

# 1 WATT REGULATED DC/DC CONVERTER

## HL01R

### FEATURES

- LOW COST
- NON-CONDUCTIVE CASE
- INTERNAL INPUT AND OUTPUT FILTERING
- SHORT CIRCUIT PROTECTED
- BUILT IN STANDOFFS
- INDUSTRY STANDARD PINOUT

### DESCRIPTION

The HL01R Series uses advanced circuit design and packaging technology to realize superior reliability and performance. A 125kHz push-pull oscillator is used in the input stage. Beat-frequency oscillator problems are reduced when using the HL01R Series with high frequency isolation amplifiers.

Reduced parts count and all surface mount construction add to the reliability of the HL01R Series. The use of surface mount devices and magnetics eliminate hand soldering operations. This "hands-free" construction increases quality and reliability while keeping cost low.

### ABSOLUTE MAXIMUM RATINGS

Internal Power Dissipation.....	1.2W
Short Circuit Duration.....	Continuous
Lead Temperature (soldering, 10 seconds max).....	+300°C*

\*Note: Refer to Reflow Profile for SMD Models.

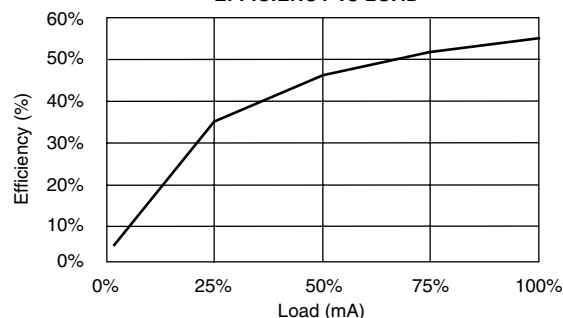
### ORDERING INFORMATION

HL01R		xx	yy	zz	Y/Z	/H
Device Family.....						
HL Indicates DC/DC Converter						
Model Number.....						
Where:						
xx = Input Voltage						
y = Number of Outputs (Single "S", Dual "D")						
zz = Output Voltage						
Package Option.....						
Screening Option.....						
DIP Package only						

### TYPICAL PERFORMANCE CURVES

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

EFFICIENCY vs LOAD



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# ELECTRICAL SPECIFICATIONS

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

MODEL	NOMINAL INPUT VOLTAGE (VDC)	RATED OUTPUT VOLTAGE (VDC)	RATED OUTPUT CURRENT (mA)	INPUT CURRENT		EFFICIENCY
				MIN LOAD (mA)	RATED LOAD (mA)(%)	
HL01R05S05 HL01R05S12 HL01R05S15	5 5 5	5 12 15	200 83 67	50 50 50	400 400 400	58 52 52
HL01R12S05 HL01R12S12 HL01R12S15	12 12 12	5 12 15	200 83 67	40 40 40	160 160 160	58 52 52
HL01R15S05 HL01R15S12 HL01R15S15	15 15 15	5 12 15	200 83 67	30 30 30	130 130 130	58 52 52
HL01R24S05 HL01R24S12 HL01R24S15	24 24 24	5 12 15	200 83 67	20 20 20	80 80 80	58 52 52
HL01R05D05 HL01R05D12 HL01R05D15	5 5 5	$\pm 5$ $\pm 12$ $\pm 15$	$\pm 100$ $\pm 41$ $\pm 33$	50 50 50	425 400 400	45 53 53
HL01R12D05 HL01R12D12 HL01R12D15	12 12 12	$\pm 5$ $\pm 12$ $\pm 15$	$\pm 100$ $\pm 41$ $\pm 33$	40 40 40	185 160 160	45 53 53
HL01R15D05 HL01R15D12 HL01R15D15	15 15 15	$\pm 5$ $\pm 12$ $\pm 15$	$\pm 100$ $\pm 41$ $\pm 33$	30 30 30	145 130 130	45 53 53
HL01R24D05 HL01R24D12 HL01R24D15	24 24 24	$\pm 5$ $\pm 12$ $\pm 15$	$\pm 100$ $\pm 41$ $\pm 33$	20 20 20	90 80 80	45 53 53

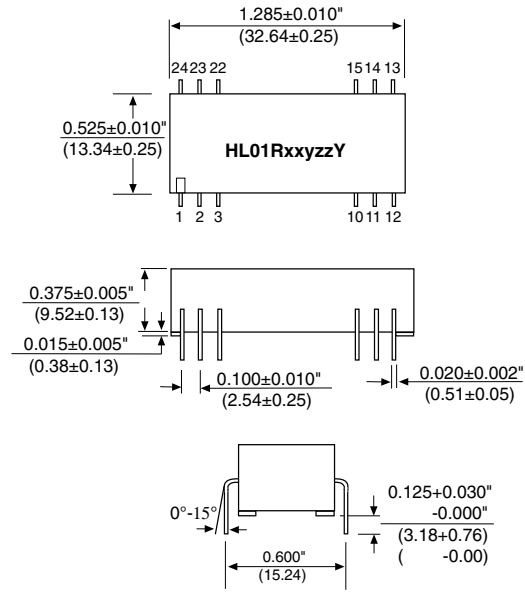
Note: Other input to output voltages may be available. Please contact factory.

# COMMON SPECIFICATIONS

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

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
<b>INPUT</b>					
Voltage Range		4.75 11.4 14.25 22.8	5 12 15 24	5.25 12.6 15.75 25.2	VDC VDC VDC VDC
Reflected Ripple Current			30	100	mAp-p
<b>ISOLATION</b>					
Rated Voltage		500			VDC
Test Voltage	60 Hz, 10 Seconds	500			Vpk
Resistance			1		G $\Omega$
Capacitance			25		pF
Leakage Current	$V_{\text{ISO}} = 240\text{VAC}, 60\text{Hz}$		2	10	$\mu\text{Arms}$
<b>OUTPUT</b>					
Rated Power			1		W
Voltage Setpoint Accuracy			$\pm 3$	$\pm 5$	%
Temperature Coefficient			$\pm 0.01$	$\pm 0.02$	%/ $^{\circ}\text{C}$
Ripple & Noise	BW = DC to 10MHz BW = 10Hz to 2MHz		30 1	100 10	mVp-p mVrms
Line Regulation	High Line to Low Line		$\pm 0.1$	$\pm 0.3$	%
Load Regulation	Rated Load to No Load		$\pm 0.3$	$\pm 0.5$	%
<b>GENERAL</b>					
Switching Frequency			125		kHz
Package Weight			10		g
MTTF per MIL-HDBK-217, Rev. F	Circuit Stress Method		675		kHr
Ground Benign					
<b>TEMPERATURE</b>					
Specification		-25		+70	$^{\circ}\text{C}$
Operation		-40		+85	$^{\circ}\text{C}$
Storage		-40		+110	$^{\circ}\text{C}$

# MECHANICAL Package/Pinout "Y" and "Z"



## DIP PACKAGE

NU = Do Not Use.

NC = No Internal Connection.

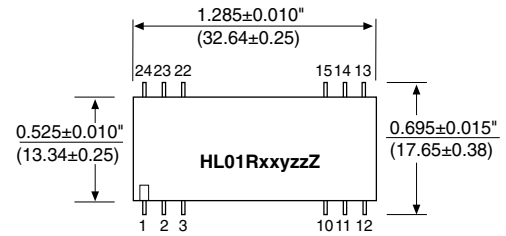
Duplicate pin functions are internally connected.

All dimensions are in inches (millimeters).

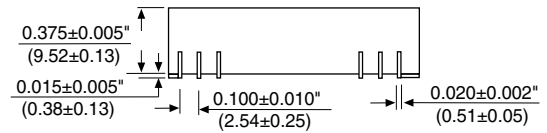
GRID: 0.100 inches (2.54 millimeters)

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

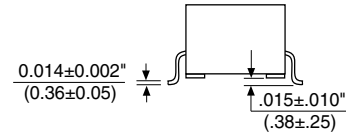
## TOP VIEWS



## SIDE VIEWS



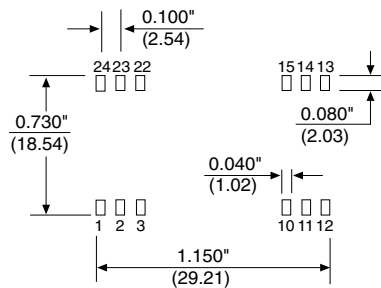
## END VIEWS



## SMD PACKAGE

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

## RECOMMENDED LAND PATTERN



## RECOMMENDED REFLOW PROFILE

