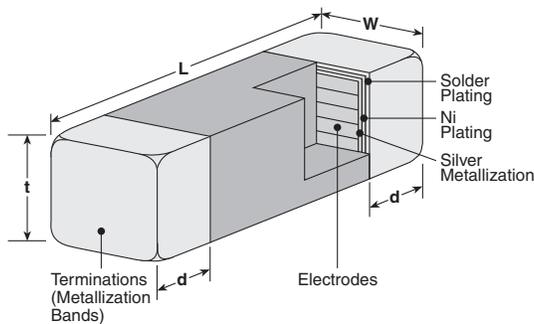


features

- Monolithic structure for closed magnetic path eliminates crosstalk and provides high reliability in a wide temperature and humidity range
- Standard EIA packages: 1J
- Nickel barrier with solder overcoat for excellent solderability
- Magnetically shielded
- Marking: Black body color with no marking
- Products with lead-free terminations meet EU RoHS requirements

dimensions and construction



Size Code	Dimensions inches (mm)			
	L	W	t	d
1J (0603)	.063±.006 (1.6±0.15)	.031±.006 (0.8±0.15)	.031±.006 (0.8±0.15)	.014±.006 (0.36±0.15)

ordering information

New Part #	MCL	1J	H	T	TE	R10	K
	Type	Size Code	Material	Termination Material	Packaging	Nominal Inductance	Tolerance
		1J	Permeability Code: H J	T: Sn	TD: 7" paper tape (1J - 4,000 pieces/reel)	047 = 0.047µH R10 = 0.100µH	K: ±10% M: ±20%

applications and ratings

Part Designation	Inductance L (µH)	Minimum Q	L.Q. Test Frequency (MHz)	Self Resonant Frequency Typical (MHz)	DC Resistance Maximum (Ω)	Allowable DC Current Maximum (mA)	Operating Temperature Range
MCL1JHTTD047M	0.047	15	50	260	0.30	60	-55°C to +125°C
MCL1JHTTD068M	0.068			250			
MCL1JHTTD082M	0.082			245			
MCL1JHTTDR10*	0.10	15	25	240	0.50	50	
MCL1JHTTDR12*	0.12			205			
MCL1JHTTDR15*	0.15			180	0.60		
MCL1JHTTDR18*	0.18			165			
MCL1JHTTDR22*	0.22			150	0.80		
MCL1JHTTDR27*	0.27	136					

* Add tolerance character (K, M) - Other tolerances available upon request

For further information on packaging, please refer to Appendix A.

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

5/07/10

applications and ratings

Part Designation	Inductance L (μH)	Minimum Q	L.Q. Test Frequency (MHz)	Self Resonant Frequency Typical (MHz)	DC Resistance Maximum (Ω)	Allowable DC Current Maximum (mA)	Operating Temperature Range	
MCL1JHTTDR33*	0.33	15	25	125	0.85	35	-55°C to +125°C	
MCL1JHTTDR39*	0.39			110	1.00			
MCL1JHTTDR47*	0.47			105	1.35			
MCL1JHTTDR56*	0.56			95	1.55			
MCL1JHTTDR68*	0.68			90	1.70			
MCL1JHTTDR82*	0.82			85	2.10			
MCL1JJTTD1R0*	1.0	35	10	75	0.60	25		
MCL1JJTTD1R2*	1.2			65	0.80			
MCL1JJTTD1R5*	1.5			60				
MCL1JJTTD1R8*	1.8			55	0.95			
MCL1JJTTD2R2*	2.2			50	1.15			
MCL1JJTTD2R7*	2.7			45	1.35			
MCL1JJTTD3R3*	3.3		4	4	40	1.55		15
MCL1JJTTD3R9*	3.9				35	1.70		
MCL1JJTTD4R7*	4.7				33	2.10		
MCL1JJTTD5R6*	5.6				22	1.55		
MCL1JJTTD6R8*	6.8				20	1.70		
MCL1JJTTD8R2*	8.2				18	2.10		
MCL1JJTTD100*	10	30	2	17	1.85	5		
MCL1JJTTD120*	12			15	2.10			

* Add tolerance character (K, M) - Other tolerances available upon request

For complete environmental specifications, please refer to pages 204-205.

environmental applications

Performance Characteristics

Parameter	Requirement	Test Method
Operating Temperature	-55°C to +125°C	—
Storage Temperature	40°C @ 70% humidity	Sealed plastic bags with desiccant shall be used to reduce the potential of oxidation on the terminations during storage.
Resistance to Solder Heat	Change in Impedance: Relative to value before test $\pm 20\%$ Appearance: There shall be no cracking. Solder Coverage: More than 75% of the terminal electrode shall be covered with solder.	Flux: 5 - 10 second dip After Flux: Air dry for 15 seconds Preheat: 150°C \pm 10°C Preheat Time: 60 seconds Solder Temperature: 260°C \pm 5°C Dip Time: 10 \pm 1 second
Solderability	Solder Coverage: More than 95% of the termination shall be covered with solder.	Flux: 5 - 10 second dip After Flux: Air dry for 15 seconds Solder Temperature: 245°C \pm 5°C Dip Time: 5 \pm 0.5 second
Leach Resistance	Appearance: There shall be no visible signs of physical or mechanical damage (i.e. no cracks). Terminations: Termination must not be leached away for more than 5%.	The bead shall be subjected to the following 5 steps for the period of time shown below. The 5 steps constitute one (1) rotation. 4 rotations shall be carried out. 1) Flux: 5 - 10 seconds 2) After Flux: Air dry for 15 seconds 3) Solder Temperature: 230°C \pm 5°C 4) Dip Time: 5 \pm 0.5 second 5) Cool: Air cool for 60 seconds
Insulation Resistance	Insulation Resistance: Min. 1G ohms	—
Solvent Resistance	Change in Impedance: Relative to value before test $\pm 10\%$	Cleaning by: Washer: Ultrasonic washer (100W) Solvent: Isopropyl alcohol Time: 3 minutes
Terminal Strength (hanging test)	Appearance: The terminal electrode shall not break off, nor shall there be damage to the body.	Type: W(kgf): Time: 1E — N/A 1J 0.5 30 seconds \pm 2 seconds
Terminal Strength (push test)	Appearance: There shall be no evidence of mechanical degradations to terminals or body.	Type: W(kgf): Time: 1E — N/A 1J 1.4 60 seconds

environmental applications (continued)

Performance Characteristics

Parameter	Requirement	Test Method
Bending Strength	Appearance: There shall be no physical or mechanical damage. Impedance: Relative to initial value before test $\pm 10\%$	Board: 90 x 40 x 1.6mm Bend: 1mm Time: 5 sec
Mechanical Shock	Appearance: There shall be no physical or mechanical damage. Impedance: Relative to initial value before test $\pm 10\%$	Force: 50G Time: 11 msec There shall be 3 shocks in each of 6 directions (18 shocks total)
Vibration	Impedance: Relative to initial value $\pm 10\%$	Only endurance conditioning by sweeping shall be made. The entire frequency range from 10 - 2,000 Hz, return to 10 Hz in 20 minutes (this will constitute one cycle). Amplitude: 15G The test shall have a 15G peak and shall be applied for a period of 4 hours (12 cycles) in each of 3 mutually perpendicular directions (a total of 36 cycles within a total of 12 hours).
Thermal Shock	Appearance: There shall be no physical or mechanical damage. Impedance: Relative to initial value $\pm 20\%$ DCR: The DCR shall not exceed initial specified value. Testing of the parts will be made at 0 hours, 250 hours and 500 hours. Before testing, the parts shall be allowed to cool to room temperature for 24 hours.	Step: Temperature: Time: 1-start $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ — 2-hold $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 30 minutes ± 5 minutes 3-transfer — 0.5 minutes maximum 4-hold $\pm 105^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 30 minutes ± 5 minutes 5-transfer — 0.5 minutes maximum Steps 1 thru 5 constitute one complete cycle and the test shall consist of a total of 500 cycles.
Load Humidity	Appearance: There shall be no physical or mechanical damage. Impedance: Relative to initial value $\pm 15\%$ Measurements shall be taken at 0 hours, 250 hours, 500 hours and 1,000 hours and shall meet the conditions stated above.	Temperature: $\pm 85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Relative Humidity: 85% Time: 1,000 hours total Apply: 100% rated current
Life Test	Appearance: There shall be no physical or mechanical damage. Impedance: Relative to initial value $\pm 15\%$ Measurements shall be taken at 0 hours, 250 hours, 500 hours and 1,000 hours and shall meet the conditions stated above.	Temperature: $\pm 85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Time: 1,000 hours total Apply: 100% rated current

Inductors