

## FEATURES

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



**NOT RECOMMENDED  
FOR NEW DESIGNS**

## DESCRIPTION

The HL01RZC 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 HL01RZC Series with high frequency isolation amplifiers.

Reduced parts count and all surface mount construction add to the reliability of the HL01RZC 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*

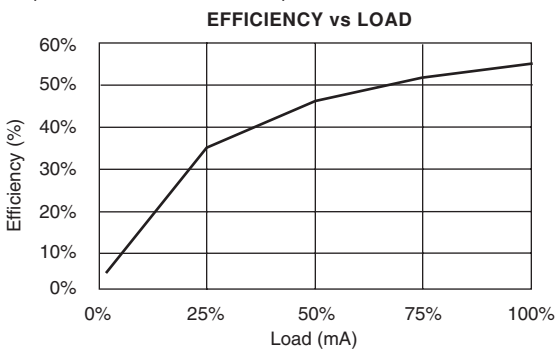
\* Note: Refer to Reflow Profile for SMD Models.

## ORDERING INFORMATION

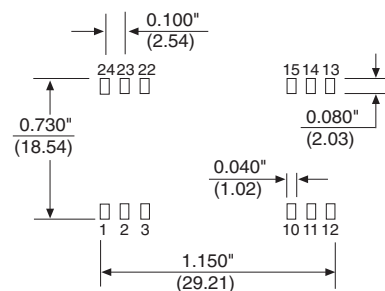
	<b>HL01R</b>	<b>xyzz</b>	<b>Z</b>	<b>C</b>
Device Family				
HL Indicates DC/DC Converter				
Model Number				
Where:				
xx = Input Voltage				
y = Number or Outputs (Single "S", Dual "D")				
zz = Output Voltage				
Package Option				
RoHS Compliant				

## TYPICAL PERFORMANCE CURVES

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



## RECOMMENDED LAND PATTERN



### 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)	
HL01R05S05ZC	5	5	200	50	400	58
HL01R05S12ZC	5	12	83	50	400	52
HL01R05S15ZC	5	15	67	50	400	52
HL01R12S05ZC	12	5	200	40	160	58
HL01R12S12ZC	12	12	83	40	160	52
HL01R12S15ZC	12	15	67	40	160	52
HL01R15S05ZC	15	5	200	30	130	58
HL01R15S12ZC	15	12	83	30	130	52
HL01R15S15ZC	15	15	67	30	130	52
HL01R24S05ZC	24	5	200	20	80	58
HL01R24S12ZC	24	12	83	20	80	52
HL01R24S15ZC	24	15	67	20	80	52
HL01R05D05ZC	5	$\pm 5$	$\pm 100$	50	425	45
HL01R05D12ZC	5	$\pm 12$	$\pm 41$	50	400	53
HL01R05D15ZC	5	$\pm 15$	$\pm 33$	50	400	53
HL01R12D05ZC	12	$\pm 5$	$\pm 100$	40	185	45
HL01R12D12ZC	12	$\pm 12$	$\pm 41$	40	160	53
HL01R12D15ZC	12	$\pm 15$	$\pm 33$	40	160	53
HL01R15D05ZC	15	$\pm 5$	$\pm 100$	30	145	45
HL01R15D12ZC	15	$\pm 12$	$\pm 41$	30	130	53
HL01R15D15ZC	15	$\pm 15$	$\pm 33$	30	130	53
HL01R24D05ZC	24	$\pm 5$	$\pm 100$	20	90	45
HL01R24D12ZC	24	$\pm 12$	$\pm 41$	20	80	53
HL01R24D15ZC	24	$\pm 15$	$\pm 33$	20	80	53

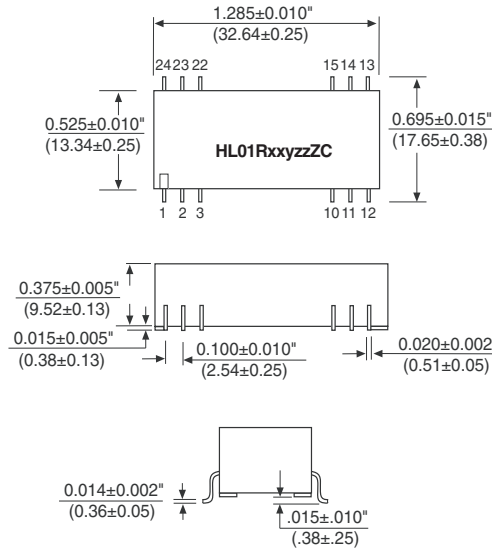
Note: Other input to output voltages may be available. Please contact factory.

### 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	5	5.25	VDC
		11.4	12	12.6	VDC
		14.25	15	15.75	VDC
		22.8	24	25.2	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	$V_{iso} = 240\text{VAC}, 60\text{Hz}$		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		30	100	mVp-p
	BW = 10Hz to 2MHz		1	10	mVrms
Line Regulation	High Line to Low Line		$\pm 0.1$	$\pm 1$	%
Load Regulation	Rated Load to No Load		$\pm 0.5$	$\pm 1$	%
<b>GENERAL</b>					
Switching Frequency			125		kHz
Package Weight			10		g
MTTF per MIL-HDBK-217, Rev. F Ground Benign	Circuit Stress Method		675		kHr
<b>TEMPERATURE</b>					
Specification		-25		+70	$^{\circ}\text{C}$
Operation		-40		+85	$^{\circ}\text{C}$
Storage		-40		+110	$^{\circ}\text{C}$

**MECHANICAL Package/Pinout "Z"**



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.  
 Pin base metal is phosphor bronze. Pin finish is matte tin (100-300 microinches) over a nickel barrier layer (5-40 microinches).

**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

**SMT SOLDERING INFORMATION**

The surface mount versions of the HL01RZC series are designed for SMT reflow soldering. During this standard process devices should be heated at a rate not to exceed 3 degrees C per second. The peak reflow temperature is 260 degrees C. The device should not be exposed to the peak temperature ±10 degrees C for more than 12 seconds. The cool down rate for this device should not exceed 3 degrees C per second.

**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.

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