

SPECIFICATION FOR APPROVAL

产品承认书

CUSTOMER: _____

CUSTOMER NO. : _____

FPE PART NO. : **CL51010302R2M1**

DESCRIPTION: SMD Power Inductor

ATTACHMENT:

■ SPECIFICATION Rev: A

CUSTOMER APPROVAL
(客户承认章)

FPE APPROVAL
(公司承认章)



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Recision Change Record		
REV	Description of changes	Date
A	新版制作	2024-12-10

COMPOSITE FORMING SMD INDUCTORS

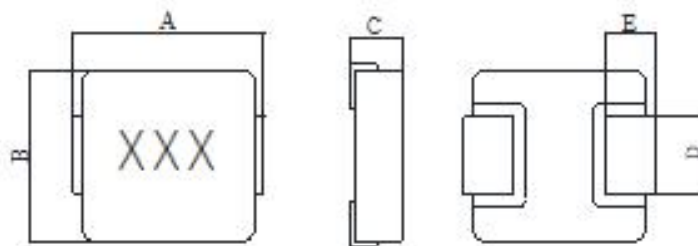
1. General specification:



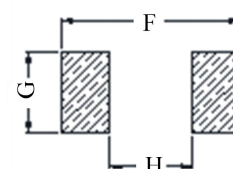
- ◆Part Number: CL5101030- 1
- ◆Specification: Composite forming SMD inductors
- ◆ Operating temp range: -40°C TO +125°C
- ◆Package: SMD

2. Mechanical Specification:

2.1 Dimension/mm:

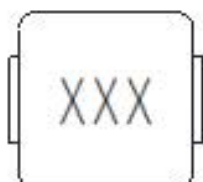


2.2 Recommended Layout/m

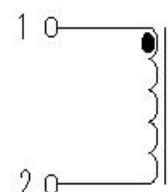


P/N	A	B	C	D	E	F	G	H
CL5101030-1	11±0.35	10±0.5	2.8±0.2	3.0±0.2	2.2±0.4	12	4.1	5.4

2.3 Marking code:



2.4 Schematic:



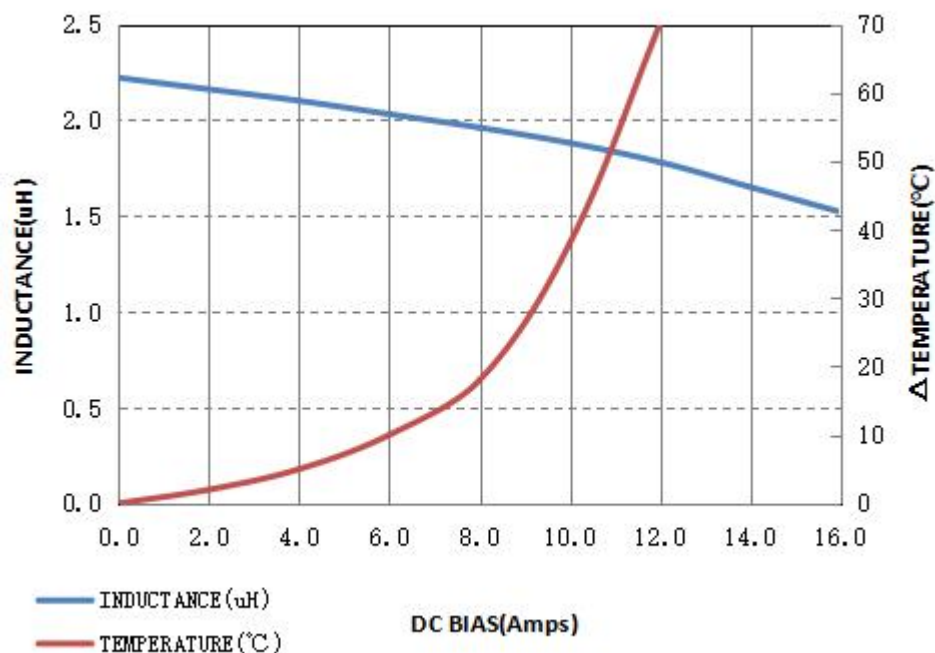
3. Electrical specifications @25°C:

3.1 Specification

P/N	L0(μH) ±20% '@0A	DCR (mΩ)		Heat Rating Current	Saturation Current
	100KHz 1.0V	Typ	Max	Idc (Amp) Typical	Isat (Amp) Typical
CL51010302R2M1	2.2	8	9	10	14

- All test data is referenced to 25°C ambient.
- DC current (Idc) that will cause an approximate ΔT of 40°C.
- DC current (Isat) that will cause Lo to drop approximately 30%.
- Operating temperature Range: -40°C to +125°C.
- The part temperature (ambient + temp rise) should not exceed 125°C under the worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the end application.

3.2 Electrical Characteristics Graph



4.RELIABILITY --- Mechanical:

Item	Required Characteristics	Test Method/Condition
Solderability test	Terminals area must have 95% min.	Dip pads in flux then dip in solder pot at 260±5°C for 10 second.
Vibration test	1.No case deformation or change in appearance. 2.ΔL/L ≤ 10% 3.ΔDCR/DCR ≤ 10%	Apply frequency 10~55Hz. 1.5mm amplitude in each of perpendicular direction for 2 hours.(total 6 hours)
Drop test	1.No case deformation or change in appearance. 2.ΔL/L ≤ 10% 3.ΔDCR/DCR ≤ 10%	Packaged & Drop down from 1m with 981m/s ² (100G) attitude In 1 angle 1 ridges & 2 surfaces orientations.

RELIABILITY --- Endurance:

Item	Required Characteristics	Test Method/Condition
High temperature Storage test	1.No case deformation or change in appearance. 2.ΔL/L ≤ 10% 3.ΔDCR/DCR ≤ 10%	Temperature: 125±2°C Time : 1000±2 hours Tested not less than 1 hour, nor more than 2 hours at room temperature.
Low temperature Storage test	1.No case deformation or change in appearance. 2.ΔL/L ≤ 10% 3.ΔDCR/DCR ≤ 10%	Temperature: -40±2°C Time : 1000±2 hours Tested not less than 1 hour, nor more than 2 hours at room temperature.
Thermal shock test	1.No case deformation or change in appearance. 2.ΔL/L ≤ 10% 3.ΔDCR/DCR ≤ 10%	First -40°C for 30 time, next +125°C 30 time as 1 cycle. Go through 96 cycles.
Humidity test	1.No case deformation or change in appearance. 2.ΔL/L ≤ 10% 3.ΔDCR/DCR ≤ 10%	(1) Environment condition: 85 ±2 °C Humidity : 90 ~ 95%. Applied Current : Rated current (2) Duration : 1,000 +4/-0 hours (See Note)

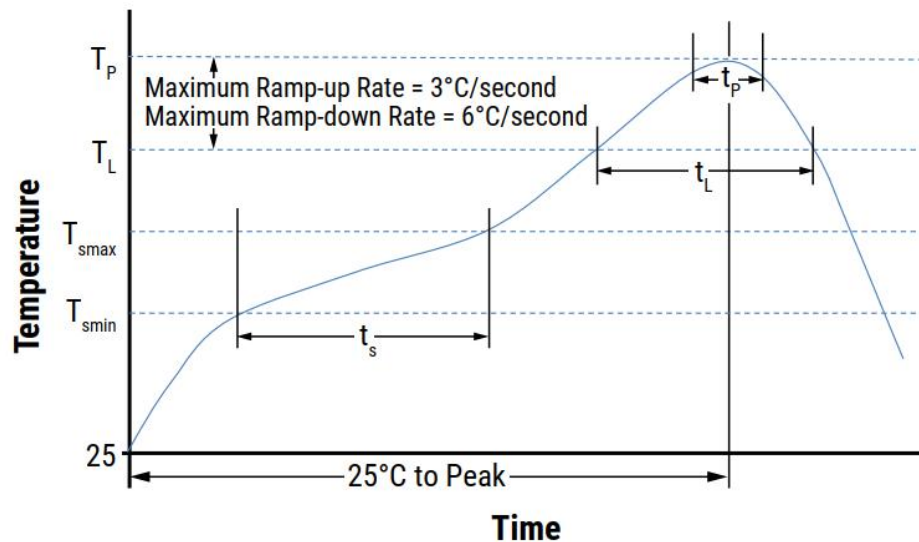
5. Soldering and Mounting

5-1. Soldering

Mildly activated rosin fluxes are preferred. FPE terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

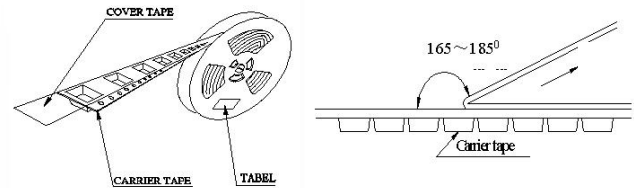
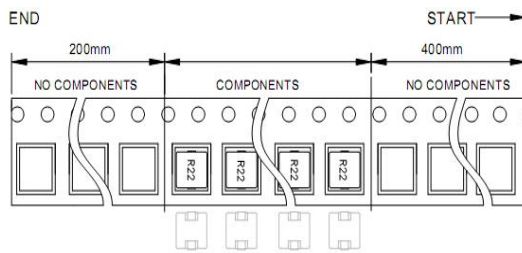
5-1.1 Solder re-flow:

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

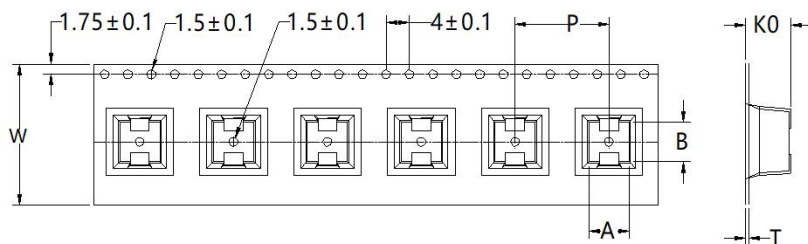


Profile Feature	Pb-Free Assembly
Preheat/Soak Temperature Minimum (T_{Smin}) Temperature Maximum (T_{Smax}) Time (t_s) from T_{Smin} to T_{Smax}	150°C 200°C 60 – 120 seconds
Ramp-Up Rate (T_L to T_P)	3°C/second maximum
Liquidous Temperature (T_L)	217°C
Time Above Liquidous (t_L)	60 – 150 seconds
Peak Temperature (T_P)	260°C for A/CL5040420,050520, 060618, 060624 250°C for A/CL5050530, 060630, 060650,080830, 080840 245°C for A/CL5101040, 131335, 131350,131365, 171740, 171770, 221213
Time within 5°C of Maximum Peak Temperature (t_P)	30 seconds maximum
Ramp-Down Rate (T_P to T_L)	6°C/second maximum
Time 25°C to Peak Temperature	8 minutes maximum

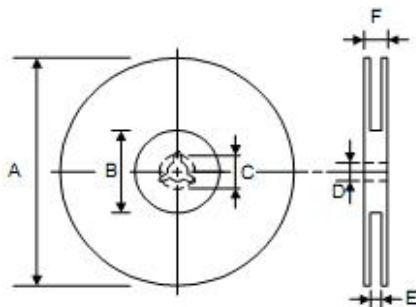
6. Packaging Information



The force for peeling off cover tape is 30 to 130 grams in the arrow direction.



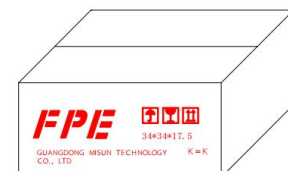
A	B	W	P	T	K0
10.7	11.5	24	16	0.35	3.3



A	B	C	D	E	F
330±2	100±2	20±0.5	13±1	24.5±1	30.5±2

Packaging Quantity

Chip size	Chip/Reel	Carton
1030 系列	1000	6000



Application Notice

Storage Conditions

To maintain the solderability of terminal electrodes:

1. FPE 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 form the time of delivery.
4. The packaging material should be kept where no chlorine or sulfur exists in the air.
5. Don't touch electrodes directly with bare hands as oil secretions may inhibit soldering. Always ensure optimum conditions for soldering.

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.

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