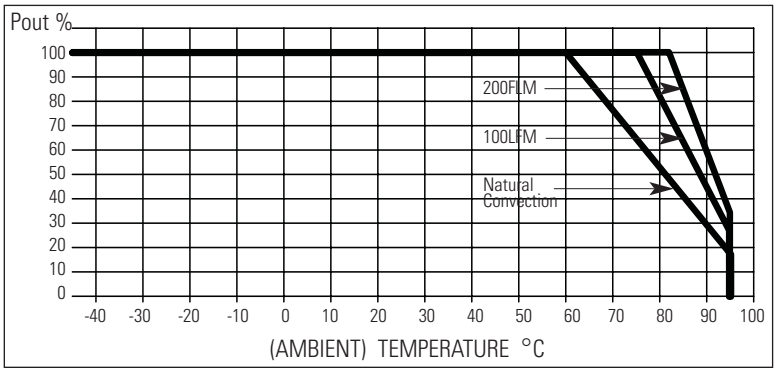
2.5V Output Models



3.3V Output Models



5V Output Models



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Output Voltage Adjustment (2000SN Series)

The converter's output voltage may be trimmed to ±10% of the nominal output voltage.

TRIM UP

Trim output voltage up by connecting an external resistor between Pins 5 and 6. Use the following equation. Reference Table 1 for variable A.

$$\text{Radj-up} = \frac{A}{\Delta\ \%} - B\ \Omega$$

Example:
If we want to trim 5% up for 3.3V output units, where A = 1250, B = 10,000, Δ % = 0.05

$$\text{Radj-up} = \frac{1250}{0.05} - 10000\ \Omega = 15\ k\Omega$$

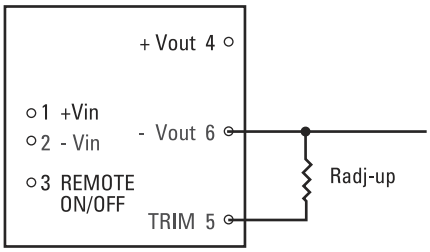

Table 1.

Output Voltage	A	B
1.5V	351	150
1.8V	624	1270
2V	762	2320
2.5V	1010	6040
3.3V	1250	10000
5V	1000	6490

TRIM DOWN

Trim output voltage down by connecting an external resistor between Pins 4 and 5. Use the following equation. Reference Table 2 for variable C and D.

$$\text{Radj-down} = \frac{C}{\Delta\ \%} - D\ \Omega$$

Example:
If we want to trim 5% down for 5V output units, where C = 1000, D = 8490, Δ % = 0.05

$$\text{Radj-down} = \frac{1000}{0.05} - 8490\ \Omega = 11.5\ k\Omega$$

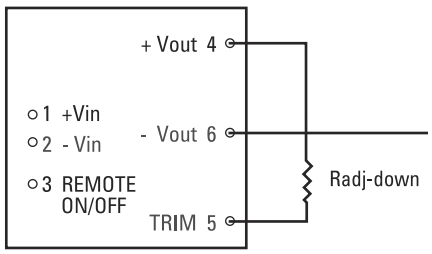

Table 2.

Output Voltage	C	D
1.5V	75	576
1.8V	282	2180
2V	468	3550
2.5V	1040	8090
3.3V	2090	13300
5V	1000	8490

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