



# EC2SA SERIES

## 2 WATT WIDE INPUT

## DC-DC CONVERTERS



### FEATURES

- \* 2W Isolated Output
- \* Compact SIP-8 Package
- \* Efficiency to 84%
- \* 2:1 Input Range
- \* Regulated Outputs
- \* Remote On/Off Control
- \* 1500VDC Isolation
- \* Continuous Short Circuit Protection
- \* Under Voltage Protection
- \* 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 |        |                     |
| EC2SA-05S33N | 4.5-9.0 VDC   | 3.3 VDC        | 0 mA           | 500 mA  | 60 mA         | 452 mA    | 73     | 500uF               |
| EC2SA-05S05N | 4.5-9.0 VDC   | 5 VDC          | 0 mA           | 400 mA  | 60 mA         | 526 mA    | 76     | 400uF               |
| EC2SA-05S12N | 4.5-9.0 VDC   | 12 VDC         | 0 mA           | 167 mA  | 60 mA         | 501 mA    | 80     | 167uF               |
| EC2SA-05S15N | 4.5-9.0 VDC   | 15 VDC         | 0 mA           | 134 mA  | 60 mA         | 503 mA    | 80     | 134uF               |
| EC2SA-05D05N | 4.5-9.0 VDC   | ±5 VDC         | ±0 mA          | ±200 mA | 60 mA         | 519 mA    | 77     | 200uF               |
| EC2SA-05D12N | 4.5-9.0 VDC   | ±12 VDC        | ±0 mA          | ±83 mA  | 60 mA         | 504 mA    | 79     | 83uF                |
| EC2SA-05D15N | 4.5-9.0 VDC   | ±15 VDC        | ±0 mA          | ±67 mA  | 60 mA         | 503 mA    | 80     | 67uF                |
| EC2SA-12S33N | 9-18 VDC      | 3.3 VDC        | 0 mA           | 500 mA  | 30 mA         | 181 mA    | 76     | 500uF               |
| EC2SA-12S05N | 9-18 VDC      | 5 VDC          | 0 mA           | 400 mA  | 30 mA         | 211 mA    | 79     | 400uF               |
| EC2SA-12S12N | 9-18 VDC      | 12 VDC         | 0 mA           | 167 mA  | 30 mA         | 204 mA    | 82     | 167uF               |
| EC2SA-12S15N | 9-18 VDC      | 15 VDC         | 0 mA           | 134 mA  | 30 mA         | 202 mA    | 83     | 134uF               |
| EC2SA-12D05N | 9-18 VDC      | ±5 VDC         | ±0 mA          | ±200 mA | 30 mA         | 211 mA    | 79     | 200uF               |
| EC2SA-12D12N | 9-18 VDC      | ±12 VDC        | ±0 mA          | ±83 mA  | 30 mA         | 202 mA    | 82     | 83uF                |
| EC2SA-12D15N | 9-18 VDC      | ±15 VDC        | ±0 mA          | ±67 mA  | 30 mA         | 202 mA    | 83     | 67uF                |
| EC2SA-24S33N | 18-36 VDC     | 3.3 VDC        | 0 mA           | 500 mA  | 18 mA         | 90 mA     | 76     | 500uF               |
| EC2SA-24S05N | 18-36 VDC     | 5 VDC          | 0 mA           | 400 mA  | 18 mA         | 105 mA    | 79     | 400uF               |
| EC2SA-24S12N | 18-36 VDC     | 12 VDC         | 0 mA           | 167 mA  | 18 mA         | 102 mA    | 82     | 167uF               |
| EC2SA-24S15N | 18-36 VDC     | 15 VDC         | 0 mA           | 134 mA  | 18 mA         | 101 mA    | 83     | 134uF               |
| EC2SA-24D05N | 18-36 VDC     | ±5 VDC         | ±0 mA          | ±200 mA | 18 mA         | 105 mA    | 79     | 200uF               |
| EC2SA-24D12N | 18-36 VDC     | ±12 VDC        | ±0 mA          | ±83 mA  | 18 mA         | 102 mA    | 81     | 83uF                |
| EC2SA-24D15N | 18-36 VDC     | ±15 VDC        | ±0 mA          | ±67 mA  | 18 mA         | 100 mA    | 84     | 67uF                |
| EC2SA-48S33N | 36-75 VDC     | 3.3 VDC        | 0 mA           | 500 mA  | 9 mA          | 46 mA     | 74     | 500uF               |
| EC2SA-48S05N | 36-75 VDC     | 5 VDC          | 0 mA           | 400 mA  | 9 mA          | 53 mA     | 79     | 400uF               |
| EC2SA-48S12N | 36-75 VDC     | 12 VDC         | 0 mA           | 167 mA  | 9 mA          | 51 mA     | 82     | 167uF               |
| EC2SA-48S15N | 36-75 VDC     | 15 VDC         | 0 mA           | 134 mA  | 9 mA          | 50 mA     | 84     | 134uF               |
| EC2SA-48D05N | 36-75 VDC     | ±5 VDC         | ±0 mA          | ±200 mA | 9 mA          | 53 mA     | 78     | 200uF               |
| EC2SA-48D12N | 36-75 VDC     | ±12 VDC        | ±0 mA          | ±83 mA  | 9 mA          | 51 mA     | 82     | 83uF                |
| EC2SA-48D15N | 36-75 VDC     | ±15 VDC        | ±0 mA          | ±67 mA  | 9 mA          | 50 mA     | 84     | 67uF                |

NOTE: 1. Nominal Input Voltage 5, 12, 24 or 48VDC

# SPECIFICATIONS

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

## INPUT SPECIFICATIONS:

|                                        |           |             |
|----------------------------------------|-----------|-------------|
| Input Voltage Range .....              | 5V .....  | 4.5-9V      |
|                                        | 12V ..... | 9-18V       |
|                                        | 24V ..... | 18-36V      |
|                                        | 48V ..... | 36-75V      |
| Input Surge Voltage (100ms max.) ..... | 5V .....  | 15Vdc max.  |
|                                        | 12V ..... | 25Vdc max.  |
|                                        | 24V ..... | 50Vdc max.  |
|                                        | 48V ..... | 100Vdc max. |

### Under Voltage Protection (note5):

|                      |              |
|----------------------|--------------|
| 5Vin Power Up .....  | 4.2Vdc max.  |
| Power Down .....     | 3Vdc min.    |
| 12Vin Power Up ..... | 7.3Vdc max.  |
| Power Down .....     | 5.8Vdc min.  |
| 24Vin Power Up ..... | 15.5Vdc max. |
| Power Down .....     | 12Vdc min.   |
| 48Vin Power Up ..... | 31Vdc max.   |
| Power Down .....     | 24Vdc min.   |

Input Filter ..... Capacitive

### Remote on/off control (note6):

Module Off (input idle current) ..... 1mA max.

## OUTPUT SPECIFICATIONS:

|                                                                |                  |            |
|----------------------------------------------------------------|------------------|------------|
| Voltage Accuracy .....                                         | ±1.5% max.       |            |
| Voltage Balance(Dual) .....                                    | ±1.0% max.       |            |
| Cross regulation(Dual)(note1) .. Asymmetrical load 25%/100% .. | ±5.0% max.       |            |
| Transient Response: 25% Step Load Change                       |                  |            |
| Error Band .....                                               | ±6% Vout nominal |            |
| Recovery Time .....                                            | < 500us          |            |
| Ripple & Noise, 20MHz BW .....                                 | 75mV pk-pk max.  |            |
| Temperature Coefficient .....                                  | ±0.03%/°C        |            |
| Line Regulation (note2) .....                                  | ±0.5% max.       |            |
| Load Regulation (note3) .....                                  | Single .....     | ±0.5% max. |
|                                                                | Dual .....       | ±1.0% max. |
| Output Short Circuit Protection .....                          | Continuous       |            |
| Start up time .....                                            | 1mS typ.         |            |

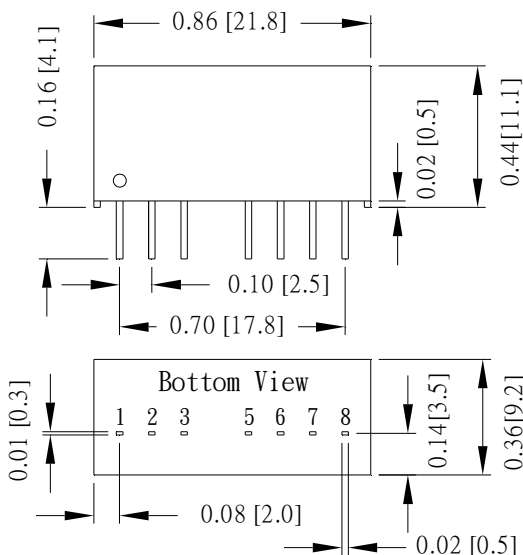
## CASE SIP-8:

All Dimensions In Inches(mm)

Tolerances : Inches millimeters

X.XX±0.02 X.X±0.5

Pin ±0.002 ±0.05

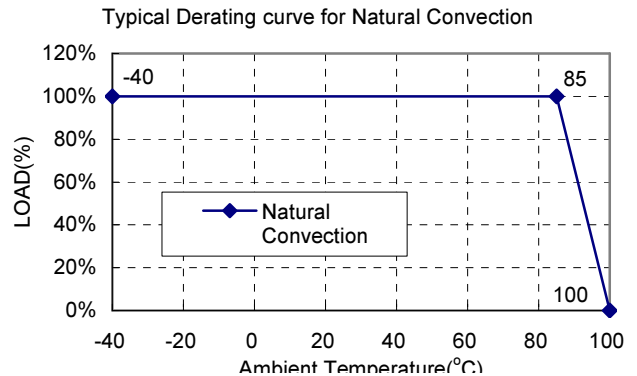


## GENERAL SPECIFICATIONS:

|                                     |                                                       |
|-------------------------------------|-------------------------------------------------------|
| Efficiency .....                    | See Table                                             |
| Isolation Voltage .....             | 1500VDC min.                                          |
| Isolation Resistance .....          | 10 <sup>9</sup> ohm min.                              |
| Isolation Capacitance .....         | 500pF typ.                                            |
| Switching Frequency .....           | 100KHz min.                                           |
| Operating Ambient Temperature ..... | -40°C to +85°C                                        |
| De-rating, Above 85°C .....         | Linearly to Zero power at 100°C                       |
| Case Temperature (note4) .....      | 100°C max.                                            |
| Cooling .....                       | Natural Convection                                    |
| Storage Temperature .....           | -55°C to +125°C                                       |
| Humidity .....                      | 95% RH max. Non condensing                            |
| MTBF .....                          | MIL-STD-217F, GB, 25°C, Full Load ..... 2500Khrs typ. |
| Dimensions .....                    | 0.86x0.36x0.44 inches(21.80x9.20x11.10 mm)            |
| Case Material .....                 | Non-Conductive Black Plastic                          |
| Weight .....                        | 4.8g                                                  |

## NOTE:

- For asymmetric loading both channels must be at 25% load or more.
- Measured from high line to low line.
- Measured from full load to 10% load.
- Maximum case temperature under any operating condition should not be exceeded 100°C.
- Suffix " N " to the model with under voltage protection.
- Suffix " N " Models: Module on ..... < 0.8VDC or open circuit  
Module off ..... 4 to 15VDC  
Other Models: Module on ..... < 1.2VDC or open circuit  
Module off ..... 5.5 to 15VDC



| PIN CONNECTION |        |        |
|----------------|--------|--------|
| Pin            | Single | Dual   |
| 1              | -Vin   | -Vin   |
| 2              | +Vin   | +Vin   |
| 3              | On/Off | On/Off |
| 5              | NC     | NC     |
| 6              | +Vo    | +Vo    |
| 7              | -Vo    | Common |
| 8              | NC     | -Vo    |

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Cincon:

[EC2SA-12S15](#) [EC2SA-12D15](#) [EC2SA-12D12](#) [EC2SA-05S33](#) [EC2SA-12S12](#) [EC2SA-05S05](#) [EC2SA-12S05](#)  
[EC2SA-24S05](#) [EC2SA-12S33](#) [EC2SA-05S15](#) [EC2SA-48S12](#) [EC2SA-48D05](#) [EC2SA-24S12](#) [EC2SA-05D12](#) [EC2SA-](#)  
[48S33](#) [EC2SA-24S33](#) [EC2SA-48D15](#) [EC2SA-24D15](#) [EC2SA-12D05](#) [EC2SA-48S05](#) [EC2SA-48S15](#) [EC2SA-05S12](#)  
[EC2SA-24S15](#) [EC2SA-24D12](#) [EC2SA-48D12](#) [EC2SA-24D05](#) [EC2SA-05D15](#) [EC2SA-05D05](#) [EC2SA-05D05N](#)  
[EC2SA-05D12N](#) [EC2SA-05D15N](#) [EC2SA-05S05N](#) [EC2SA-05S12N](#) [EC2SA-05S15N](#) [EC2SA-05S33N](#) [EC2SA-](#)  
[12D05N](#) [EC2SA-12D12N](#) [EC2SA-12D15N](#) [EC2SA-12S05N](#) [EC2SA-12S12N](#) [EC2SA-12S15N](#) [EC2SA-12S33N](#)  
[EC2SA-24D05N](#) [EC2SA-24D12N](#) [EC2SA-24D15N](#) [EC2SA-24S05N](#) [EC2SA-24S12N](#) [EC2SA-24S15N](#) [EC2SA-](#)  
[24S33N](#) [EC2SA-48D05N](#) [EC2SA-48D12N](#) [EC2SA-48D15N](#) [EC2SA-48S05N](#) [EC2SA-48S12N](#) [EC2SA-48S15N](#)  
[EC2SA-48S33N](#)