



EC2SB SERIES 10 WATT 2:1 INPUT DC-DC CONVERTERS



FEATURES

- * 10W Isolated Output
- * Efficiency to 87%
- * 2:1 Input Range
- * Regulated Outputs
- * Fixed Switching Frequency
- * Input Under Voltage Protection
- * Over Current Protection
- * Remote On/Off
- * Continuous Short Circuit Protection
- * Conductive EMI Meets EN55022 Class A
- * 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 | | |
| EC2SB-05S33 | 4.7-9 VDC | 3.3 VDC | 0 mA | 2500 mA | 120 mA | 1897 mA | 87 | 2470uF |
| EC2SB-05S05 | 4.7-9 VDC | 5 VDC | 0 mA | 2000 mA | 120 mA | 2299 mA | 87 | 2000uF |
| EC2SB-05S12 | 4.7-9 VDC | 12 VDC | 0 mA | 833 mA | 50 mA | 2298 mA | 87 | 940uF |
| EC2SB-05S15 | 4.7-9 VDC | 15 VDC | 0 mA | 666 mA | 50 mA | 2297 mA | 87 | 690uF |
| EC2SB-05D05 | 4.7-9 VDC | ±5 VDC | 0 mA | ±1000 mA | 50 mA | 2353 mA | 85 | 1000uF |
| EC2SB-05D12 | 4.7-9 VDC | ±12 VDC | 0 mA | ±416 mA | 50 mA | 2295 mA | 87 | 440uF |
| EC2SB-05D15 | 4.7-9 VDC | ±15 VDC | 0 mA | ±333 mA | 50 mA | 2297 mA | 87 | 330uF |
| EC2SB-12S33 | 9-18 VDC | 3.3 VDC | 0 mA | 2500 mA | 30 mA | 838 mA | 82 | 2470uF |
| EC2SB-12S05 | 9-18 VDC | 5 VDC | 0 mA | 2000 mA | 30 mA | 980 mA | 85 | 2000uF |
| EC2SB-12S12 | 9-18 VDC | 12 VDC | 0 mA | 833 mA | 35 mA | 957 mA | 87 | 940uF |
| EC2SB-12S15 | 9-18 VDC | 15 VDC | 0 mA | 666 mA | 35 mA | 956 mA | 87 | 690uF |
| EC2SB-12D05 | 9-18 VDC | ±5 VDC | 0 mA | ±1000 mA | 45 mA | 980 mA | 85 | 1000uF |
| EC2SB-12D12 | 9-18 VDC | ±12 VDC | 0 mA | ±416 mA | 45 mA | 957 mA | 87 | 440uF |
| EC2SB-12D15 | 9-18 VDC | ±15 VDC | 0 mA | ±333 mA | 45 mA | 957 mA | 87 | 330uF |
| EC2SB-24S33 | 18-36 VDC | 3.3 VDC | 0 mA | 2500 mA | 25 mA | 419 mA | 82 | 2470uF |
| EC2SB-24S05 | 18-36 VDC | 5 VDC | 0 mA | 2000 mA | 25 mA | 490 mA | 85 | 2000uF |
| EC2SB-24S12 | 18-36 VDC | 12 VDC | 0 mA | 833 mA | 25 mA | 478 mA | 87 | 940uF |
| EC2SB-24S15 | 18-36 VDC | 15 VDC | 0 mA | 666 mA | 25 mA | 478 mA | 87 | 690uF |
| EC2SB-24D05 | 18-36 VDC | ±5 VDC | 0 mA | ±1000 mA | 25 mA | 490 mA | 85 | 1000uF |
| EC2SB-24D12 | 18-36 VDC | ±12 VDC | 0 mA | ±416 mA | 25 mA | 478 mA | 87 | 440uF |
| EC2SB-24D15 | 18-36 VDC | ±15 VDC | 0 mA | ±333 mA | 25 mA | 478 mA | 87 | 330uF |
| EC2SB-48S33 | 36-75 VDC | 3.3 VDC | 0 mA | 2500 mA | 20 mA | 212 mA | 81 | 2470uF |
| EC2SB-48S05 | 36-75 VDC | 5 VDC | 0 mA | 2000 mA | 20 mA | 245 mA | 85 | 2000uF |
| EC2SB-48S12 | 36-75 VDC | 12 VDC | 0 mA | 833 mA | 20 mA | 239 mA | 87 | 940uF |
| EC2SB-48S15 | 36-75 VDC | 15 VDC | 0 mA | 666 mA | 20 mA | 239 mA | 87 | 690uF |
| EC2SB-48D05 | 36-75 VDC | ±5 VDC | 0 mA | ±1000 mA | 20 mA | 245 mA | 85 | 1000uF |
| EC2SB-48D12 | 36-75 VDC | ±12 VDC | 0 mA | ±416 mA | 20 mA | 239 mA | 87 | 440uF |
| EC2SB-48D15 | 36-75 VDC | ±15 VDC | 0 mA | ±333 mA | 20 mA | 239 mA | 87 | 330uF |

NOTE: 1. Nominal Input Voltage 5, 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 | 5V | 4.7 - 9V |
| | 12V | 9 - 18V |
| | 24V | 18 - 36V |
| | 48V | 36 - 75V |
| Under voltage lockout | 5Vin power up: 4.4V, power down: 4.2V | |
| | 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.) | EC2SB-05Sxx/05Dxx | 12Vdc max. |
| | EC2SB-12Sxx/12Dxx | 25Vdc max. |
| | EC2SB-24Sxx/24Dxx | 50Vdc max. |
| | EC2SB-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:

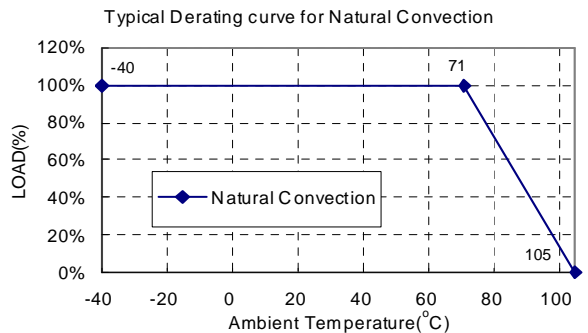
| | |
|--|----------------------------|
| Voltage Accuracy | ±1.5% max. |
| Voltage Balance (Dual) | ±2.0% max. |
| Transient Response: 25% Step Load Change | <500us. |
| Ripple and Noise, 20MHz BW (note3) | 50mV pk-pk max. |
| | SMD 100mV pk-pk max. |
| Temperature Coefficient | ±0.03%/°C max. |
| Short Circuit Protection | Continuous |
| Line Regulation (note1) | Single ±0.2% max. |
| | SMD ±0.3% max. |
| | Dual ±0.5% max. |
| Load Regulation (note2) | Single ±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 (single output models only) | ±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 ⁹ ohm min. |
| Isolation Capacitance | 1000pF typ. |
| Switching Frequency | 350KHz typ. |
| EMI/RFI (Standard) | Conductive EMI Meets EN55022 Class A |
| Operating Ambient Temperature Range | -40°C to +85°C |
| Derating, Above 71°C | Linearly to Zero Power at +105°C |
| Case Temperature (note4) | 105°C max. |
| 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 | Standard 1.00x1.00x0.4 inches (25.4x25.4x10.2 mm) |
| | SMD 1.00x1.00x0.36 inches (25.4x25.4x9.2 mm) |
| Case Material | Black Coated Copper with Non-Conductive Base |
| Weight | 18g |

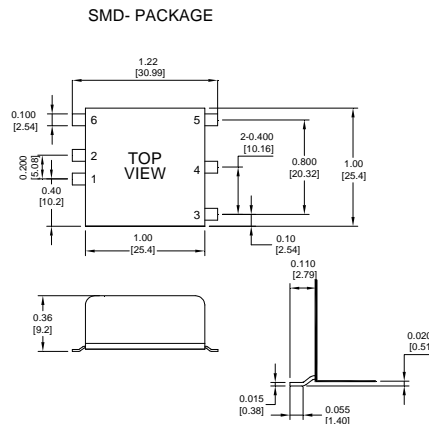
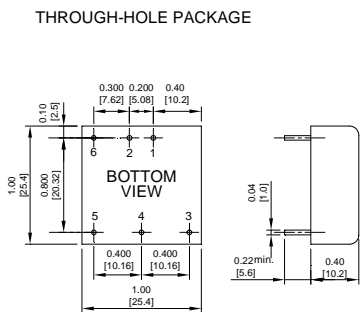
NOTE:

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.

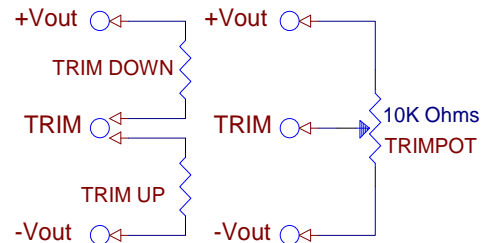


SIZE SB Dimensions:

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



EXTERNAL OUTPUT TRIM



| 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 |

Mouser Electronics

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