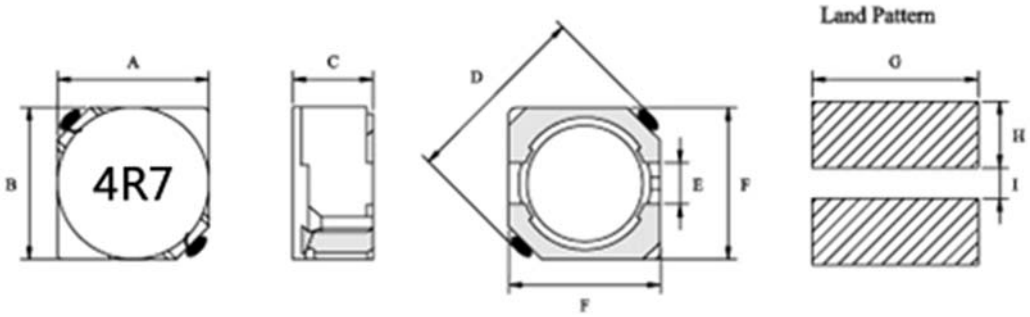
FEATRLRES

- Magnetic Shielded surface mount inductor with high current rating.
- Low resistance to keep power loss minimum.
- 100% Lead(Pb) & Halogen-Free and RoHS compliant.

CONFIGRLRATIONS & DIMENSIONS (unit in mm)



Type	A±0.3	B±0.3	C(max)	D(max)	E(Ref.)	F(Ref.)	G	H	I
HRH3D16	4.0max	4.0max	1.8	5.2	1.0	4.0max	4.6	1.6	1.4

ELECTRICAL CHARACTERISTICS

Part Number	Inductance (uH)	Tolerance (%)	Test Frequency (Hz)	DCR (Ω) max.	IDC (A) max.
HRH3D16-1R5Y	1.5	± 30%	0.1V/100K	0.052	1.55
HRH3D16-2R2Y	2.2	± 30%	0.1V/100K	0.072	1.20
HRH3D16-3R3Y	3.3	± 30%	0.1V/100K	0.085	1.10
HRH3D16-4R7Y	4.7	± 30%	0.1V/100K	0.105	0.90
HRH3D16-6R8Y	6.8	± 30%	0.1V/100K	0.170	0.73
HRH3D16-100Y	10	± 30%	0.1V/100K	0.210	0.55
HRH3D16-150Y	15	± 30%	0.1V/100K	0.295	0.45
HRH3D16-220Y	22	± 30%	0.1V/100K	0.430	0.40
HRH3D16-330Y	33	± 30%	0.1V/100K	0.675	0.32

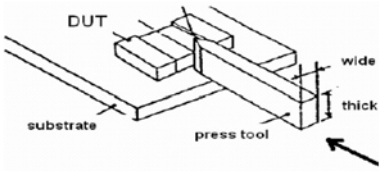
Note:

Based on inductance change （△L/L0：≦-35%）@ ambient temp. 25℃ Based on temperature rise （△T：40℃ typ.）

Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40~+125℃ (Including self - temperature rise)	
Storage temperature	1. -10~+40℃,50~60%RH (Product with taping) 2. -40~+125℃(on board)	

<table>
<tr><td colspan="3">Electrical Performance Test</td></tr>
<tr><td>Inductance</td><td rowspan="2">Refer to standard electrical characteristics list.</td><td>HP4284A,CH11025,CH3302,CH1320,CH1320S
LCR Meter.</td></tr>
<tr><td>DCR</td><td>CH16502,Agilent33420A Micro-Ohm Meter.</td></tr>
<tr><td>Saturation Current (Isat)</td><td>Approximately△L30%</td><td>Saturation DC Current (Isat) will cause L0
to drop △L(%)</td></tr>
<tr><td>Heat Rated Current (Irms)</td><td>Approximately △T40℃</td><td>Heat Rated Current (Irms) will cause the coil temperature rise △T(℃).
1.Applied the allowed DC current
2.Temperature measured by digital surface thermometer</td></tr>
<tr><td colspan="3">Reliability Test</td></tr>
<tr><td>Life Test</td><td rowspan="5">Appearance：No damage.
Inductance：within±10% of initial value
Q：Shall not exceed the specification value.
RDC：within ±15% of initial value and shall not exceed the specification value</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles)
Temperature： 125±2℃(Inductor)
Applied current：rated current
Duration：1000±12hrs
Measured at room temperature after placing for 24±2 hrs</td></tr>
<tr><td>Load Humidity</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles
Humidity：85±2 % R.H,
Temperature：85℃±2℃
Duration：1000hrs Min. with 100% rated current
Measured at room temperature after placing for 24±2 hrs</td></tr>
<tr><td>Moisture Resistance</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow
Profiles
1. Baked at50℃ for 25hrs, measured at room temperature after placing for 4 hrs.
2. Raise temperature to 65±2℃ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25℃ in 2.5hrs.
3. Raise temperature to 65±2℃ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25℃ in
2.5hrs,keep at 25℃ for 2 hrs then keep at -10℃ for 3 hrs
4. Keep at 25℃ 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at
room temperature after placing for 1~2 hrs.</td></tr>
<tr><td>Thermal
shock</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification
Reflow Profiles
Condition for 1 cycle
Step1：-40±2℃ 30±5min
Step2：25±2℃ ≦0.5min
Step3：125±2℃ 30±5min
Number of cycles： 500
Measured at room temperature after placing for 24±2 hrs</td></tr>
<tr><td>Vibration</td><td>Oscillation Frequency: 10 ~ 2K ~ 10Hz for 20 minutes
Equipment： Vibration checker
Total Amplitude:1.52mm±10%
Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations)。</td></tr>
<tr><td>Bending</td><td rowspan="2">Appearance：No damage.
Impedance：within±15% of initial value
Inductance：within±10% of initial value
Q：Shall not exceed the specification value.
RDC：within ±15% of initial value and shall not exceed the specification value</td><td>Shall be mounted on a FR4 substrate of the following dimensions: >=0805 inch(2012mm):40x100x1.2mm
<0805 inch(2012mm):40x100x0.8mm
Bending depth: >=0805 inch(2012mm):1.2mm
<0805 inch(2012mm):0.8mm
duration of 10 sec.</td></tr>
<tr><td>Shock</td><td>
<table>
<tr><th>Type</th><th>Peak value (g's)</th><th>Normal duration (D) (ms)</th><th>Wave form</th><th>Velocity change (Vi)ft/sec</th></tr>
<tr><td>SMD</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr>
<tr><td>Lead</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr>
</table>
</td></tr>
<tr><td>Solder ability</td><td>More than 95% of the terminal electrode should be covered with solder。</td><td>Preheat: 150℃,60sec.。
Solder: Sn96.5% Ag3% Cu0.5%
Temperature: 245±5℃。
Flux for lead free: Rosin. 9.5%。
Dip time: 4±1sec。
Depth: completely cover the termination</td></tr>
<tr><td>Resistance to Soldering Heat</td><td></td><td>Depth: completely cover the termination
<table>
<tr><th>Temperature(°C)</th><th>Time(s)</th><th>Temperature ramp/immersion and emersion rate</th><th>Number of heat cycles</th></tr>
<tr><td>260 ±5 (solder temp)</td><td>10 ±1</td><td>25mm/s ±6 mm/s</td><td>1</td></tr>
</table>
</td></tr>
</table>

Terminal Strength	Appearance：No damage. Impedance：within±15% of initial value Inductance：within±10% of initial value Q：Shall not exceed the specification value. RDC：within ±15% of initial value and shall not exceed the specification value e	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles With the component mounted on a PCB with the device to be tested, apply a force(>0805:1kg , <=0805:0.5kg)to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested. 

Note : When there are questions concerning measurement result : measurement shall be made after 48 ± 2 hours of recovery under the standard condition.