

Power Chip Inductors

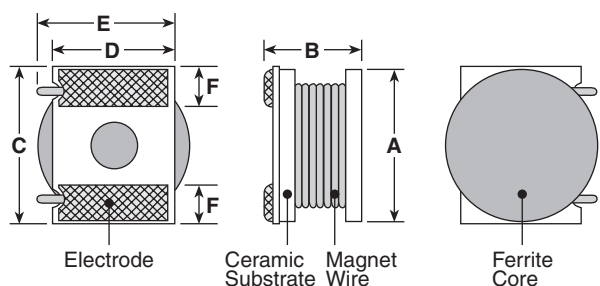
Type LPC4045

ISO 9001:2000
CERTIFIED
TS-16949
CERTIFIED

1. Scope

This specification shall be applied to the LPC4045 manufactured by KOA Corporation.

2. Dimensions and Construction



Size	Dimensions inches (mm)					
	A	B	C	D	E	F
4045	$\phi.157 \pm .008$ ($\phi 4.0 \pm 0.2$)	$.169 \pm .009$ (4.3 ± 0.2)	$.177 \pm .008$ (4.5 ± 0.2)	$.118 \pm .008$ (3.0 ± 0.2)	.138 (3.5)	$.039 \pm .112$ (1.0 ± 0.3)

3. Type Designation

The type designation shall be the following form:

New Type

LPC	4045	A	TED	101	K
Type	Size	Termination Material	Packaging	Nominal Inductance	Tolerance
	4045	A: SnAg (Other termination styles available, contact factory for options)	TED: 10" Embossed Plastic 1,000 pcs/reel	101: 100 μ H 221: 220 μ H 152: 1500 μ H	K: $\pm 10\%$ M: $\pm 20\%$

4. Standard Applications

Part Designation	Inductance (μH)	Inductance Tolerance	Quality Factor Minimum (MHz)	Self Resonant Frequency Minimum (MHz)	DC Resistance Maximum (Ω)	Allowable DC Current Maximum (Amps)	Measured Frequency (Hz)
LPC4045ATEDR68M	0.68	M: ±20%	20	120.0	0.012	3.40	1000
LPC4045ATED1R0M	1.0			90.0	0.015	3.10	
LPC4045ATED1R5M	1.5			70.0	0.020	2.80	
LPC4045ATED2R2M	2.2			55.0	0.023	2.50	
LPC4045ATED3R3M	3.3			45.0	0.044	1.80	
LPC4045ATED4R7M	4.7			35.0	0.062	1.45	
LPC4045ATED6R8M	6.8			25.0	0.075	1.30	
LPC4045ATED100K	10	K: ±10%		23.5	0.10	1.02	
LPC4045ATED150K	15			18.5	0.15	0.84	
LPC4045ATED220K	22			14.0	0.21	0.70	
LPC4045ATED330K	33			12.0	0.41	0.52	
LPC4045ATED470K	47			10.5	0.52	0.46	
LPC4045ATED680K	68			8.0	0.67	0.40	
LPC4045ATED101K	100			6.3	0.92	0.28	
LPC4045ATED151K	150		40	5.2	1.80	0.25	
LPC4045ATED221K	220			3.9	2.25	0.18	
LPC4045ATED331K	330			3.0	4.27	0.15	
LPC4045ATED471K	470			2.7	5.23	0.14	
LPC4045ATED681K	680			2.2	6.67	0.12	

4.1 Rating

No.	Item	Specification
1	Nominal inductance range	0.68 μH ~ 680 μH E-6 series

Measuring Conditions: Normal testing is conducted at normal temperatures (5°C ~ 35°C) and at nominal humidity (45% ~ 85% R. H.). If there is concern, the test may be conducted at a temperature of 20 ± 2°C and at a relative humidity of 65 ± 5% R. H.

5. Environmental Characteristics

No.	Item	Test Methods
1	High temperature, leaving test	85 ± 2°C 500 Hr
2	Low temperature, leaving test	-40 ± 2°C 500 Hr
3	Moisture leaving test	40 ± 2°C 90 ~ 95% R. H. 500 Hr
4	Heat shock test	-40 ± 4°C/0.5 Hr ↔ 85 ± 2°C/0.5 Hr 100 cycles 85°C -40°C
5	Dropping test	1 dropped from height of 1 meter to top of board.
6	Vibration test	2 hours in each direction of X, Y, Z at a frequency range of 10 ~ 55 Hz with 1.5 mm amplitude.
7	Operating temperature range	-30°C ~ +80°C
8	Storage temperature range	-40°C ~ +85°C
9	Resistance to soldering heat	With the temperature of the solder at 260°C +5°C, 10 seconds, There shall be no abnormalities.
10	Resistance to solvent	MIL-STD-202F Method 215

There shall be no abnormalities under the above conditions.

Measurement: Inductance DC Superposed characteristics LCR Meter HP4284A Q (Quality factor)

Frequency: Inductance 1 MHz DC Superposed characteristics 10 KHz

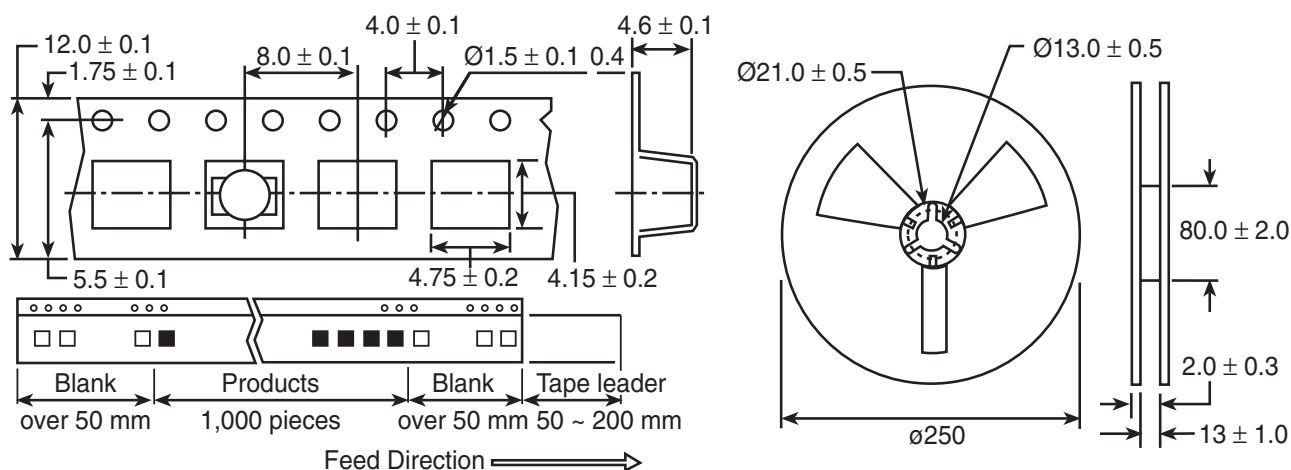
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6. Packaging

6.1 Taping

The taping shall be embossed carrier tapes of 12 mm width and 8 mm pitches. The standard quantity per reel shall be 1,000 pieces.

6.2 Dimensions of Taping



6.3 Packaging Method

A specially designed cardboard box is used for the external packaging and can hold a maximum of 20 reels.

6.4 Markings

The following information is provided on the reel.

- (1) Product name (2) Part number (3) Quality
- (4) Lot number (5) Manufacture origin

6.5 Lot Number

(Example) January 21, 2006

41	21	D	K
Year and Month of Manufacture	Day of Manufacture	Manufacture Plant	Additional Number
41...2006.1 42...2006.2 43...2006.3			

7. General Information

7.1 Storage

Chip inductors shall not be stored under high temperature and high humidity conditions. Especially, do not store taping where they are exposed to heat or direct sunlight. Otherwise, material may be deformed, causing problems during mounting.

7.2 Mounting

Placement force should not be excessive.

7.3 Soldering

Soldering should be done at 250°C for less than 6 seconds. When using a soldering iron, temperature shall not exceed 350°C and within 3 seconds. Soldering iron time shall be allowed only one time. After soldering, chip inductors shall not be stressed excessively.

7.4 Cleaning

There is no problem using organic solvents. Since these chip inductors are a coil of ultra-thin wire, they are susceptible to vibration. If an ultrasonic cleaning unit is used, check for any possibility of problem generation before practical use, since such cleaning units differ considerably in vibration level and mode. Although the conditions vary depending on the printed board size, Ultrasonic cleaning is generally used in the conditions described in the following examples:

Power: Within 20W/L
Cleaning times: Within 5 minutes

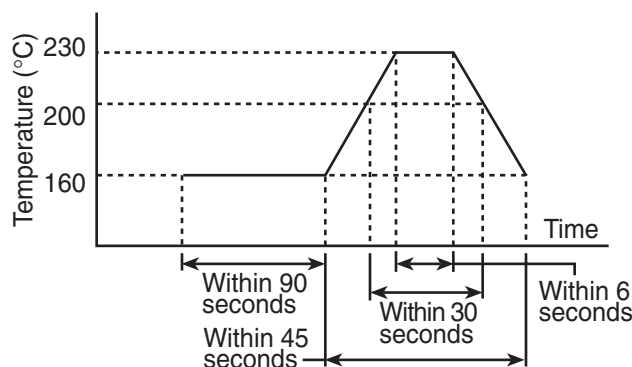
7.5 Pattern Design

A land pattern gap is recommended of 2.0 mm to 2.5 mm. When low or more chip inductors are closely mounted, they must be separated by means of solder resists to prevent excessive solder.

8. Soldering

8.1 Conditions for Reflow Soldering

The time and temperature for reflow solder applications are as shown below.



9. Land Pattern Design

9.1 Pattern Design

A land pattern gap is recommended of 2.0 mm to 2.5 mm. When low or more chip inductors are closely mounted, they must be separated by means of solder resists to prevent excessive solder.

