

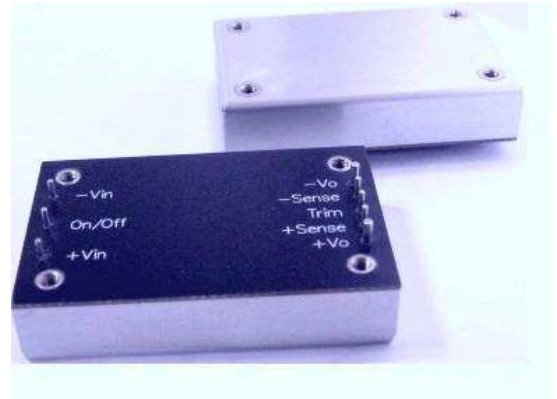


# CQE50W SERIES

## 50 WATT 4:1 INPUT DC-DC CONVERTERS SINGLE OUTPUT

### FEATURES

- \* 50W Isolated Output
- \* No Tantalum Capacitor Inside
- \* Quarter-Brick Size, Six-Sided Shield Metal Case
- \* High Efficiency up to 92%
- \* 300KHz Switching Frequency
- \* 4 : 1 Input Range
- \* Regulated Outputs
- \* Continuous Short Circuit Protection
- \* Full Load Operation up to 80°C  
with Heat-sink M-C421 Natural Convention
- \* Over Temperature/Voltage/Current 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 | (2)    | (3)  |                     |
| CQE50W-24S3V3 | 9-36 VDC      | 3.3 VDC        | 0mA            | 10A    | 100mA         | 1528mA    | 90     | 90.5 | 10000µF             |
| CQE50W-24S05  | 9-36 VDC      | 5.0 VDC        | 0mA            | 10 A   | 100mA         | 2277mA    | 91     | 91.5 | 10000µF             |
| CQE50W-24S12  | 9-36 VDC      | 12 VDC         | 0mA            | 4.16A  | 100mA         | 2261mA    | 91     | 91.5 | 4160µF              |
| CQE50W-24S15  | 9-36 VDC      | 15 VDC         | 0mA            | 3.33 A | 100mA         | 2287mA    | 91.5   | 91.5 | 3330µF              |
| CQE50W-24S24  | 9-36 VDC      | 24 VDC         | 0mA            | 2.08A  | 60mA          | 2311mA    | 90     | 90   | 2080µF              |
| CQE50W-24S48  | 9-36VDC       | 48 VDC         | 0mA            | 1.04 A | 60mA          | 2311mA    | 88.5   | 88.5 | 1040µF(4)           |
| CQE50W-48S3V3 | 18-75VDC      | 3.3 VDC        | 0mA            | 10A    | 60mA          | 764mA     | 90     | 90   | 10000µF             |
| CQE50W-48S05  | 18-75VDC      | 5.0 VDC        | 0mA            | 10 A   | 60mA          | 1132mA    | 91.5   | 92   | 10000µF             |
| CQE50W-48S12  | 18-75VDC      | 12 VDC         | 0mA            | 4.16A  | 60mA          | 1130mA    | 92     | 92   | 4160µF              |
| CQE50W-48S15  | 18-75VDC      | 15 VDC         | 0mA            | 3.33 A | 60mA          | 1144mA    | 91     | 91   | 3330µF              |
| CQE50W-48S24  | 18-75VDC      | 24 VDC         | 0mA            | 2.08A  | 60mA          | 1156mA    | 91     | 90.5 | 2080µF              |
| CQE50W-48S48  | 18-75VDC      | 48 VDC         | 0mA            | 1.04 A | 60mA          | 1156mA    | 89     | 89   | 1040µF(4)           |

NOTE: 1. Nominal Input Voltage 24, 48VDC

2. Measured at 12VDC for 24SXX, 24VDC for 48SXX

3. Measured at Nominal Input Voltage

4. Require a 10uF Aluminum Capacitor Connected Between +Vout and -Vout for 48Vout Models

# SPECIFICATIONS

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

## INPUT SPECIFICATIONS:

|                                                 |                  |             |
|-------------------------------------------------|------------------|-------------|
| Input Voltage Range                             | 24V              | 9-36V       |
|                                                 | 48V              | 18-75V      |
| Input Surge Voltage (100ms max.)                | 24V              | 50Vdc max.  |
|                                                 | 48V              | 100Vdc max. |
| Under voltage lockout                           | 24Vin power up   | 8.8V        |
|                                                 | 24Vin power down | 8.0V        |
|                                                 | 48Vin power up   | 17V         |
|                                                 | 48Vin power down | 16V         |
| Positive Logic Remote ON/OFF ( see note 4 & 5 ) |                  |             |
| Input Filter                                    |                  | PI Type     |

## OUTPUT SPECIFICATIONS:

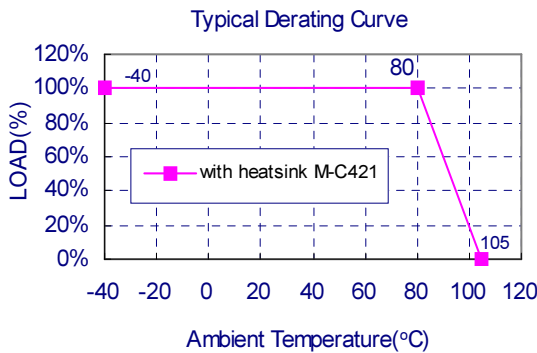
|                                                  |                             |
|--------------------------------------------------|-----------------------------|
| Voltage Accuracy:                                | ±1.5% max.                  |
| Transient Response: 75% to 100% Step Load Change |                             |
| Error Band                                       | ±5% Vout                    |
| Recover Time                                     | <500us                      |
| External Trim Adj. Range                         | ±10%                        |
| Ripple & Noise, 20MHz BW ( see note 3)           |                             |
| 3.3V & 5V                                        | 40mV RMS, 100mV pk-pk max.  |
| 12V & 15V                                        | 60mV RMS, 150mV pk-pk max.  |
| 24V                                              | 100mV RMS, 240mV pk-pk max. |
| 48V                                              | 200mV RMS, 480mV pk-pk max. |
| Temperature Coefficient                          | ±0.03%/°C                   |
| Short Circuit Protection                         | Continuous                  |
| Line Regulation (note 1)                         | ±0.2% max.                  |
| Load Regulation (note 2)                         | ±0.2% max.                  |
| Over Voltage Protection trip Range, % Vo nom.    | 115-140%                    |
| Current Limit                                    | 110% ~165% Nominal Output   |
| Start up time                                    | 20ms typ.                   |

## GENERAL SPECIFICATIONS:

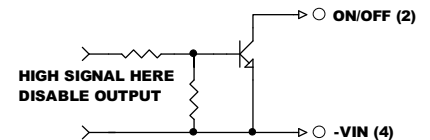
|                                            |                                                  |
|--------------------------------------------|--------------------------------------------------|
| Efficiency                                 | See Table                                        |
| Isolation Voltage                          | Input/Output 1500VDC min.                        |
|                                            | Input/Case 1500VDC min.                          |
|                                            | Output/Case 1500VDC min.                         |
| Isolation Resistance                       | 10 <sup>7</sup> ohm min.                         |
| Isolation Capacitance                      | 1000pF typ                                       |
| Switching Frequency                        | 300KHz typ.                                      |
| Operating Case Temperature                 | -40°C to 105°C                                   |
| Storage Temperature                        | -55°C to +125°C                                  |
| Thermal Shutdown, Case Temp.               | 110°C typ.                                       |
| Humidity                                   | 95% RH max. Non condensing                       |
| MTBF ... MIL-STD-217F, GB, 25°C, Full Load | XXS24, XXS48 ... 800Khrs typ.                    |
|                                            | Others ... 600Khrs typ.                          |
| Dimensions                                 | 1.45 x 2.28 x 0.50 inches(36.8 x 57.9 x 12.7 mm) |
| Case Material                              | Aluminum with Non-Conducted Base                 |
| Weight                                     | 63g                                              |

## NOTE:

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10uF aluminum and 1uF ceramic capacitor across output for 48Vout and with 10uF tantalum and 1uF ceramic capacitor for others.
4. Logic compatibility ..... open collector ref to -Input
  - Module on ..... >3.5Vdc to 75Vdc or open circuit
  - Module off ..... < 1.2Vdc
5. Suffix "N" to the model number with negative logic remote on/off
  - Module on ..... < 1.2Vdc
  - Module off ..... >3.5Vdc to 75Vdc or open circuit

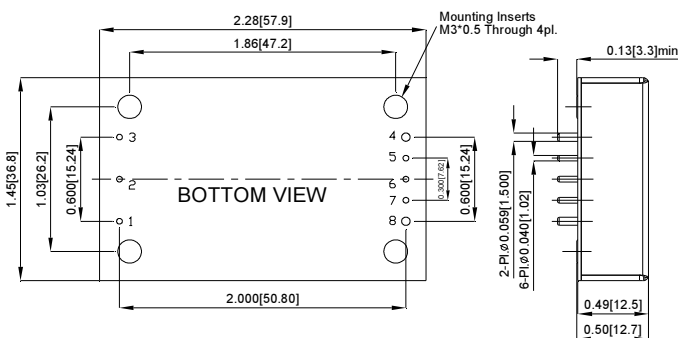


## REMOTE ON/OFF CONTROL

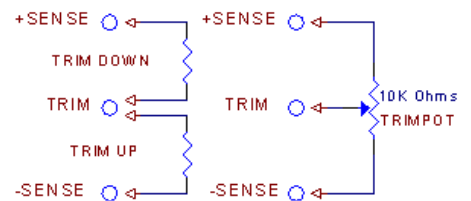


## CASE QB

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 CONNECTION |           |
|----------------|-----------|
| Pin            | Function  |
| 1              | +V Input  |
| 2              | ON/OFF    |
| 3              | -V Input  |
| 4              | -V Output |
| 5              | -Sense    |
| 6              | Trim      |
| 7              | +Sense    |
| 8              | +V Output |