

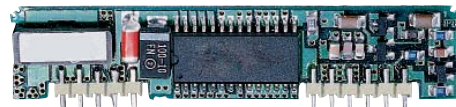
SIP/SIE 500 SERIES - NON-ISOLATED, 20 WATT

DESCRIPTION

SIP/SIE non-isolated step-down DC/DC converters deliver high efficiency and excellent transient response in an industry-standard SIP package. The SIP/SIE Series has output voltages ranging from 1.2 to 3.3V and up to 6 amps of output current. The SIE model has power OK and remote sense pins for added flexibility and improved point-of-load regulation. The SIP/SIE Series is available for vertical or horizontal mounting. The SIP/SIE Series uses 100% surface-mount construction for maximum reliability and features over seven million hours MTBF.

FEATURES

- Non-Isolated
- High Efficiency Topology
- Excellent Transient Response
- Sense and Power OK (SIE Model Only)
- Surface-Mount Construction
- Voltage Trim
- Vertical or Horizontal Mounting
- Water Washable

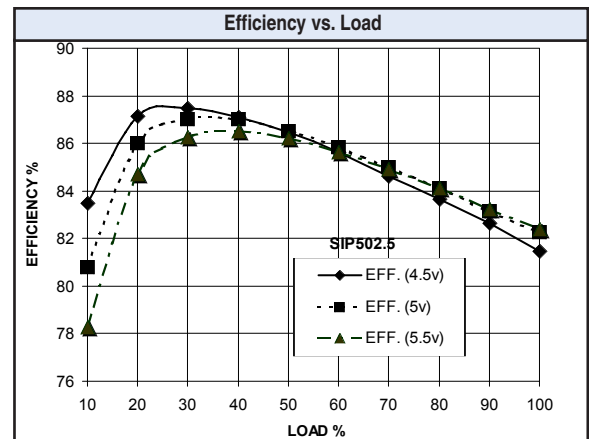


TECHNICAL SPECIFICATIONS

Input	
Voltage Range	4.5 - 5.5 VDC
5 VDC Nominal	

Output	
Setpoint Accuracy	±1%
Line Regulation V_{in} Min. - V_{in} Max., I_{out} Rated	1% V_{out}
Load Regulation I_{out} Min. - I_{out} Max., V_{in} Nom.	1% V_{out}
Ripple and Noise, DC - 20 MHz	50 mV Pk-Pk
Remote Sense Headroom	0.25 V
Current Limit Protection Type	Foldback
Current Limit Threshold Range, % of I_{out} Rated	120% to 180%
Short Circuit Protection Type	Continuous
Power Good Signal (SIE model only); Asserts "High" When V_{out} is Between the Following Thresholds:	
Lower Sense Threshold, % Vsetpoint	-16% to -10%
Upper Sense Threshold, % Vsetpoint	+10% to +16%
Power Good Signal Reference	Common Ground
V_{out} Ramp Up Rate, Minimum	0.5V/ms

General	
Remote Shutdown	Negative Logic
Switching Frequency	330 kHz
Temperature Coefficient	0.03%/°C
Ambient Operating Temperature	0 to +55°C
Minimum Required Airflow	200 LFM
Storage Range	-25 to +120°C
Humidity Max., Non-Condensing	95%
Vibration, 3 Axes, 5 Min Each	5 g, 10 - 55 Hz
MTBF† (Bellcore TR-NWT-000332)	7.1×10^6 hrs
Safety	UL, cUL, TUV
Weight (approx.)	0.25 oz



Notes
† MTBF predictions may vary slightly from model to model.
Specifications typically at 25°C, normal line, and full load, unless otherwise stated.
Soldering Conditions: I/O pins, 260°C, ten seconds; fully compatible with commercial wave-soldering equipment.
Safety: Agency approvals may vary from model to model. Please consult factory for specific model information.
Units are water-washable and fully compatible with commercial spray or immersion post wave-solder washing equipment.

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MODELS - (See the last page of section for options.)

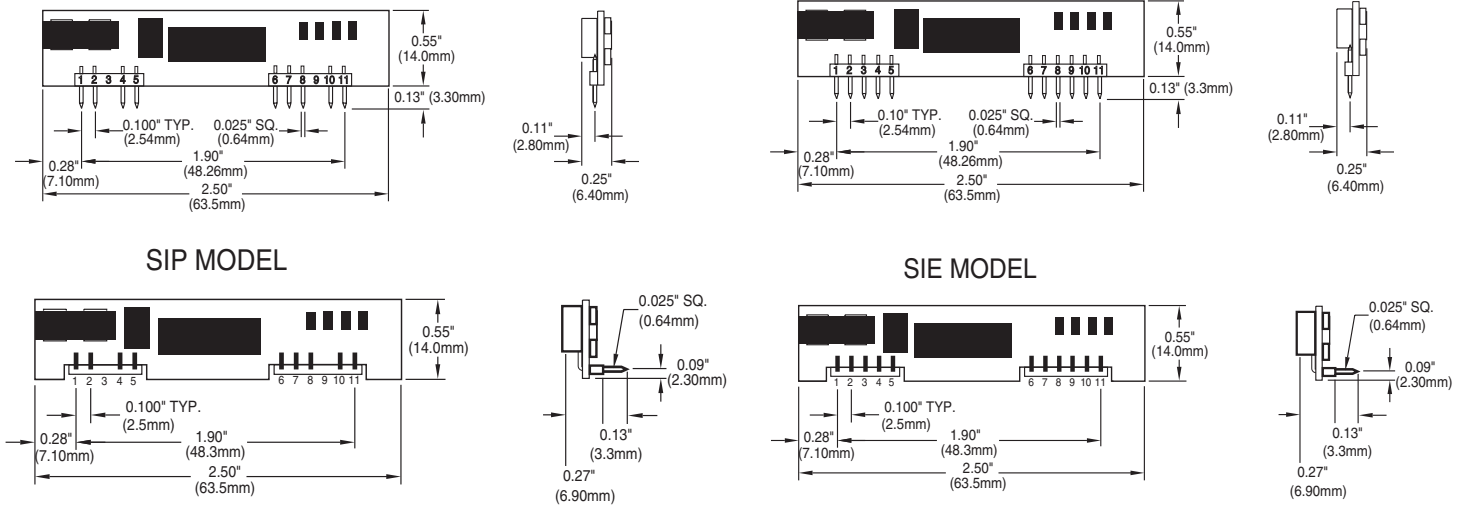
MODEL	INPUT VOLTAGE (VOLTS)	INPUT VOLTAGE RANGE (VOLTS)	MAXIMUM INPUT CURRENT (AMPS)*	OUTPUT VOLTAGE (VOLTS)	RATED OUTPUT CURRENT (AMPS)	TYPICAL EFFICIENCY**
SIP501.2LT	5	4.5 - 5.5	2.3	1.2	6	70%
SIP501.5LT	5	4.5 - 5.5	2.7	1.5	6	75%
SIP501.8LT	5	4.5 - 5.5	3.1	1.8	6	77%
SIP502.1LT	5	4.5 - 5.5	3.5	2.1	6	81%
SIP502.5LT	5	4.5 - 5.5	4.0	2.5	6	83%
SIP503.3LT	5	4.5 - 5.5	5.1	3.3	6	87%
SIE501.2LT	5	4.5 - 5.5	2.3	1.2	6	70%
SIE501.5LT	5	4.5 - 5.5	2.7	1.5	6	75%
SIE501.8LT	5	4.5 - 5.5	3.1	1.8	6	77%
SIE502.1LT	5	4.5 - 5.5	3.5	2.1	6	84%
SIE502.5LT	5	4.5 - 5.5	4.0	2.5	6	83%
SIE503.3LT	5	4.5 - 5.5	5.1	3.3	6	87%

NOTES: * Maximum input current at minimum input voltage, maximum rated output power.
 ** At nominal V_{in} , rated output.

Model numbers highlighted in yellow or shaded are not recommended for new designs.

For right-angle pins, add suffix R to model number.

MECHANICAL DRAWING



Thermal Impedance	
Natural Convection	24.4 °C/W
100 LFM	18.3 °C/W
200 LFM	15.0 °C/W
300 LFM	11.1 °C/W
400 LFM	7.9 °C/W

Note:
 Thermal impedance data is dependent on many environmental factors. The exact thermal performance should be validated for specific application.

Pin	Function
1	+V _{out}
2	+V _{out}
3	Sense (SIE)
4	+V _{out}
5	Ground
6	Ground
7	+V _{in}
8	+V _{in}
9	PWR OK (SIE)
10	Trim
11	Enable

Tolerances	
Inches:	(Millimeters)
.XX ± 0.020	.X ± 0.5
.XXX ± 0.010	.XX ± 0.25
Pin:	
± 0.002	± 0.05
(Dimensions as listed unless otherwise specified.)	

OPTIONS

When ordering equipment options, use the following suffix information. Select the option(s) that you prefer and add them to the model number. Example ordering options are located below the options table.

OPTION	SUFFIX	APPLICABLE SERIES	REMARKS
Negative Logic	N	HAS, HBD, HBS, HES, HLS, HLD, LES, QBS, QES, QLS, TES, TQD	TTL "Low" Turns Module ON TTL "High" Turns Module OFF
Lucent-Compatible Trim	T	HAS, HBD, HBS, HES, HLS, QBS, QES, QLS	
Terminal Strip	TS	XWS, XWD, XWT	
Trim	1	IAS, LES	
Enable	2	IAD, IAS, LES, SMS	
Trim and Enable	3	IAS, LES	
Pin Length and Heatsink Options			Standard Pin Length is 0.180" (4.6mm)
0.110" (2.8mm) Pin Length	8	All Leaded Models	
0.150" (3.8mm) Pin Length	9	All Leaded Models	
0.24" (6.1mm) Horizontal Heatsink	1H	All 1/4-Bricks, 1/2-Bricks, 3/4-Bricks, Full-Bricks (Except HLS, HLD, QLS, TLD, and TKD Packages)	Includes Thermal Pad
0.24" (6.1mm) Vertical Heatsink	1V	All 1/4-Bricks, 1/2-Bricks, 3/4-Bricks, Full-Bricks (Except HLS, HLD, QLS, TLD, and TKD Packages)	Includes Thermal Pad
0.45" (11.4mm) Horizontal Heatsink	2H	All 1/4-Bricks, 1/2-Bricks, 3/4-Bricks, Full-Bricks (Except HLS, HLD, QLS, TLD, and TKD Packages)	Includes Thermal Pad
0.45" (11.4mm) Vertical Heatsink	2V	All 1/4-Bricks, 1/2-Bricks, 3/4-Bricks, Full-Bricks (Except HLS, HLD, QLS, TLD, and TKD Packages)	Includes Thermal Pad
0.95" (24.1mm) Horizontal Heatsink	3H	All 1/4-Bricks, 1/2-Bricks, 3/4-Bricks, Full-Bricks (Except HLS, HLD, QLS, TLD, and TKD Packages)	Includes Thermal Pad
0.95" (24.1mm) Vertical Heatsink	3V	All 1/4-Bricks, 1/2-Bricks, 3/4-Bricks, Full-Bricks (Except HLS, HLD, QLS, TLD, and TKD Packages)	Includes Thermal Pad

Example Options:

HBS050ZG-ANT3V = HBS050ZG-A with negative logic, Lucent-compatible trim, and 0.95" vertical heatsink.

LES015YJ-3N = LES015YJ with optional trim and enable, negative logic.

QBS066ZG-AT8 = QBS066ZG-A with Lucent-compatible trim and 0.110" pin length.

NUCLEAR AND MEDICAL APPLICATIONS - Power-One products are not authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional President of Power-One, Inc.

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.
