

SCOPE :

This specification applies to the Pb Free high current type SMD inductors for
MSCD-53-SERIES

PRODUCT IDENTIFICATION

MSCD- 53 - 100 K

① ② ③ ④

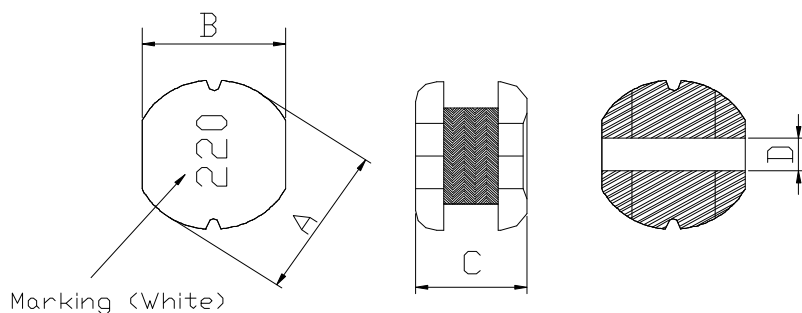
① Product Code

② Dimensions Code

③ Inductance Code

④ Tolerance Code

(1) SHAPES AND DIMENSIONS



A: 5.8 ± 0.3 mm
B: 5.2 ± 0.3 mm
C: 3.0 ± 0.3 mm
D: 2.0 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 $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$



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TABLE 1

MAGLAYERS PT/NO.	Inductance L(μH)	Percent Tolerance	Test Frequency	Resistance RDC(Ω)Max.	Rated DC Current IDC(A)	Marking
MSCD-53-1R0□	1.0	M,N	100kHz/0.25V	30m	4.50	1R0
MSCD-53-1R4□	1.4	M,N	100kHz/0.25V	30m	4.10	1R4
MSCD-53-1R5□	1.5	M,N	100kHz/0.25V	30m	4.00	1R5
MSCD-53-1R8□	1.8	M,N	100kHz/0.25V	30m	3.70	1R8
MSCD-53-2R2□	2.2	M,N	100kHz/0.25V	30m	3.50	2R2
MSCD-53-2R7□	2.7	M,N	100kHz/0.25V	40m	3.20	2R7
MSCD-53-3R3□	3.3	M,N	100kHz/0.25V	50m	2.80	3R3
MSCD-53-3R9□	3.9	M,N	100kHz/0.25V	60m	2.60	3R9
MSCD-53-4R7□	4.7	M,N	100kHz/0.25V	70m	2.50	4R7
MSCD-53-5R6□	5.6	M,N	100kHz/0.25V	80m	2.40	5R6
MSCD-53-6R8□	6.8	M,N	100kHz/0.25V	90m	2.20	6R8
MSCD-53-8R2□	8.2	M,N	100kHz/0.25V	0.10	2.00	8R2
MSCD-53-100□	10	K,L,M	100kHz/0.25V	0.12	1.80	100
MSCD-53-120□	12	L,M	100kHz/0.25V	0.13	1.75	120
MSCD-53-150□	15	L,M	100kHz/0.25V	0.15	1.70	150
MSCD-53-180□	18	L,M	100kHz/0.25V	0.18	1.60	180
MSCD-53-220□	22	L,M	100kHz/0.25V	0.22	1.30	220
MSCD-53-270□	27	K,L,M	100kHz/0.25V	0.26	1.20	270
MSCD-53-330□	33	K,L,M	100kHz/0.25V	0.33	1.10	330
MSCD-53-390□	39	L,M	100kHz/0.25V	0.42	1.00	390
MSCD-53-470□	47	K,L,M	100kHz/0.25V	0.50	0.90	470
MSCD-53-560□	56	L,M	100kHz/0.25V	0.55	0.85	560
MSCD-53-680□	68	L,M	100kHz/0.25V	0.65	0.80	680
MSCD-53-820□	82	L,M	100kHz/0.25V	0.80	0.65	820
MSCD-53-101□	100	K,M	100kHz/0.25V	0.90	0.60	101
MSCD-53-121□	120	K,M	100kHz/0.25V	1.00	0.58	121
MSCD-53-151□	150	K,M	100kHz/0.25V	1.30	0.43	151
MSCD-53-181□	180	K,M	100kHz/0.25V	1.50	0.41	181
MSCD-53-221□	220	K,M	100kHz/0.25V	2.00	0.38	221
MSCD-53-271□	270	K,M	100kHz/0.25V	2.50	0.35	271
MSCD-53-331□	330	K,M	100kHz/0.25V	3.20	0.28	331
MSCD-53-391□	390	K,M	100kHz/0.25V	3.50	0.26	391
MSCD-53-471□	470	K,M	100kHz/0.25V	4.20	0.20	471
MSCD-53-561□	560	K,M	100kHz/0.25V	4.50	0.19	561
MSCD-53-681□	680	K,M	100kHz/0.25V	6.50	0.18	681
MSCD-53-821□	820	K,M	100kHz/0.25V	7.50	0.15	821
MSCD-53-102□	1000	K,M	100kHz/0.25V	8.00	0.13	102

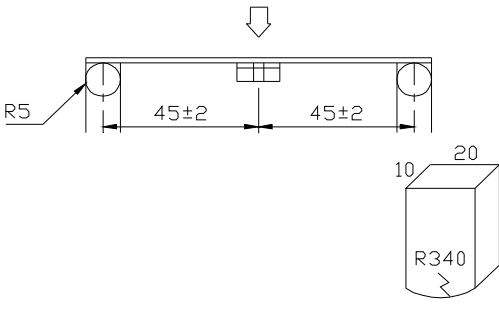
※ □ specify the inductance tolerance,K(±10%),L(±15%),M(±20%),N(±30%)

※ IDC : Based on inductance change ($\Delta L/L_0$: drop 10% Max.) @ ambient temp. 25℃ and
Based on temperature rise (ΔT : 40℃ TYP.)

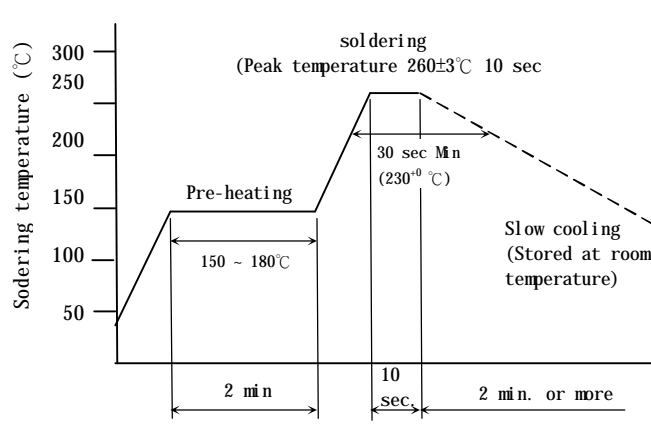


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(4) RELIABILITY TEST METHOD MECHANICAL

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℃ 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℃.</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	$\Delta L/L_o \leq \pm 5\%$ 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	$\Delta L/L_o \leq \pm 5\%$ 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	$\Delta L/L_o \leq \pm 5\%$ There shall be no other damage of problems	The sample shall be subject to 5 continuos 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;">table 2</div> <table border="1"> <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	$\Delta L/L_o \leq \pm 5\%$ 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.																	



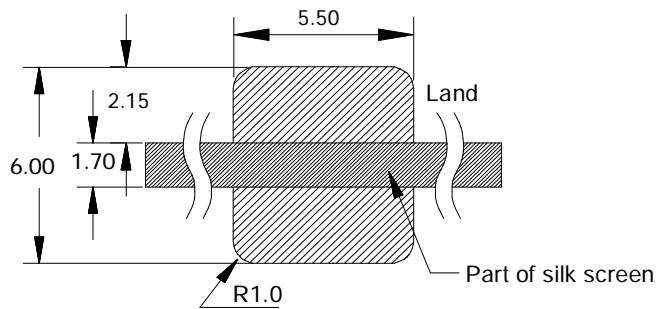
(5) LAND DIMENSION (Ref.)

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

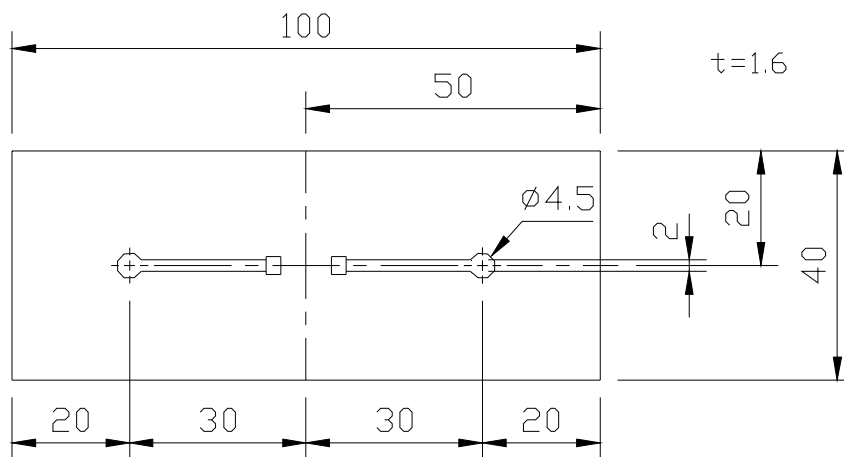
(5)-1 LAND PATTERN DIMENSIONS

(STANDARD PATTERN)

Unit:mm

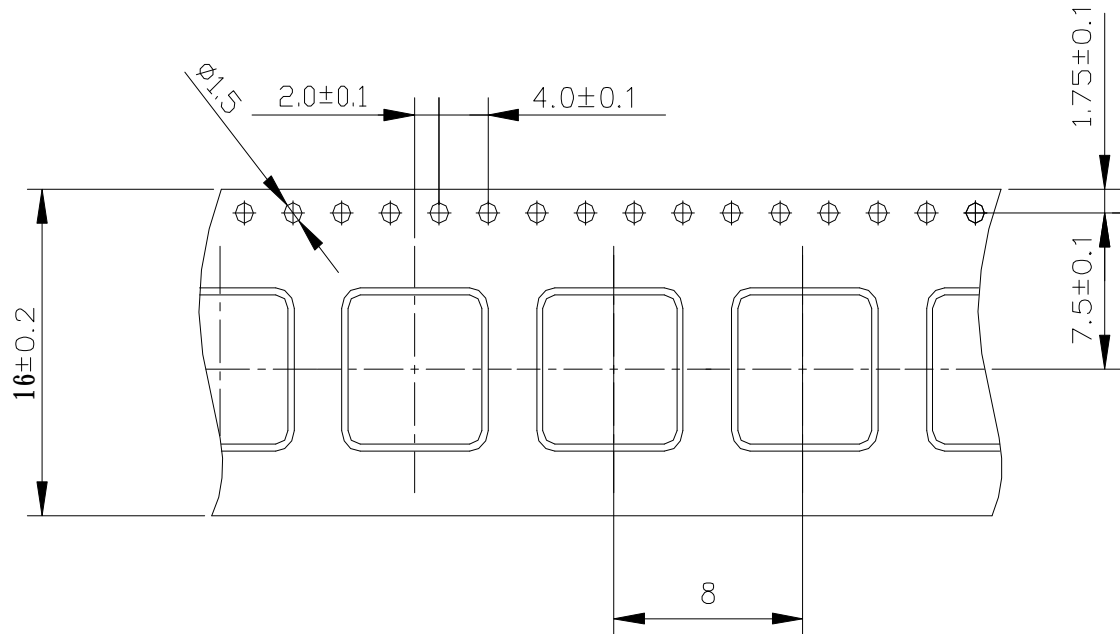


(5)-2 SUBSTRATE BENDING TEST BENDING TEST BOARD

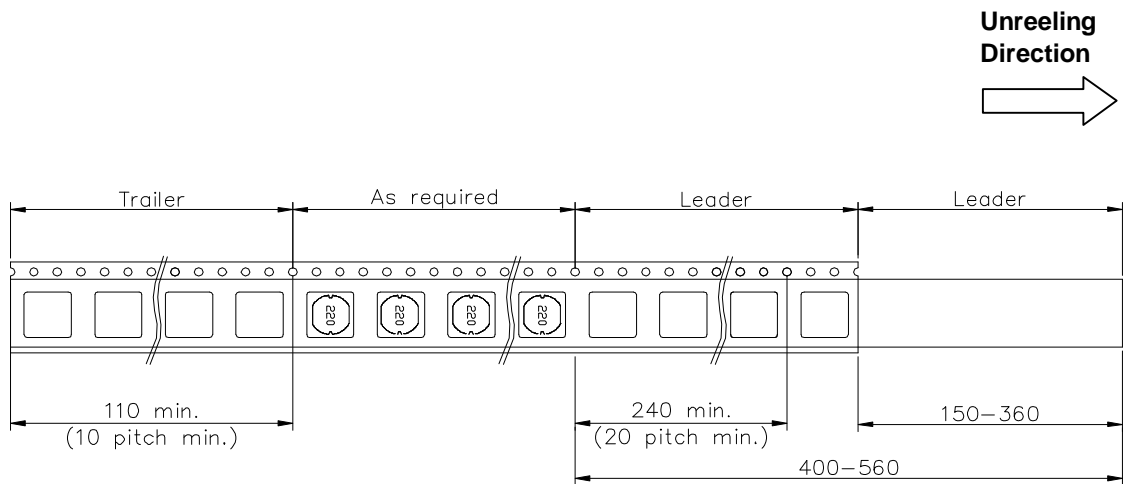


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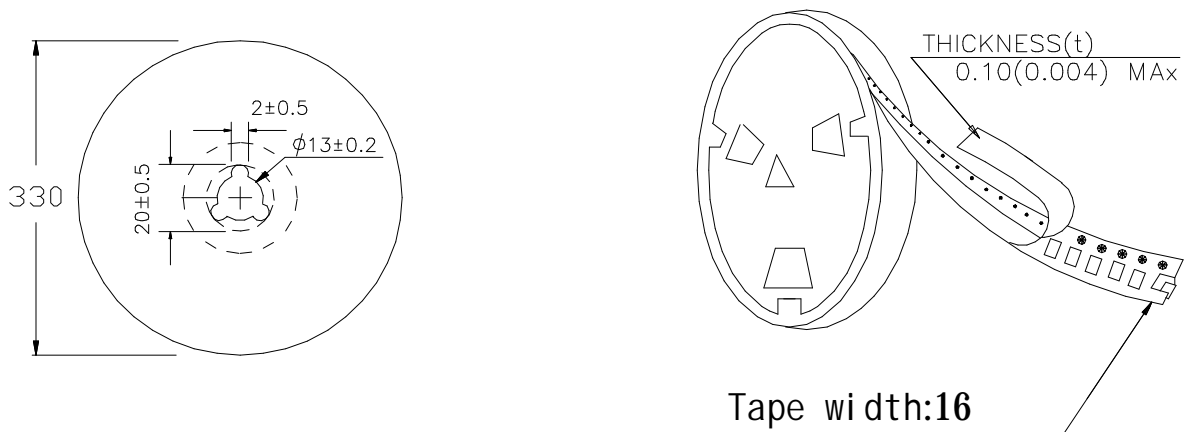
(6) PACKAGING
(6)-1 CARRIER TAPE DIMENSIONS (mm)



(6)-2 TAPING DIMENSIONS (mm)



(6)-3 REEL DIMENSIONS (mm)



(6)-4 QUANTITY

2000pcs/Reel

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



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