# POWER-ONE®

Powering Communications and Technology

SIP/SIE 500
NON-ISOLATED SERIES

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 use 100% surface-mount construction for maximum reliability and feature 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

High Density - Board Mounted Power Division

Input	
Voltage Range	
5 VDC Nominal	4.5 - 5.5 VDC

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	Hiccup
Current Limit Threshold Range, % of I_{out} Rated	150%
Short Circuit Protection Type	Latching
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	350 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

Efficiency vs. Load

SIP502.5
- EFF. (4.5v)
- EFF. (5v)
- EFF. (5.5v)
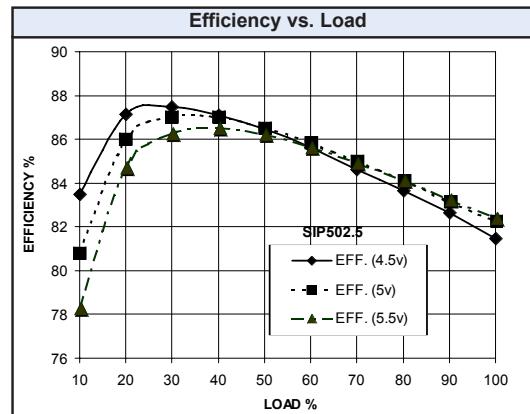
Notes
† MTBF predictions may vary slightly from model to model.
Specifications typically at 25°C, normal line, and full load, unless otherwise stated.
Soldering Conditions: I/O pins, 260°C, ten seconds; fully compatible with commercial wave-soldering equipment.
Safety: Agency approvals may vary from 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.

POWER-ONE®

Powering Communications and Technology

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

Selection Chart						
Model	Vin (Volts)	Vin Range (Volts)	Iin Max.* (Amps)	Vout (Volts)	Iout Rated (Amps)	Efficiency Typ. **
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	81%
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%

* Maximum input current at minimum input voltage, maximum rated output power.

** At nominal Vin, rated output.

NOTE: For Right Angle Pins, Add suffix "R" to model number.

MECHANICAL DRAWING

SIP MODEL
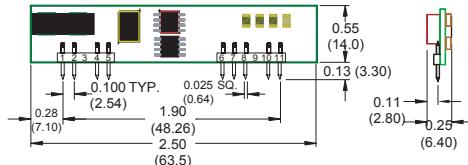
SIE MODEL
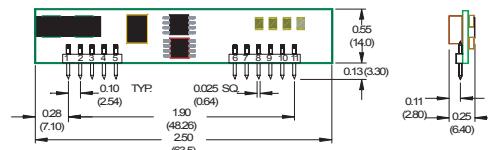
Right Angle Pins
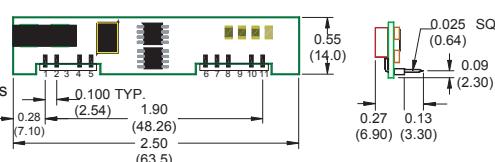
Right Angle Pins
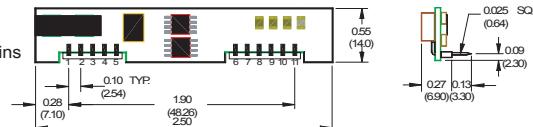
Thermal Impedance	
Natural Convection	24.4 °C/W
100 LFM	18.3 °C/W
200 LFM	15.0 °C/W
300 LFM	11.1 °C/W
400 LFM	7.9 °C/W

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.)

High Density - Board Mounted Power Division