Horus

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: High Current Ferrite Chip Bead

规格 SPEC : HRS-RCA-HC1608HKF-SERIES

包装 PACKAGE: 卷装

客户 CUSTOMER:

客户料号 CUSTOMER P/N:

APPROVED BY	
CUSTOMER	**HORUS**

唐碩科技股份有限公司
RDM Technology Co., Ltd.
EMC/RF Best Design & Debug Solution Partner

DATA SHEET

High Current Ferrite Chip Bead

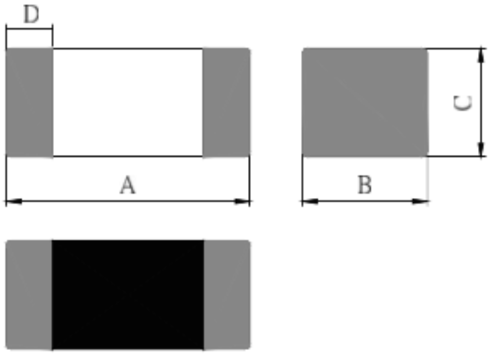
P/N: RCA-HC1608HKF-SERIES

RoHS COMPLIANT
Halogen Free
REACH
AEC-Q200

Moisture Sensitivity Level: 1

***Content in this sheet are subject to change without prior notice**

1. Dimensions (mm):



HC1608	Dimensions
A	1.60 ± 0.15
B	0.80 ± 0.15
C	0.80 ± 0.15
D	0.30 ± 0.20

2. Part Number:

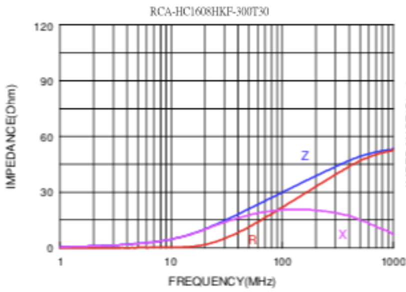
RCA	–	HC	1608	HKF	–		T	
A		B	C	D		E	F	G

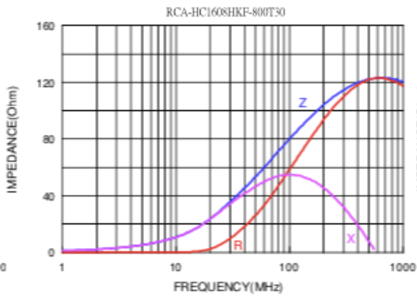
A: Series (RCA: For Automotive Electronics)
B: Internal code
C: Dimension A x B
D: Lead Free Material
E: Impedance 100=10Ω, 101=100Ω±25%
F: Packing T=Taping and Reel
G: 10=1000mA, 20=2000mA

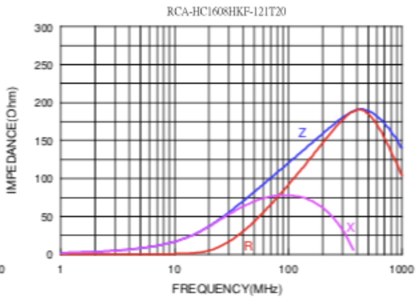
3. Electrical Characteristics:

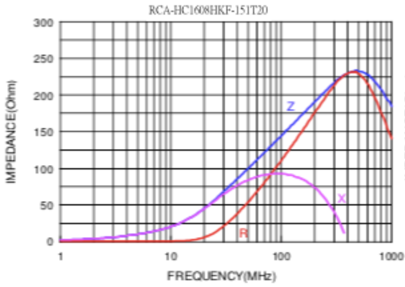
Part Number	Impedance (Ω) ±25%@100M	DCR (Ω) Max.	Rated Current (mA)
RCA-HC1608HKF-300T30	30	0.04	3000
RCA-HC1608HKF-800T30	80	0.04	3000
RCA-HC1608HKF-121T20	120	0.10	2000
RCA-HC1608HKF-151T20	150	0.10	2000
RCA-HC1608HKF-221T20	220	0.10	2000
RCA-HC1608HKF-301T10	300	0.20	1000
RCA-HC1608HKF-471T10	470	0.20	1000
RCA-HC1608HKF-601T10	600	0.20	1000

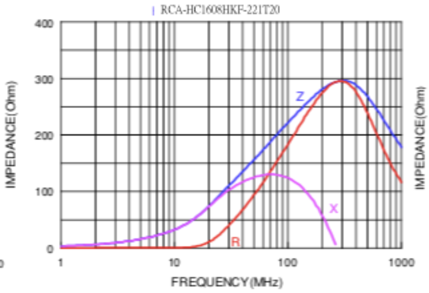
4. Performance Curves:

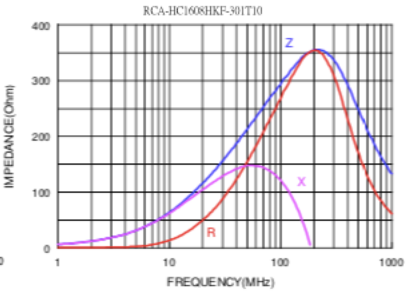


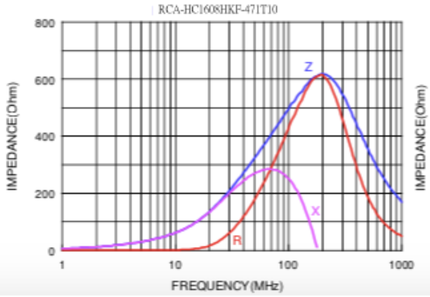


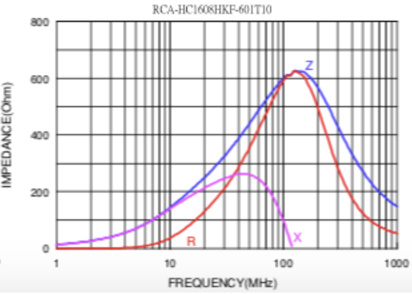










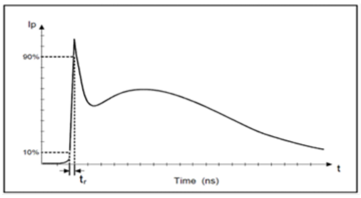
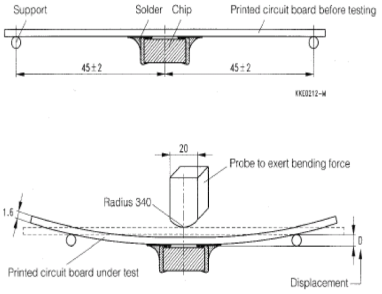
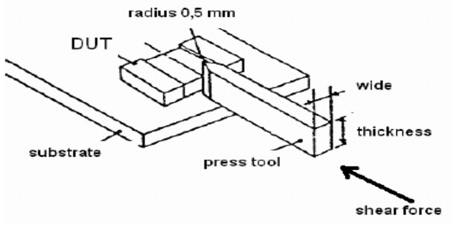


5.Reliabllity and Test Condition:

Item	Performance	Test Condition
Operating temperature	-40~+125℃(Including self - temperature rise)	
Storage temperature and Humidity range	1. -10~+40℃,50~60%RH (Product with taping) 2. -40~+125℃(on board)	
Electrical Performance Test		
Z	Refer to standard electrical characteristics list.	Agilent-4291A+Agilent-16197A
DCR		CH16502,Agilent33420A Micro-Ohm Meter.
Rated Current		Applied the DC current to coils the impedance change should be less than ±25% to initial value and temperature rise should not be more than 40℃
I.R		Agilent4339
Reliability Test		
High Temperature Exposure (Storage) AEC-Q200	Appearance：No damage. Impedance：within±15% of initial value RDC：within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Temperature：125±2℃(Inductor) Duration ： 1000hrs Min. Measured at room temperature after placing for 24±2 hrs.
Temperature Cycling AEC-Q200		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Condition for 1 cycle Step1：-40±2℃ 30min Min.(Inductor) Step2：125±2℃ transition time 1min MAX. Step3：125±2℃ 30min Min. Step4：Low temp. Transition time 1min MAX. Number of cycles： 1000 Measured at room temperature after placing for 24±2 hrs.
Moisture Resistance		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 2hrs then keep at -10℃ for 3hrs 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.
Biased Humidity (AEC-Q200)		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Humidity ：85±3％R.H, Temperature：85℃±2℃ Duration: 1000hrs Min with 100% rated current. Measured at room temperature after placing for24±2hrs
High Temperature Operational Life (AEC-Q200)		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Temperature：125±2℃(Inductor) Duration ： 1000hrs Min. With 100% rated current. Measured at room temperature after placing for24±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. Impedance：within±15% of initial value RDC：within ±15% of initial value and shall not exceed the specification value	Shocks in each direction along 3 perpendicular axes.

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

Shocks in each direction along 3 perpendicular axes.

<table>
<tr><th>Item</th><th>Performance</th><th>Test Condition</th></tr>
<tr><td>Vibration</td><td rowspan="3">Appearance：No damage.
Impedance：within±15% of initial value
RDC：within ±15% of initial value and shall not exceed the specification value</td><td>IPC/JEDEC J-STD-020DClassification 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)。</td></tr>
<tr><td>Resistance to Soldering Heat</td><td>Test condition ：<table><tr><th>Temperature (℃)</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>
<tr><td>Thermal shock
(AEC-Q200)</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles
Condition for 1 cycle
Step1：-40±2℃ 15±1min(Inductor)
Step2：125±2℃ within 20Sec.
Step3：125±2℃ 15±1min
Number of cycles： 300
Measured at room temperature after placing fo24±2hrs</td></tr>
<tr><td>ESD</td><td>Appearance：No damage.</td><td> </td></tr>
<tr><td>Solder ability</td><td>More than 95% of the terminal electrode should be covered with solder。</td><td>Steam Aging: 8 hours ± 15 min
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>Electrical Characterization</td><td>Refer Specification for Approval</td><td>Summary to show Min, Max, Mean and Standard deviation.</td></tr>
<tr><td>Flammability</td><td>Electrical Test not required.</td><td>V-0 or V-1 are acceptable.</td></tr>
<tr><td>Board Flex</td><td>Appearance：No damage</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification 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.
 </td></tr>
<tr><td>Terminal Strength (SMD)</td><td>Appearance：No damage</td><td>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.
 </td></tr>
</table>

. Soldering and Mounting:

(1) Soldering

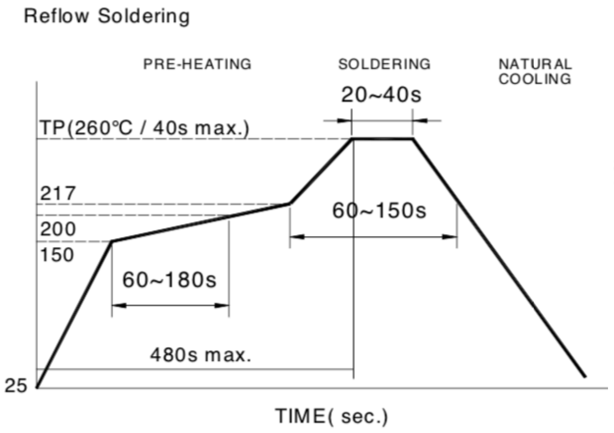
Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. The terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the 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:

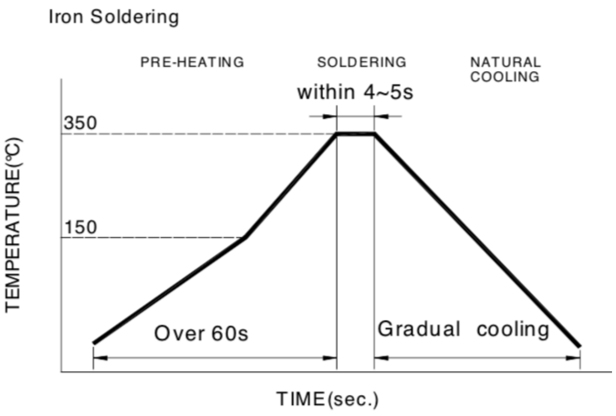
Recommended temperature profiles for lead free re-flow soldering in Figure 1.

(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.

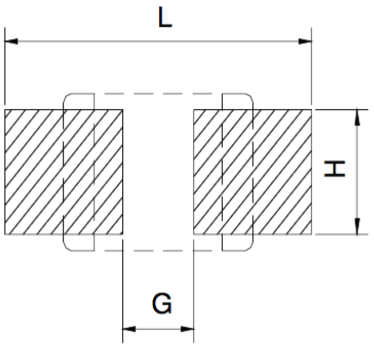


Reflow times: 3 times max
Fig.1



Iron Soldering times：1 times max
Fig.2

(4) Recommend PC Board Pattern(mm)

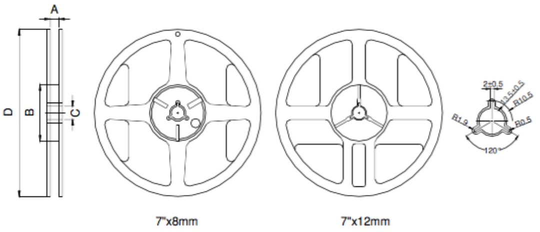


Land Patterns For Reflow Soldering(mm)		
L	G	H
2.6	0.6	0.8

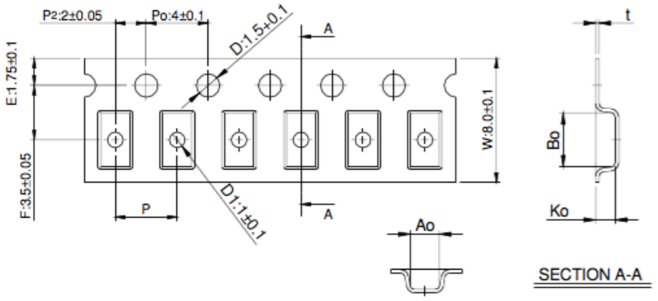
7. Package Information:

Packaging Quantity: 4000pcs/Reel

Reel Dimension:

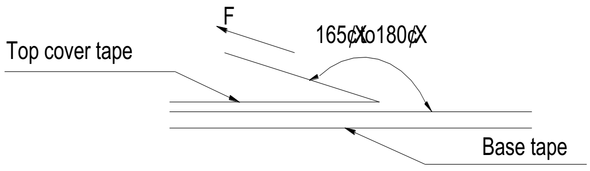


Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	9.0±0.5	60±2	13.5±0.5	178±2
7"x12mm	13.5±0.5	60±2	13.5±0.5	178±2



Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
160808	1.95±0.10	1.05±0.10	1.05±0.10	4.0±0.10	0.23±0.05	none

Tearing Off Force:



Room Temp. (℃)	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℃ 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