

## Quarter-Brick Series

### Narrow Input IBC

**Total Power:** 240 -300W  
**Input Voltage:** 48VDC  
**# of Outputs:** Single

### Special Features

- 48 V input with isolated 12 V output
- Efficiencies up to 96%
- Open loop regulation
- Fully rated 240 W @ 70 °C, 200 LFM
- Overcurrent protection
- Operates with no load
- Auto restart after fault condition
- Remote ON/OFF
- Parallelable
- Over-temperature protection
- Available RoHS compliant
- 2 Year Warranty

### Safety

UL/cUL : CAN/CSA 22.2  
No. 60950  
UL 60950 File No. E139421

TÜV Product Service (EN60950)  
Certificate No.  
B03 04 19870213



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This series is a new, high efficiency, Quarter-Brick, isolated, Intermediate Bus Converter series that provides up to 300 Watts of output power. The series is designed to convert 48 Volts  $\pm 10\%$  to a loosely regulated 12 Volts at full rated load up to 25 A and efficiencies up to 96%. This converter is available in four package types, standard quarter-brick through-hole, through-hole vertical, standard quarter-brick surface-mount, and quarter-brick surface-mount solder ball. In addition, this series features remote ON/OFF, no-load operation, input undervoltage protection as well as output overvoltage and overcurrent protection.



# Specifications

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All specifications are typical at nominal input, full load at 25 °C ambient unless otherwise stated.

## OUTPUT SPECIFICATIONS

|                                    |                        |                                                           |
|------------------------------------|------------------------|-----------------------------------------------------------|
| Output voltage                     |                        | 12 V                                                      |
| Current share accuracy             | Full load              | 10%                                                       |
| Line regulation                    | Low line to high line  | ±10% max.                                                 |
| Load regulation                    | Full load to min. load | 6% max.                                                   |
| Minimum load                       |                        | 0 A                                                       |
| Overshoot                          |                        | 3.0% max.                                                 |
| Undershoot                         |                        | 200 mV max.                                               |
| Ripple and noise<br>(See Note 1)   | 5-20 MHz               | 150 mV pk-pk                                              |
| Transient response<br>(See Note 2) | Deviation              | <100 mV<br><100 µs recovery to<br>within total error band |
| Overvoltage setpoint               |                        | 13.8 V                                                    |

## INPUT SPECIFICATIONS

|                               |                        |                           |
|-------------------------------|------------------------|---------------------------|
| Input voltage range           | Nominal 48 Vdc         | ±10% Vdc                  |
| Input current                 | No load<br>Remote OFF  | 100 mA typ.<br>2 mA typ.  |
| Input reflected ripple        | (See Note 3)           | 34 mA rms<br>100 mA pk-pk |
| Remote ON/OFF                 | ON<br>OFF              | >1.7 Vdc<br><0.8 Vdc      |
| Under-voltage lockout         | Power up<br>Power down | 41.0 V<br>38.6 V          |
| Start-up time<br>(See Note 4) | Power up<br>Power down | <50 ms<br><20 ms          |

## EMC CHARACTERISTICS

|                          |                                              |                    |
|--------------------------|----------------------------------------------|--------------------|
| Conducted emissions      | EN55022 (See Note 5)<br>EN55022 (See Note 5) | Level A<br>Level B |
| Immunity:                |                                              |                    |
| ESD air                  | EN61000-4-2 4 kV                             |                    |
| ESD contact              | EN61000-4-2 4 kV                             |                    |
| Radiated field enclosure | EN61000-4-3 3 V/m                            |                    |
| Conducted (dc power)     | EN61000-4-6 3 V                              |                    |
| Conducted (signal)       | EN61000-4-6 3 V                              |                    |

## GENERAL SPECIFICATIONS

|                                         |                                                                             |                 |
|-----------------------------------------|-----------------------------------------------------------------------------|-----------------|
| Efficiency                              | Half load                                                                   | Up to 96% typ.  |
| Isolation                               | Input/output                                                                | 2250 Vdc        |
| Switching frequency                     | Fixed                                                                       | 300 kHz typ.    |
| Approvals and<br>standards (See Note 6) | EN60950 (TÜV Product Service)<br>UL/cUL60950                                |                 |
| Material flammability                   | UL94V-0                                                                     |                 |
| Weight                                  | 56.66 g (2 oz)                                                              |                 |
| MTBF                                    | MIL-HDBK-217F                                                               | 1,000,000 hours |
| Representative model:                   | 25 A @ 48 Vin, 40 °C ambient<br>100% load ground benign<br>Telcordia SR-332 | 2,828,160 hours |

## ENVIRONMENTAL SPECIFICATIONS

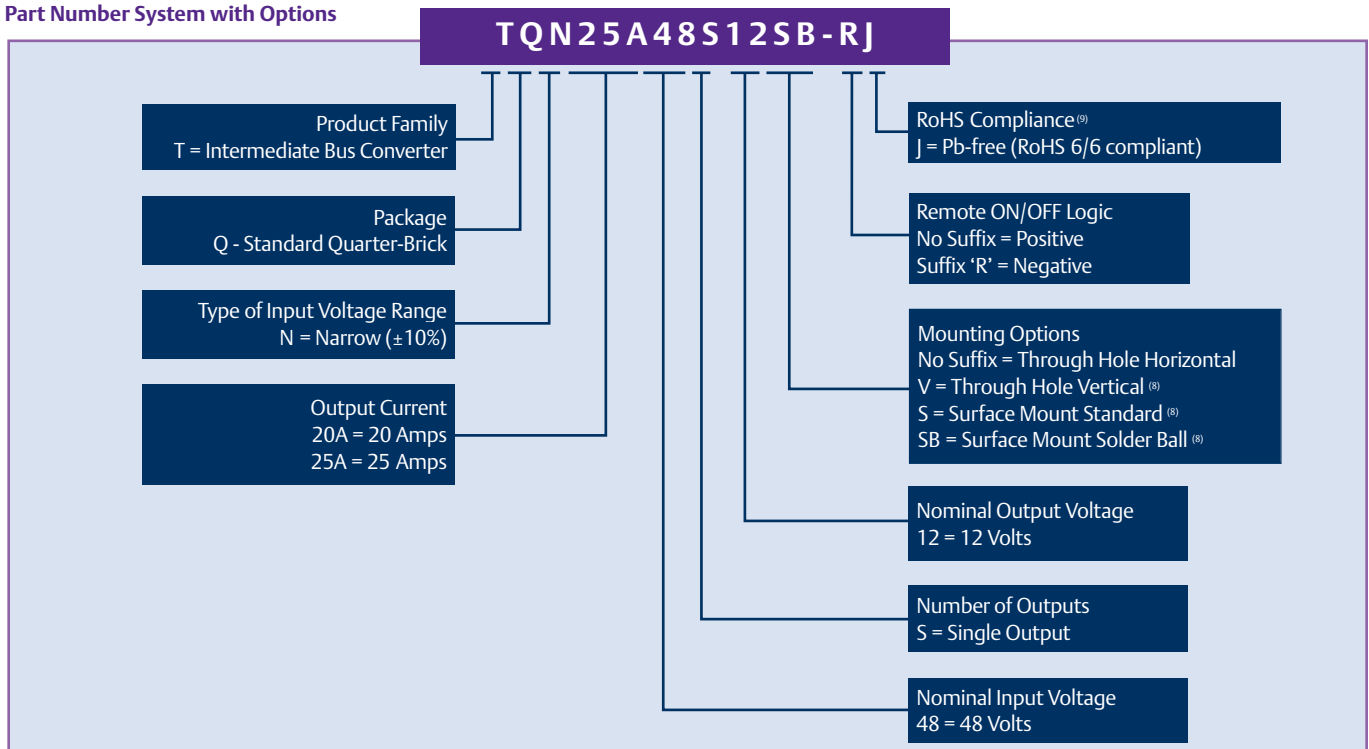
|                                          |                                                    |                                     |
|------------------------------------------|----------------------------------------------------|-------------------------------------|
| Thermal performance<br>(300 LFM airflow) | Operating ambient,<br>temperature<br>Non-operating | 0 °C to +80 °C<br>-55 °C to +125 °C |
|------------------------------------------|----------------------------------------------------|-------------------------------------|

## Specifications Contd.

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| RATED OUTPUT POWER | INPUT VOLTAGE | OUTPUT VOLTAGE | INPUT CURRENT (MAX) | OUTPUT CURRENT (MAX.) | OVER CURRENT SETPOINT | EFFICIENCY HALF/FULL LOAD | MODEL NUMBER <sup>(9,10)</sup> |
|--------------------|---------------|----------------|---------------------|-----------------------|-----------------------|---------------------------|--------------------------------|
| 240 W              | 43.2-52.8 Vdc | 12 V           | 6 A                 | 20 A                  | 25 A                  | 96%/95% (typ.)            | TQN20A48S12J                   |
| 300 W              | 43.2-52.8 Vdc | 12 V           | 7 A                 | 25 A                  | 29 A                  | 96%/95% (typ.)            | TQN25A48S12J                   |

### Part Number System with Options



### Notes

- Measured as per recommended set-up. See Application Note 140 for details.
- $di/dt = 10 \text{ A}/\mu\text{s}$ ,  $V_{in} = 48 \text{ Vdc}$ ,  $T_c = 25^\circ\text{C}$ , load change = 50%  $I_o$  max. to 75%  $I_o$  max. and 75%  $I_o$  max. to 50%  $I_o$  max.
- Measured with external filter. See Application Note 140 for details.
- Start-up into resistive load.
- The Quarter-Brick Narrow Input series of converters meet levels A and B conducted emissions with external components. See Application Note 140 for details.
- This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
- Use of additional high quality ceramic output capacitors is recommended in the end system.
- Consult factory for availability.
- TSE RoHS 5/6 (non Pb-free) compliant versions may be available on special request, please contact your local sales representative for details.
- NOTICE: Some models do not support all options. Please contact your local Artesyn representative or use the on-line model number search tool at <http://www.artesyn.com/powergroup/products.htm> to find a suitable alternative.

### PROTECTION

|                  |                     |
|------------------|---------------------|
| Short-circuit    | Continuous foldback |
| Over-temperature | Auto restart        |

### RECOMMENDED SYSTEM CAPACITANCE

|                    |                                                |
|--------------------|------------------------------------------------|
| Input capacitance  | 390 $\mu\text{F}$ /20 mW ESR max.              |
| Output capacitance | (See Note 7) 270 $\mu\text{F}$ /10 mW ESR max. |

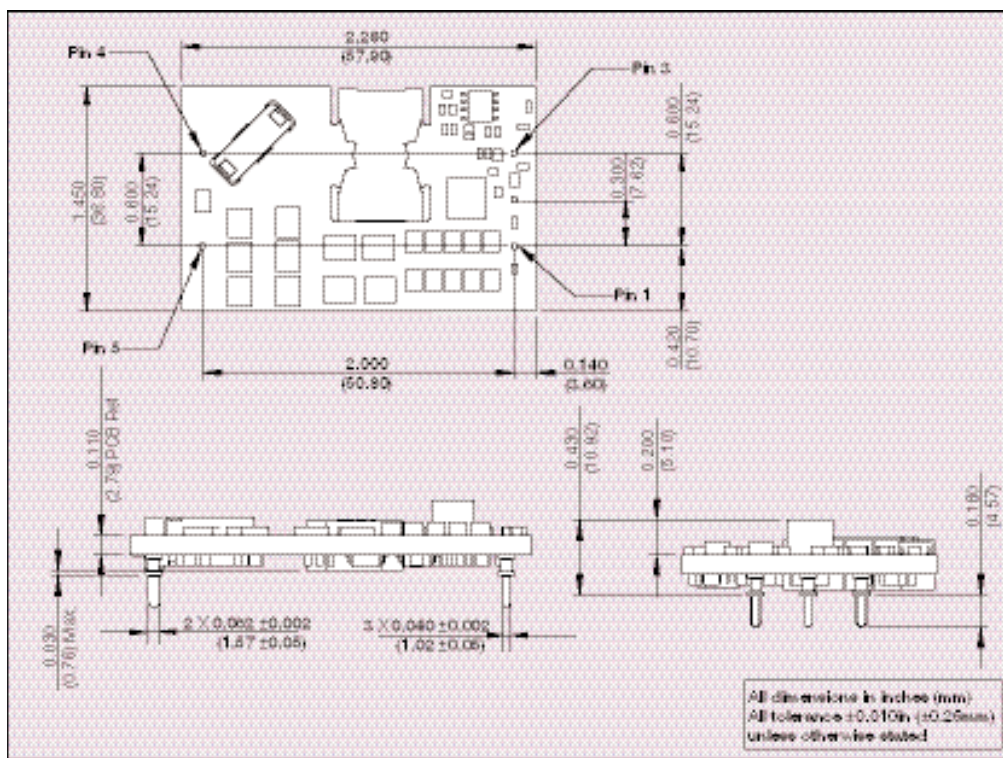


Figure 1: Horizontal Mechanical Drawing and Pinout Table

| PIN CONNECTIONS |               |
|-----------------|---------------|
| PIN NUMBER      | FUNCTION      |
| 1               | +Vin          |
| 2               | Remote ON/OFF |
| 3               | -Vin          |
| 4               | -Vout         |
| 5               | +Vout         |

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