信 昌 電 子 陶 瓷 股 份 有 限 公 司
PROSPERITY DIELECTRICS CO., LTD.

SPECIFICATION FOR APPROVAL

CUSTOMER	
CUST. PART NO.	
CUST. DOC. REV.	
DESCRIPTION	MOLDED POWER CHOKE (RoHS+H.F.)
SAMPLE LOT NO.	
PART NO.	MCS0320-XXXXT1
DOC. REV.	ORIG
DATE	

Once you approve this part, please sign and return this page to the following marked location.

Customer Signature:_____ Date:_____

☐This part currently development section.

☐Production line can produce this series of products.

■Sales Office-Headquarter
No. 566-1, Kao-Shi Rd., Yangmei, Taoyuan 32668, Taiwan
TEL: +886-3-475-3355
FAX: +886-3-485-4959

☐Yong Zhou Plant
Tao-Yuan Rd., Fenghuang Park, Lengshuitan District, Yongzhou, Hunan 425000, P.R.C.
TEL: +86-746-8610-180
FAX: +86-746-8610-181

☐Sales Office-Dong Guan,China
No.638,Mei Jing West Road Xiniupo Administrative Zone Dalang Town,Dong Guan City,GuangDong Province,China.
TEL: +86-769-8555-0979
FAX: +86-769-8555-0972

TESTED BY	CHECKED BY	APPROVED BY

TABLE OF CONTENTS

INDEX **Page**

SPECIFICATION FOR APPROVAL

CUSTOMER	CUSTOMER P/N	REV.	SPL. LOT NO.	
		–		
PART NAME	**PART NO.**	**REV.**	**DATE OF ISSUE**	**Q'TY**
MOLDED POWER CHOKE(RoHS+H.F.)	**MCS0320-XXXXT1**	**ORIG**		**0 PCS**

ENGINEERING CHANGE NOTICE - RECORD

REVISION NO.	REVISION DESCRIPTION	AUTHOR	DATE	REMARK
ORIG		***Gary Chang***		

SPECIFICATION FOR APPROVAL

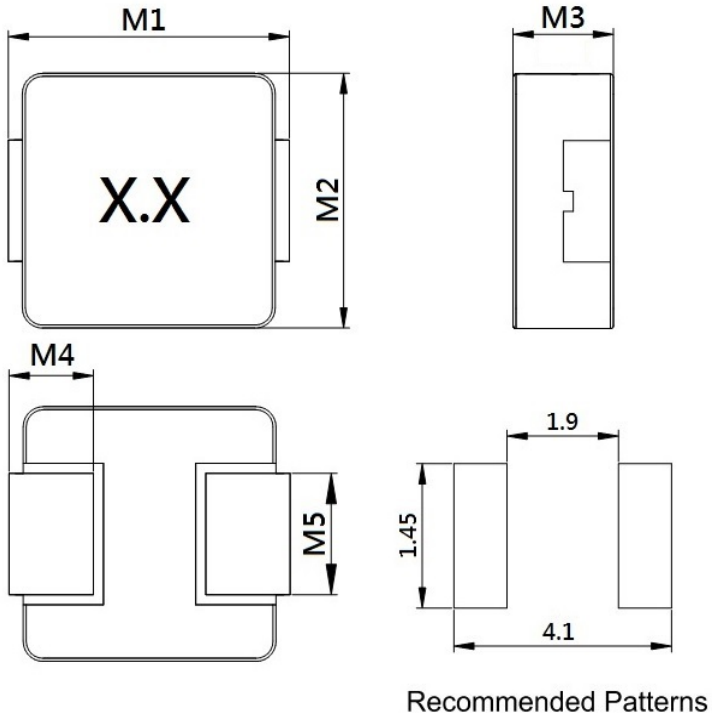
※This is a RoHS and REACH compliant product whose related documents are available on request.
※Graphic is only for dimensionally application.

1. PART NUMBERING IDENTIFICATION

MCS 0320 - □□□ □ T1

- **T1** — CONTROL NUMBER
- **□** — TOLERANCE
- **□□□** — INDUCTANCE
- **0320** — DIMENSIONS
- **MCS** — PRODUCT SYMBOL

2. MECHANICAL DIMENSION



Recommended Patterns

UNIT: mm

	DIM.	TOL.
M1	3.5	±0.2
M2	3.2	±0.2
M3	1.8	±0.2
M4	0.7	±0.2
M5	1.2	±0.2

3. MARKING

Marking ex: 1.0uH ➔ 1.0

SPECIFICATION FOR APPROVAL

4. ELECTRICAL SPECIFICATION

Part Number	Inductance (uH)	DC Resistance (mΩ) Typical	DC Resistance (mΩ) MAX.	I rms (A) Typical	I rms (A) MAX.	I sat (A) Typical	I sat (A) MAX.
MCS0320-R10NT1	0.10	6.6	9	10.5	9.5	14.0	12.5
MCS0320-R22NT1	0.22	11.0	14	9.0	8.0	11.2	10.5
MCS0320-R33MT1	0.33	17.0	21	8.0	7.0	10.0	9.0
MCS0320-R47MT1	0.47	19.7	23	7.0	6.0	9.0	8.0
MCS0320-R68MT1	0.68	25.5	29	5.5	4.5	7.0	6.5
MCS0320-1R0MT1	1.00	32.0	38	4.0	3.5	5.0	4.5
MCS0320-1R5MT1	1.50	42.0	50	3.8	3.1	4.0	3.5
MCS0320-2R2MT1	2.20	65.0	75	3.5	3.0	3.7	3.2
MCS0320-3R3MT1	3.30	125.0	145	3.0	2.6	3.5	3.0
MCS0320-4R7MT1	4.70	172.0	200	2.6	2.2	3.0	2.6
MCS0320-5R6MT1	5.60	205.0	238	2.2	1.8	2.6	2.2
MCS0320-6R8MT1	6.80	260.0	300	1.9	1.5	2.2	1.9
MCS0320-8R2MT1	8.20	340.0	390	1.6	1.3	1.9	1.6
MCS0320-100MT1	10.00	366.0	422	1.4	1.1	1.6	1.4

Tolerance: M:±20%, N:±30%

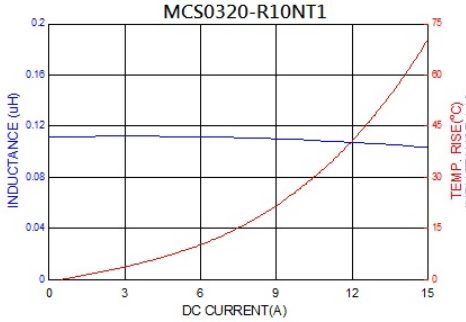
Note:

1. **Test frequency: 100KHz/1.0V**
2. **Operating temperature: -40~+125℃(Including self - temperature rise)**
3. **Storage temperature:**
   - **3-1. -10~+40℃, 50~60% RH(Product with taping)**
   - **3-2. -40~+125℃(on board)**
4. **All test data referenced to 25℃ ambient**
5. **Testing Instrument: Inductance: HP4284A, CH11025, CH3302, CH1320, CH1320S LCR Meter / DC Resistance: CH16502, Agilent33420A Micro ohm meter**
6. **Heat Rated Current (Irms) will cause the coil temperature rise approximately Δt of 40℃**
7. **Saturation Current (Isat) will cause L0 to drop approximately 30%**
8. **The part temperature (ambient + temp rise) should not exceed 125℃ under worst case operating conditions. Circuit design, component, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application**
9. **MSL: Level 1**

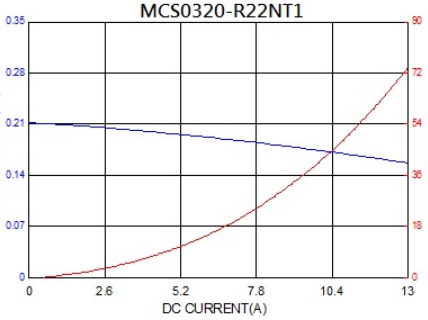
SPECIFICATION FOR APPROVAL

5. ELECTRICAL CURVE

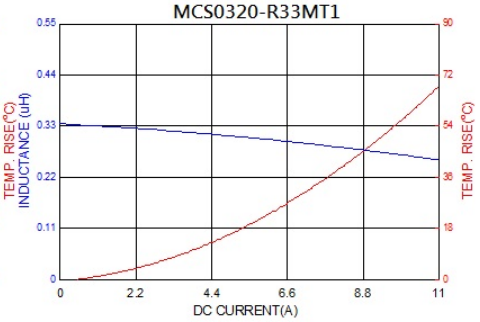
MCS0320-R10NT1



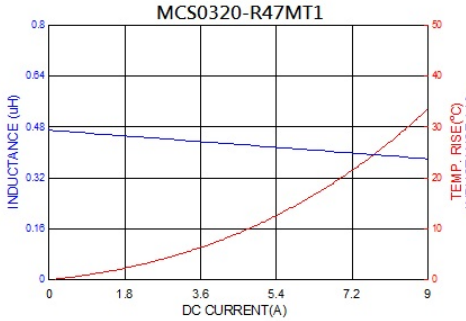
MCS0320-R22NT1



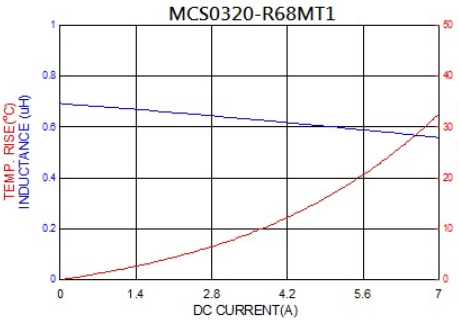
MCS0320-R33MT1



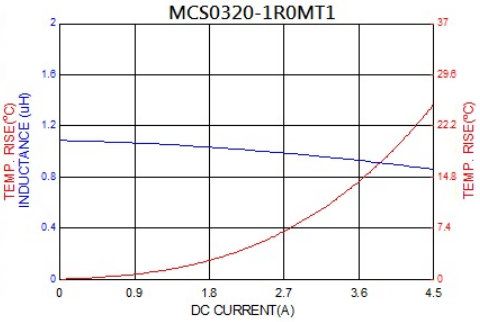
MCS0320-R47MT1



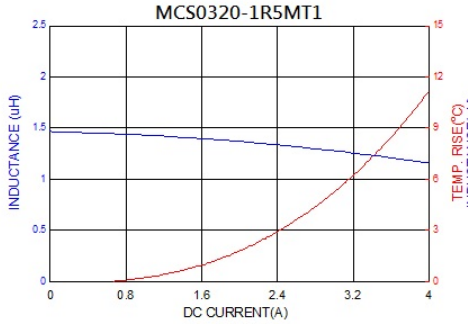
MCS0320-R68MT1



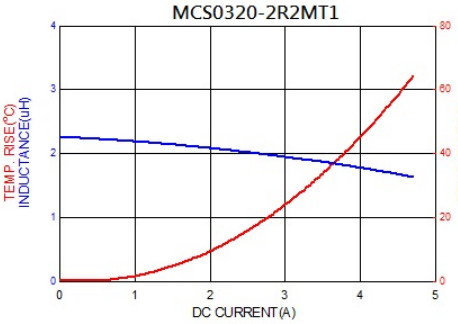
MCS0320-1R0MT1



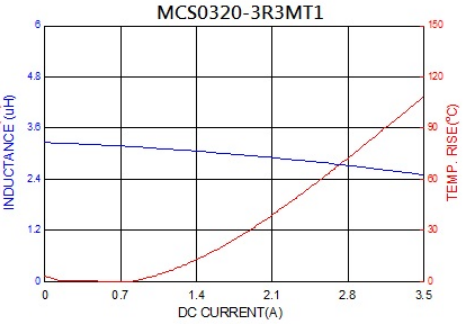
MCS0320-1R5MT1



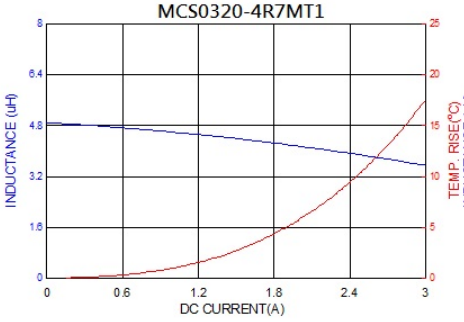
MCS0320-2R2MT1



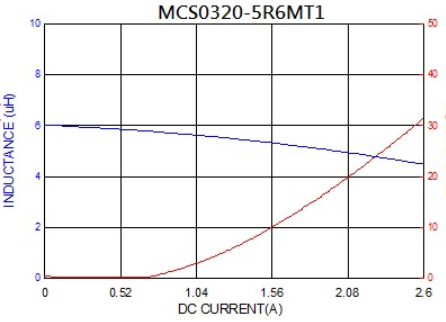
MCS0320-3R3MT1



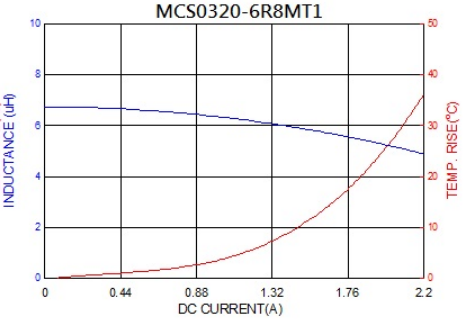
MCS0320-4R7MT1



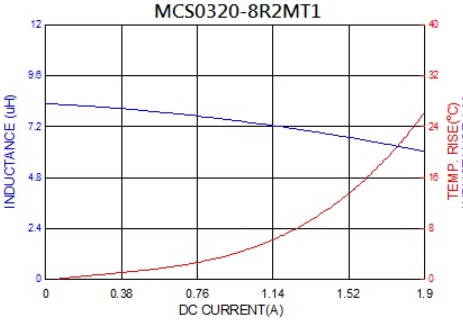
MCS0320-5R6MT1



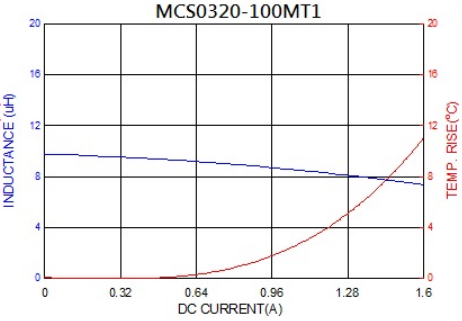
MCS0320-6R8MT1



MCS0320-8R2MT1



MCS0320-100MT1

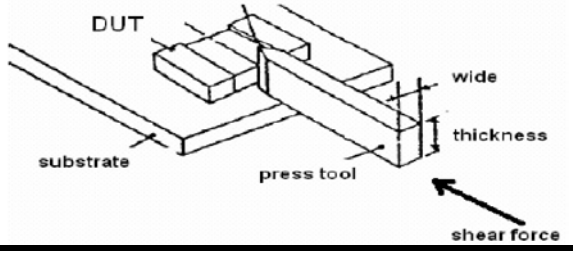


SPECIFICATION FOR APPROVAL

6. RELIABILITY PERFORMANCE

Item	Performance	Test Condition
Life Test	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	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDECJ-STD-020DClassification Reflow Profiles) Temperature: 125±2℃(Inductor) Applied current: rated current Duration: 1000±12hrs Measured at room temperature after placing for 24±2 hrs.
Load Humidity		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDECJ-STD-020DClassification Reflow Profiles) Humidity: 85±2% R.H, Temperature: 85℃±2℃ 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/JEDECJ-STD-020DClassification Reflow Profiles) 1. Baked at 50℃ 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 2 hrs then keep at -10℃ for 3 hrs 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.
Thermal shock		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDECJ-STD-020DClassification Reflow Profiles) Condition for 1 cycle Step1: -55±2℃ 30±5min Step2: 25±2℃ ≦0.5min Step3: 125±2℃ 30±5minNumber of cycles: 500 Measured at room fempraturc after placing for 24±2 hrs.
Vibration		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDECJ-STD-020DClassification 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)

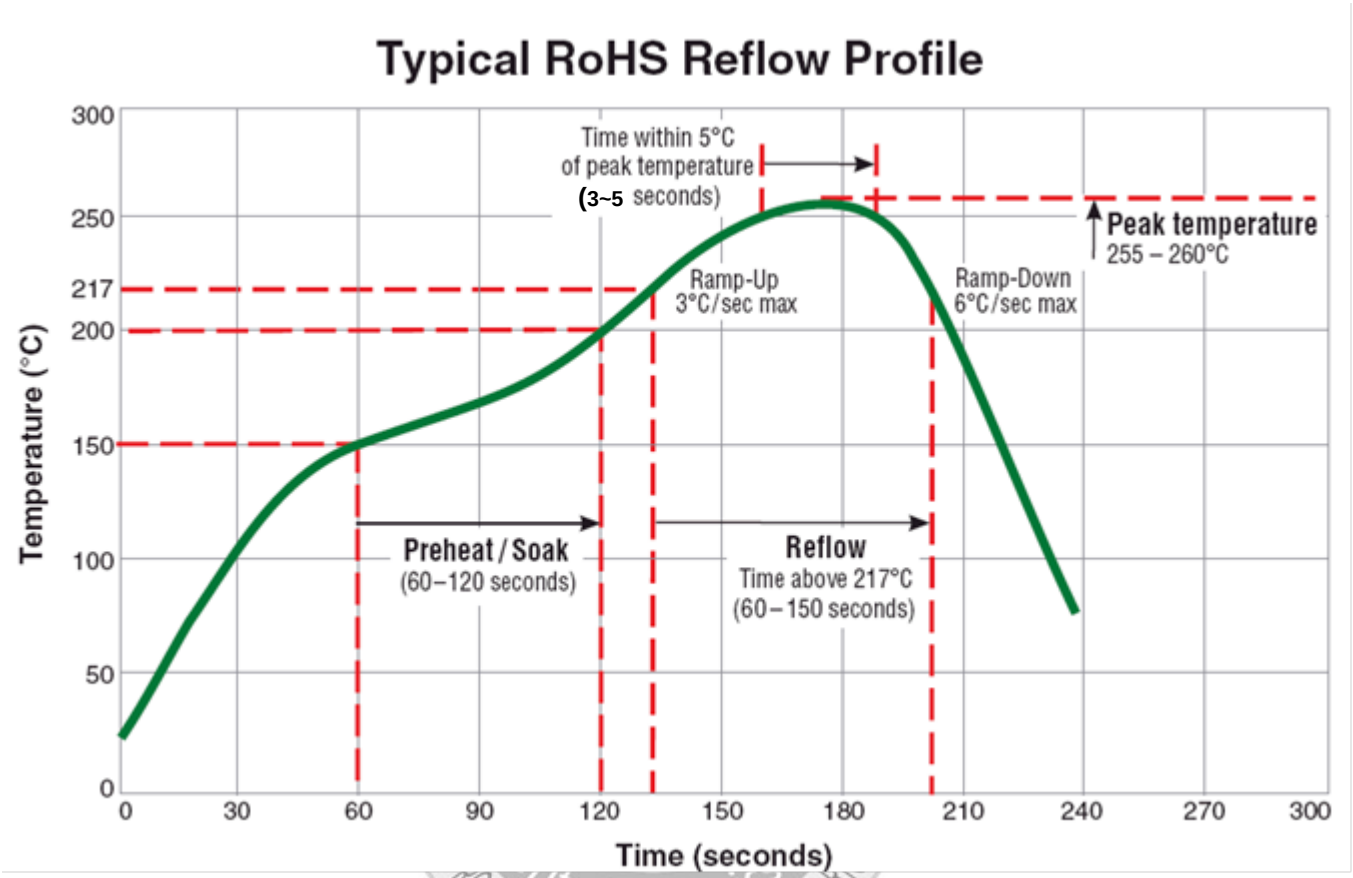
SPECIFICATION FOR APPROVAL

<table>
<tr><th>Item</th><th>Performance</th><th>Test Condition</th></tr>
<tr><td>Bending</td><td rowspan="2">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</td><td>Shall be mounted on a FR4 substrate of the following dimensions: >=0805 inch(2012mm):40x100x1.2mm
<0805 inch(2012mm):40x100x0.8mm
Bending depth: >=0805 inch(2012mm):1.2mm
<0805 inch(2012mm):0.8mm
duration of 10 sec.</td></tr>
<tr><td>Shock</td><td>
<table>
<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>
<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>
</table>
</td></tr>
<tr><td>Solder ability</td><td>More than 95% of the terminal electrode should be covered with solder</td><td>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>Resistance to Soldering Heat</td><td rowspan="2">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</td><td>Depth: completely cover the termination
<table>
<tr><th>Temperature(°C)</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>Terminal Strength</td><td>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification 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.
 
</td></tr>
</table>

Note: When there are questions concerning measurement result: measurement shall be made after 48±2 hours of recovery under the standard condition.

SPECIFICATION FOR APPROVAL

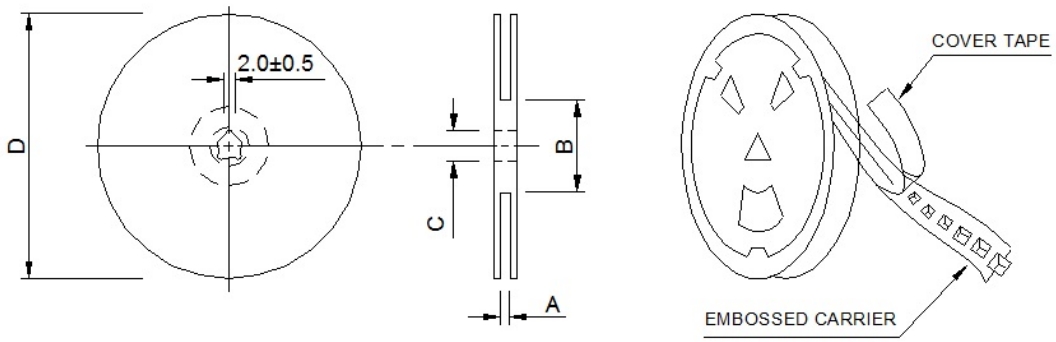
7. TYPICAL RoHS REFLOW PROFILE



SPECIFICATION FOR APPROVAL

8. PACKING

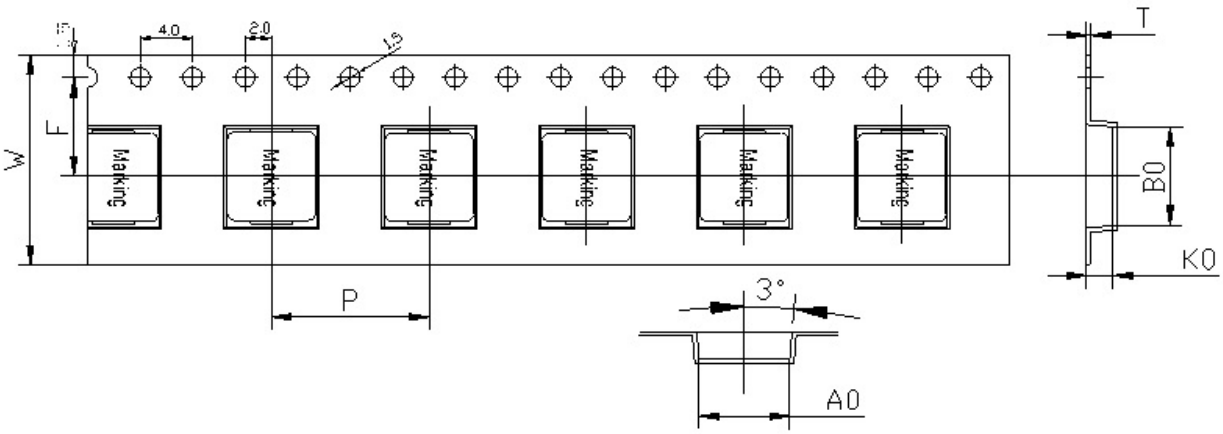
8-1 Reel Dimension



UNIT: mm

A	B	C	D
12.4+2/-0	100±2	13+0.5/-0.2	330

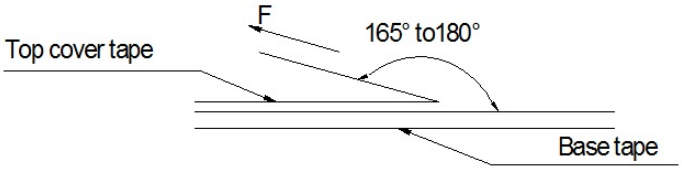
8-2 Tape Dimension



UNIT: mm

Bo	Ao	Ko	P	W	F	T
3.8±0.1	3.5±0.1	2.3±0.1	8.0±0.1	12±0.3	5.5±0.1	0.35±0.05

8-3 Tearing Off Force



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).

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

8-4 Packaging Quantity

Chip/Reel	3000
Inner box	6000
Carton	24000