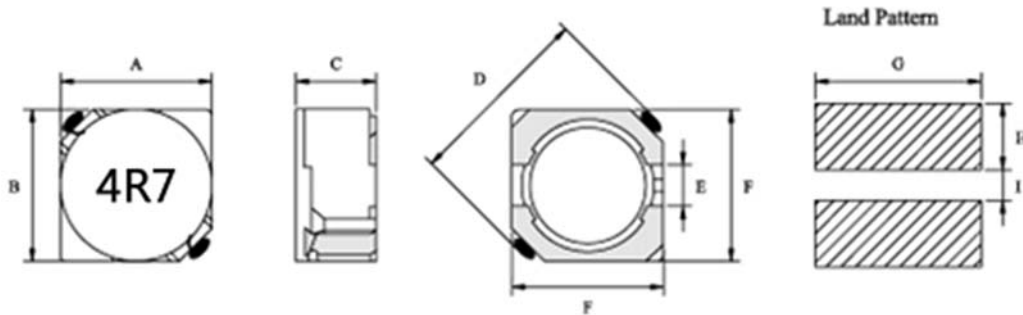


FEATRLRES

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

CONFIGLRATIONS & DIMENSIONS (unit in mm)



Type	A±0.3	B±0.3	C(max)	D(max)	E(Ref.)	F(Ref.)	G	H	I
HRH4D18	4.7	4.7	2.0	6.9	1.5	4.5	5.3	1.90	1.5

ELECTRICAL CHARACTERISTICS

Part Number	Inductance (uH)	Tolerance (%)	Test Frequency (Hz)	DCR (Ω) max.	IDC (A) max.
HRH4D18-1R0Y	1.0	± 30%	0.1V/100K	0.045	1.72
HRH4D18-2R2Y	2.2	± 30%	0.1V/100K	0.075	1.32
HRH4D18-2R7Y	2.7	± 30%	0.1V/100K	0.105	1.28
HRH4D18-3R3Y	3.3	± 30%	0.1V/100K	0.110	1.04
HRH4D18-3R9Y	3.9	± 30%	0.1V/100K	0.155	0.88
HRH4D18-4R7Y	4.7	± 30%	0.1V/100K	0.162	0.84
HRH4D18-5R6Y	5.6	± 30%	0.1V/100K	0.170	0.80
HRH4D18-6R8Y	6.8	± 30%	0.1V/100K	0.200	0.76
HRH4D18-8R2Y	8.2	± 30%	0.1V/100K	0.245	0.68
HRH4D18-100Y	10	± 30%	0.1V/100K	0.200	0.61
HRH4D18-120Y	12	± 30%	0.1V/100K	0.210	0.56
HRH4D18-150Y	15	± 30%	0.1V/100K	0.240	0.50
HRH4D18-180Y	18	± 30%	0.1V/100K	0.338	0.48
HRH4D18-220Y	22	± 30%	0.1V/100K	0.397	0.41
HRH4D18-270Y	27	± 30%	0.1V/100K	0.441	0.35
HRH4D18-330Y	33	± 30%	0.1V/100K	0.694	0.32

HRH4D18-390Y

39

 $\pm 30\%$

0.1V/100K

0.709

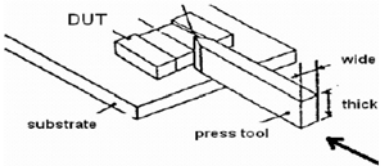
0.30

Note:

 Based on inductance change ($\Delta L/L_0 : \leq -35\%$) @ ambient temp. 25°C Based on temperature rise ($\Delta T : 40^\circ\text{C}$ typ.)

Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40~+125°C (Including self - temperature rise)	
Storage temperature	1. -10~+40°C, 50~60%RH (Product with taping) 2. -40~+125°C (on board)	
Electrical Performance Test		
Inductance	Refer to standard electrical characteristics list.	HP4284A, CH11025, CH3302, CH1320, CH1320S LCR Meter.
DCR		CH16502, Agilent33420A Micro-Ohm Meter.
Saturation Current (Isat)	Approximately $\Delta L 30\%$	Saturation DC Current (Isat) will cause L0 to drop $\Delta L(\%)$
Heat Rated Current (Irms)	Approximately $\Delta T 40^\circ\text{C}$	Heat Rated Current (Irms) will cause the coil temperature rise $\Delta T(^\circ\text{C})$. 1. Applied the allowed DC current 2. Temperature measured by digital surface thermometer
Reliability Test		
Life Test	Appearance : No damage. Inductance : within $\pm 10\%$ of initial value Q : Shall not exceed the specification value. RDC : within $\pm 15\%$ of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Temperature : $125 \pm 2^\circ\text{C}$ (Inductor) Applied current : rated current Duration : 1000 ± 12 hrs Measured at room temperature after placing for 24 ± 2 hrs
Load Humidity		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Humidity : $85 \pm 2\%$ R.H, Temperature : $85^\circ\text{C} \pm 2^\circ\text{C}$ Duration : 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24 ± 2 hrs
Moisture Resistance		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) 1. Baked at 50°C for 25hrs, measured at room temperature after placing for 4 hrs. 2. Raise temperature to $65 \pm 2^\circ\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs. 3. Raise temperature to $65 \pm 2^\circ\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs, keep at 25°C for 2 hrs then keep at -10°C for 3 hrs 4. Keep at 25°C 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.
Thermal shock		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Condition for 1 cycle Step1 : $-40 \pm 2^\circ\text{C}$ 30 \pm 5min Step2 : $25 \pm 2^\circ\text{C}$ \leq 0.5min Step3 : $125 \pm 2^\circ\text{C}$ 30 \pm 5min Number of cycles : 500 Measured at room temperature after placing for 24 ± 2 hrs
Vibration		Oscillation Frequency: 10 ~ 2K ~ 10Hz for 20 minutes Equipment : Vibration checker Total Amplitude: $1.52\text{mm} \pm 10\%$ Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations).
Bending		Shall be mounted on a FR4 substrate of the following dimensions: ≥ 0.805 inch(2012mm): $40 \times 100 \times 1.2\text{mm}$ < 0.805 inch(2012mm): $40 \times 100 \times 0.8\text{mm}$ Bending depth: ≥ 0.805 inch(2012mm): 1.2mm < 0.805 inch(2012mm): 0.8mm duration of 10 sec.
	Appearance : No damage.	

Shock	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	<table border="1"> <thead> <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> </thead> <tbody> <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> </tbody> </table>	Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3
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SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
Solder ability	More than 95% of the terminal electrode should be covered with solder.	Preheat: 150°C,60sec. Solder: Sn96.5% Ag3% Cu0.5% Temperature: 245±5°C Flux for lead free: Rosin. 9.5% Dip time: 4±1sec Depth: completely cover the termination Depth: completely cover the termination															
Resistance to Soldering Heat		<table border="1"> <thead> <tr> <th>Temperature(°C)</th> <th>Time(s)</th> <th>Temperature ramp/immersion and emersion rate</th> <th>Number of heat cycles</th> </tr> </thead> <tbody> <tr> <td>260 ±5 (solder temp)</td> <td>10 ±1</td> <td>25mm/s ±6 mm/s</td> <td>1</td> </tr> </tbody> </table>	Temperature(°C)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles	260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s	1							
Temperature(°C)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles														
260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s	1														
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-020Classification 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.