

ATCR250 Series

250 Watt Half-Brick Isolated DCDC Converter

Data Sheet

Total Power: 250 Watts
Input Voltage: -48 VDC
Output: 12 V Intermediate Bus
 3.3 V Management Bus



SPECIAL FEATURES

- Optimized footprint for high density ATCA applications
- Accepts inputs from -48 V A and B feeds
- CISPR Class A EMI
- Adjustable Hold Up Voltage from 50 - 80 VDC
- I²C serial bus interface for monitoring and reporting
- Programmable alarm thresholds via I²C bus
- Hardware alarms via opto-isolators for loss of A or B feeds
- Comprehensive protection circuitry: current, voltage and temperature
- EU directive 2002/95/EC compliant for RoHS

SAFETY

- UL/cUL 60950-1
- TÜV EN60950-1

Electrical Specifications

| Input | | |
|---|---|---------------------------------|
| Input range | -36 V to -72 VDC | |
| Transient | -100 VDC (< 1 ms) | |
| External input capacitance | 82 µF max | |
| Inrush current | 11 A typical | |
| Inrush duration | < 2 ms | |
| Undervoltage lockout | -36 < V _{in} | |
| Overvoltage lockout | -77.5 ≤ V _{in} < 72 VDC | |
| Efficiency | 89% @ 250 W | |
| Output | | |
| | 12 V Intermediate Bus | 3.3 V Management Bus |
| Nominal setpoint | 12.2 V | 3.32 V |
| Total regulation band ¹ | 11.4 - 12.6 V | 3.20 - 3.40 V |
| Output current | 0 - 20.83 A | 0 - 4.5 A |
| Current limit | 118% I _o , max (typ) | 130% I _o , max (typ) |
| Short circuit | Shutdown/Autorecovery | |
| Ripple and noise ² | 50 mV pk-pk | 40 mV pk-pk |
| Overvoltage | V _o > 13.4 VDC | V _o > 3.6 VDC (typ) |
| Undervoltage | NA | V _o < 3.0 VDC (typ) |
| External output capacitance | 1000 µF min | 100 µF min |
| Control/Monitoring | | |
| ON/OFF+ and ON/OFF- I ² C serial bus interface | Remote activation of module. See ATCR250 Application Note. For digital monitoring (V _{out} , V _{in} , Temp, I _{in}) referenced to secondary side. | |
| Isolation Characteristic | | |
| Input to Output isolation voltage | 2250 Vdc | |
| Input to Output insulation | Basic | |

Environmental Specifications

| | |
|-------------------------------------|-------------------------------------|
| Operating ambient temperature range | -25 °C to +85 °C ambient |
| Storage temperature | -40 °C to +125 °C |
| MTBF | > 1 MHrs @ 25 °C 100% load (target) |

Part Number System with Options

| | | | | |
|---|--|---|---|---|
| Product Family ATCR ATCA Product Series | Product Family 250 250 Watts | Product Family 48 -36 to 72 VDC | Product Family D12-03 Dual output: 12.0 V @ 20.83 A Intermediate Bus 3.3 V @ 4.5 A Management Bus | Product Family J RoHS 6/6 |
|---|--|---|---|---|

| Pin Assignments | | | |
|-----------------|--------------|---|--|
| Pin # | Pin Name | Function | Note |
| 1 | -48VA | Power input from A bus | Connects to ATCAZone 1 connector pin 33 via external 12 A fuse |
| 2 | -48VB | Power input from B bus | Connects to ATCAZone 1 connector pin 34 via external 12 A fuse |
| 3 | Reserved | For future use | |
| 4 | Hold Up Trim | Hold up voltage trim | Connects a resistor between this pin and pin 11 to trim hold up voltage |
| 5 | RTN A | Power return from A bus | Connects to ATCAZone 1 connector pin 28 via external 15 A fuse |
| 6 | RTN B | Power return from B bus | Connects to ATCAZone 1 connector pin 29 via external 15 A fuse |
| 7 | ENA | When connected to RTN A, turns ON isolated open collector A enabled device (See Note 3) | Connects to ATCAZone 1 connector pin 32 via external 1 A fuse. Used to signal to management system correct board insertion and presence of A bus |
| 8 | ENB | When connected to RTN B, turns ON isolated open collector B enabled device (See Note 3) | Connects to ATCAZone 1 connector pin 27 via external 1 A fuse. Used to signal to management system correct board insertion and presence of B bus |
| 9 | C_CL- | Connection to module of auxiliary capacitor hold up array -ve | Utilizes greater capacitance in a given can size of lower voltage capacitors. Clamped to -50V wrt HU+OUT when pin 4 is open. |
| 10 | HU- | Connection to module of hold up capacitor array -ve | |
| 11 | HU+OUT | Connection from on board filter and management circuits to hold up capacitor array +ve | May also connect to input of boost module to reduce hold up storage area |
| 12 | HU+IN | Connection to main power converter from hold up capacitor array +ve | May also connect to output of boost module to reduce hold up storage area |
| 13 | ON/OFF- | Current from pin to turn main output ON | Fully floating remote ON/OFF signal, may be used with management system or ATCA ENABLE_A/B via R-D network |
| 14 | ON/OFF+ | Current into pin to turn main output ON | Fully floating remote ON/OFF signal, may be used with management system or ATCA ENABLE_A/B via R-D network |
| 15 | B_OK# | Open collector signal, monitors status of B feed | Low when OK |
| 16 | A_OK# | Open collector signal, monitors status of A feed | Low when OK |
| 17 | A2 | | I ² C lines, address strapping |
| 18 | INTRPT | Interrupt alarm | I ² C Register out of limits, LM80 pin INT# direct connection |
| 19 | A1 | | I ² C lines, address strapping |
| 20 | SCL | Clock | I ² C lines, clock line input |
| 21 | A0 | | I ² C lines, address strapping |
| 22 | SDA | Data | I ² C lines, serial data |
| 23, 24 | 3V3 Return | Management power return and I ² C | Also return for A_OK# and B_OK# signals Externally connected to ATCA Zone 1 connector pin 26 |
| 25, 26 | 3V3 Out | 3V3, 14.85 W management power | |
| 27, 28 | 3V3 Trim | Trim pin for management power | |
| 29 | 12V RTN | 12 V return | Externally connected to ATCA Zone 1 connector pin 26 |
| 30 | 12V OUT | 12 V power | |

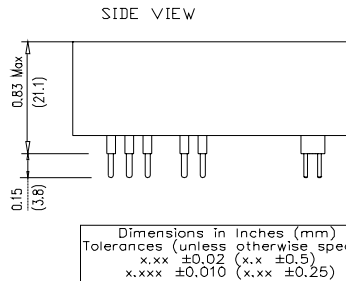
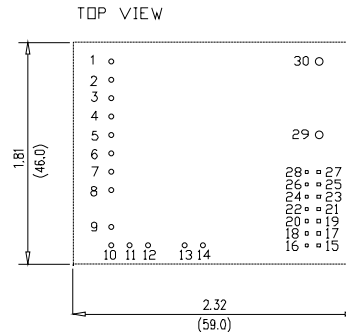
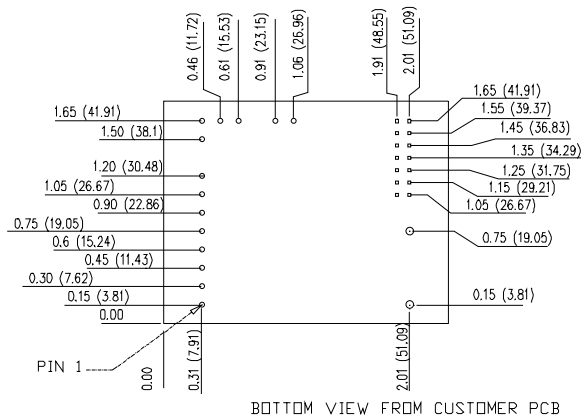
Notes:

1. Regulation band over line, load and temperature.
2. Measured at 20 MHz with external 10 mF Tantalum in parallel with 1 mF ceramic, 25V rated low ESR type capacitors across each output.
3. All specifications are typical at nominal line, TA = 25 °C unless otherwise indicated.
4. All specifications are subject to change without notice.
5. Technical Reference Notes and Application Notes should be consulted for complete product details
6. Warranty 2 years.

Mechanical Drawings

RECOMMENDED HOLES SIZE & PAD SIZE

| | holes size | pad size |
|----------------|------------|------------|
| Pins 1 to 14 | 0.051[1.3] | 0.098[2.5] |
| Pins 15 to 28 | 0.043[1.1] | 0.087[2.2] |
| Pins 29 and 30 | 0.075[1.9] | 0.118[3.0] |



Dimensions in Inches (mm)
 Tolerances (unless otherwise specified)
 x.xx ±0.02 (x.x ±0.5)
 x.xxx ±0.010 (x.xxx ±0.25)

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