

SPECIFICATION FOR APPROVAL

产品承认书

CUSTOMER:

CUSTOMER NO.:

FPE PART NO.:

CL5201610-1 Series

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	2025-1-17

Molded power inductors

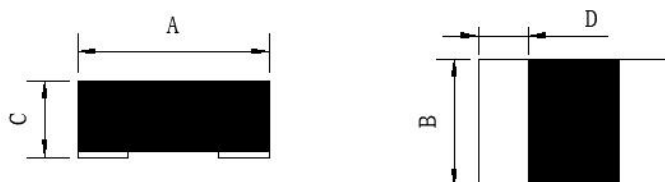
1. General specification:



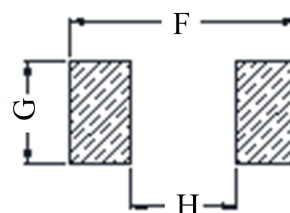
- ◆Part Number: CL5201610-1
- ◆Specification: Composite forming SMD inductors
- ◆Operating temp range: -55°C TO +125°C
- ◆Package: SMD

2. Mechanical Specification:

2.1 Dimension/mm:



2.2 Recommended Layout/m



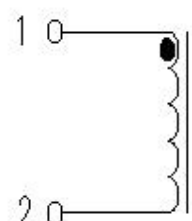
P/N	A	B	C	D	F	G	H
CL5201610-1	2.0±0.2	1.6±0.2	1.0 max	0.7±0.2	2.1typ	1.7typ	0.5typ

2.3 Marking code:

no marking



2.4 Schematic:



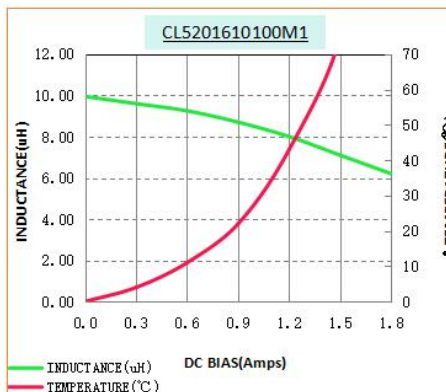
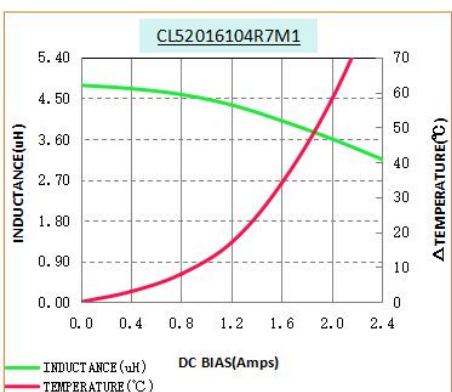
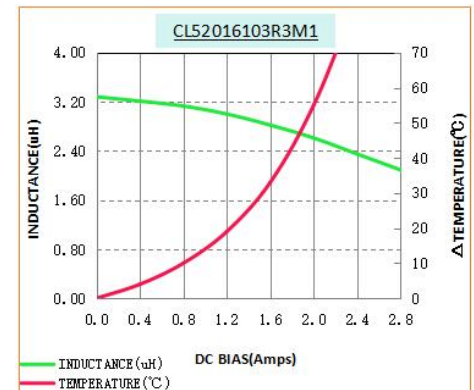
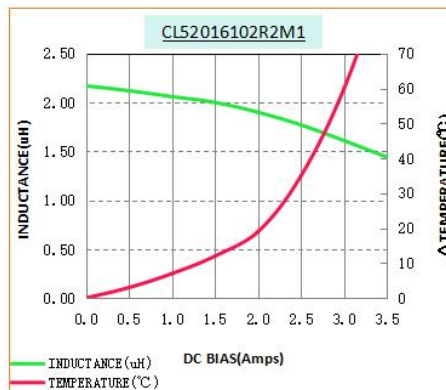
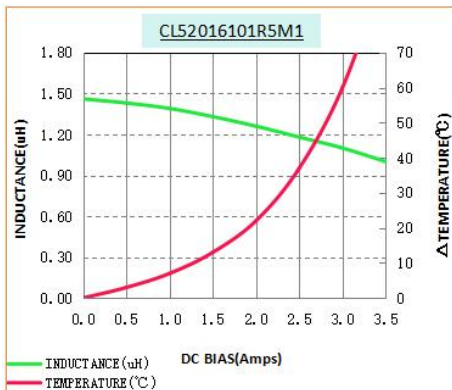
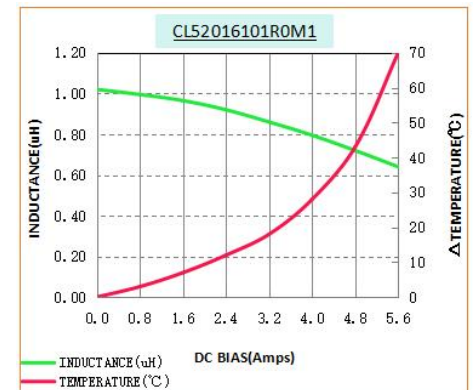
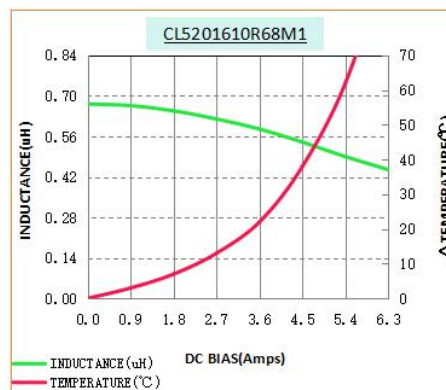
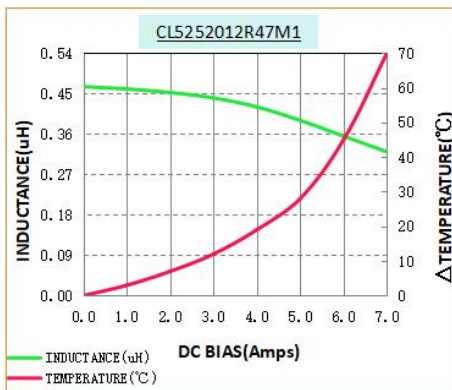
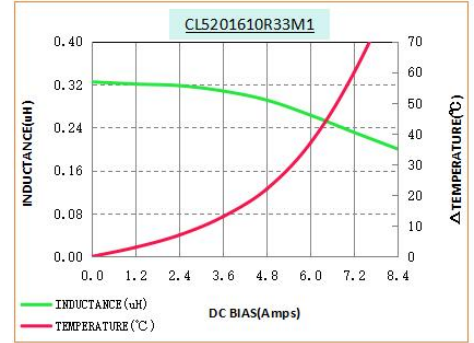
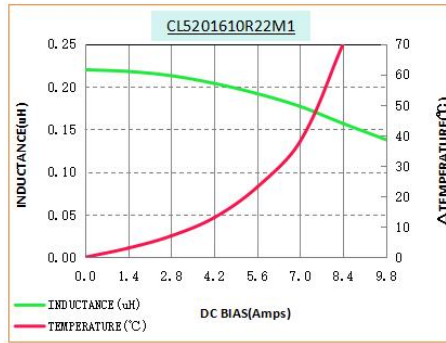
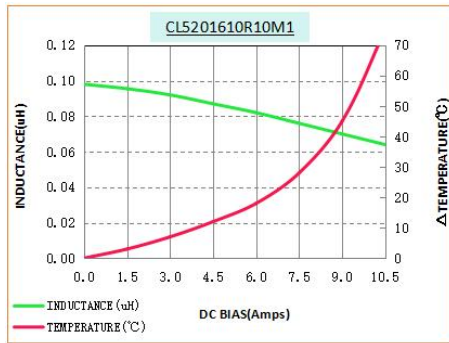
3. Electrical specifications @25°C:

3.1 Specification

Electrical Specifications @ 25°C							
P/N	1MHz /1.0V	D.C.R (mΩ)		Heat Rating Current		Saturation Current	
	L0(μH) ±20% '@0A	Typical	Max	Idc (Amp) Typical	Idc (Amp) Max	Isat (Amp) Typical	Isat (Amp) Max
CL5201610R10M1	0.10	7	12	8.5	8	9	8.4
CL5201610R22M1	0.22	11	18	6.9	6.3	8.2	7.5
CL5201610R33M1	0.33	17	22	5.7	5.3	7	6.5
CL5201610R47M1	0.47	22	25	5.5	5	6.3	5.5
CL5201610R68M1	0.68	25	32	4.6	4.3	5.2	4.7
CL52016101R0M1	1.0	31	36	4.6	4.2	4.7	4.2
CL52016101R5M1	1.5	80	100	2.6	2.3	3.2	2.9
CL52016102R2M1	2.2	120	130	2.5	2.1	3	2.8
CL52016103R3M1	3.3	140	170	1.7	1.5	2.3	2
CL52016104R7M1	4.7	190	220	1.6	1.4	2	1.8
CL5201610100M1	10	483	580	1	0.7	1.4	1.1

- 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: -55°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: -55±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 -55°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 : 85%. Applied Current : Rated current (2) Duration : 1,000 +4/-0 hours (See Note)

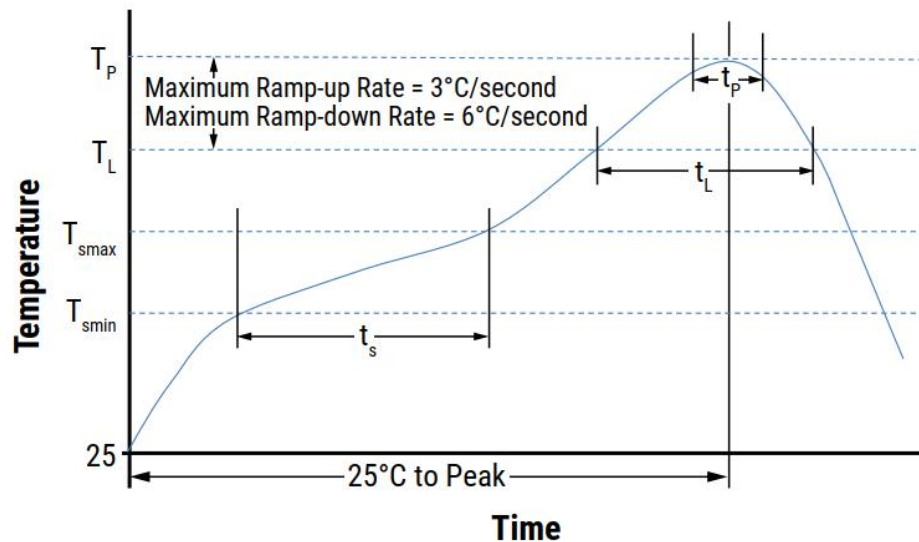
5. Soldering and Mounting

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.

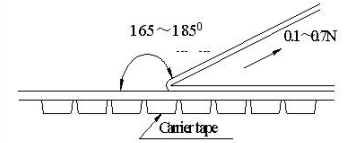
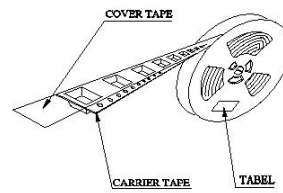
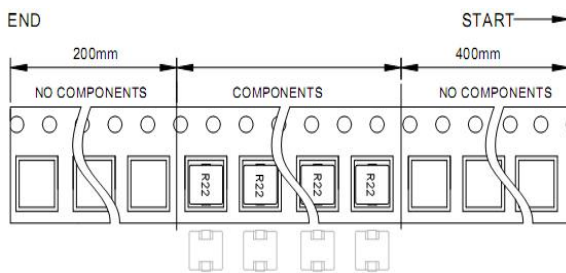
5-1.1 Solder re-flow:

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

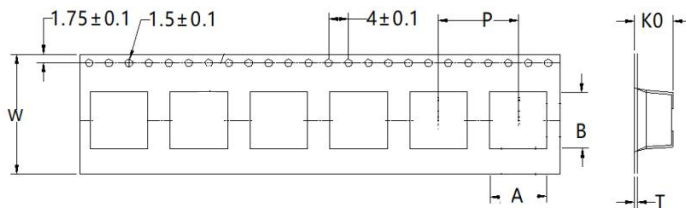


Profile Feature	Pb-Free Assembly
Preheat/Soak Temperature Minimum (T _{smmin}) Temperature Maximum (T _{smmax}) Time (t _s) from T _{smmin} to T _{smmax}	125°C 200°C 60 – 120 seconds
Ramp-Up Rate (T _L to T _P)	3°C/second maximum
Liquidous Temperature (T _L)	217°C
Time Above Liquidous (t _l)	60 – 125 seconds
Peak Temperature (T _P)	260°C
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

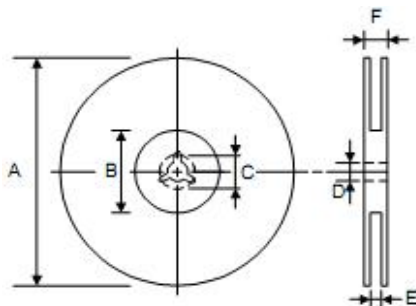
6. Packaging Information



The force for peeling off cover tape is 10 to 70 grams in the arrow direction.



A	B	W	P	T	K0
1.95	2.35	8	4	0.25	1.0



A	B	C	D	E	F
178	58±1	21±1	13±1	9±1	12±2

Packaging Quantity

Chip size	Chip/Reel	Carton
201610 系列	3000	15000



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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