KOA SPEER ELECTRONICS, INC.

spec sheet

SS-193 R6
AHA 5/6/04

ISO 9002 CERTIFIED

Chip Inductors

Type KQ 0805

1. Scope of Application

This specification shall be applied to chip inductors KQ series produced by KOA Corporation.

2. Type Designation

Type designation shall be as the following form.

Old Type

KQ	0805		TE	10N	J
Type	Size Code		Packaging	Nominal Inductance	Tolerance

New Type

KQ	0805	L	TE	10N	J
Type	Size	Termination Material	Packaging	Nominal Inductance	Tolerance
	0805	L: SnPb T: Sn	TE: 7" Embossed Plastic TD: 7" Paper Tape	10N: 10nH R10: 0.1µH 1R0: 1.0µH	G: ±2% J: ±5% K: ±10% M: ±20%

3. Rating

No.	Item	Specification
1	Nominal inductance range	3.3 nH ~ 820 nH
2	Storage temperature range	-40°C ~ +100°C
3	Operating temperature range	-40°C ~ +125°C

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4. Standard Applications

Part Designation	Marking	Nominal Inductance (nH)	L Measuring Frequency	Inductance Tolerance	Q Quality Factor Minimum	Q Measuring Frequency (MHz)	Self Resonant Frequency Minimum (MHz)	DC Resistance Maximum (Ω)	Allowable DC Current Maximum (mA)
KQ0805*TE3N3**	0	3.3	250	J: ±5% K: ±10% M:±20%	50	1500	6000	0.08	600
KQ0805*TE6N8**	1	6.8				1000	5500	0.11	
KQ0805*TE8N2**	2	8.2					4700	0.12	
KQ0805*TE12N**	3	12		G:±2% J: ±5% K: ±10% M:±20%		500	4000	0.15	
KQ0805*TE15N**	4	15					3400	0.17	
KQ0805*TE18N**	5	18					3300	0.20	
KQ0805*TE22N**	6	22			55		2600	0.22	500
KQ0805*TE27N**	7	27					2500	0.25	
KQ0805*TE33N**	8	33			60		2050	0.27	
KQ0805*TE39N**	9	39					2000	0.29	
KQ0805*TE47N**	0	47	200				1650	0.31	
KQ0805*TE56N**	1	56		G:±2% J: ±5% K: ±10%			1550	0.34	
KQ0805*TE68N**	2	68					1450	0.38	
KQ0805*TE82N**	3	82	150		65		1300	0.42	400
KQ0805*TER10**	4	100					1200	0.46	
KQ0805*TER12**	5	120			50	250	1100	0.51	
KQ0805*TER15**	6	150	100				920	0.56	
KQ0805*TER18**	7	180					870	0.64	
KQ0805*TER22**	8	220					850	0.70	
KQ0805*TER27**	9	270			48		650	1.0	350
KQ0805*TER33**	0	330					600	1.4	310
KQ0805*TER39**	1	390					560	1.5	290
KQ0805*TER47**	2	470	50	J: ±5% K: ±10%	33	100	375	1.76	250
KQ0805*TER56**	3	560	25		23	50	340	1.9	230
KQ0805*TER68**	4	680					188	2.2	190
KQ0805*TER82**	5	820					215	2.35	180

* Add termination material character (L, T)
** Add tolerance character (C, G, H, J, K, M)

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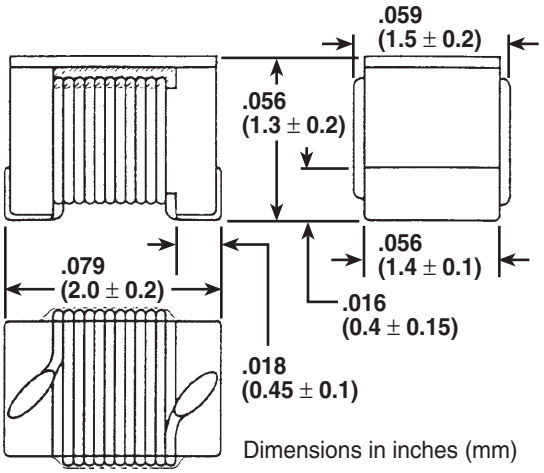
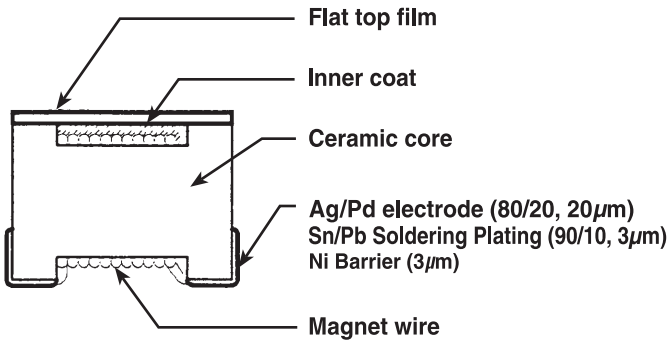
5. Dimensions



Dimensions in inches (mm)

6. Construction



7. Measurement Method

Nominal Inductance Range	Test Equipment	Fixture	Setup	Measuring Frequency
3.3 nH to 820 nH	4291A RF Impedance analyzer (H.P)	16193A Test fixture	E.L = 1.4 cm OSC = 500 mV	Listed Table-1

8. Test Conditions

Unless otherwise specified, the test shall be performed at the temperature of 20±15°C and at a relative humidity of 65±20%. Revers for the test conditions shall be performed at the temperature of 20±2°C and at a relative humidity of 65±5%.

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9. Reliability Tests

9-1 Electrical Characteristics

Item	Requirement	Test Methods
Dielectric withstanding voltage	No evidence of flaming, fuming, or breakdown	5 seconds at AC 500 V applied between both terminals and film.
Insulation resistance	1000MΩ and over	1 minute at DC 100 V measured between both terminals and film.
Flammability	IEC 695-2-2	Withstands needle-flame test.

9-2 Mechanical Characteristics

Item	Requirement	Test Methods
Terminal pull strength	No evidence of damage	Terminals shall withstand a pull of 10 N in a horizontal direction.
Terminal bending strength	No evidence of breakdown	Specimen shall be soldered on bend test board and force applied to the opposite side to cause a 10 mm deflection
Vibration	ΔL/L within ±5% ΔQ/Q within ±10%	2 hours in each direction of X, Y, Z, on PCB at a frequency range of 10-55-10Hz with 1.5 mm amplitude
Dropping	No evidence of damage ΔL/L within ±5% ΔQ/Q within ±10%	Dropping 1 m on the ground of concrete 1 time
Resistance to soldering heat	No evidence of outer damage ΔL/L within ±5% ΔQ/Q within ±10%	Immerse in the solder at 260±5°C for 10±1 seconds
Solderability	95% of the terminal should be covered with new solder	Immerse in the solder at 230±5°C for 3±0.5 seconds
Resistance to solvent	No damage and marking must remain legible	Accordance with MIL-STD-202F Method 215

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9-3 Environmental Characteristics

Item	Requirement	Test Methods
Low temperature storage	No evidence of damage ΔL/L within ±5% ΔQ/Q within ±10%	Store at -40±2°C, for 1000 hours
High temperature storage	No evidence of damage ΔL/L within ±5% ΔQ/Q within ±10%	Store at +125±2°C, for 1000 hours
Moisture endurance	No evidence of damage ΔL/L within ±5% ΔQ/Q within ±10%	Store at 40±2°C, 90~95% RH for 1000 hours
Load life	No evidence of damage ΔL/L within ±5% ΔQ/Q within ±10%	Biased to full rated current at +125°C for 1000 hours
High temperature High Humidity	No evidence of damage ΔL/L within ±5% ΔQ/Q within ±10%	Biased to 10% rated current at +85°C, 85% RH for 1000 hours
Thermal shock	No evidence of damage ΔL/L within ±5% ΔQ/Q within ±10%	100 cycles between -40°C/hour and +125°C/hour
Temperature characteristics	ΔL/L within ±5%	ΔL/L to be measured at the temperature of between -40°C and +125°C as based on the inductance at 20°C

Unless otherwise specified, measurements shall be performed within 2 hours after leaving test samples for more than one hour at the normal temperature and at the normal humidity.

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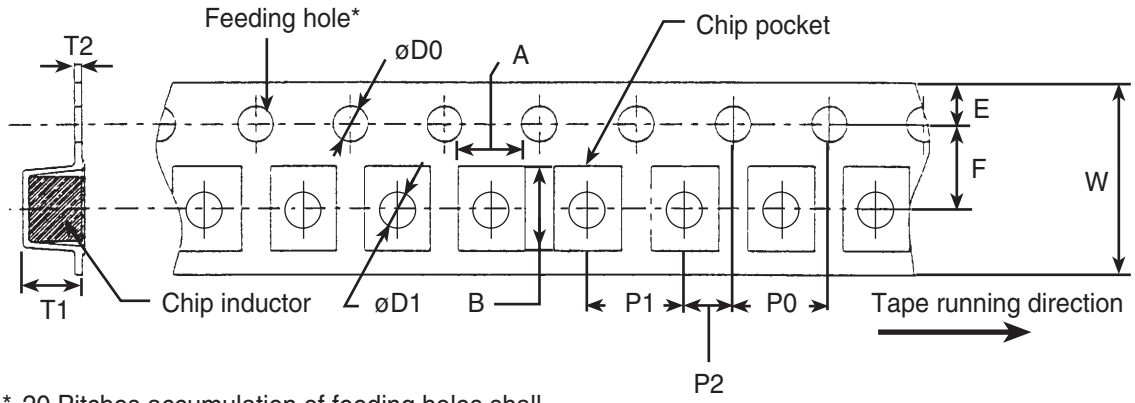
10. Packaging

10-2 Taping

The tapes for taping shall be embossed carrier tapes of 8 mm width and 4 mm pitches. The standard quantity per reel shall be 2,000 pieces.

(1) Dimensions of Carrier Tape



* 20 Pitches accumulation of feeding holes shall be 80 ± 0.15 mm.

Top tape peeling strength: 0.1N ~ 0.7N

Dimensions in inches (mm)

Series	A	B	W	E	F	T1
3N3~R39	0.062 ± 0.003 (1.60 ± 0.1)	0.087 ± 0.003 (2.22 ± 0.1)	0.314 ± 0.007 (8.0 ± 0.2)	0.068 ± 0.003 (1.75 ± 0.1)	0.137 ± 0.001 (3.5 ± 0.05)	0.059 ± 0.003 (1.5 ± 0.1)
R47~R82	0.066 ± 0.003 (1.7 ± 0.1)	0.086 ± 0.003 (2.20 ± 0.1)				0.057 ± 0.003 (1.45 ± 0.1)

Dimensions in inches (mm)

Series	T2	P0	P1	P2	øD0	øD1
3N3~R39	0.009 ± 0.001 (0.25 ± 0.05)	0.157 ± 0.003 (4.0 ± 0.1)	0.157 ± 0.003 (4.0 ± 0.1)	0.078 ± 0.001 (2.0 ± 0.05)	$0.059 \pm {}^{0.003}_{0}$ ($1.5 \pm {}^{0.1}_{0}$)	$0.039 \pm {}^{0.007}_{0}$ ($1.0 \pm {}^{0.2}_{0}$)
R47~R82						

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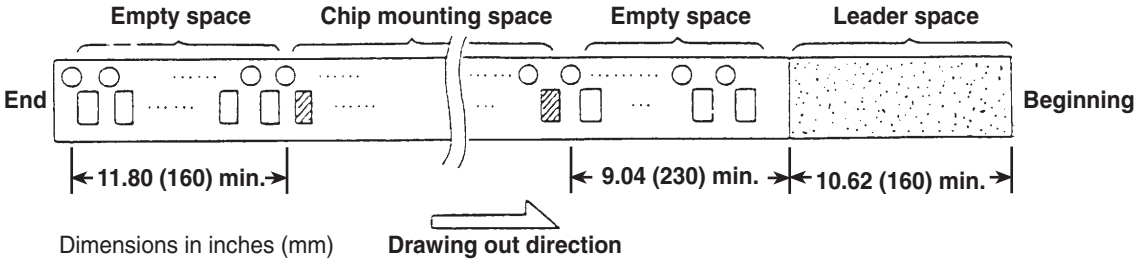
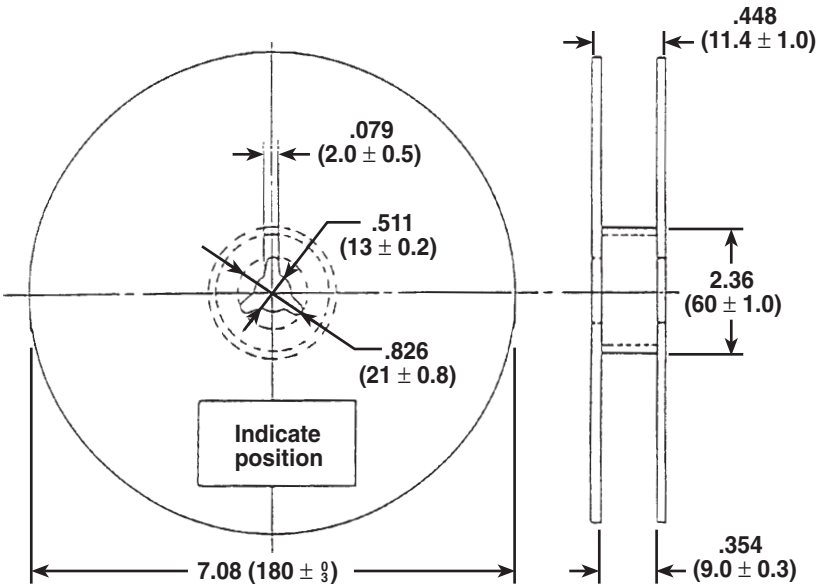
(2) Taped Configurations (conforming to EIA-481 standard)



Dimensions in inches (mm)

(3) Reel Dimensions and Indication



Dimensions in inches (mm)

The following items shall be indicated on the reel.

- Type (KQ 0805 TE)
- Nominal inductance and tolerance
- Quantity
- Production lot number
- Manufacturer's name or trade mark

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11. General Information

(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, the packing material may be deformed, causing problems during mounting.

(2) Mounting

Placement force should not be excessive.

(3) Soldering

Flow soldering should be done at 260°C for less than 10 seconds. Reflow soldering should be done at 240°C for less than 30 seconds. When using a soldering iron, temperature shall not exceed 350°C and within 3 seconds. Soldering iron time of each electrode shall be allowed only one time. After soldering, chip inductors shall not be stressed excessively.

(4) Cleaning

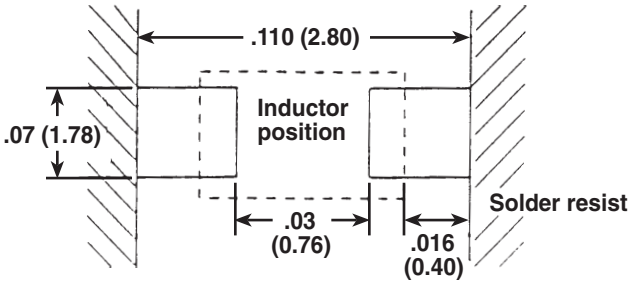
There is no problem using organic solvents. Since this chip inductor is a coil of ultra-fine wire, it is susceptible to vibration. If an ultrasonic cleaning unit is used for cleaning, check for any possibility of problem generation before practical use since such cleaning units considerably differ in vibration level and mode.

Although the conditions differ depending on the printed board size, ultrasonic cleaning is generally used in the conditions described below as examples.

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

(5) Pattern design

The land pattern is recommended as follows.



Dimensions in inches (mm)

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