KOA SPEER ELECTRONICS, INC.

spec sheet

SS-194 R2
AHA 11/27/02

ISO 9002 CERTIFIED

Power Chip Inductors

Type LPC4045

1. Scope

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

2. Type Designation

The type designation shall be the following form:

Old Type

LPC	4045		TED	101	K
Type	Size		Packaging	Nominal Inductance	Tolerance

New Type

LPC	4045	L	TED	101	K
Type	Size	Termination Material	Packaging	Nominal Inductance	Tolerance
	4045	L: SnPb A: SnAg	TED: 10" Embossed Plastic 2,500 pcs/reel	101: 100µH 221: 220µH	K: ±10% M: ±20% N: ±30%

3. Rating

Ordering Code	Inductance (µH)	Inductance Tolerance (%)	Quality Factor Min.	Self Resonance Freq. Min. (MHz)	DC Resistance Maximum (Ω)	Allowable DC Current Max. (A)
LPC4045TE 100K	10	10	20	23.5	0.08	1.02
LPC4045TE 150K	15			18.5	0.13	0.84
LPC4045TE 220K	22			14.0	0.18	0.70
LPC4045TE 330K	33			12.0	0.35	0.52
LPC4045TE 470K	47			10.5	0.45	0.46
LPC4045TE 680K	68			8.0	0.58	0.40
LPC4045TE 101K	100			6.3	0.80	0.28
LPC4045TE 151K	150		40	5.2	1.56	0.25
LPC4045TE 221K	220			3.9	1.95	0.18
LPC4045TE 331K	330			3.0	3.71	0.15
LPC4045TE 471K	470			2.7	4.55	0.14
LPC4045TE 681K	680			2.2	5.80	0.12

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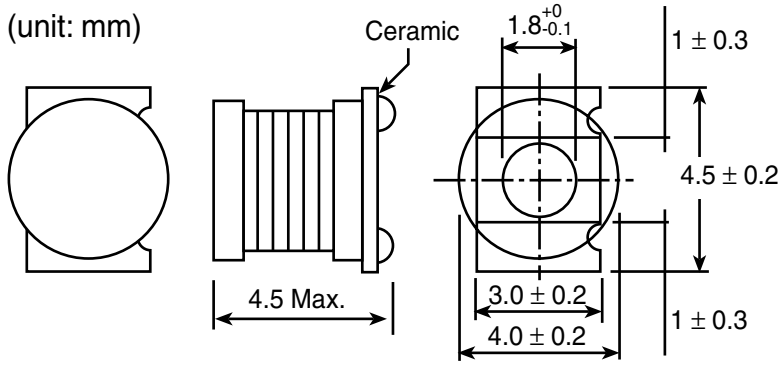
3.1 Rating

No.	Item	Specification
1	Nominal inductance range	10 μ ~ 680 μ H (E-6 series)
2	Nominal inductance tolerance	The rating shall be shown in 6.
3	Q (Quality factor)	
4	Self-resonance frequency of (MHz)	
5	DC resistance Rdc (ohm)	
6	Allowable current I (mA)	

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.

4. External Appearance, Design and Rating

(unit: mm)



4.1 Circuit Diagram

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 0.5 Hr
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 250°C, soak for 6 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

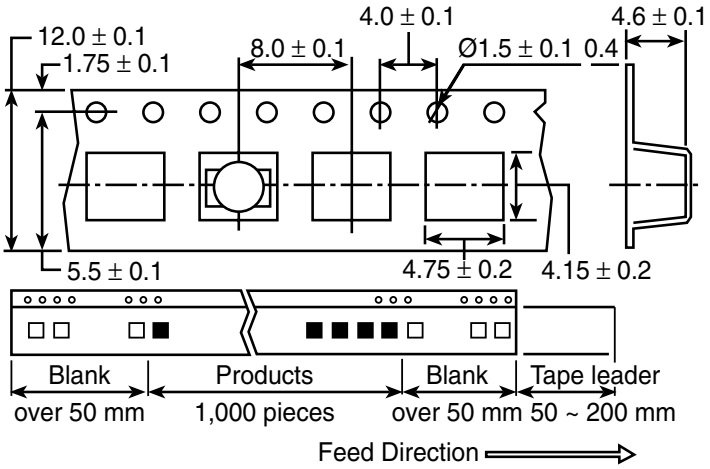
6.1 Bulk Packaging

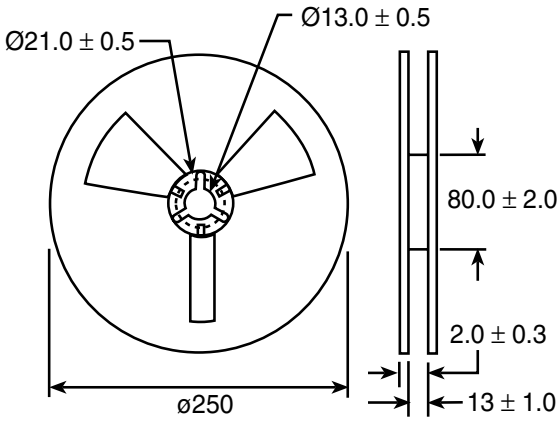
(1) 1,000 chip inductors are packed in a poly bag. (2) None: Bulk

6.2 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.

6.3 Dimensions of Taping





6.4 Packaging Method

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

6.5 Markings

The following information is provided on the reel.

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

6.6 Lot Number

(Example) January 22, 1992

53	22	D	K
Year and Month of Manufacture	Day of Manufacture	Manufacture Plant	Additional Number

53···1992.1 54···1992.2 55···1992.3

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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

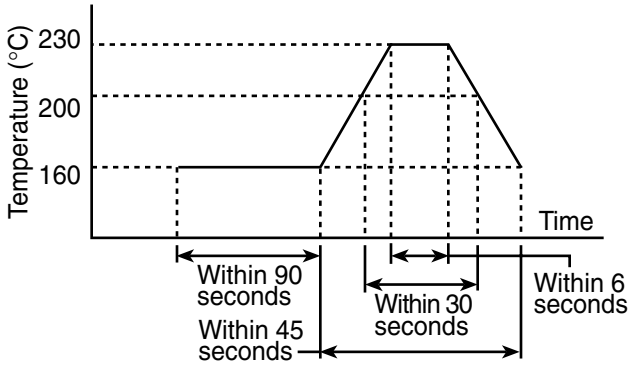
7.5 Pattern Design

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.

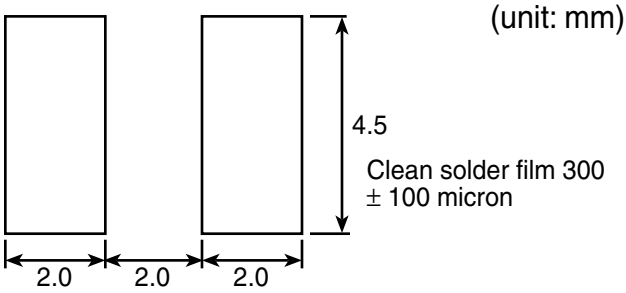


9. Land Pattern Design

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.

(unit: mm)



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