

# 深圳市华锐达电子有限公司

## 产品承认书

SPECIFICATION FOR APPROVAL

编号: 202068Mon162522

客 户: \_\_\_\_\_

客户料号: \_\_\_\_\_

料 号: \_\_\_\_\_ CMBZ0603-601T04 \_\_\_\_\_

日 期: \_\_\_\_\_ 2020/06/08 \_\_\_\_\_

客户承认栏 APPROVED FOR CUSTOMER	DRAWN (制图)	CHECKED (检查)	APPROVED (确认)
	许丽琳	甘元培	胡林立
确认无误后敬请签回 (Please Return After Approved)			

地 址: 中国广东省深圳市宝安区石岩水田金凯进工业区B栋2楼

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深圳市华锐达电子有限公司

### SPECIFICATION FOR APPROVAL

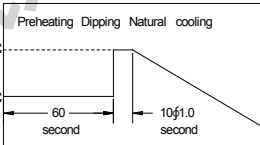
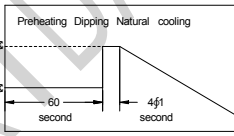
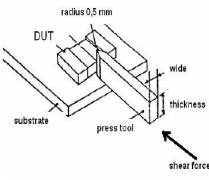
CUSTOME (客户):			PAGE: 2 FO 9	
ITEM: CMBZ0603-601T04			Customer' s ITEM:	
变更次数	变更项目	变更前内容	变更后内容	变更日期
1				
2				
3				
CUSTOMER APPROVED (客户确认栏)		APPROVED (确认)	CHECKED (检查)	DRAWN (制图)
		胡林立	甘元培	许丽琳

## 华锐达样品承认书

### SPECIFICATION FOR APPROVAL

CUSTOMER (客户):	PAGE :		
ITEM : CMBZ0603-601T04	Customer' s ITEM :		
1. EXTERNAL DIMENSIONS (外观尺寸):			
			
A (mm)	B (mm)	C (mm)	D (mm)
1.6±0.15	0.8±0.15	0.8±0.15	0.3±0.2
2. ELECTRICAL CHARACTERISTICS (电特性要求):			
ITEM (项目)	Specifications (规格值)	Typ. (参考值)	Testequipments (测试仪器)
L	600 Ω ±25%	600 Ω	HP4291B LCR METER
Test Freq.	100MHz 60mV		HP4291B LCR METER
DCR	0.5 oHM MAX	0.38 oHM	CH502A LCR METER
IDC	400mA		HP42841A
Ope. Temp.	-40℃ TO 125℃		HC-D3M TEMP. & HUMIDITY CHAMBER
3. Product size specification reference table (产品尺寸规格对照表)			
英寸制	毫米制	英寸制	毫米制
0402	100505	1206	321611
0603	160808	1206A	321613
0805	201209	1210	322013
0805T	201212	1812	453215
1008	252012	1812A	451616
1008A	252010	2220	575018
CUSTOMER APPROVED (客户确认栏)		APPROVED (确认)	CHECKED (检查)      DRAWN (制图)
		胡林立	甘元培      许丽琳
ISSUED DATE (出版日期): 2020/06/08			版次: 1.0

## 4. Reliability and Test Condition

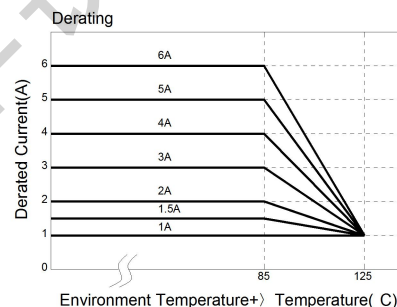
Item	Performance						Test Condition															
Series No.			HLLB				--															
Operating Temperature	-40~+125°C (Including self-temperature rise)			-40~+105°C (Including self-temperature rise)			--															
Transportation Storage Temperature	-40~+125°C (on board)			-40~+105°C (on board)			For long storage conditions, please see the Application Notice															
Impedance (Z)	Refer to standard electrical characteristics list						Agilent4291															
Inductance (Ls)							Agilent E4991															
Q Factor							Agilent4287															
DC Resistance							Agilent16192															
Rated Current							Agilent 4338															
Temperature Rise Test	Rated Current < 1A ΔT 20°CMax Rated Current ≥ 1A ΔT 40°CMax						1. Applied the allowed DC current. 2. Temperature measured by digital surface thermometer.															
Resistance to Soldering Heat	<p>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</p>						<p>Preheat: 150°C,60sec. Solder: Sn99.5%-Cu0.5% Solder temperature: 260±5°C Flux for lead free: Rosin. 9.5% Temperature ramp/immersion and immersion rate: 25±6 mm/s Dip time: 10±1sec. Depth: completely cover the termination.</p> 															
Solderability	<p>More than 95% of the terminal electrode should be covered with solder.</p>						<p>Preheat: 150°C,60sec. Solder: Sn99.5%-Cu0.5% Solder temperature: 245±5°C Flux for lead free: Rosin. 9.5% Depth: completely cover the termination. Dip time: 4±1sec.</p> 															
Terminal strength	<p>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</p>						<p>Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020D Classification Reflow Profiles) Component mounted on a PCB apply a force (&gt;0805:1kg &lt;=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 shock the component being tested.</p> 															
Bending	<p>Appearance: No damage. Impedance: within±10% 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</p>						<p>Shall be mounted on a FR4 substrate of the following dimensions:&gt;=0805:40x100x1.2mm &lt;0805:40x100x0.8mm Bending depth:&gt;=0805:1.2mm &lt;0805:0.8mm Duration of 10 sec for a min.</p>															
Vibration Test	<p>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</p>						<p>Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020D Classification Reflow Profiles) 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).</p>															
Shock	<p>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</p>						<p>Test condition:</p> <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 (V)ft/sec</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>1,500</td> <td>0.5</td> <td>Half-sine</td> <td>15.4</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 (V)ft/sec	SMD	1,500	0.5	Half-sine	15.4	Lead	100	6	Half-sine	12.3
Type	Peak Value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (V)ft/sec																		
SMD	1,500	0.5	Half-sine	15.4																		
Lead	100	6	Half-sine	12.3																		

Item	Performance	Test Condition
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<b>Life test</b>	Appearance: no damage.  Impedance: within $\pm 15\%$ of initial value. 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: $125 \pm 2^\circ\text{C}$ (bead), $85 \pm 2^\circ\text{C}$ (inductor) Applied current: rated current. Duration: $1000 \pm 12$ hrs. Measured at room temperature after placing for $24 \pm 2$ hrs.
<b>Load Humidity</b>	Appearance: no damage.  Impedance: within $\pm 15\%$ of initial value. 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) Humidity: $85 \pm 2\%$ R.H. Temperature: $85 \pm 2^\circ\text{C}$ . Duration: 1000hrs Min. with 100% rated current. Measured at room temperature after placing for $24 \pm 2$ hrs.
<b>Thermal shock</b>	Appearance: no damage.  Impedance: within $\pm 15\%$ of initial value. 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) Condition for 1 cycle Step1: $-40 \pm 2^\circ\text{C}$ $30 \pm 5$ min. Step2: $25 \pm 2^\circ\text{C}$ $\cong 0.5$ min Step3: $+105 \pm 2^\circ\text{C}$ $30 \pm 5$ min. Number of cycles: 500 Measured at room temperature after placing for $24 \pm 2$ hrs.
<b>Insulation Resistance</b>	IR > 1GΩ	Chip Inductor Only Test Voltage: $100 \pm 10\%$ V for 30Sec.

**\*\*Derating Curve**

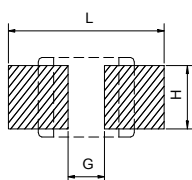
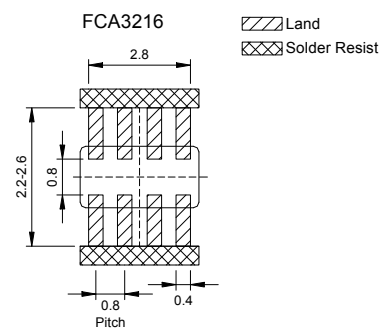
For the ferrite chip bead which withstanding current over 1.5A, as the operating temperature over  $85^\circ\text{C}$ , the derating current information is necessary to consider with. For the detail derating of current, please refer to the Derated Current vs. Operating Temperature curve.



**5.Soldering and Mounting**

**5-1. Recommended PC Board Pattern**

Chip Size						Land Patterns For Reflow Soldering		
Series	Type	A(mm)	B(mm)	C(mm)	D(mm)	L(mm)	G(mm)	H(mm)
HLLB	0603	$0.6 \pm 0.03$	$0.30 \pm 0.03$	$0.30 \pm$	$0.15 \pm$	0.80	0.30	0.30
	1005	$1.0 \pm 0.10$	$0.50 \pm 0.10$	$0.50 \pm$	$0.25 \pm$	1.50	0.40	0.55
	1608	$1.6 \pm 0.15$	$0.80 \pm 0.15$	$0.80 \pm$	$0.30 \pm$	2.60	0.60	0.80
GHB	2012	$2.0 \pm 0.20$	$1.25 \pm 0.20$	$0.85 \pm$	$0.50 \pm$	3.00	1.00	1.00
		$2.0 \pm 0.20$	$1.25 \pm 0.20$	$1.25 \pm$	$0.50 \pm$			
FHI	3216	$3.2 \pm 0.20$	$1.60 \pm 0.20$	$1.10 \pm$	$0.50 \pm$	4.40	2.20	1.40
FCH	3225	$3.2 \pm 0.20$	$2.50 \pm 0.20$	$1.30 \pm$	$0.50 \pm$	4.40	2.20	3.40
HCI	4516	$4.5 \pm 0.20$	$1.60 \pm 0.20$	$1.60 \pm$	$0.50 \pm$	5.70	2.70	1.40
	4532	$4.5 \pm 0.20$	$3.20 \pm 0.20$	$1.50 \pm$	$0.50 \pm$	5.90	2.57	4.22



PC board should be designed so that products can prevent damage from mechanical stress when warping the board.

### 5-2. Soldering

Mildly activated rosin fluxes are preferred. 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 wave soldering is used, there will be some risk.

Re-flow soldering temperatures below 240 degrees, there will be non-wetting risk

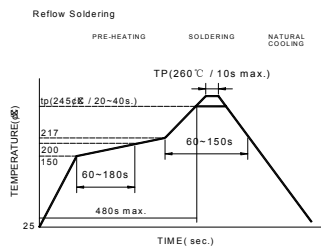
#### 5-2.1 Lead Free Solder re-flow:

Recommended temperature profiles for lead free re-flow soldering in Figure 1. (Referred to J-STD-020C)

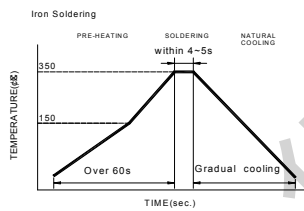
#### 5-2.2 Soldering Iron:

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

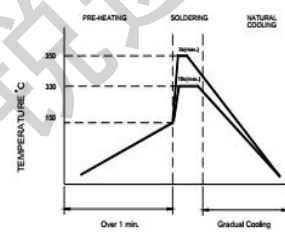
- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 350°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4~5sec.



Reflow times: 3 times max



Iron Soldering times: 1 times max

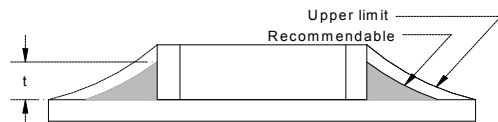


Hand Soldering

### 5-2.3 Solder Volume

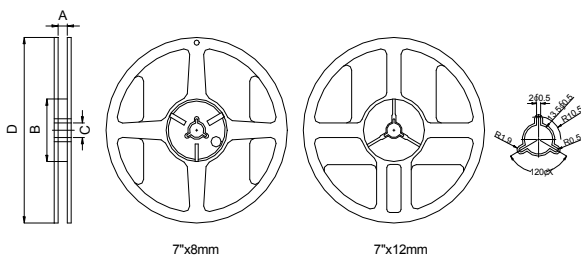
Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceed as shown in right side:

Minimum fillet height = soldering thickness + 25% product height



## 6. Packaging Information

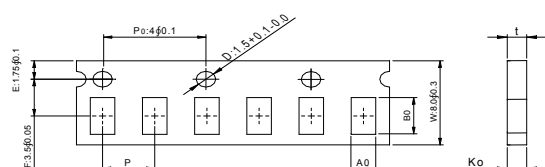
### 6-1. Reel Dimension



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

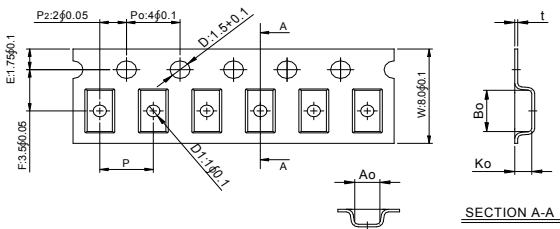
#### 6-2.1 Tape Dimension / 8mm

Material of taping is paper



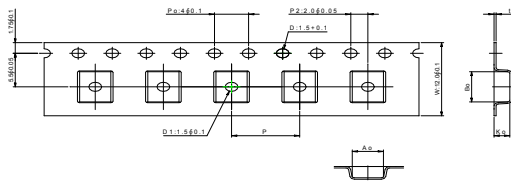
Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
060303	0.68±	0.38±	0.50max	2.0±0.05	0.50max
100505	1.12±	0.62±	0.60±	2.0±0.05	0.60±

Material of taping is plastic



Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
201212	2.10±	1.28±	1.28±	4.0±0.10	0.22±	1.0±0.10
321611	3.35±	1.75±	1.25±	4.0±0.10	0.23±	1.0±0.10
322513	3.42±	2.77±	1.55±	4.0±0.10	0.22±	1.0±0.10
321609	3.40±	1.77±	1.04±	4.0±0.10	0.22±	1.0±0.10

6-2.2 Tape Dimension / 12mm

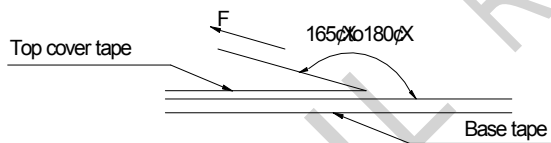


Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
451616	4.70±0.10	1.75±	1.75±0.10	4.0±0.1	0.24±0.05	1.5±0.1
453215	4.70±0.10	3.45±	1.60±0.10	8.0±0.1	0.24±0.05	1.5±0.1

6-3. Packaging Quantity

Chip Size	453215	451616	322513	321611	321609	201212	201209	160808	100505	060303
Chip / Reel	1000	1000	2000	4000	4000	4000	4000	4000	10000	15000
Inner box	5000	5000	14000	28000	28000	28000	28000	28000	70000	105000
Carton	20000	20000	56000	112000	112000	112000	112000	112000	280000	420000

6-4. Tearing Off Force



The force for tearing off cover tape is 15 to 60 grams in the arrow direction under the following conditions.

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

Application Notice

- Storage Conditions(component level)
  - To maintain the solder ability of terminal electrodes:
    1. TAI-TECH products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
    2. Temperature and humidity conditions: Less than 40°C and 60% RH.
    3. Recommended products should be used within 12 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.