



## EC3SB SERIES 15 WATT 2:1 INPUT DC-DC CONVERTERS



### FEATURES

- \* 15W Isolated Output
- \* Efficiency to 90%
- \* 2:1 Input Rang
- \* Regulated Outputs
- \* Fixed Switching Frequency
- \* Input Under Voltage Protection
- \* Over Current Protection
- \* Remote On/Off
- \* Continuous Short Circuit Protection
- \* Without Tantalum Capacitors Inside
- \* CE Mark Meets 2004/108/EC
- \* Safety Meets UL60950-1, EN60950-1, and IEC60950-1



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
EC3SB -12S33	9-18 VDC	3.3 VDC	0 mA	4000 mA	90 mA	1280 mA	85	4000uF
EC3SB -12S05	9-18 VDC	5 VDC	0 mA	3000 mA	85 mA	1453 mA	88	3000uF
EC3SB -12S12	9-18 VDC	12 VDC	0 mA	1250 mA	70 mA	1420 mA	88	1330uF
EC3SB -12S15	9-18 VDC	15 VDC	0 mA	1000 mA	70 mA	1420 mA	88	1000uF
EC3SB-12D05	9-18 VDC	±5 VDC	0 mA	±1500 mA	45 mA	1470 mA	85	1470uF
EC3SB-12D12	9-18 VDC	±12 VDC	0 mA	±625 mA	45 mA	1436 mA	87	660uF
EC3SB-12D15	9-18 VDC	±15 VDC	0 mA	±500 mA	45 mA	1420 mA	88	550uF
EC3SB -24S33	18-36 VDC	3.3 VDC	0 mA	4000 mA	50 mA	640 mA	86	4000uF
EC3SB -24S05	18-36 VDC	5 VDC	0 mA	3000 mA	50 mA	718 mA	89	3000uF
EC3SB -24S12	18-36 VDC	12 VDC	0 mA	1250 mA	20 mA	695 mA	90	1330uF
EC3SB -24S15	18-36 VDC	15 VDC	0 mA	1000 mA	20 mA	695 mA	90	1000uF
EC3SB-24D05	18-36 VDC	±5 VDC	0 mA	±1500 mA	25 mA	726 mA	86	1470uF
EC3SB-24D12	18-36 VDC	±12 VDC	0 mA	±625 mA	25 mA	710 mA	88	660uF
EC3SB-24D15	18-36 VDC	±15 VDC	0 mA	±500 mA	25 mA	702 mA	89	550uF
EC3SB -48S33	36-75 VDC	3.3 VDC	0 mA	4000 mA	25 mA	320 mA	86	4000uF
EC3SB -48S05	36-75 VDC	5 VDC	0 mA	3000 mA	30 mA	359 mA	88	3000uF
EC3SB -48S12	36-75 VDC	12 VDC	0 mA	1250 mA	20 mA	347 mA	90	1330uF
EC3SB -48S15	36-75 VDC	15 VDC	0 mA	1000 mA	20 mA	351 mA	90	1000uF
EC3SB-48D05	36-75 VDC	±5 VDC	0 mA	±1500 mA	20 mA	363 mA	86	1470uF
EC3SB-48D12	36-75 VDC	±12 VDC	0 mA	±625 mA	20 mA	355 mA	88	660uF
EC3SB-48D15	36-75 VDC	±15 VDC	0 mA	±500 mA	20 mA	351 mA	89	550uF

NOTE: 1. Nominal Input Voltage 12, 24 or 48 VDC

# SPECIFICATIONS

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

## INPUT SPECIFICATIONS:

Input Voltage Range	12V	9 - 18V
	24V	18 - 36V
	48V	36 - 75V
Under voltage lockout	12Vin power up: 8.8V	power down: 8V
	24Vin power up: 17V	power down: 16V
	48Vin power up: 34V	power down: 32V
Input Surge Voltage (100mS max.)	EC3SB-12Sxx/12DXX	25Vdc max.
	EC3SB-24Sxx/24DXX	50Vdc max.
	EC3SB-48Sxx/48DXX	100Vdc max.
Input Filter	Standard	PI Type
	SMD	LC Type
Positive Logic Remote on/off Control:		
Logic Compatibility	CMOS or Open Collector TTL	
Module On	>+5.5V to 75VDC or Open Circuit	
Module Off	<1.2VDC	

## OUTPUT SPECIFICATIONS:

Voltage Accuracy	±1.5% max.
Voltage Balance (Dual)	±2.0% max.
Transient Response: 25% Step Load Change	<500us
Ripple and Noise, 20MHz BW (note 3)	50mV pk-pk max.
	SMD 120mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	Single ..... DIP±0.2% max., SMD±0.3% max.
	Dual ..... ±0.5% max.
Load Regulation (note 2)	Single ..... DIP±0.2% max., SMD±0.5% max.
	Dual ..... ±1.0% max.
Cross Regulation (Dual output) Load cross variation 10%/100%	±5% max.
Over Voltage Protection	Zener or TVS Clamp
External Trim Adj. Range	±10%
Current Limit	110% - 140% Nominal Output
Start up time	20ms max.

## GENERAL SPECIFICATIONS:

Efficiency	See Table
Isolation Voltage	1500 VDC min.
Isolation Resistance	10 <sup>9</sup> ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	350KHz typ.
Operating Ambient Temperature Range	-40°C to +85°C
Derating, Above 71°C	Linearly to Zero Power at +105°C
Case Temperature (note 4)	105°C
Cooling	Natural Convection
Storage Temperature Range	-55°C to +125°C
Humidity	95% RH max. Non condensing
MTBF	MIL-STD-217-F, GB, 25°C, Full Load 1200Khrs typ.
Dimensions	DIP ..... 1.00x1.00x0.4 inches (25.4x25.4x10.2 mm)
	SMD ... 1.00x1.00x0.36 inches (25.4 x 25.4 x 9.2 mm)
Case Material	Black Coated Copper with Non-Conductive Base
Weight	18g

## NOTE:

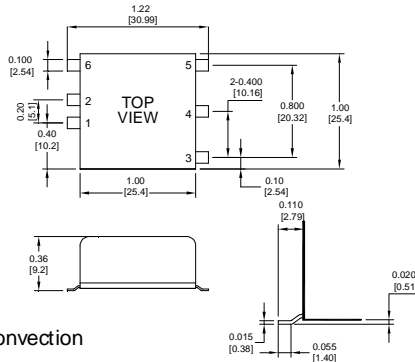
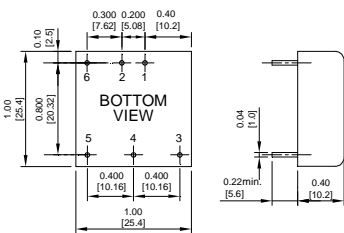
1. Measured from high line to low line.
2. Measured from full load to min. load.
3. The output ripple and noise is measured with 10uF tantalum and 1uF ceramic capacitor across output.
4. Maximum case temperature under any operating condition should not be exceeded 105°C.
5. Suffix "S" to the model number with SMD packages.

## SIZE SB Dimensions:

NOTE: Pin Size is 0.04±0.004 Inch (1.0±0.1 mm) DIA  
 All Dimensions In Inches (mm)  
 Tolerances: Inches: X.XX= ±0.02, X.XXX= ±0.010  
 Millimeters: X.X= ±0.5, X.XX= ±0.25

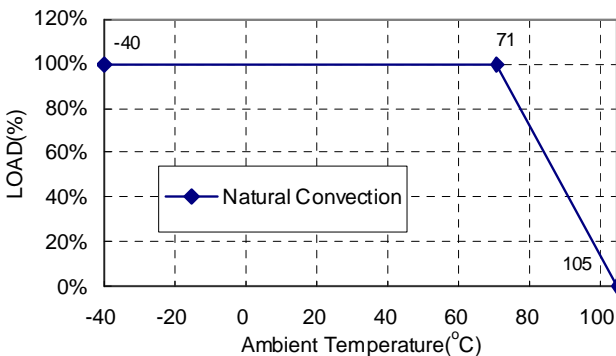
THROUGH-HOLE PACKAGE

SMD- PACKAGE



Pin	Function	
	Single	Dual
1	+Input	+Input
2	-Input	-Input
3	+V Output	+V Output
4	Trim	Common
5	-V Output	-V Output
6	Remote	Remote

Typical Derating curve for Natural Convection



## EXTERNAL OUTPUT TRIM

