



# CQB60W-110S SERIES

## 60 WATT

## DC-DC CONVERTERS



### FEATURES

- \* 60W Isolated Output
- \* Efficiency to 92%
- \* Low No Load Power Consumption
- \* 4:1 Input Range
- \* Regulated Outputs
- \* Remote On/Off
- \* Over Temperature/Voltage/Current Protection
- \* Continuous Short Circuit Protection
- \* Quarter Brick Size Meet Industrial Standard
- \* UL60950-1 (Basic Insulation) Approval
- \* Meets EN50155 with External Circuits
- \* Shock & Vibration Meets EN50155 (EN61373)
- \* CE Mark Meets 2014/30/EU
- \* Fire & Smoke Meets EN45545-2
- \* 4000m Operating Altitude



| MODEL NUMBER  | INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT |        | INPUT CURRENT |           | % EFF. | CAPACITOR LOAD MAX. |
|---------------|---------------|----------------|----------------|--------|---------------|-----------|--------|---------------------|
|               |               |                | MIN.           | MAX.   | NO LOAD       | FULL LOAD |        |                     |
| CQB60W-110S05 | 43-160 VDC    | 5 VDC          | 0 mA           | 12 A   | 5 mA          | 600 mA    | 91     | 6800μF              |
| CQB60W-110S12 | 43-160 VDC    | 12 VDC         | 0 mA           | 5 A    | 5 mA          | 593 mA    | 92     | 3300μF              |
| CQB60W-110S15 | 43-160 VDC    | 15 VDC         | 0 mA           | 4 A    | 5 mA          | 606 mA    | 90     | 3300μF              |
| CQB60W-110S24 | 43-160 VDC    | 24 VDC         | 0 mA           | 2.5 A  | 5 mA          | 606 mA    | 90     | 1200μF              |
| CQB60W-110S28 | 43-160 VDC    | 28 VDC         | 0 mA           | 2.14 A | 5 mA          | 606 mA    | 90     | 1200μF              |
| CQB60W-110S48 | 43-160 VDC    | 48 VDC         | 0 mA           | 1.25 A | 5 mA          | 613 mA    | 89     | 470μF               |

NOTE:

1. Nominal Input Voltage 110VDC

# SPECIFICATIONS

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

## INPUT SPECIFICATIONS:

|                                  |            |             |
|----------------------------------|------------|-------------|
| Input Voltage Range              | 110V       | 43-160V     |
| Input Surge Voltage (100ms max.) |            | 180Vdc max. |
| Under Voltage Lockout            | Power up   | 42V         |
|                                  | Power down | 38V         |

Positive Logic Remote On/Off (note 4&5)

Input Filter ..... PI Type

## OUTPUT SPECIFICATIONS:

|                                               |                             |
|-----------------------------------------------|-----------------------------|
| Voltage Accuracy                              | ±1.0% max.                  |
| Transient Response (25% Step Load Change)     | <250µs                      |
| External Trim Adj. Range                      | ±10%                        |
| Ripple & Noise, 20MHz BW(note 3)              |                             |
| 5V                                            | 40mV RMS, 100mV pk-pk max.  |
| 12V/15V                                       | 60mV RMS, 150mV pk-pk max.  |
| 24V/28V                                       | 100mV RMS, 240mV pk-pk max. |
| 48V                                           | 200mV RMS, 480mV pk-pk max. |
| Temperature Coefficient                       | ±0.03%/°C                   |
| Short Circuit Protection                      | Continuous                  |
| Line Regulation (note1)                       | ±0.2% max.                  |
| Load Regulation (note2)                       | ±0.2% max.                  |
| Over Voltage Protection trip Range, % Vo nom. | 115-140%                    |
| Current Limit                                 | 110% - 165% Nominal Output  |
| Start up time                                 | 15ms typ.                   |

## GENERAL SPECIFICATIONS:

|                              |                                                       |
|------------------------------|-------------------------------------------------------|
| Efficiency                   | See Table                                             |
| Isolation Voltage            | Input/Output ..... 3000VDC min.                       |
|                              | Input/Case ..... 3000VDC min.                         |
|                              | Output/Case ..... 1500VDC min.                        |
| Isolation Resistance         | 10 <sup>7</sup> ohm min.                              |
| Isolation Capacitance        | 1000pF typ.                                           |
| Switching Frequency          | 200KHz typ.                                           |
| Operating Case Temperature   | -40°C to +100°C                                       |
| Storage Temperature          | -55°C to +105°C                                       |
| Thermal Shutdown, Case Temp. | 110°C typ.                                            |
| Humidity                     | 95% RH max. Non condensing                            |
| Operating Altitude           | 4000m                                                 |
| MTBF                         | MIL-HDBK-217F, GB, 25°C, Full Load ..... 650Khrs typ. |
| Safety                       | UL60950-1 2 <sup>nd</sup> (Basic insulation)          |
| EMI                          | EN50155 (EN50121-3-2) with external filter            |
| Shock/Vibration              | EN50155 (EN61373)                                     |
| Dimensions                   | 2.28x1.45x0.50 inches (57.9x36.8x12.7 mm)             |
| Case Material                | Aluminum Baseplate with Plastic Case                  |
| Weight                       | 61.5 g                                                |

## NOTE:

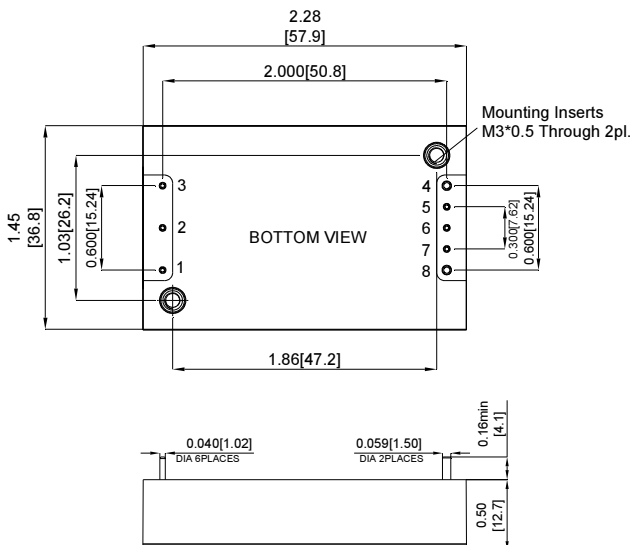
1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10uF tantalum and 1uF ceramic capacitor across output.
4. Logic compatibility ..... open collector ref to -Input  
Module on ..... > 3.5VDC to 75VDC or open circuit  
Module off ..... < 1.2 VDC
5. Suffix "N" to the model number with negative logic remote on/off  
Module on ..... < 1.2 VDC  
Module off ..... >3.5VDC to 75VDC or open circuit
6. Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)
7. An external input capacitor 68uF for all models are recommended to reduce input ripple voltage.
8. Design meet EN50155 and RIA12 refer to application note.

### CASE QB

All Dimensions In Inches(mm)

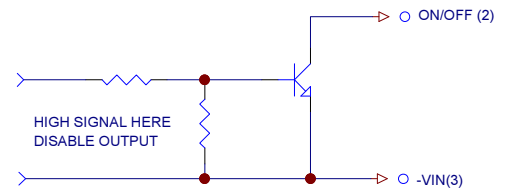
Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010

Millimeters: X.X= ±0.5 , X.XX=±0.25



| Pin | Function  |
|-----|-----------|
| 1   | +V Input  |
| 2   | On/Off    |
| 3   | -V Input  |
| 4   | -V Output |
| 5   | -Sense    |
| 6   | Trim      |
| 7   | +Sense    |
| 8   | +V Output |

## REMOTE ON/OFF CONTROL



## EXTERNAL OUTPUT TRIM

