

# 后芮驷(上海)电子有限公司

Horus International Electronics Co., LTD.

## 承认书

### SPECIFICATION FOR APPROVAL

编号:

品名	DESCRIPTION:	SMD Type Power Inductor
规格	SPEC :	HRS-RCA-0420H-SERIES
包装	PACKAGE:	卷装
客户	CUSTOMER:	
客户料号	CUSTOMER P/N:	

#### APPROVED BY

CUSTOMER	 HORUS
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# DATA SHEET

## SMD Type Power Inductor

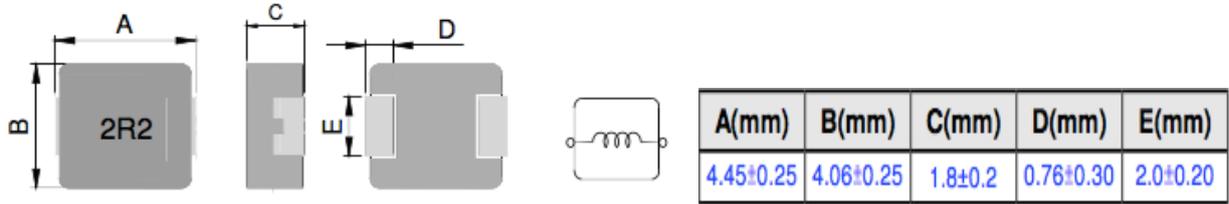
**P/N: RCA-0420H-SERIES**



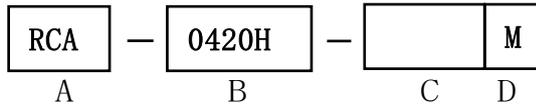
Moisture Sensitivity Level: 1



### 1. Dimension (mm) :



### 2. Part Number :



- A: Series (RCA: For Automotive Electronics)
- B: Dimension B x C
- C: Inductance uH
- D: Inductance Tolerance M= ± 20%

### 3. Electrical Characteristics:

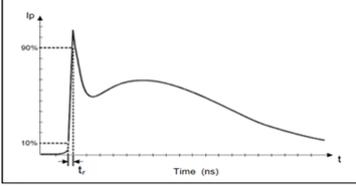
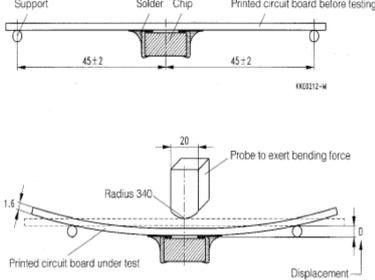
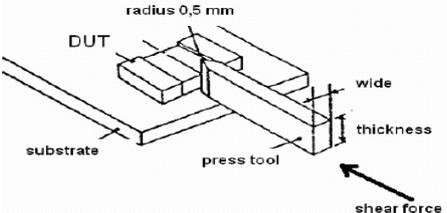
Part Number	Inductance(uH) @1V/100KHz	I <sub>rms</sub> (A)		I <sub>sat</sub> (A)		DCR(mΩ) ±30%
		Typ.	Max.	Typ.	Max.	
RCA-0420H-R10M	0.10	16.1	14.1	26.1	22.1	2.9
RCA-0420H-R22M	0.22	14.1	12.6	15.1	13.1	4.7
RCA-0420H-R47M	0.47	10.1	9.1	9.1	8.1	9.4
RCA-0420H-R68M	0.68	9.1	8.1	7.7	6.7	11.5
RCA-0420H-R82M	0.82	8.1	7.1	6.1	5.6	16.2
RCA-0420H-1R0M	1.0	7.6	6.6	5.6	5.1	18.9
RCA-0420H-1R5M	1.5	6.8	5.9	5.3	4.9	26.9
RCA-0420H-2R2M	2.2	5.6	5.1	4.6	4.1	40.0
RCA-0420H-3R3M	3.3	4.6	3.6	3.2	2.8	64.0
RCA-0420H-4R7M	4.7	3.9	3.3	2.9	2.6	83.0
RCA-0420H-5R6M	5.6	3.3	2.9	2.7	2.4	96.0
RCA-0420H-6R8M	6.8	3.0	2.5	2.5	2.2	130
RCA-0420H-8R2M	8.2	2.7	2.4	2.3	2.1	139
RCA-0420H-100M	10	2.5	2.3	2.2	2.1	164



**4. Reliability and Test Condition:**

Item	Performance	Test Condition															
Operating temperature	-55~+150°C (Including self - temperature rise)																
Storage temperature and Humidity range	1. -10~+40°C, 50~60%RH (Product with taping) 2. -55~+150°C (on board)																
<b>Electrical Performance Test</b>																	
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															
<b>Reliability Test</b>																	
High Temperature Exposure (Storage) AEC-Q200	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: $150 \pm 2^\circ\text{C}$ (Inductor) Duration : 1000hrs Min. Measured at room temperature after placing for 24 $\pm$ 2 hrs.															
Temperature Cycling AEC-Q200		Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles Condition for 1 cycle Step1: $-55 \pm 2^\circ\text{C}$ 30min Min. (Inductor) Step2: $180 \pm 2^\circ\text{C}$ transition time 1min MAX. Step3: $180 \pm 2^\circ\text{C}$ 30min Min. Step4: Low temp. Transition time 1min MAX. Number of cycles: 1000 Measured at room temperature after placing for 24 $\pm$ 2 hrs.															
Moisture Resistance		Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles 1. Baked at $50^\circ\text{C}$ 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 $25^\circ\text{C}$ 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 $25^\circ\text{C}$ in 2.5hrs, keep at $25^\circ\text{C}$ for 2hrs then keep at $-10^\circ\text{C}$ for 3hrs 4. Keep at $25^\circ\text{C}$ 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.															
Biased Humidity (AEC-Q200)		Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles Humidity : $85 \pm 3\%$ 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 $\pm$ 2hrs															
High Temperature Operational Life (AEC-Q200)		Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles Temperature: $150 \pm 2^\circ\text{C}$ (Inductor) Duration : 1000hrs Min. With 100% rated current. Measured at room temperature after placing for 24 $\pm$ 2hrs															
External Visual	Appearance : No damage.	Inspect device construction, marking and workmanship. Electrical Test not required.															
Physical Dimension	According to the product specification size measurement	According to the product specification size measurement															
Resistance to Solvents	Appearance : No damage.	Add aqueous wash chemical - OKEM clean or equivalent.															
Mechanical Shock	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	<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>100</td> <td>6</td> <td>Half-sine</td> <td>12.3</td> </tr> <tr> <td>Lead</td> <td>100</td> <td>6</td> <td>Half-sine</td> <td>12.3</td> </tr> </tbody> </table>	Type	Peak value (g's)	Normal Duration (D) (ms)	Wave form	Velocity Change (Vi)ft/sec	SMD	100	6	Half-sine	12.3	Lead	100	6	Half-sine	12.3
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		SMD	100	6	Half-sine	12.3											
Lead	100	6	Half-sine	12.3													
Shocks in each direction along 3 perpendicular axes.																	



Item	Performance	Test Condition								
Vibration		IPC/JEDEC J-STD-020D Classification Reflow Profiles Oscillation Frequency: 10~2K~10Hz for 20 minute Equipment : Vibration checker Total Amplitude:1.52mm±10% Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations) °								
Resistance to Soldering Heat	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	Test condition : <table border="1" style="width: 100%; border-collapse: collapse;"> <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
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260±5(solder temp)	10±1	25mm/s ±6 mm/s	1							
Thermal shock (AEC-Q200)		Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020D Classification Reflow Profiles Condition for 1 cycle Step1: -55±2°C 15±1min(Inductor) Step2: 150±2°C within 20Sec. Step3: 150±2°C 15±1min Number of cycles : 300 Measured at room temperature after placing fo24±2hrs								
ESD	Appearance : No damage.									
Solder ability	More than 95% of the terminal electrode should be covered with solder °	Steam Aging: 8 hours ± 15 min 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								
Electrical Characterization	Refer Specification for Approval	Summary to show Min, Max, Mean and Standard deviation.								
Flammability	Electrical Test not required.	V-0 or V-1 are acceptable.								
Board Flex	Appearance : No damage	Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020D Classification Reflow Profiles Place the 100mm X 40mm board into a fixture similar to the one shown in below Figure with the component facing down. The apparatus shall consist of mechanical means to apply a force which will bend the board (D) x = 2 mm minimum. The duration of the applied forces shall be 60 (+ 5) sec. The force is to be applied only once to the board. 								
Terminal Strength (SMD)	Appearance : No damage	Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020D Classification Reflow Profiles With the component mounted on a PCB with the device to be tested, apply a 17.7 N (1.8 Kg) force 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. 								



**5. Soldering and Mounting:**

**(1) Soldering**

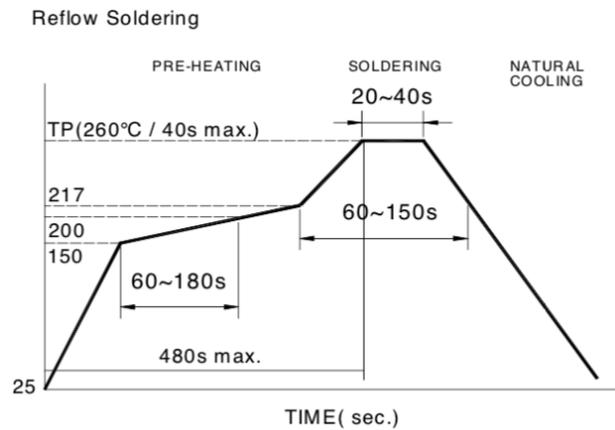
Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. The terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools. Note. If Use Wave soldering is there will be some risk. Re-flow soldering temperatures below 240 degrees, there will be unwitting risk

**(2) Solder re-flow:**

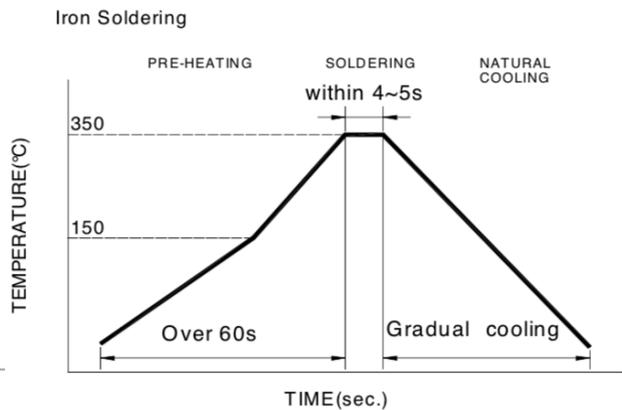
Recommended temperature profiles for lead free re-flow soldering in Figure 1.

**(3) Soldering Iron:**

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended. for Iron Soldering in Figure 2.

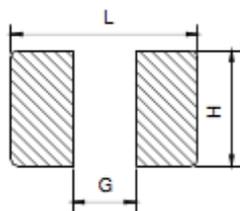


Reflow times: 3 times max  
Fig.1



Iron Soldering times : 1 times max  
Fig.2

**(4) Recommend PC Board Pattern(mm)**



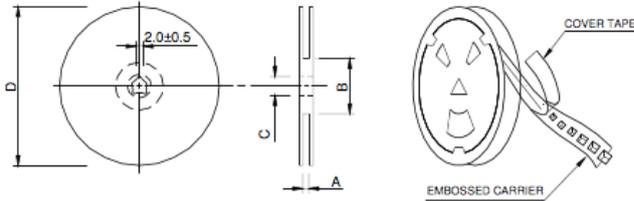
L(mm)	G(mm)	H(mm)
5.2	2.2	2.4



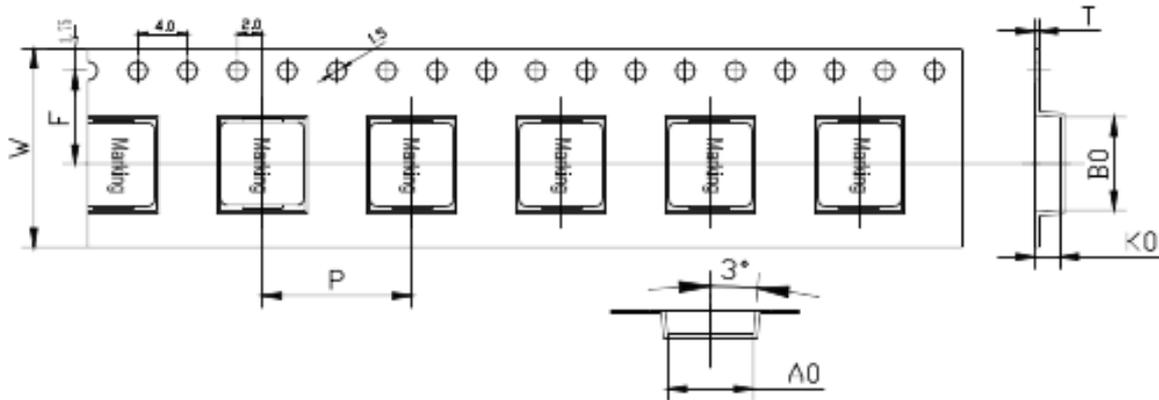
**6. Package Information:**

Packaging Quantity: 3000pcs/Reel

Reel Dimension:

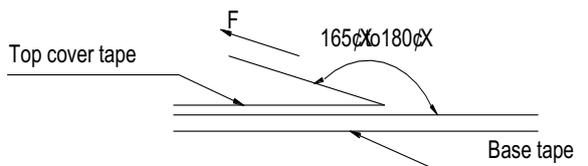


Type	A(mm)	B(mm)	C(mm)	D(mm)
13"x12mm	12.0±0.5	100±2	13.5±0.5	330



Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	W(mm)	F(mm)	t(mm)
0420	5.0±0.1	4.4±0.1	2.3±0.1	8.0±0.1	12±0.3	5.5±0.1	0.35±0.05

Tearing Off Force:



Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	860~1060	300

The force for tearing off cover tape is 10 to 130 grams in the arrow direction under the following conditions(referenced ANSI/EIA-481-D-2008 of 4.11 standard).

**Application Notice**

Storage Conditions To maintain the solder ability of terminal electrodes:

1. RDM products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
2. Temperature and humidity conditions: -10~ 40°C and 30~70% RH.
3. Recommended products should be used within 6 months from the time of delivery.
4. The packaging material should be kept where no chlorine or sulfur exists in the air.

Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

**Modify records:**

Version	Page	Description
V01	N/A	New issued