承 认 书

SPECIFICATION FOR APPROVAL

客户名称：

Customer Name：_____

（请填写贵司全名）

客户品名：

Customer Part No.：_____

（请填写客户物料编码）

大立品名：

DALI Part No.：_____

（请填写大立品名）

大立规格书编号：

Specification No.：Spec-CMLC Series Rev.02

变更履历/Revised record:

Rev.	Effective Date	Changed Contents	Change Reasons	Approved By
01	2012-09-01	New released		Paul
02	2019-01-01	Format update		Paul

客户承认栏(请签名盖章并签署日期后回传)

Customer's Approval Chop: 客户承认盖章:
Approved By: 承认人:
Approved Date: 承认日期:

广州大立电子有限公司

Confirmed	Checked	Prepared
Paul	Amy	Steven
Date: 2019-01-01		

Add:广州市南沙区进港大道

Tel: 020-39075998 Fax: 020-39075978

Type:CMLC0603,1005,1608,2012 Operation Temperature：-40～+85℃(Includes temperature when the coil is heated)

Feature/特长

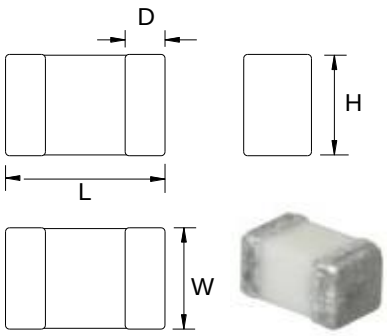
- Monolithic inorganic material construction(Ceramic)
- Excellent solderability and heat resistance.
- High reliability.
- RoHS compliant.
- 无机材料构造(陶瓷)。
- 良好的可焊性、耐热性。
- 高可靠性。
- RoHS指定对应。

Application/用途

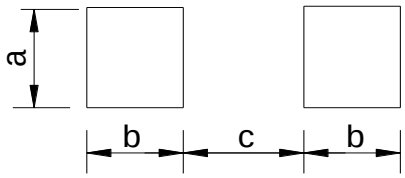
For high frequency applications such as mobile phones, high frequency modules (PA, VCO, FEM etc.), Bluetooth, W-LAN, UWB and tuners.

携带电话、高周波数制品(PA, VCO, FEM etc.), Bluetooth, W-LAN, UWB及无线电收音机适用。

Dimensions/外形图(Unit: mm)



Recommended Land Pattern/推荐贴装尺寸



Type	L	W	H	D	a(Ref.)	b(Ref.)	c(Ref.)	Packaging (pcs/reel)
CMLC0603 [0201]	0.60 ±0.05	0.30 ±0.05	0.30 ±0.05	0.15 ±0.05	0.4	0.5	0.3	15000
CMLC1005 [0402]	1.00 ±0.15	0.50 ±0.15	0.50 ±0.15	0.25 ±0.15	0.6	0.8	0.5	10000
CMLC1608 [0603]	1.60 ±0.2	0.80 ±0.2	0.80 ±0.2	0.3 ±0.2	0.8	1.0	0.6	4000
CMLC2012 [0805]	2.00 ±0.2	1.25 ±0.2	0.85 ±0.2	0.5 ±0.3	1.2	1.0	1.0	4000
CMLC2012A [0805]	2.00 ±0.2	1.25 ±0.2	1.25 ±0.2	0.5 ±0.3	1.2	1.0	1.0	3000

Product Identification/品名注释

C M L C 1005 - 22N J C
(1) (2) (3) (4) (5) (6) (7) (8)

(1) SMD/表面安装制品

(2) Multilayer chip/叠层片式

(3) Inductors/电感

(4) Ceramic/陶瓷

(5) Dimension symbol/尺寸表示:

1005=1.0 x 0.5 mm (L x W)

(6) Inductance value/电感值:

1N5=1.5nH, 22N=22nH, R10=100nH

(7) Tolerance/公差: S=±0.3nH, J=±5%

(8) Packing Style/包装形态: C=Carrier taping/编带包装

CMLC0603 Electrical Characteristics

Part Number	Inductance	Inductance	Q	Test frequency	DCR max.	Rated current	SRF(MHz)	
	(nH)	tolerance	min.	L,Q	(Ω)	(mA)	typ.	min.
CMLC0603-0N8SC	0.8	S	4	100 MHz,50mV	0.10	500	>12000	>10000
CMLC0603-1N0SC	1.0	S	4	100 MHz,50mV	0.11	470	>12000	>10000
CMLC0603-1N2SC	1.2	S	4	100 MHz,50mV	0.12	450	>12000	>10000
CMLC0603-1N5SC	1.5	S	4	100 MHz,50mV	0.13	430	>12000	>10000
CMLC0603-1N8SC	1.8	S	4	100 MHz,50mV	0.16	390	>12000	>10000
CMLC0603-2N0SC	2.0	S	4	100 MHz,50mV	0.17	380	>12000	>10000
CMLC0603-2N2SC	2.2	S	4	100 MHz,50mV	0.19	360	12000	8800
CMLC0603-2N4SC	2.4	S	4	100 MHz,50mV	0.20	350	11000	8300
CMLC0603-2N7SC	2.7	S	4	100 MHz,50mV	0.21	340	10000	7700
CMLC0603-3N0SC	3.0	S	4	100 MHz,50mV	0.22	330	9500	7200
CMLC0603-3N3SC	3.3	S	4	100 MHz,50mV	0.23	320	9300	6700
CMLC0603-3N6SC	3.6	S	4	100 MHz,50mV	0.25	310	9000	6400
CMLC0603-3N9SC	3.9	S	4	100 MHz,50mV	0.27	300	8500	6000
CMLC0603-4N3SC	4.3	S	4	100 MHz,50mV	0.30	280	8000	5700
CMLC0603-4N7SC	4.7	S	4	100 MHz,50mV	0.30	280	7500	5300
CMLC0603-5N1SC	5.1	S	4	100 MHz,50mV	0.33	270	7000	5000
CMLC0603-5N6SC	5.6	S	4	100 MHz,50mV	0.36	260	6500	4600
CMLC0603-6N2SC	6.2	S	4	100 MHz,50mV	0.38	250	6000	4200
CMLC0603-6N8JC	6.8	J	4	100 MHz,50mV	0.39	250	5500	3900
CMLC0603-7N5JC	7.5	J	4	100 MHz,50mV	0.41	240	5000	3600
CMLC0603-8N2JC	8.2	J	4	100 MHz,50mV	0.45	230	4500	3400
CMLC0603-9N1JC	9.1	J	4	100 MHz,50mV	0.48	220	4000	3200
CMLC0603-10NJC	10	J	4	100 MHz,50mV	0.51	220	3800	2900
CMLC0603-12NJC	12	J	4	100 MHz,50mV	0.68	190	3500	2700
CMLC0603-15NJC	15	J	4	100 MHz,50mV	0.71	180	3200	2300
CMLC0603-18NJC	18	J	4	100 MHz,50mV	0.81	170	3000	2100
CMLC0603-22NJC	22	J	4	100 MHz,50mV	1.00	150	2500	1800
CMLC0603-27NJC	27	J	4	100 MHz,50mV	1.35	120	2400	1800
CMLC0603-33NJC	33	J	4	100 MHz,50mV	1.47	110	2300	1700
CMLC0603-39NJC	39	J	4	100 MHz,50mV	1.72	100	2200	1500
CMLC0603-47NJC	47	J	4	100 MHz,50mV	1.90	100	1800	1300
CMLC0603-56NJC	56	J	4	100 MHz,50mV	2.27	80	1500	1100
CMLC0603-68NJC	68	J	4	100 MHz,50mV	2.66	80	1500	1100
CMLC0603-82NJC	82	J	4	100 MHz,50mV	3.37	70	1400	1000

• Tolerance: S=±0.3nH, J=±5%.

• Test equipments: Inductance Q : HP4291A+16193A, or equivalent；SRF: HP8720C, or equivalent；DCR: YOKOGAWA TYPE7561, or equivalent.

• Rated current: The DC current at which the temperature rise is △t＝40℃ max.(Ta=25℃)

• All test data is referenced to 25℃ ambient.

CMLC1005 Electrical Characteristics

Part Number	Inductance	Inductance	Q	Test frequency	DCR max.	Rated current	SRF(MHz)	
	(nH)	tolerance	min.	L,Q	(Ω)	(mA)	typ.	min.
CMLC1005-1N0SC	1.0	S	7	100MHz,50mV	0.10	400	>13000	10000
CMLC1005-1N2SC	1.2	S	7	100MHz,50mV	0.10	400	>13000	10000
CMLC1005-1N5SC	1.5	S	7	100MHz,50mV	0.12	300	>13000	6000
CMLC1005-1N8SC	1.8	S	7	100MHz,50mV	0.12	300	11000	6000
CMLC1005-2N0SC	2.0	S	7	100MHz,50mV	0.20	300	10000	6000
CMLC1005-2N2SC	2.2	S	7	100MHz,50mV	0.20	300	10000	6000
CMLC1005-2N4SC	2.4	S	7	100MHz,50mV	0.20	300	9000	6000
CMLC1005-2N7SC	2.7	S	7	100MHz,50mV	0.20	300	9000	6000
CMLC1005-3N0SC	3.0	S	7	100MHz,50mV	0.20	300	8000	6000
CMLC1005-3N3SC	3.3	S	7	100MHz,50mV	0.20	300	8000	6000
CMLC1005-3N6SC	3.6	S	7	100MHz,50mV	0.20	300	7000	4000
CMLC1005-3N9SC	3.9	S	7	100MHz,50mV	0.20	300	7000	4000
CMLC1005-4N3SC	4.3	S	7	100MHz,50mV	0.20	300	6000	4000
CMLC1005-4N7SC	4.7	S	7	100MHz,50mV	0.21	300	6000	4000
CMLC1005-5N1SC	5.1	S	7	100MHz,50mV	0.30	300	5700	4000
CMLC1005-5N6SC	5.6	S	7	100MHz,50mV	0.30	300	5700	4000
CMLC1005-6N2JC	6.2	J	7	100MHz,50mV	0.30	300	5500	3900
CMLC1005-6N8JC	6.8	J	7	100MHz,50mV	0.30	300	5500	3900
CMLC1005-7N5JC	7.5	J	7	100MHz,50mV	0.40	300	5000	3700
CMLC1005-8N2JC	8.2	J	7	100MHz,50mV	0.40	300	4900	3600
CMLC1005-9N1JC	9.1	J	7	100MHz,50mV	0.40	300	4500	3400
CMLC1005-10NJC	10	J	7	100MHz,50mV	0.40	300	4300	3200
CMLC1005-12NJC	12	J	8	100MHz,50mV	0.50	300	3900	2700
CMLC1005-15NJC	15	J	8	100MHz,50mV	0.50	300	3500	2300
CMLC1005-18NJC	18	J	8	100MHz,50mV	0.60	300	3100	2100
CMLC1005-22NJC	22	J	8	100MHz,50mV	0.60	300	2800	1900
CMLC1005-27NJC	27	J	8	100MHz,50mV	0.70	300	2300	1600
CMLC1005-33NJC	33	J	8	100MHz,50mV	0.80	200	1900	1300
CMLC1005-39NJC	39	J	8	100MHz,50mV	1.0	200	1700	1200
CMLC1005-47NJC	47	J	8	100MHz,50mV	1.2	200	1500	1100
CMLC1005-56NJC	56	J	8	100MHz,50mV	1.3	200	1300	750
CMLC1005-68NJC	68	J	8	100MHz,50mV	2.0	180	1200	750
CMLC1005-82NJC	82	J	8	100MHz,50mV	2.4	150	1100	750
CMLC1005-R10JC	100	J	8	100MHz,50mV	2.6	150	1000	700
CMLC1005-R12JC	120	J	8	100MHz,50mV	2.8	150	800	600
CMLC1005-R15JC	150	J	8	100MHz,50mV	3.2	100	750	550
CMLC1005-R18JC	180	J	8	100MHz,50mV	3.7	100	700	500
CMLC1005-R22JC	220	J	8	100MHz,50mV	4.0	100	600	400
CMLC1005-R27JC	270	J	8	100MHz,50mV	4.5	50	500	350
CMLC1005-R33JC	330	J	8	100MHz,50mV	7.0	50	500	350

• Tolerance: S=±0.3nH, J=±5%.

• Test equipments: Inductance Q : HP4291A+16193A, or equivalent； SRF: HP8720C, or equivalent； DCR: YOKOGAWA TYPE7561, or equivalent.

• Rated current: The DC current at which the temperature rise is △t＝40℃ max.(Ta=25℃)

• All test data is referenced to 25℃ ambient.

CMLC1608 Electrical Characteristics

Part Number	Inductance	Inductance	Q	Test frequency	DCR max.	Rated current	SRF(MHz)	
	(nH)	tolerance	min.	L,Q	(Ω)	(mA)	typ.	min.
CMLC1608-1N0SC	1.0	S	8	100MHz,50mV	0.10	300	>13000	10000
CMLC1608-1N2SC	1.2	S	8	100MHz,50mV	0.10	300	>13000	10000
CMLC1608-1N5SC	1.5	S	8	100MHz,50mV	0.10	300	>13000	6000
CMLC1608-1N8SC	1.8	S	8	100MHz,50mV	0.12	300	>13000	6000
CMLC1608-2N2SC	2.2	S	8	100MHz,50mV	0.20	300	12000	6000
CMLC1608-2N7SC	2.7	S	8	100MHz,50mV	0.20	300	11000	6000
CMLC1608-3N3SC	3.3	S	8	100MHz,50mV	0.20	300	9000	6000
CMLC1608-3N9SC	3.9	S	8	100MHz,50mV	0.25	300	8000	5600
CMLC1608-4N7SC	4.7	S	8	100MHz,50mV	0.30	300	6500	4000
CMLC1608-5N6SC	5.6	S	8	100MHz,50mV	0.30	300	5800	4000
CMLC1608-6N8JC	6.8	J	8	100MHz,50mV	0.35	300	5600	4000
CMLC1608-8N2JC	8.2	J	8	100MHz,50mV	0.35	300	5200	3500
CMLC1608-10NJC	10	J	8	100MHz,50mV	0.40	300	4600	3200
CMLC1608-12NJC	12	J	8	100MHz,50mV	0.40	300	4000	2600
CMLC1608-15NJC	15	J	8	100MHz,50mV	0.45	300	3400	2300
CMLC1608-18NJC	18	J	8	100MHz,50mV	0.60	300	3000	2000
CMLC1608-22NJC	22	J	8	100MHz,50mV	0.60	300	2900	1600
CMLC1608-27NJC	27	J	8	100MHz,50mV	0.80	300	2200	1400
CMLC1608-33NJC	33	J	8	100MHz,50mV	0.80	300	1800	1200
CMLC1608-39NJC	39	J	8	100MHz,50mV	1.00	300	1600	1100
CMLC1608-47NJC	47	J	8	100MHz,50mV	1.00	200	1600	900
CMLC1608-56NJC	56	J	8	100MHz,50mV	1.00	200	1400	900
CMLC1608-68NJC	68	J	8	100MHz,50mV	1.00	200	1200	700
CMLC1608-82NJC	82	J	8	100MHz,50mV	1.00	200	1100	600
CMLC1608-R10JC	100	J	8	100MHz,50mV	1.40	200	1000	600
CMLC1608-R12JC	120	J	8	100MHz,50mV	1.60	150	800	500
CMLC1608-R15JC	150	J	8	100MHz,50mV	1.80	150	800	500
CMLC1608-R18JC	180	J	8	100MHz,50mV	1.80	150	700	400
CMLC1608-R22JC	220	J	8	100MHz,50mV	2.50	100	600	400
CMLC1608-R27JC	270	J	8	100MHz,50mV	3.20	80	500	300

• Tolerance: S=±0.3nH, J=±5%.

• Test equipments: Inductance Q : HP4291A+16193A, or equivalent； SRF: HP8720C, or equivalent； DCR: YOKOGAWA TYPE7561, or equivalent.

• Rated current: The DC current at which the temperature rise is △t＝40℃ max.(Ta=25℃)

• All test data is referenced to 25℃ ambient.

CMLC2012/CMLC2012A Electrical Characteristics

Part Number	Inductance	Inductance	Q	Test frequency	DCR max.	Rated current	SRF(MHz)		Thickness
	(nH)	tolerance	min.	L,Q(MHz)	(Ω)	(A)	typ.	min.	
CMLC2012-1N5SC	1.5	S	10	100	0.10	0.30	>6000	4000	0.85 ±0.2
CMLC2012-1N8SC	1.8	S	10	100	0.10	0.30	>6000	4000	0.85 ±0.2
CMLC2012-2N2SC	2.2	S	10	100	0.10	0.30	>6000	4000	0.85 ±0.2
CMLC2012-2N7SC	2.7	S	12	100	0.10	0.30	>6000	4000	0.85 ±0.2
CMLC2012-3N3SC	3.3	S	12	100	0.13	0.30	>6000	4000	0.85 ±0.2
CMLC2012-3N9SC	3.9	S	12	100	0.15	0.30	>6000	4000	0.85 ±0.2
CMLC2012-4N7SC	4.7	S	12	100	0.20	0.30	>6000	3500	0.85 ±0.2
CMLC2012-5N6SC	5.6	S	15	100	0.23	0.30	5400	3200	0.85 ±0.2
CMLC2012-6N8JC	6.8	J	15	100	0.25	0.30	4200	2800	0.85 ±0.2
CMLC2012-8N2JC	8.2	J	15	100	0.28	0.30	3700	2400	0.85 ±0.2
CMLC2012-10NJC	10	J	15	100	0.30	0.30	3100	2100	0.85 ±0.2
CMLC2012-12NJC	12	J	15	100	0.35	0.30	3000	1900	0.85 ±0.2
CMLC2012-15NJC	15	J	15	100	0.40	0.30	2600	1600	0.85 ±0.2
CMLC2012-18NJC	18	J	15	100	0.45	0.30	2300	1500	0.85 ±0.2
CMLC2012-22NJC	22	J	18	100	0.50	0.30	2100	1400	0.85 ±0.2
CMLC2012-27NJC	27	J	18	100	0.55	0.30	1800	1300	0.85 ±0.2
CMLC2012-33NJC	33	J	18	100	0.60	0.30	1700	1200	0.85 ±0.2
CMLC2012-39NJC	39	J	18	100	0.65	0.30	1400	1000	0.85 ±0.2
CMLC2012-47NJC	47	J	18	100	0.70	0.30	1200	900	0.85 ±0.2
CMLC2012-56NJC	56	J	18	100	0.75	0.30	1100	800	0.85 ±0.2
CMLC2012-68NJC	68	J	18	100	0.80	0.30	900	700	0.85 ±0.2
CMLC2012-82NJC	82	J	18	100	0.90	0.30	800	600	0.85 ±0.2
CMLC2012-R10JC	100	J	18	100	0.90	0.30	800	600	0.85 ±0.2
CMLC2012-R12JC	120	J	13	100	1.0	0.30	700	500	0.85 ±0.2
CMLC2012-R15JC	150	J	13	100	1.0	0.30	700	500	0.85 ±0.2
CMLC2012-R18JC	180	J	13	100	1.1	0.30	600	400	0.85 ±0.2
CMLC2012-R22JC	220	J	12	100	1.2	0.30	550	350	0.85 ±0.2
CMLC2012-R27JC	270	J	12	100	1.3	0.30	480	300	0.85 ±0.2
CMLC2012-R33JC	330	J	12	100	1.4	0.30	400	250	0.85 ±0.2
CMLC2012A-R39JC	390	J	10	100	1.3	0.30	400	250	1.25 ±0.2
CMLC2012A-R47JC	470	J	10	100	1.5	0.30	350	200	1.25 ±0.2

• Tolerance: S=±0.3nH, J=±5%.

• Test equipments: Inductance Q : HP4291A+16193A, or equivalent；SRF: HP8720C, or equivalent；DCR: YOKOGAWA TYPE7561, or equivalent.

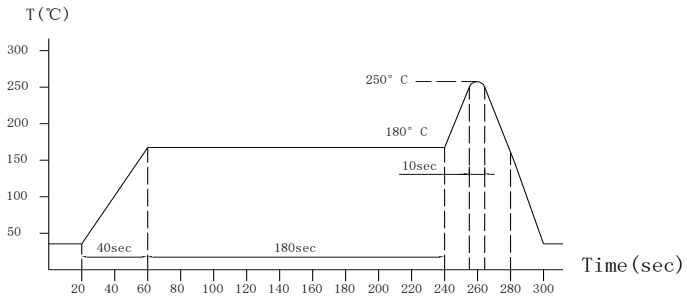
• Rated current: The DC current at which the temperature rise is △t＝40℃ max.(Ta=25℃)

• All test data is referenced to 25℃ ambient.

General Characteristics/一般特性

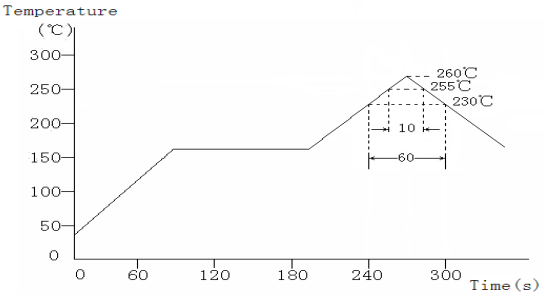
Operation Temperature Range /使用温度范围	-40～+85℃(Includes temperature when the coil is heated) / -40～+85℃(包含线圈自身发热)
Storage Conditions /保存条件(产品安装基板前)	To maintain the solderability of terminal electrodes: / 为了保持电极的可焊性，请按以下保存条件存储： 1. Temperature and humidity conditions: 5~ 40℃ and 30~70% RH; / 温度、湿度条件: 5~ 40℃、相对湿度 30~70%; 2. Recommended products should be used within 6 months form the time of delivery; / 产品应在交货后 6 个月内使用; 3. The products Should be stored in the complete package provided by the supplier; The packaging material should be kept where no chlorine or sulfur exists in the air; The packaging should be placed on the shelf. / 产品须存储在供方提供的完整的包装内；产品包装应存放在空气中不含氯或硫的地方；产品包装应放在货架上。
Transport Attentions /搬运注意事项	1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils; / 1.产品搬运时应小心处理，避免因出汗和皮肤油渍而造成损坏或污染; 2. The use of tweezers or vacuum pick up is strongly recommended for individual components; / 2.强烈建议对单个部件使用镊子或真空吸嘴; 3. Bulk handling should ensure that abrasion and mechanical shock are minimized. / 3.散货搬运应确保磨损和机械冲击最小化。
External Appearance/外观	On visual inspection, the coil has no external defects. / 目视检查时，外观没有明显的缺陷。
Solderability Test/可焊性测试	The terminal shall be at least 90% covered with solder. Test condition: after fluxing, inductor shall be dipped in a melted solder bath at 245 ±5℃ for 5 Sec. / 电极应至少覆盖 90%的焊料。测试条件：电极涂上助焊剂后在 245±5℃的熔化焊槽中浸泡 5 秒。
Humidity Characteristics /耐湿度特性	Inductance deviation within ±10%, after 96 hours in 90～95% relative humidity at 40±2℃ and 1 hour drying under normal condition. / 温度在 40±2℃，相对湿度在 90～95%条件下存放 96 小时后取出，用布擦干，然后在常温常湿中放置 1 小时，电感值变化率±10%以内。
Thermal shock test /冷热冲击特性	Inductance deviation within ±10%, after 20 cycles of -40℃ for 30 minutes, +85℃ for 30 minutes. Characteristics are measured after the ambient air exposure of 1 hour. / -40℃放置 30 分钟后转换为+85℃放置 30 分钟，20 次循环，然后在常温常湿中放置 1 小时，电感值变化率±10%以内。
High temperature storage test /高温保存测试	Inductance deviation within ±10%, after 96 hours in +85℃±2℃ characteristics are measured after ambient are exposure of 1 hour. / +85℃±2℃放置 96 小时，然后在常温常湿中放置 1 小时，电感值变化率±10%以内。
Low temperature storage test /低温保存测试	Inductance deviation within ±10%, after 96 hours in -40℃±2℃ characteristics are measured after ambient are exposure of 1 hour. / -40℃±2℃放置 96 小时，然后在常温常湿中放置 1 小时，电感值变化率±10%以内。

Recommended Reflow Conditions (Lead-free) /推荐回流焊条件(无铅)



The reflow condition recommended above is according to the machine used by our company. Big differences will arises a result of the type of machine, reflow conditions, method, used etc. Hence, before setting up your reflow conditions, please confirm with the above. / 上面推荐的回流焊试验条件是根据本公司的回流焊设备测试结果得到。不同的试验设备、试验条件和试验方法及试

Reflow Soldering Heat Endurance /回流焊耐热



No mechanical and electrical defects are found after testing based on the above profile and keeping under the conditions of room temperature and humidity for 2 hours. / 在该条件下进行回流焊，常温常湿条件下放置 2 个小时后，无机械、电气特性缺陷发生。

Twice reflow test is acceptable with the test interval remaining 1 hour under the normal conditions. / 在常温常湿条件下，间隔 1 个小时可进行两次回流焊。The reflow test profile may vary with the testing