



EC4A SERIES

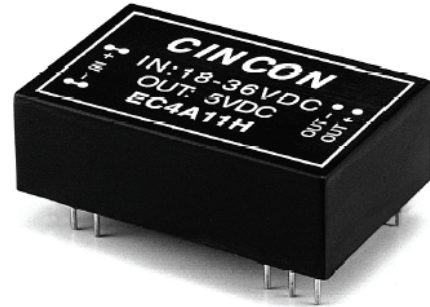
5-6 WATT 2:1 INPUT RANGE

DC-DC CONVERTERS



FEATURES

- * 5-6W Isolated Output
- * 24-Pin DIP Package
- * Efficiency to 84%
- * 2:1 Input Range
- * Regulated Outputs
- * Pi Input Filter
- * Continuous Short Circuit Protection
- * UL60950-1 Approval for H/HM Versions only



| MODEL NUMBER | INPUT VOLTAGE ⁽¹⁾ | OUTPUT VOLTAGE | OUTPUT CURRENT | INPUT CURRENT | | % EFF. ⁽²⁾ | CAPACITOR LOAD MAX. |
|--------------|------------------------------|----------------|----------------|---------------|-----------|-----------------------|---------------------|
| | | | | NO LOAD | FULL LOAD | | |
| EC4A01 | 9-18 VDC | 5 VDC | 1000 mA | 7.5 mA | 541 mA | 77 | 4700uF |
| EC4A02 | 9-18 VDC | 12 VDC | 470 mA | 7.5 mA | 573 mA | 82 | 4700uF |
| EC4A03 | 9-18 VDC | 15 VDC | 400 mA | 7.5 mA | 625 mA | 80 | 4700uF |
| EC4A04 | 9-18 VDC | ±12 VDC | ±230 mA | 12 mA | 554 mA | 83 | 2200uF |
| EC4A05 | 9-18 VDC | ±15 VDC | ±190 mA | 12 mA | 556 mA | 81 | 2200uF |
| EC4A06 | 9-18 VDC | ±5 VDC | ±500 mA | 12 mA | 541 mA | 77 | 2200uF |
| EC4A07 | 9-18 VDC | 3.3 VDC | 1000 mA | 7.5 mA | 382 mA | 72 | 4700uF |
| EC4A11 | 18-36 VDC | 5 VDC | 1000 mA | 5 mA | 260 mA | 80 | 4700uF |
| EC4A12 | 18-36 VDC | 12 VDC | 470 mA | 5 mA | 280 mA | 84 | 4700uF |
| EC4A13 | 18-36 VDC | 15 VDC | 400 mA | 5 mA | 298 mA | 84 | 4700uF |
| EC4A14 | 18-36 VDC | ±12 VDC | ±230 mA | 7.5 mA | 280 mA | 82 | 2200uF |
| EC4A15 | 18-36 VDC | ±15 VDC | ±190 mA | 7.5 mA | 293 mA | 81 | 2200uF |
| EC4A16 | 18-36 VDC | ±5 VDC | ±500 mA | 7.5 mA | 260 mA | 80 | 2200uF |
| EC4A17 | 18-36 VDC | 3.3 VDC | 1000 mA | 5 mA | 186 mA | 74 | 4700uF |
| EC4A21 | 36-72 VDC | 5 VDC | 1000 mA | 2 mA | 132 mA | 79 | 4700uF |
| EC4A22 | 36-72 VDC | 12 VDC | 470 mA | 2 mA | 142 mA | 83 | 4700uF |
| EC4A23 | 36-72 VDC | 15 VDC | 400 mA | 2 mA | 154 mA | 81 | 4700uF |
| EC4A24 | 36-72 VDC | ±12 VDC | ±230 mA | 3 mA | 142 mA | 81 | 2200uF |
| EC4A25 | 36-72 VDC | ±15 VDC | ±190 mA | 3 mA | 147 mA | 81 | 2200uF |
| EC4A26 | 36-72 VDC | ±5 VDC | ±500 mA | 3 mA | 130 mA | 80 | 2200uF |
| EC4A27 | 36-72 VDC | 3.3 VDC | 1000 mA | 2 mA | 93 mA | 74 | 4700uF |

NOTE:

1. Nominal Input Voltage is 12, 24 or 48 VDC.
2. Typical value at nominal input voltage and full load.

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 | 36-72V |
| Input Surge Voltage (100ms max.) | 12V | 25Vdc max. |
| | 24V | 50Vdc max. |
| | 48V | 100Vdc max. |
| Input Filter | Pi Type | |

OUTPUT SPECIFICATIONS:

| | |
|--------------------------|---------------------------------------|
| Voltage Accuracy | ±2.0% max. |
| Voltage Balance (Dual) | ±1.0% max. |
| Temperature Coefficient | ±0.05%/°C |
| Ripple & Noise, 20MHz BW | 3.3V/5V 100mV pk-pk, max |
| | 12V/15V 1% pk-pk max. |
| Short Circuit Protection | Continuous |
| Line Regulation | Single/Dual (note 1) ±0.5% max. |
| Load Regulation | Single (note 2) ±0.5% max. |
| | Dual (note 3) ±1.0% max. |

NOTE:

1. Measured From High Line to Low Line.
2. Measured From Full Load to 10% Load.
3. Measured From Full Load to 1/4 Load.
4. Maximum case temperature under any operating condition should not be exceed 95°C (Plastic Case),100°C (Copper Case).

GENERAL SPECIFICATIONS:

| | |
|--|--|
| Efficiency | See Table |
| Isolation Voltage: | |
| 500 VDC min. | Standard Models |
| 3K VDC min. ... (Non-Conductive Black Plastic Only) | Suffix "H" Models |
| 1.5K VDC min. | Suffix "HM" Models |
| Isolation Resistance | 10 ⁹ ohm min. |
| Switching Frequency | 100KHz min. |
| Operating Ambient Temperature Range | -25°C to +71°C |
| Power de-rating Curve | see Figure1 |
| Case Temperature (Note 4) ... Plastic/Copper case... | 95°C/100°C max. |
| Cooling | Natural Convection |
| Storage Temperature Range | -40°C to +100°C |
| Humidity | 95% RH max. Non condensing |
| MTBF | MIL-STD-217F 2000Khrs typ. |
| Dimensions | DIP 1.25×0.80×0.40 inches(31.8×20.3×10.2 mm) |
| | SMD ... 1.25×0.80×0.45 inches(31.8×20.3×11.4 mm) |
| Case Material: | |
| Standard Models | Non-Conductive Black Plastic |
| Suffix "M" Models | Black Coated Copper with Non-conductive Base |
| Suffix "S" Models | SMD package |
| Weight | 12.5g |

Case A Dimensions:

NOTE:Pin Size is 0.02 ±0.002 Inch (0.5±0.05 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

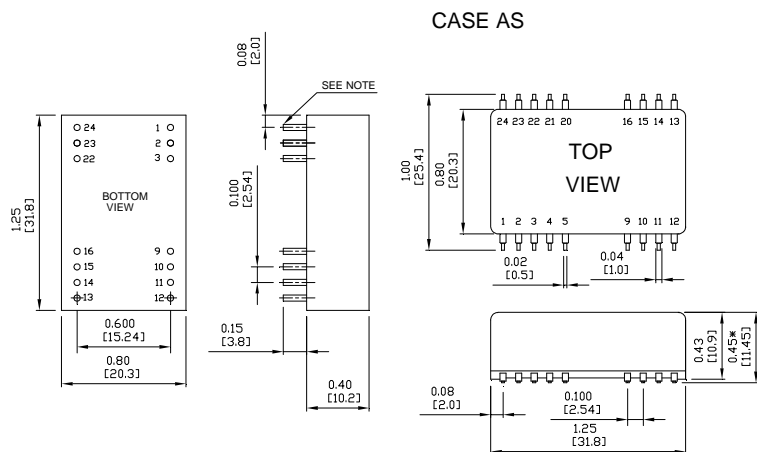
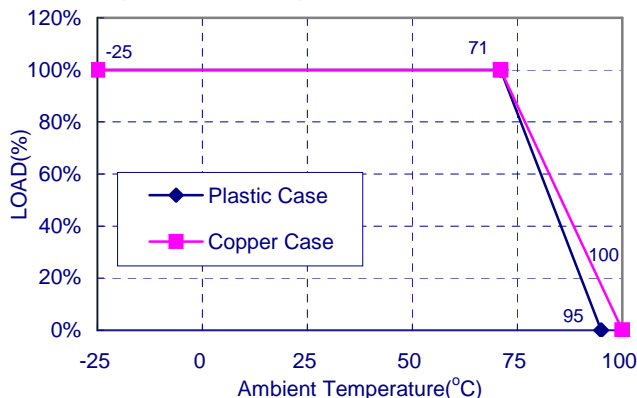


Figure1. Typical Derating curve for Natural Convection



| PIN CONNECTION | | | | | | | | | |
|----------------|---------------|-----|-------------|-----|---------------|---------------|-----|-------------|-----|
| Pin | 500 VDC | | | | 1.5K & 3K VDC | | | | |
| | Single Output | | Dual Output | | Pin | Single Output | | Dual Output | |
| | DIP | SMD | DIP | SMD | | DIP | SMD | DIP | SMD |
| 1,24 | +V Input | | +V Input | | 1,24 | NP | NC | NP | NC |
| 2,23 | NC | | -V Output | | 2,3 | -V Input | | -V Input | |
| 3,22 | NC | | Common | | 4,5 | NP | NC | NP | NC |
| 4 | NP | NC | NP | NC | 9 | NC | | Common | |
| 5 | NP | NC | NP | NC | 10,15 | NC | | NC | |
| 9 | NP | NC | NP | NC | 11 | NC | | -V Output | |
| 10,15 | -V Output | | Common | | 12,13 | NP | NC | NP | NC |
| 11,14 | +V Output | | +V Output | | 14 | +V Output | | +V Output | |
| 12,13 | -V Input | | -V Input | | 16 | -V Output | | Common | |
| 16 | NP | NC | NP | NC | 20,21 | NP | NC | NP | NC |
| 20,21 | NP | NC | NP | NC | 22,23 | +V Input | | +V Input | |

* NP-NO PIN
 * NC-NO CONNECTION WITH PIN