

SCOPE :

This specification applies to the Pb Free high current type SMD inductors for
MSCD-0315-SERIES

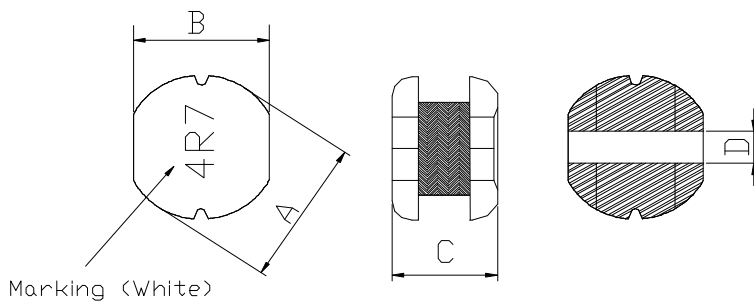
PRODUCT IDENTIFICATION

MSCD - 0315 - 4R7 M

① ② ③ ④

- ① Product Code
- ② Dimensions Code
- ③ Inductance Code
- ④ Tolerance Code

(1) SHAPES AND DIMENSIONS



A: 3.5 ± 0.3	mm
B: 3.0 ± 0.3	mm
C: 1.5 ± 0.3	mm
D: 1.2 Typ.	mm

(2) ELECTRICAL SPECIFICATIONS

SEE TABLE 1

TEST INSTRUMENTS

- L : HP 4284A PRECISION LCR METER (or equivalent)
RDC : CHROMA MODEL 16502 MILLIOHMMETER (or equivalent)

(3) CHARACTERISTICS

- (3)-1 Ambient temperature $+60^{\circ}\text{C}$ Max.
- (3)-2 Operate temperature range $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
(Including self temp. rise)
- (3)-3 Storage temperature range $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$



MAG.LAYERS

TABLE 1

MAGLAYERS PT/NO.	Inductance L(μH)	Percent Tolerance	Test Frequency	Resistance RDC(Ω)Max.	Rated DC Current		Marking
					IDC1(A)	IDC2(A)	
MSCD-0315-1R0□	1.0	M,N	100kHz/0.25V	62m	1.60	2.05	1R0
MSCD-0315-2R2□	2.2	M,N	100kHz/0.25V	0.13	1.20	1.50	2R2
MSCD-0315-3R3□	3.3	M,N	100kHz/0.25V	0.14	0.90	1.30	3R3
MSCD-0315-4R7□	4.7	M,N	100kHz/0.25V	0.18	0.65	1.05	4R7
MSCD-0315-5R6□	5.6	M,N	100kHz/0.25V	0.26	0.60	1.00	5R6
MSCD-0315-6R8□	6.8	M,N	100kHz/0.25V	0.27	0.55	0.90	6R8
MSCD-0315-8R2□	8.2	M,N	100kHz/0.25V	0.36	0.50	0.81	8R2
MSCD-0315-100□	10	M,N	100kHz/0.25V	0.39	0.45	0.70	100
MSCD-0315-120□	12	M,N	100kHz/0.25V	0.45	0.42	0.65	120
MSCD-0315-150□	15	M,N	100kHz/0.25V	0.75	0.30	0.63	150
MSCD-0315-180□	18	M,N	100kHz/0.25V	0.76	0.29	0.60	180
MSCD-0315-220□	22	M,N	100kHz/0.25V	0.92	0.25	0.57	220
MSCD-0315-270□	27	M,N	100kHz/0.25V	1.12	0.23	0.50	270
MSCD-0315-330□	33	M,N	100kHz/0.25V	1.43	0.20	0.45	330
MSCD-0315-470□	47	M,N	100kHz/0.25V	1.69	0.17	0.35	470
MSCD-0315-560□	56	M,N	100kHz/0.25V	1.92	0.15	0.32	560
MSCD-0315-680□	68	M,N	100kHz/0.25V	2.86	0.13	0.28	680
MSCD-0315-820□	82	M,N	100kHz/0.25V	3.25	0.128	0.27	820
MSCD-0315-101□	100	K,M	100kHz/0.25V	4.55	0.125	0.26	101
MSCD-0315-121□	120	K,M	100kHz/0.25V	4.55	0.123	0.25	121
MSCD-0315-181□	180	K,M	100kHz/0.25V	7.15	0.122	0.22	181
MSCD-0315-221□	220	K,M	100kHz/0.25V	8.32	0.120	0.20	221
MSCD-0315-271□	270	K,M	100kHz/0.25V	12.61	0.115	0.18	271
MSCD-0315-331□	330	K,M	100kHz/0.25V	14.56	0.10	0.16	331
MSCD-0315-391□	390	K,M	100kHz/0.25V	16.12	0.09	0.12	391
MSCD-0315-471□	470	K,M	100kHz/0.25V	18.20	0.09	0.10	471

※ □ specify the inductance tolerance, K(±10%), M(±20%), N(±30%)

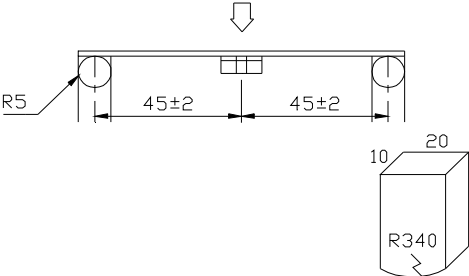
※ IDC1 : Based on inductance change ($\Delta L/L_o$: drop 10% Max.) @ambient temperature 25℃

IDC2 : Based on temperature rise (ΔT : 40℃ TYP.)

Rated DC Current : The less value which is IDC1 or IDC2.



(4) RELIABILITY TEST METHOD MECHANICAL

TEST ITEM	SPECIFICATION	TEST DETAILS
Substrate bending	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage or electrical damage.	<p>The sample shall be soldered onto the printed circuit board in figure 1 and a load applied until the figure in the arrow direction is made approximately 3mm.(keep time 30 seconds)</p> <p>PCB dimension shall the page 7/9</p> <p>F(Pressurization)</p>  <p>PRESSURE ROD figure-1</p>
Vibration	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage.	<p>The sample shall be soldered onto the printed circuit board and when a vibration having an amplitude of 1.52mm and a frequency of from 10 to 55Hz/1 minute repeated should be applied to the 3 directions (X,Y,Z) for 2 hours each. (A total of 6 hours)</p>
Solderability	New solder More than 90%	<p>Flux (rosin, isopropyl alcohol{JIS-K-1522}) shall be coated over the whole of the sample before hard, the sample shall then be preheated for about 2 minutes in a temperature of 130~150°C and after it has been immersed to a depth 0.5mm below for 3±0.2 seconds fully in molten solder M705 with a temperature of 245±5°C.</p> <p>More than 90% of the electrode sections shall be covered with new solder smoothly when the sample is taken out of the solder bath.</p>

MECHANICAL

TEST ITEM	SPECIFICATION	
Resistance to Soldering heat (reflow soldering)	There shall be no damage or problems.	<p>Temperature profile of reflow soldering</p> <p>The specimen shall be passed through the reflow oven with the condition shown in the above profile for 1 time.</p> <p>The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.</p>

ELECTRICAL

TEST ITEM	SPECIFICATION	TEST DETAILS
Insulation resistance	There shall be no other damage or problems.	<p>DC 100V voltage shall be applied across this sample of top surface and the terminal.</p> <p>The insulation resistance shall be more than $1 \times 10^8 \Omega$.</p>
Dielectric withstand voltage	There shall be no other damage or problems.	<p>AC 100V voltage shall be applied for 1 minute across the top surface and the terminal of this sample</p>
Temperature characteristics	$\Delta L/L20^\circ\text{C} \leq \pm 10\%$ $0 \sim 2000 \text{ ppm}/^\circ\text{C}$	<p>The test shall be performed after the sample has stabilized in an ambient temperature of -20 to $+85^\circ\text{C}$, and the value calculated based on the value applicable in a normal temperature and normal humidity shall be $\Delta L/L20^\circ\text{C} \leq \pm 10\%$.</p>



ENVIROMENT CHARACTERISTICS

TEST ITEM	SPECIFICATION																
High temperature storage	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 96 ± 4 hours in an atmosphere with a temperature of $85 \pm 2^\circ\text{C}$ and a normal humidity. Upon completion of the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.															
Low temperature storage	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 96 ± 4 hours in an atmosphere with a temperature of $-25 \pm 3^\circ\text{C}$. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.															
Change of temperature	$\Delta L/L_0 \leq \pm 5\%$ There shall be no other damage of problems	The sample shall be subject to 5 continuous cycles, such as shown in the table 2 below and then it shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made. <div style="text-align: center; margin-top: 10px;"> table 2 </div> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th><th>Temperature</th><th>Duration</th></tr> </thead> <tbody> <tr> <td>1</td><td>$-25 \pm 3^\circ\text{C}$ (Thermostat No.1)</td><td>30 min.</td></tr> <tr> <td>2</td><td>Standard atmospheric</td><td>No.1→No.2</td></tr> <tr> <td>3</td><td>$85 \pm 2^\circ\text{C}$ (Thermostat No.2)</td><td>30 min.</td></tr> <tr> <td>4</td><td>Standard atmospheric</td><td>No.2→No.1</td></tr> </tbody> </table>		Temperature	Duration	1	$-25 \pm 3^\circ\text{C}$ (Thermostat No.1)	30 min.	2	Standard atmospheric	No.1→No.2	3	$85 \pm 2^\circ\text{C}$ (Thermostat No.2)	30 min.	4	Standard atmospheric	No.2→No.1
	Temperature	Duration															
1	$-25 \pm 3^\circ\text{C}$ (Thermostat No.1)	30 min.															
2	Standard atmospheric	No.1→No.2															
3	$85 \pm 2^\circ\text{C}$ (Thermostat No.2)	30 min.															
4	Standard atmospheric	No.2→No.1															
Moisture storage	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 96 ± 4 hours in a temperature of $40 \pm 2^\circ\text{C}$ and a humidity(RH) of 90~95%. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity more than 1 hour.															
Test conditions : The sample shall be reflow soldered onto the printed circuit board in every test.																	



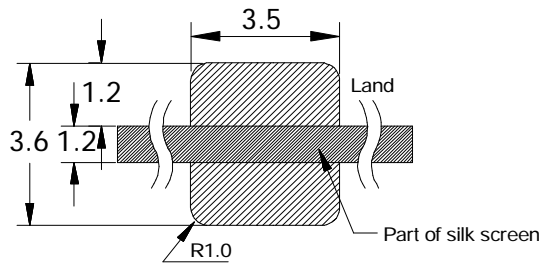
(5) LAND DIMENSION (Ref.)

PCB: GLASS EPOXY $t=1.6\text{mm}$

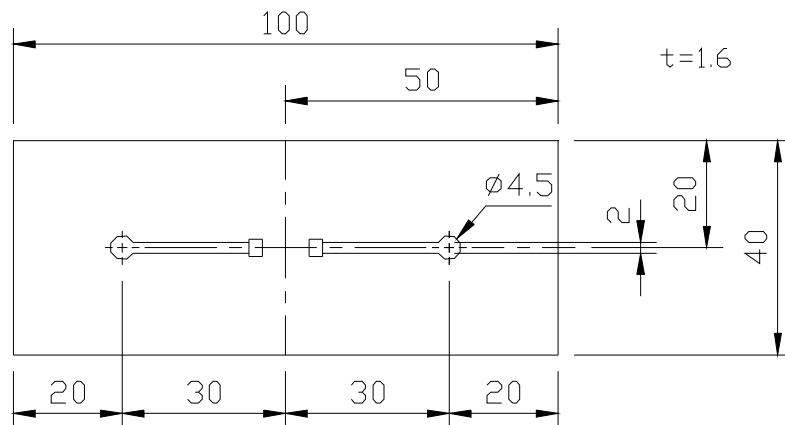
(5)-1 LAND PATTERN DIMENSIONS

(STANDARD PATTERN)

Unit:mm

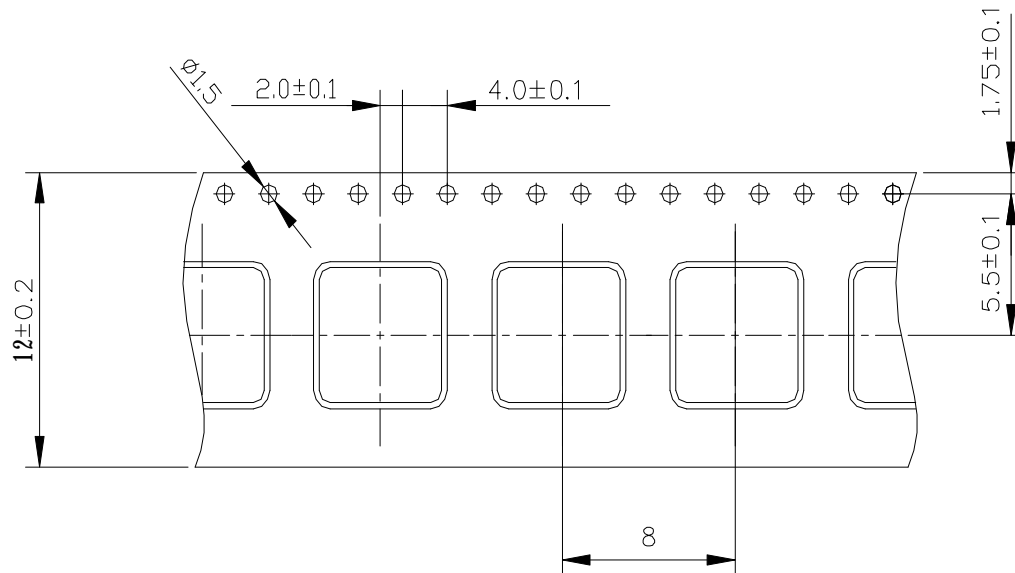


(5)-2 SUBSTRATE BENDING TEST BENDING TEST BOARD

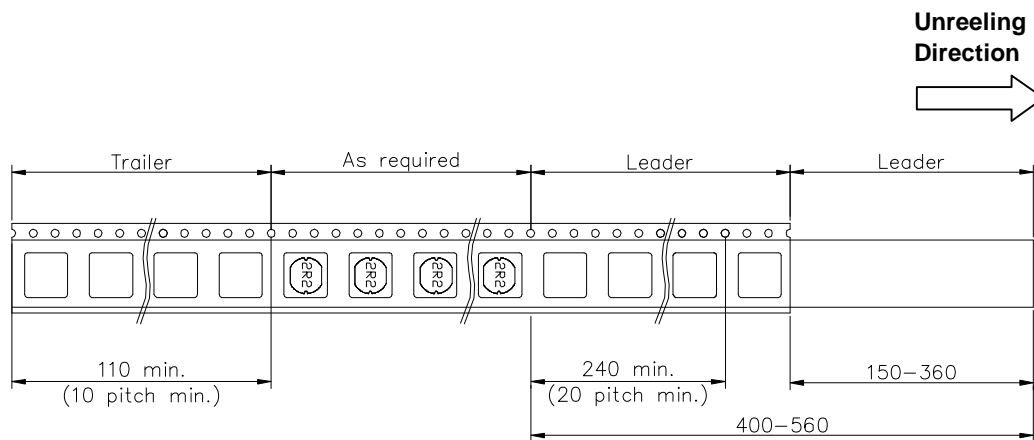


(6) PACKAGING

(6)-1 CARRIER TAPE DIMENSIONS (mm)

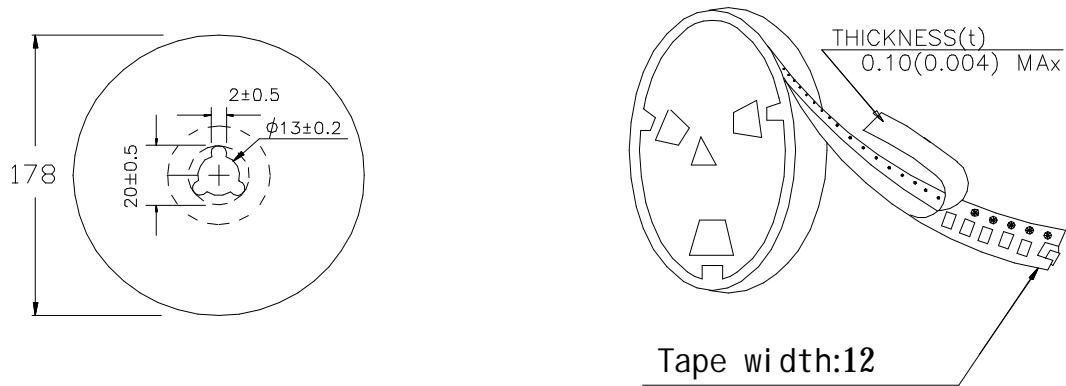


(6)-2 TAPING DIMENSIONS (mm)



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(6)-3 REEL DIMENSIONS (mm)



(6)-4 QUANTITY

1000pcs/Reel

The products are packaged so that no damage will be sustained.



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