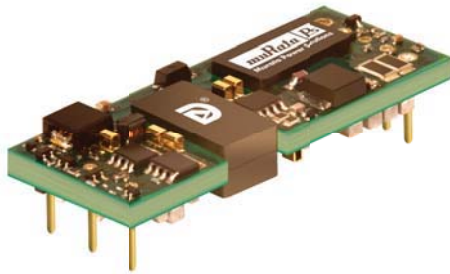




UWE Series

Wide Input, Isolated
Eighth-Brick DC/DC Converters



Typical unit

The UWE Series "Eighth-Brick" DC/DC Converters are high-current isolated power modules designed for use in high-density system boards.

Contents of full data sheet

| | Page |
|------------------------------------------------|------|
| Description, Photograph, Connection Diagram | 1 |
| Ordering Guide, Model Numbering | 2 |
| Mechanical Specifications, Input/Output Pinout | 3 |
| Detailed Electrical Specifications | 5 |
| Soldering Guidelines, Technical Notes | 9 |
| Performance Data | 13 |
| Shipping Tray | 21 |

FEATURES

- Industry-standard through-hole eighth-brick package with 0.9" x 2.3" x 0.38" outline dimensions
- Choice of two wide input ranges, 9-36 Vdc or 18-75 Vdc
- Fixed output from 3.3 to 24 Volts DC up to 75 Watts
- Synchronous rectification yields very high efficiency and low power dissipation
- Operating temperature range from -40 to +85°C with derating
- Up to 1500 Volt DC isolation (basic insulation)
- Outstanding thermal performance and derating
- Extensive self-protection, overtemperature and overload features with no output reverse conduction
- On/Off control, trim and remote sense functions
- Meets UL/EN/IEC 60950-1, CAN/CSA-C22.2 No. 60950-1 safety approvals and FCC RFI/EMI certification
- Pre-bias operation for startup protection

PRODUCT OVERVIEW

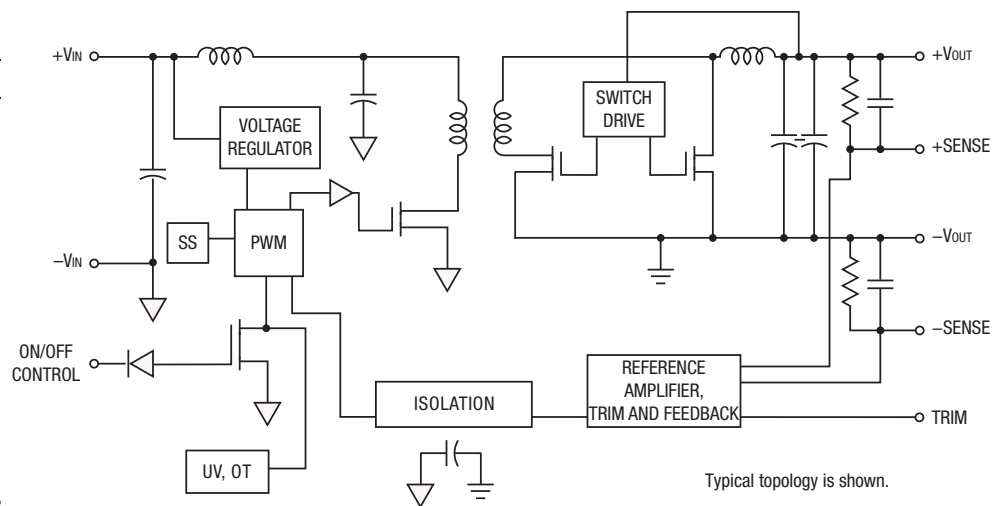
With dimensions of only 0.9 by 2.3 by 0.38 inches, the UWE series open frame DC/DC converters deliver up to 75 Watts in an industry-standard "eighth-brick" through-hole package. This format can plug directly into quarter-brick pinouts. Several standard fixed-output voltages from 3.3 Vdc to 24 Vdc assure compatibility in embedded equipment, CPU cards and instrument subsystems. The extended 4-to-1 input power range (9-36V) is ideal for battery-powered, telecom or portable applications. Very high efficiency means no fans or temperature deratings in many applications. An optional thermal mounting baseplate extends operation into most conceivable environments.

The synchronous rectifier design uses the maximum available duty cycle for greatest efficiency and low power dissipation with no reverse output conduction. Other features include low on-resistance FET's, planar magnetics and heavy-copper PC boards. These deliver low output noise,

tight line/load regulation, stable no-load operation and fast load step response. All units are precision assembled in a highly automated facility with ISO-traceable manufacturing quality standards.

Isolation of 1500 Volts assures safety and fully differential (floating) operation for greatest application flexibility. On-board Sense inputs compensate for line drop errors at high output currents. Outputs are trimmable within $\pm 10\%$ of nominal voltage. The UWE series are functionally complete.

A wealth of protection features prevents damage to both the converter and outside circuits. Inputs are protected from undervoltage and outputs feature short circuit protection, overcurrent and excess temperature shut down. Overloads automatically recover using the "hiccup" technique upon fault removal. The UWE is designed to meet all standard safety and EMI/RFI certifications. All units meet RoHS-6 hazardous materials compliance.



Typical topology is shown.

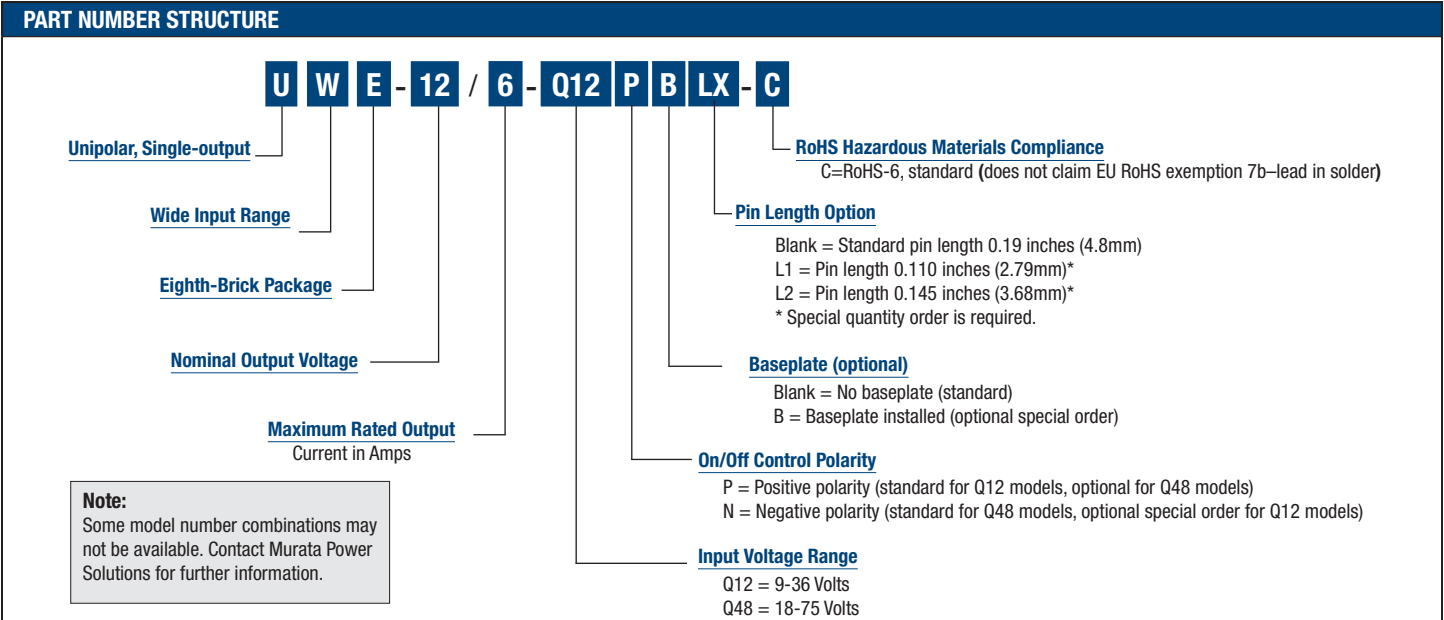
Simplified Block Diagram



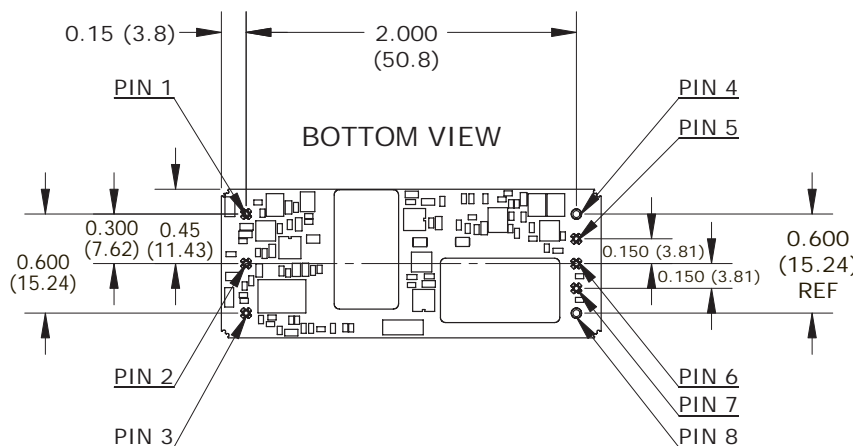
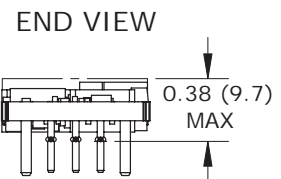
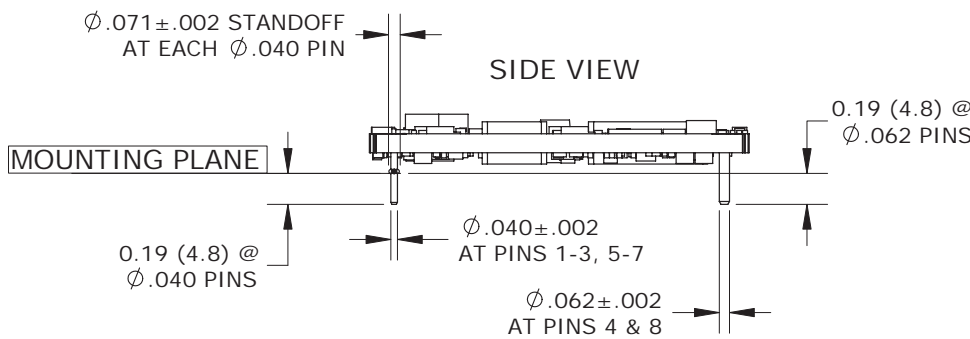
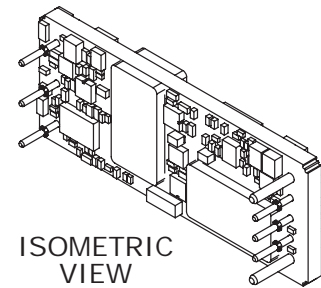
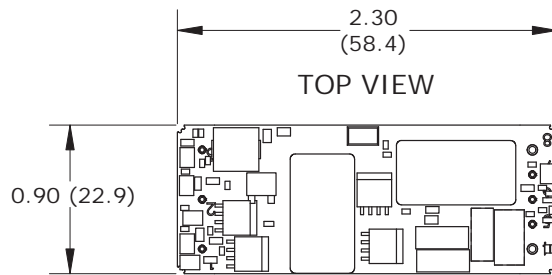
| SPECIFICATION SUMMARY AND ORDERING GUIDE ① | | | | | | | | | | | | | | |
|--------------------------------------------|-------------------------|-------------------------|--------------|---------------|------|-------------------|---------|-----------------------------|--------------|--------------------------------------|---------------------------------------|-------|---------------------------|----------|
| Root Model ① | Output | | | | | | Input | | | | Efficiency | | Package (Case, Pinout) | |
| | V _{OUT} (V) | I _{OUT} (A) | Power (W) | R/N (mVp-p) ③ | | Regulation (max.) | | V _{IN} Nom. (V) | Range (V) | I _{IN} , no load (mA) | I _{IN} , full load (A) | Min. | | Typ. |
| | | | | Typ. | Max. | Line | Load | | | | | | | |
| UWE-3.3/20-Q12P-C | 3.3 | 20 | 66 | 80 | 125 | ±0.25% | ±0.25% | 12 | 9-36 | 160 | 6.18 | 87% | 89% | C77, P32 |
| UWE-3.3/20-Q48N-C | 3.3 | 20 | 66 | 165 | 225 | ±0.2% | ±0.25% | 48 | 18-75 | 75 | 1.54 | 88% | 89.5% | |
| UWE-5/15-Q12P-C | 5.0 | 15 | 75 | 80 | 125 | ±0.25% | ±0.125% | 12 | 9-36 | 185 | 6.87 | 89% | 91% | |
| UWE-5/15-Q48N-C | 5.0 | 15 | 75 | 135 | 150 | ±0.25% | ±0.075% | 48 | 18-75 | 90 | 1.74 | 88.5% | 90% | |
| UWE-12/6-Q12P-C | 12.0 | 6 | 72 | 120 | 180 | ±0.125% | ±0.05% | 12 | 9-36 | 75 | 6.56 | 90% | 91.5% | |
| UWE-12/6-Q48N-C | 12.0 | 6 | 72 | 115 | 150 | ±0.1% | ±0.075% | 48 | 18-75 | 90 | 1.65 | 89% | 91% | |
| UWE-15/5-Q12P-C | 15.0 | 5 | 75 | 65 | 125 | ±0.125% | ±0.075% | 12 | 9-36 | 270 | 6.83 | 89.5% | 91.5% | |
| UWE-24/3-Q12P-C ⑤ | 24.0 | 3 | 72 | 190 | 275 | ±0.125% | ±0.125% | 12 | 9-36 | 110 | 6.70 | 88.3% | 89.5% | |

- ① Please refer to the part number structure for additional ordering model numbers and options.
 ② All specifications are at nominal line voltage, nominal output voltage and full load, +25° C. unless otherwise noted. See detailed specifications.
 ③ Output capacitors are 1 µF ceramic in parallel with 10 µF electrolytic. Input cap is 100 µF. All caps are low ESR types. Contact Murata Power Solutions for details.

- ④ I/O caps are necessary for our test equipment and may not be needed for your application.
 ⑤ Load regulation range: 0.1-3A. This is required only for our test equipment. The converter will operate at zero output current with degraded regulation.



MECHANICAL SPECIFICATIONS—NO BASEPLATE



| I/O CONNECTIONS | |
|-----------------|------------------|
| Pin | Function |
| 1 | - Vin |
| 2 | On/Off Control * |
| 3 | + Vin |
| 4 | - Vout |
| 5 | - Sense |
| 6 | Trim |
| 7 | + Sense |
| 8 | + Vout |

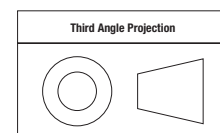
* The Remote On/Off can be provided with either positive (P suffix) or negative (N suffix) polarity

Connect each sense input to its respective Vout if sense is not connected at a remote load.

MATERIAL:
 0.040 PINS: C26000 BRASS, 3/4 HARD
 0.062 PINS: C10200 COPPER ALLOY, FULL HARD

FINISH: (ALL PINS)
 GOLD (5 MICROINCHES MIN) OVER NICKEL (50 MICROINCHES MIN)

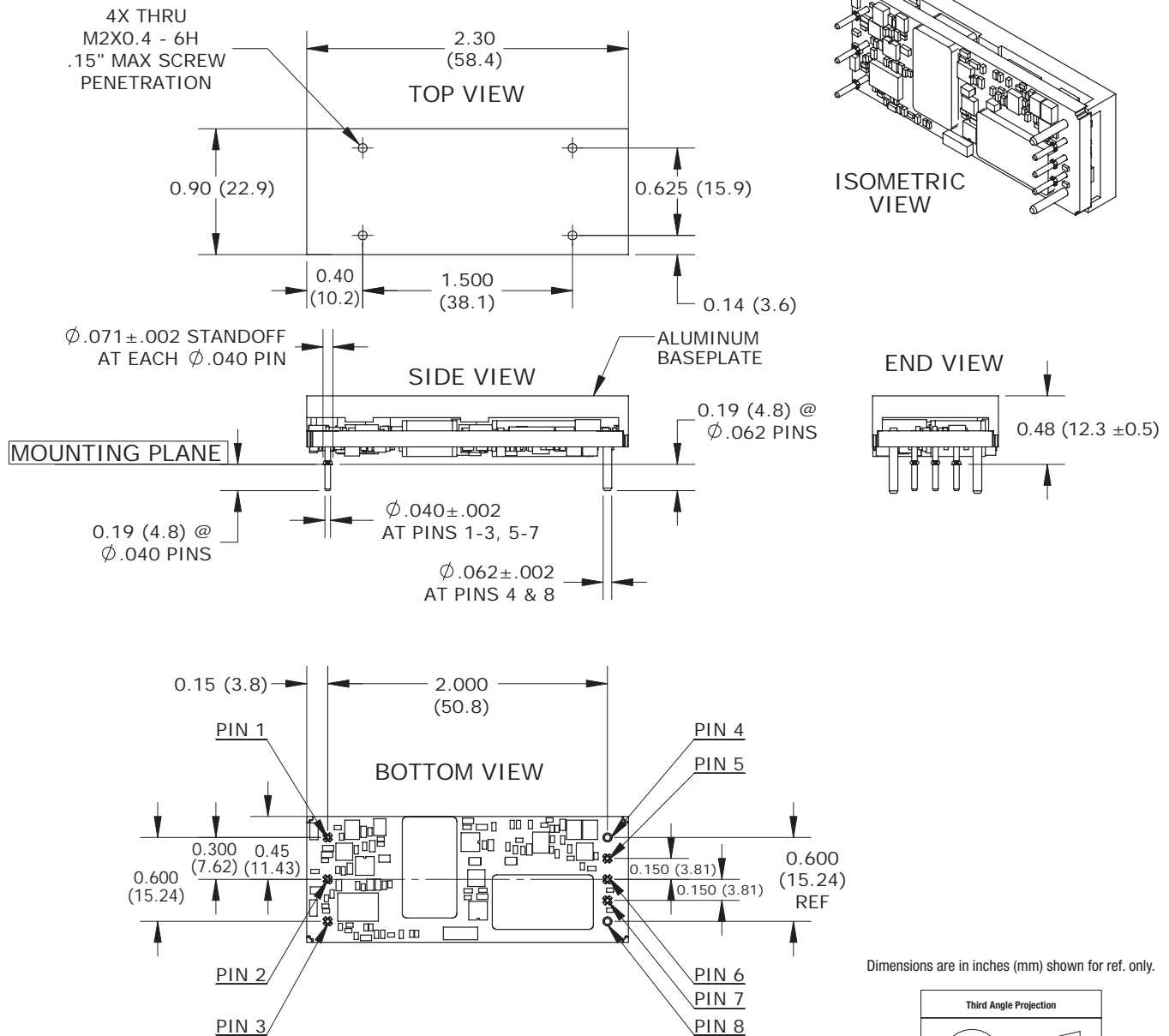
Dimensions are in inches (mm) shown for ref. only.



Tolerances (unless otherwise specified):
 .XX ± 0.02 (0.5)
 .XXX ± 0.010 (0.25)
 Angles ± 2°

Components are shown for reference only.

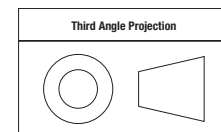
MECHANICAL SPECIFICATIONS (continued)—BASEPLATE INSTALLED



MATERIAL:
 Ø.040 PINS: C26000 BRASS, 3/4 HARD
 Ø.062 PINS: C10200 COPPER ALLOY, FULL HARD

FINISH: (ALL PINS)
 GOLD (5 MICROINCHES MIN) OVER NICKEL (50 MICROINCHES MIN)

Dimensions are in inches (mm) shown for ref. only.



Tolerances (unless otherwise specified):
 .XX ± 0.02 (0.5)
 .XXX ± 0.010 (0.25)
 Angles ± 2°

Components are shown for reference only.