



### FEATURES

- RoHS compliant
- High Isolation - 3000v Rating
- 8000v Isolation Test Voltage
- Barrier 100% Production Tested
- Low Barrier Capacitance - 10pf
- Low Leakage Current - 2ma Max
- Internal Filtering

### Applications

- Biomedical Data Acquisition
- Industrial Process Control
- Analytical Measurements
- Ground Loop Elimination
- Intrinsic Safety Systems

### PRODUCT OVERVIEW

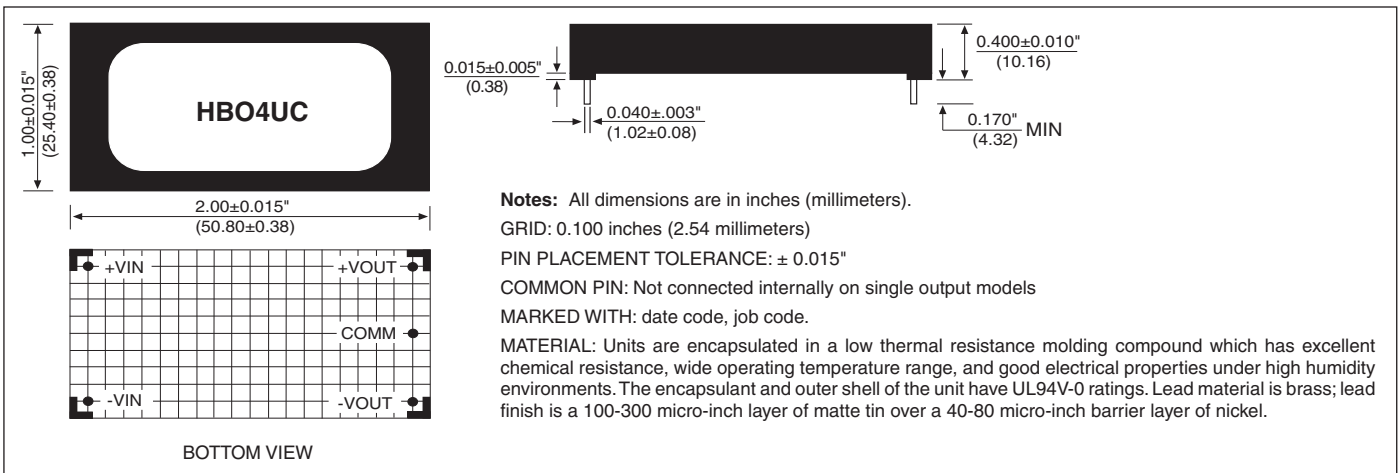
The HB04UC Series is a low-cost, high-isolation voltage, unregulated, single and dual output DC/DC converter. The dielectric withstand characteristics of each converter is tested in production to ensure barrier integrity.

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](http://www.murata-ps.com)

### ELECTRICAL SPECIFICATIONS

Specifications typical at T<sub>A</sub> = +25°C, nominal input voltage, rated output current unless otherwise noted.

	Model	Nominal Input Voltage (V <sub>DC</sub> )	Rated Output Voltage (V <sub>DC</sub> )	Rated Output Current (mA)	Input Current		Efficiency(%)
					No Load (mA)	Rated Load (mA)	
Discontinued	HB04U05S05QC	5	5	800	60	1000	80
Discontinued	HB04U05S12QC	5	12	333	60	1000	80
Discontinued	HB04U05S15QC	5	15	267	60	1000	80
Discontinued	HB04U12S05QC	12	5	800	25	380	87
Available	HB04U12S12QC*	12	12	333	25	380	87
Discontinued	HB04U12S15QC	12	15	267	25	380	87
Discontinued	HB04U15S05QC	15	5	800	20	310	87
Discontinued	HB04U15S12QC	15	12	333	20	310	87
Discontinued	HB04U15S15QC	15	15	267	20	310	87
Discontinued	HB04U05D05QC	5	±5	±400	60	944	85
Discontinued	HB04U05D12QC	5	±12	±167	60	944	85
Discontinued	HB04U05D15QC	5	±15	±134	60	944	85
Discontinued	HB04U12D05QC	12	±5	±400	25	375	88
Discontinued	HB04U12D12QC	12	±12	±167	25	375	88
Discontinued	HB04U12D15QC	12	±15	±134	25	375	88
Discontinued	HB04U15D05QC	15	±5	±400	20	300	88
Discontinued	HB04U15D12QC	15	±12	±167	20	300	88
Discontinued	HB04U15D15QC	15	±15	±134	20	300	88

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

\* ±6.25% Max for Voltage Setpoint Accuracy.

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

1. Reflected ripple current is measured at 50% load with a 33 $\mu\text{F}$  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  $260^{\circ}\text{C}$  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  $175^{\circ}\text{C}$ . Care should be taken to control manual soldering limits identical to that of wave soldering.

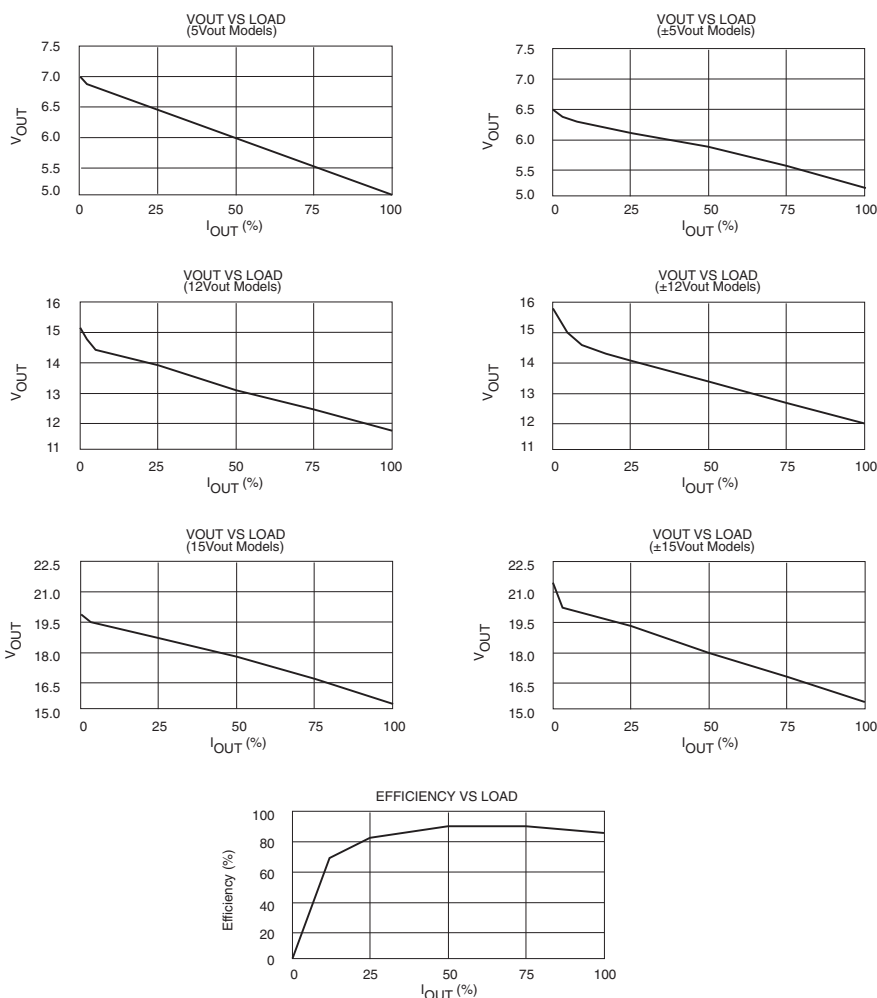
## ABSOLUTE MAXIMUM RATINGS

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

## ORDERING INFORMATION

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

## TYPICAL PERFORMANCE CURVES



Murata Power Solutions, Inc.  
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 ISO 9001 and 14001 REGISTERED



This product is subject to the following **operating requirements** and the **Life and Safety Critical Application Sales Policy**:  
 Refer to: <http://www.murata-ps.com/requirements/>

Murata Power Solutions, Inc. makes no representation that the use of its products in the circuits described herein, or the use of other technical information contained herein, will not infringe upon existing or future patent rights. The descriptions contained herein do not imply the granting of licenses to make, use, or sell equipment constructed in accordance therewith. Specifications are subject to change without notice.

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