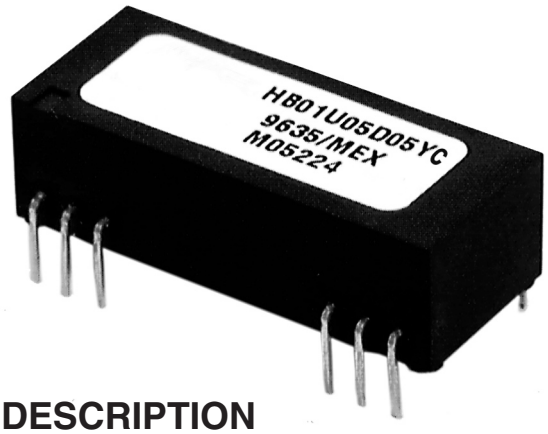
Murata Power Solutions

1 Watt Unregulated DC/DC Converters

HB01UYC



RoHS COMPLIANT 2002/95/EC

25

For full details go to www.murata-ps.com/rohs

ISO9001 CERTIFIED

DESCRIPTION

The HB01UYC Series offers a wide selection of input and output voltages to choose from. Each model is offered in a 24-pin DIP 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 HB01UYC 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 HB01UYC 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.

APPLICATIONS

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

FEATURES

- ROHS COMPLIANT
- HIGH ISOLATION
- 2500Vrms ISOLATION TEST VOLTAGE
- BARRIER 100% PRODUCTION TESTED
- LOW BARRIER CAPACITANCE - 10pF
- LOW LEAKAGE CURRENT - 2μA MAX
- 24-PIN DIP
- 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 (VDC)	RATED OUTPUT VOLTAGE (VDC)	RATED OUTPUT CURRENT (mA)	INPUT CURRENT MIN LOAD (mA)	INPUT CURRENT RATED LOAD (mA)	EFFICIENCY (%)
HB01U05S05YC	5	5	200	63	290	68
HB01U05S12YC	5	12	83	63	290	70
HB01U05S15YC	5	15	67	63	290	73
HB01U12S05YC	12	5	200	20	120	68
HB01U12S12YC	12	12	83	20	120	70
HB01U12S15YC	12	15	67	20	114	73
HB01U15S05YC	15	5	200	25	98	68
HB01U15S12YC	15	12	83	25	95	70
HB01U15S15YC	15	15	67	25	90	73
HB01U24S05YC	24	5	200	13	61	68
HB01U24S12YC	24	12	83	13	60	70
HB01U24S15YC	24	15	67	13	57	73
HB01U05D05YC	5	±5	±100	63	290	68
HB01U05D12YC	5	±12	±42	63	285	70
HB01U05D15YC	5	±15	±34	63	275	73
HB01U12D05YC	12	±5	±100	20	123	68
HB01U12D12YC	12	±12	±42	20	118	70
HB01U12D15YC	12	±15	±34	20	114	73
HB01U15D05YC	15	±5	±100	25	98	68
HB01U15D12YC	15	±12	±42	25	95	70
HB01U15D15YC	15	±15	±34	25	90	73
HB01U24D05YC	24	±5	±100	13	61	68
HB01U24D12YC	24	±12	±42	13	60	70
HB01U24D15YC	24	±15	±34	13	57	73

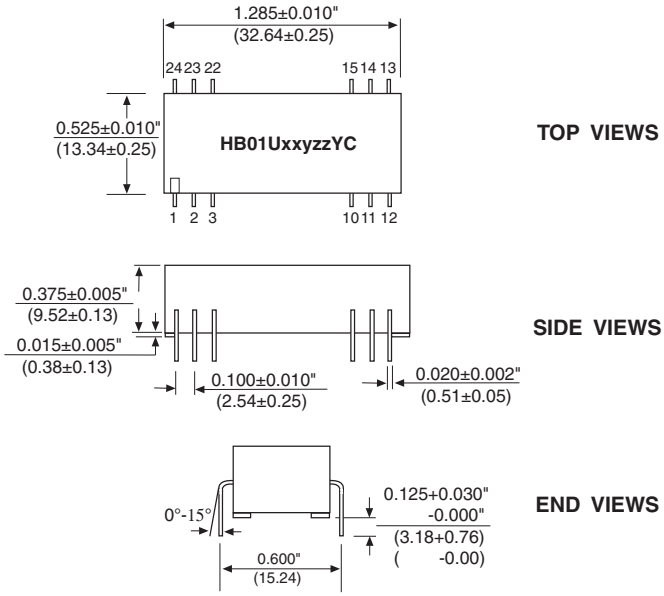
COMMON SPECIFICATIONS

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	VDC
		10.8	12	13.2	VDC
		13.5	15	16.5	VDC
		20	24	30	VDC
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}= 240VAC, 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"

DIP 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 phosphor bronze; lead finish is 100-300 microinches of matte tin over a barrier layer of 5-40 microinches nickel.

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

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.....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

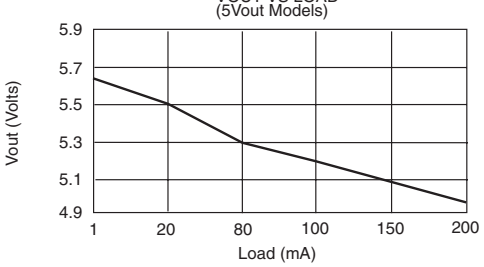
HB01U xxyzz Y C

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
RoHS Compliant

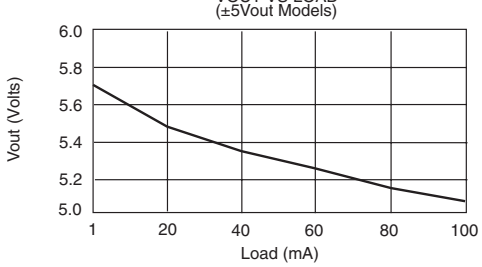
TYPICAL PERFORMANCE CURVES

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

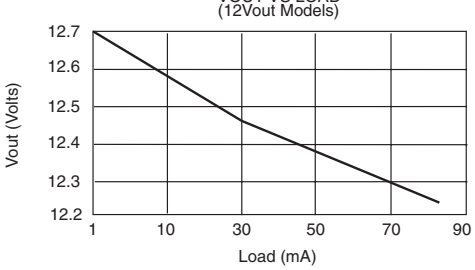
VOUT VS LOAD
(5Vout Models)



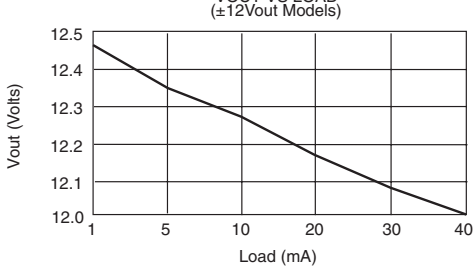
VOUT VS LOAD
(±5Vout Models)



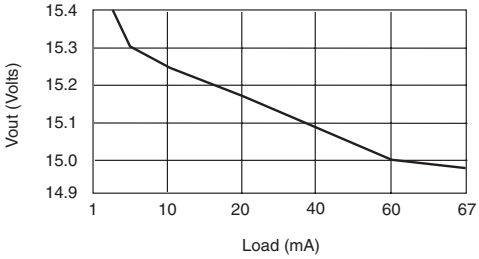
VOUT VS LOAD
(12Vout Models)



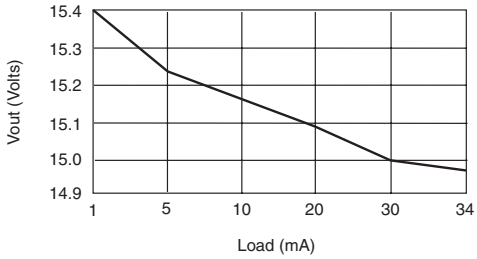
VOUT VS LOAD
(±12Vout Models)



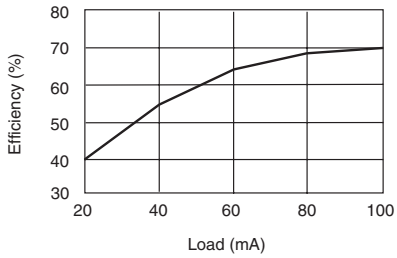
VOUT VS LOAD
(15Vout Models)



VOUT VS LOAD
(±15Vout Models)



EFFICIENCY VS LOAD



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