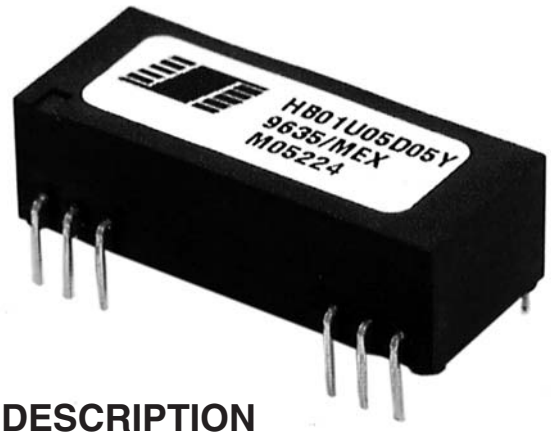
Murata Power Solutions

1 Watt Unregulated DC/DC Converters

HB01U



APPLICATIONS

- INDUSTRIAL PROCESS CONTROL
- DC MOTOR DRIVE
- INTRINSIC SAFETY SYSTEMS
- GROUND LOOP ELIMINATION
- MEDICAL EQUIPMENT
- PORTABLE TEST EQUIPMENT
- DATA ACQUISITION

DESCRIPTION

The HB01U Series offers a wide selection of input and output voltages to choose from. Each model is offered in a 24-pin DIP or SMD package and has an input to output isolation rating of 2500Vrms making it ideal for applications requiring high isolation. The dielectric withstand characteristics of each converter are measured in production to ensure barrier integrity.

The HB01U Series is ideal for applications where the output is susceptible to high voltage transients, such as motor drive and industrial process control applications. The low barrier capacitance gives excellent input to output dV/dt characteristics thus protecting the input control circuitry from peak transients appearing on the output.

The HB01U Series uses a self-oscillating circuit design technology to realize low cost and high performance. The inherent current limiting capability of the high isolation design reduces high current stresses during start-up thus increasing the capacitive load capability while maintaining high reliability.

As with all of our DC/DC converters, surface mount construction combined with extensive qualification testing assures low cost without sacrificing quality and reliability.

FEATURES

- HIGH ISOLATION
- 2500Vrms ISOLATION TEST VOLTAGE
- BARRIER 100% PRODUCTION TESTED
- LOW BARRIER CAPACITANCE - 10pF
- LOW LEAKAGE CURRENT - 2□A MAX
- 24-PIN DIP AND SMD
- INTERNAL FILTERING
- NON-CONDUCTIVE CASE
- LOW COST
- LOW PROFILE - .375"

ELECTRICAL SPECIFICATIONS

Specifications typical at T_A = +25°C, nominal input voltage, rated output current unless otherwise specified.

MODEL	NOMINAL INPUT VOLTAGE (V_{DC})	RATED OUTPUT VOLTAGE (V_{DC})	RATED OUTPUT CURRENT (mA)	INPUT CURRENT MIN LOAD (mA)	INPUT CURRENT RATED LOAD (mA)	EFFICIENCY (%)
HB01U05S05	5	5	200	63	290	68
HB01U05S12	5	12	83	63	290	70
HB01U05S15	5	15	67	63	290	73
HB01U12S05	12	5	200	20	120	68
HB01U12S12	12	12	83	20	120	70
HB01U12S15	12	15	67	20	114	73
HB01U15S05	15	5	200	25	98	68
HB01U15S12	15	12	83	25	95	70
HB01U15S15	15	15	67	25	90	73
HB01U24S05	24	5	200	13	61	68
HB01U24S12	24	12	83	13	60	70
HB01U24S15	24	15	67	13	57	73
HB01U05D05	5	±5	±100	63	290	68
HB01U05D12	5	±12	±42	63	285	70
HB01U05D15	5	±15	±34	63	275	73
HB01U12D05	12	±5	±100	20	123	68
HB01U12D12	12	±12	±42	20	118	70
HB01U12D15	12	±15	±34	20	114	73
HB01U15D05	15	±5	±100	25	98	68
HB01U15D12	15	±12	±42	25	95	70
HB01U15D15	15	±15	±34	25	90	73
HB01U24D05	24	±5	±100	13	61	68
HB01U24D12	24	±12	±42	13	60	70
HB01U24D15	24	±15	±34	13	57	73

COMMON SPECIFICATIONS

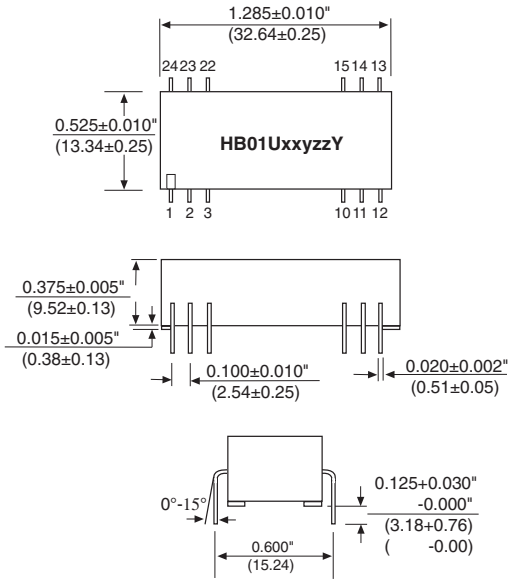
Specifications typical at T_A = +25°C, nominal input voltage, rated output current unless otherwise specified.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
INPUT					
Voltage Range		4.5	5	5.5	V_{DC}
		10.8	12	13.2	V_{DC}
		13.5	15	16.5	V_{DC}
		20	24	30	V_{DC}
Reflected Ripple Current			35		mAp-p
ISOLATION					
Rated Voltage		3535			VDC
Test Voltage	60 Hz, 10 Seconds	2500			Vrms
Resistance			10		GΩ
Capacitance			10		pF
Leakage Current	V_{ISO}= 240V_{AC}, 60Hz		1	2	µArms
OUTPUT					
Rated Power			1		W
Voltage Setpoint Accuracy			±3	±5	%
Temperature Coefficent			±0.02		%/°C
Ripple & Noise	BW = DC to 10MHz		50		mVp-p
	BW =10Hz to 2MHz		25		mVrms
Line Regulation	High Line to Low Line		±1.5		%/% Vin
Load Regulation	See Performance Curves (Min Load =5%)				
GENERAL					
Switching Frequency			160		kHz
Package Weight			12		g
MTTF per MIL-HDBK-217, Rev. F	Circuit Stress Method				
Ground Benign	T_A = +25°C		2,000,000		Hr
Moisture Sensitivity Level (MSL)	Per IPC/JEDEC J-STD 020		2		
TEMPERATURE					
Specification		-25		+70	°C
Operation		-40		+85	°C
Storage		-40		+110	°C

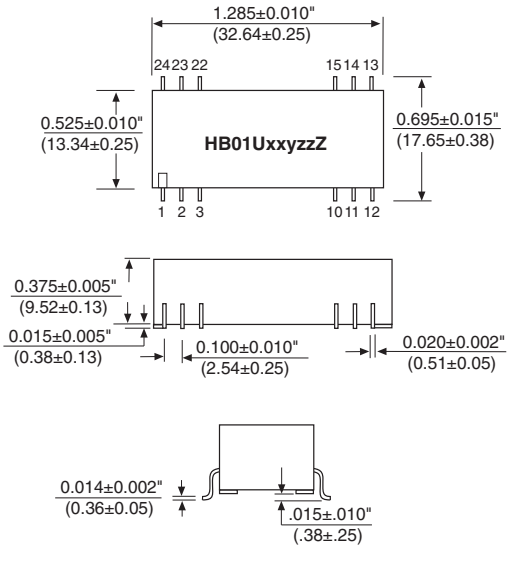
MECHANICAL

Package/Pinout "Y" and "Z"

DIP PACKAGE



SMD PACKAGE



NU = Do Not Use.

NC = No Internal Connection.

Duplicate pin functions are internally connected.

All dimensions are in inches (millimeters).

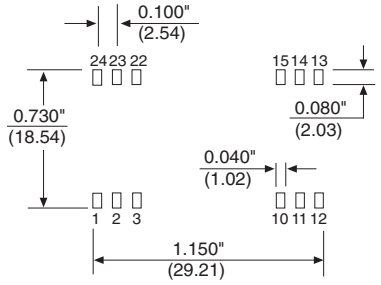
GRID: 0.100 inches (2.54 millimeters)

Typically Marked with: specific model ordered, date code, job code and Logo.

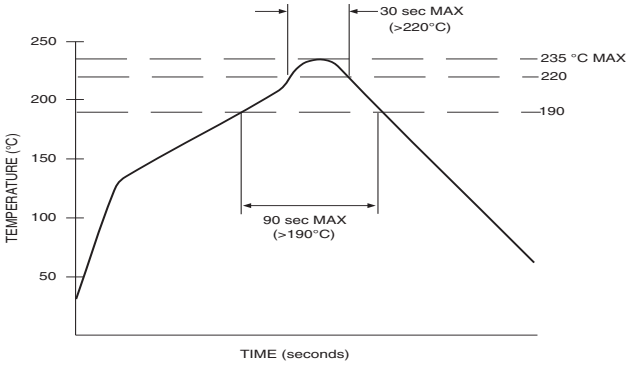
MATERIAL: Units are encapsulated in a low thermal resistance molding compound which has excellent chemical resistance, wide operating temperature range, and good electrical properties under high humidity environments. The encapsulant and outer shell of the unit have UL94V-0 ratings. Lead material is brass with a solder plated surface to allow ease of solderability.

PIN CONNECTIONS		
PIN#	**SINGLES**	**DUALS**
1	+VOUT	+VOUT
2	-VOUT	Common
3	NU	-VOUT
10	-VIN	-VIN
11	NC	NC
12	+VIN	+VIN
13	+VIN	+VIN
14	NC	NC
15	-VIN	-VIN
21	NC	NC
22	NU	-VOUT
23	-VOUT	Common
24	+VOUT	+VOUT

RECOMMENDED LAND PATTERN



RECOMMENDED REFLOW PROFILE



ABSOLUTE MAXIMUM RATINGS

Internal Power Dissipation.....0.5 Watt
Short Circuit Duration.....5 Min
Lead Temperature (soldering, 10 seconds max).....+300°C

*Note: Refer to Reflow Profile for SMD Models.

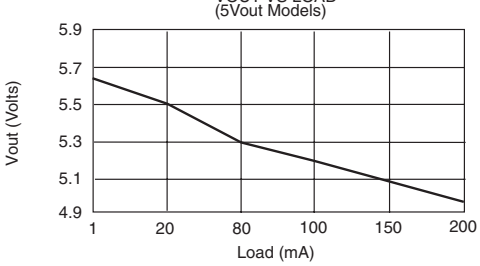
ORDERING INFORMATION

HB01U xxyzz Y/Z /H

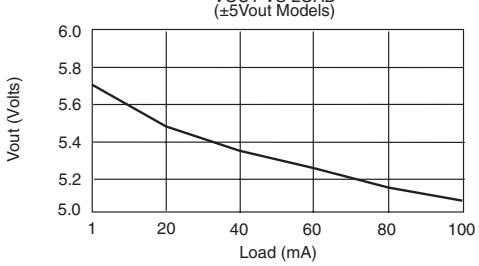
Device Family
HB Indicates DC/DC Converter
Model Number
Where:
xx = Input Voltage
y = Number or Outputs (Single "S", Dual "D")
zz = Output Voltage
Package Option
Screening Option

TYPICAL PERFORMANCE CURVES

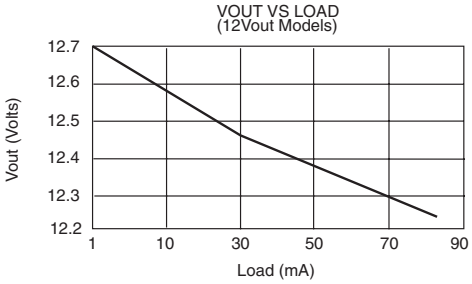
VOUT VS LOAD
(5Vout Models)



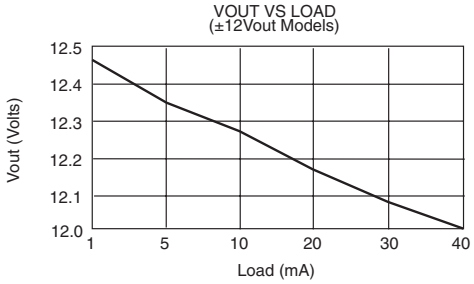
VOUT VS LOAD
(±5Vout Models)



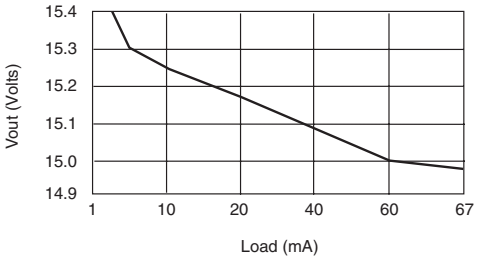
VOUT VS LOAD
(12Vout Models)



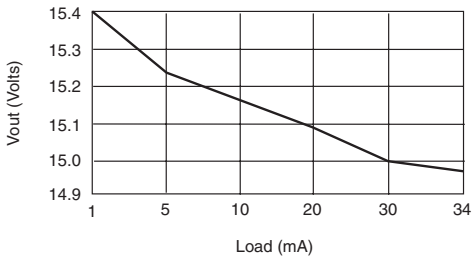
VOUT VS LOAD
(±12Vout Models)



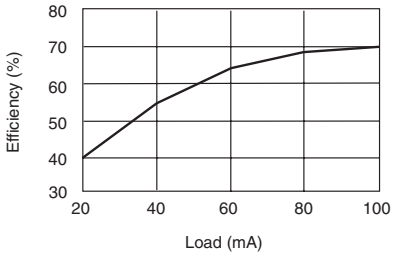
VOUT VS LOAD
(15Vout Models)



VOUT VS LOAD
(±15Vout Models)



EFFICIENCY VS LOAD



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Murata Power Solutions

Murata Power Solutions, Inc.
11 Cabot Boulevard, Mansfield, MA 02048-1151 U.S.A.
Tel: (508) 339-3000 (800) 233-2765 Fax: (508) 339-6356
www.murata-ps.com email: sales@murata-ps.com ISO 9001 & ISO 14001 REGISTERED

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USA: Mansfield (MA), Tel: (508) 339 3000, email: sales@murata-ps.com
Canada: Toronto, Tel: (866) 740 1232, email: toronto@murata-ps.com
UK: Milton Keynes, Tel: +44 (0)1908 615232, email: mk@murata-ps.com
France: Montigny Le Bretonneux, Tel: +33 (0)1 34 60 01 01, email: france@murata-ps.com
Germany: München, Tel: +49 (0)89-544334-0, email: ped.munich@murata-ps.com
Japan: Tokyo, Tel: 3-3779-1031, email: sales_tokyo@murata-ps.com
Osaka, Tel: 6-6354-2025, email: sales_osaka@murata-ps.com
China: Shanghai, Tel: +86 215 027 3678, email: shanghai@murata-ps.com
Guangzhou, Tel: +86 208 221 8066, email: guangzhou@murata-ps.com
Singapore: Parkway Centre, Tel: +65 6348 9096, email: singapore@murata-ps.com