



FEATURES

- ROHS COMPLIANT
- HIGH ISOLATION - 3000V RATING
- 8000V ISOLATION TEST VOLTAGE
- BARRIER 100% PRODUCTION TESTED
- LOW BARRIER CAPACITANCE - 10PF
- LOW LEAKAGE CURRENT - 2µA MAX
- INTERNAL FILTERING

APPLICATIONS

- BIOMEDICAL DATA ACQUISITION
- INDUSTRIAL PROCESS CONTROL
- ANALYTICAL MEASUREMENTS
- GROUND LOOP ELIMINATION
- INTRINSIC SAFETY SYSTEMS

DESCRIPTION

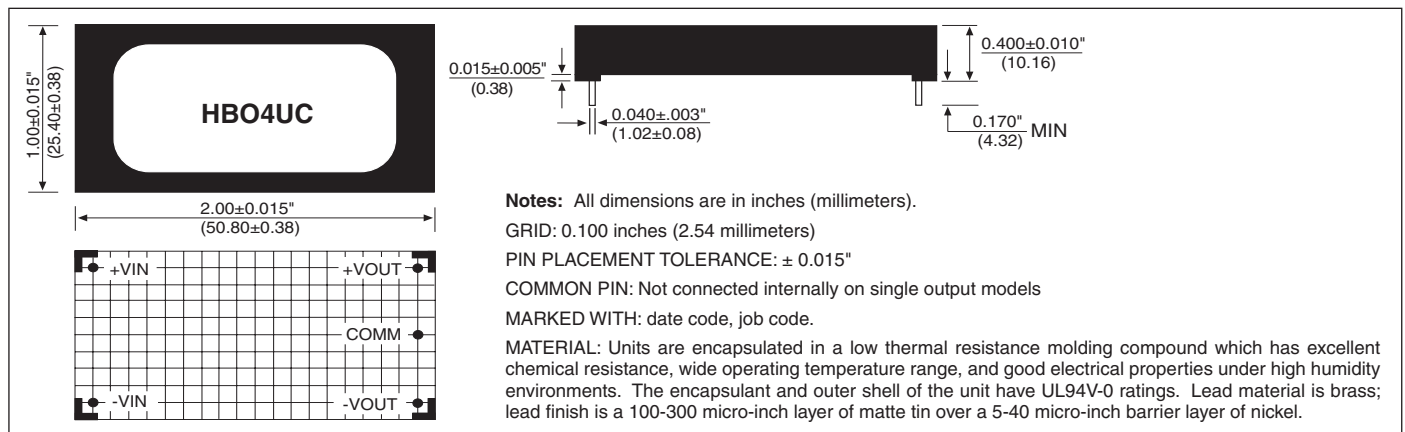
The HB04UC Series is a low-cost, high-isolation voltage, unregulated, single and dual output DC/DC converter. The dielectric withstand characteristics of each converter is tested in production to ensure barrier integrity.

The HB04UC Series uses advanced circuit design and packaging technology to realize superior reliability and performance. A 100kHz driven push-pull oscillator is used to ensure stable frequency and non-saturating operation of the input stage. This means there are no high peak voltages or currents like other design topologies, which can reduce unit reliability. Reduced parts count adds to the reliability of the HB04UC Series.

The high efficiency of the HB04UC Series means less internal power dissipation. With less heat to dissipate, the HB04UC Series can operate over a wider ambient temperature range with no degradation of reliable operation.

The HB04UC Series offers the user low cost without sacrificing reliability. The use of surface mounted devices and manufacturing technologies make it possible to offer premium performance at low cost.

MECHANICAL



More product information and application notes are available on our website at www.murata-ps.com



ELECTRICAL SPECIFICATIONS

Specifications typical at $T_A = +25^{\circ}\text{C}$, nominal input voltage, rated output current unless otherwise noted.

| MODEL | NOMINAL INPUT VOLTAGE (V _{DC}) | RATED OUTPUT VOLTAGE (V _{DC}) | RATED OUTPUT CURRENT (mA) | INPUT CURRENT | | EFFICIENCY (%) |
|-------------------------|--|---|---------------------------|---------------|-----------------|----------------|
| | | | | NO LOAD (mA) | RATED LOAD (mA) | |
| HB04U05S05QC | 5 | 5 | 800 | 60 | 1000 | 80 |
| HB04U05S12QC | 5 | 12 | 333 | 60 | 1000 | 80 |
| HB04U05S15QC | 5 | 15 | 267 | 60 | 1000 | 80 |
| HB04U12S05QC | 12 | 5 | 800 | 25 | 380 | 87 |
| HB04U12S12QC | 12 | 12 | 333 | 25 | 380 | 87 |
| HB04U12S15QC | 12 | 15 | 267 | 25 | 380 | 87 |
| HB04U15S05QC | 15 | 5 | 800 | 20 | 310 | 87 |
| HB04U15S12QC | 15 | 12 | 333 | 20 | 310 | 87 |
| HB04U15S15QC | 15 | 15 | 267 | 20 | 310 | 87 |
| HB04U05D05QC | 5 | ±5 | ±400 | 60 | 944 | 85 |
| HB04U05D12QC | 5 | ±12 | ±167 | 60 | 944 | 85 |
| HB04U05D15QC | 5 | ±15 | ±134 | 60 | 944 | 85 |
| HB04U12D05QC | 12 | ±5 | ±400 | 25 | 375 | 88 |
| HB04U12D12QC | 12 | ±12 | ±167 | 25 | 375 | 88 |
| HB04U12D15QC | 12 | ±15 | ±134 | 25 | 375 | 88 |
| HB04U15D05QC | 15 | ±5 | ±400 | 20 | 300 | 88 |
| HB04U15D12QC | 15 | ±12 | ±167 | 20 | 300 | 88 |
| HB04U15D15QC | 15 | ±15 | ±134 | 20 | 300 | 88 |

Note: Other input to output voltage options may be available. Please consult factory.

Models with strikethrough have been discontinued.

COMMON SPECIFICATIONS

Specifications typical at $T_A = +25^{\circ}\text{C}$, nominal input voltage, rated output current unless otherwise noted.

| PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|--|--|---------------------|-----------------|---------------------|---------------------|
| INPUT | | | | | |
| Voltage Range | | 4.5 10.8 13.5 | 5 12 15 | 5.5 13.2 16.5 | V _{DC} |
| Reflected Ripple Current | | | 35 ¹ | | mAp-p |
| ISOLATION | | | | | |
| Rated Voltage | | 3000 | | | V _{DC} |
| Test Voltage | 60 Hz, 10 Seconds | 8000 | | | V _{pk} |
| Resistance | | | 10 | | GΩ |
| Capacitance | | | 10 | | pF |
| Leakage Current | V _{ISO} = 240V _{AC} , 60Hz | | 1.2 | 2 | μArms |
| OUTPUT | | | | | |
| Rated Power | | | 4 | | W |
| Voltage Setpoint Accuracy | | | ±3 | ±5 | % |
| Temperature Coefficient | | | ±0.02 | | %/°C |
| Ripple & Noise | BW = DC to 10MHz | | 100 | | mVp-p |
| | BW = 10Hz to 2MHz | | 20 | | mVrms |
| Line Regulation | High Line to Low Line | | ±1.5 | | %/% V _{in} |
| Load Regulation | See performance curves | | | | |
| GENERAL | | | | | |
| Switching Frequency | | | 100 | | kHz |
| Package Weight | | | 22 | | g |
| MTTF per MIL-HDBK-217, Rev. E Ground Benign | Circuit Stress Method $T_A = +25^{\circ}\text{C}$ | | 200,000 | | Hr |
| TEMPERATURE | | | | | |
| Specification | | -25 | | +70 | °C |
| Operation | | -40 | | +85 | °C |
| Storage | | -40 | | +110 | °C |

1. Reflected ripple current is measured at 50% load with a 33μF capacitor across the input of the UUT.

THROUGH-HOLE SOLDERING INFORMATION

These devices are intended for wave soldering or manual soldering.
They are not intended to be subject to surface mount processes under any circumstances.

The normal wave soldering process can be used with these devices where the device is subjected to a maximum wave temperature of 260°C for a period of no more than 10 seconds. Within this time and temperature range, the integrity of the device's plastic body will not be compromised and internal temperatures within the converter will not exceed 175°C. Care should be taken to control manual soldering limits identical to that of wave soldering.

ABSOLUTE MAXIMUM RATINGS

Internal Power Dissipation.....1W
 Short Circuit Duration.....Momentary
 Lead Temperature (soldering, 10 seconds max).....+300°C

ORDERING INFORMATION

Device Family HB04U xyzz Q C
 HB04U Indicates DC/DC Converter
 Model Number _____
 Where:
 xx = Input Voltage
 y = Number of Outputs (Single "S", Dual "D")
 zz = Output Voltage
 Package Option _____
 RoHS Compliant _____

TYPICAL PERFORMANCE CURVES

