

SCOPE :

This specification applies to the Pb Free high current type SMD inductors for
MSCDRI-4018X-SERIES

Warn : It is here not to use synchronous rectification circuit !

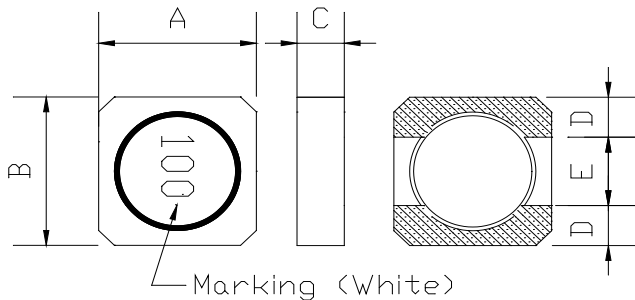
PRODUCT IDENTIFICATION

MSCDRI - 4018X - 100 M

① ② ③ ④

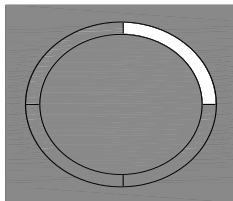
- ① Product Code
- ② Dimensions Code
- ③ Inductance Code
- ④ Tolerance Code

(1) SHAPES AND DIMENSIONS



A: 4.00±0.2	mm
B: 4.00±0.2	mm
C: 1.80 Max.	mm
D: 1.10 Typ.	mm
E: 1.80 Typ.	mm

Void Appearance Tolerance Limit



- 1.The length of the hole in the epoxy of the sealed glue position should be less than 1/4 of the DR core 's circumference, otherwise, it is NG.
- 2.The total length of the amount of hole in the epoxy should be less than 1/4 of the DR core 's circumference, otherwise, it is NG.

(2) ELECTRICAL SPECIFICATIONS

SEE TABLE 1

TEST INSTRUMENTS

L : HP 4284A PRECISION LCR METER (or equivalent)

RDC : CHROMA MODEL 16502 MILLIOHM METER (or equivalent)



MAG.LAYERS

TABLE 1

MAGLAYERS PT/NO.	Inductance L(μ H)	Percent Tolerance	Test Frequency	Resistance RDC(Ω)Max.	Rated DC Current		Marking
					IDC1(A)	IDC2(A)	
MSCDRI-4018X-R56□	0.56	M,N	100kHz/0.1V	30m	4.80	2.80	R56
MSCDRI-4018X-1R0□	1.0	M,N	100kHz/0.1V	40m	3.40	2.70	1R0
MSCDRI-4018X-1R5□	1.5	M,N	100kHz/0.1V	50m	2.70	2.50	1R5
MSCDRI-4018X-1R6□	1.6	N	100kHz/0.1V	50m	2.70	2.50	1R6
MSCDRI-4018X-2R2□	2.2	M,N	100kHz/0.1V	70m	2.50	2.20	2R2
MSCDRI-4018X-2R5□	2.5	N	100kHz/0.1V	75m	2.40	2.10	2R5
MSCDRI-4018X-3R3□	3.3	M,N	100kHz/0.1V	80m	2.20	2.00	3R3
MSCDRI-4018X-3R6□	3.6	N	100kHz/0.1V	0.100	2.00	1.80	3R6
MSCDRI-4018X-3R9□	3.9	M,N	100kHz/0.1V	0.100	2.00	1.80	3R9
MSCDRI-4018X-4R7□	4.7	M,N	100kHz/0.1V	0.125	1.70	1.60	4R7
MSCDRI-4018X-5R6□	5.6	M,N	100kHz/0.1V	0.135	1.50	1.45	5R6
MSCDRI-4018X-6R8□	6.8	M,N	100kHz/0.1V	0.15	1.20	1.30	6R8
MSCDRI-4018X-100□	10	M,N	100kHz/0.1V	0.20	1.10	1.15	100
MSCDRI-4018X-150□	15	M,N	100kHz/0.1V	0.28	0.86	0.90	150
MSCDRI-4018X-180□	18	M,N	100kHz/0.1V	0.30	0.78	0.88	180
MSCDRI-4018X-220□	22	M,N	100kHz/0.1V	0.36	0.74	0.85	220
MSCDRI-4018X-330□	33	M,N	100kHz/0.1V	0.46	0.58	0.77	330
MSCDRI-4018X-470□	47	M,N	100kHz/0.1V	0.75	0.51	0.63	470
MSCDRI-4018X-680□	68	M,N	100kHz/0.1V	1.07	0.41	0.48	680
MSCDRI-4018X-820□	82	M,N	100kHz/0.1V	1.22	0.38	0.44	820
MSCDRI-4018X-101□	100	M,N	100kHz/0.1V	1.64	0.34	0.42	101
MSCDRI-4018X-121□	120	M,N	100kHz/0.1V	1.88	0.31	0.38	121
MSCDRI-4018X-151□	150	M,N	100kHz/0.1V	2.45	0.27	0.31	151
MSCDRI-4018X-181□	180	M,N	100kHz/0.1V	2.91	0.24	0.30	181
MSCDRI-4018X-221□	220	M,N	100kHz/0.1V	4.20	0.22	0.24	221
MSCDRI-4018X-331□	330	M,N	100kHz/0.1V	5.90	0.18	0.22	331
MSCDRI-4018X-471□	470	M,N	100kHz/0.1V	7.10	0.14	0.20	471
MSCDRI-4018X-561□	560	M,N	100kHz/0.1V	10.0	0.13	0.18	561
MSCDRI-4018X-681□	680	M,N	100kHz/0.1V	11.5	0.12	0.16	681
MSCDRI-4018X-821□	820	M,N	100kHz/0.1V	17.8	0.11	0.12	821
MSCDRI-4018X-102□	1000	M	100kHz/0.1V	19.4	0.10	0.10	102
MSCDRI-4018X-152□	1500	M	100kHz/0.1V	30.0	0.08	0.08	152

※ □ specify the inductance tolerance, M(\pm 20%), N(\pm 30%)

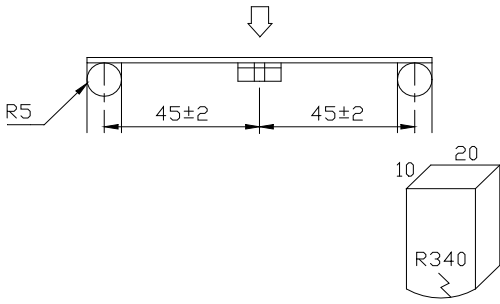
※ IDC1 : Based on inductance change (Δ L/Lo : drop 30% Max.)@ ambient temperature 25°C

IDC2 : Based on temperature rise (Δ T : 40°C Typ.)

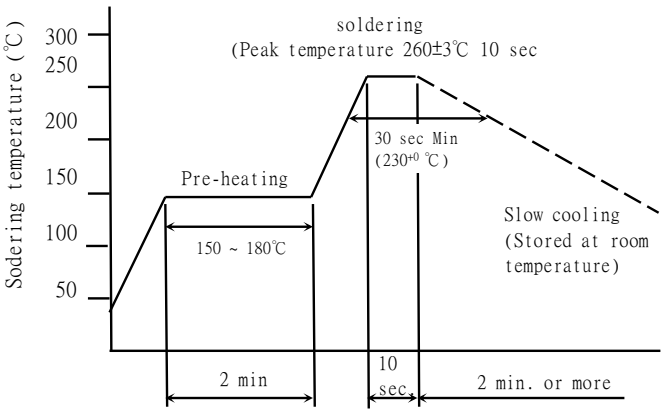
Rated DC Current : The less value which is IDC1 or IDC2.



(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) PCB dimension shall the page 7/9</p>  <p style="text-align: center;">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 style="text-align: center;">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
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	$\Delta L/Lo \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 96±4 hours in an atmosphere with a temperature of 125°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	$\Delta L/Lo \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 96±4 hours in an atmosphere with a temperature of -25±3°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	$\Delta L/Lo \leq \pm 5\%$ 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;"> table 2 <table border="1" style="margin: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">Temperature</th> <th style="text-align: center;">Duration</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">-25±3°C (Thermostat No.1)</td> <td style="text-align: center;">30 min.</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">Standard atmospheric</td> <td style="text-align: center;">No.1→No.2</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">85±2°C (Thermostat No.2)</td> <td style="text-align: center;">30 min.</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">Standard atmospheric</td> <td style="text-align: center;">No.2→No.1</td> </tr> </tbody> </table> </div>		Temperature	Duration	1	-25±3°C (Thermostat No.1)	30 min.	2	Standard atmospheric	No.1→No.2	3	85±2°C (Thermostat No.2)	30 min.	4	Standard atmospheric	No.2→No.1
	Temperature	Duration															
1	-25±3°C (Thermostat No.1)	30 min.															
2	Standard atmospheric	No.1→No.2															
3	85±2°C (Thermostat No.2)	30 min.															
4	Standard atmospheric	No.2→No.1															
Moisture storage	$\Delta L/Lo \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 96±4 hours in a temperature of 40±2°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.																	

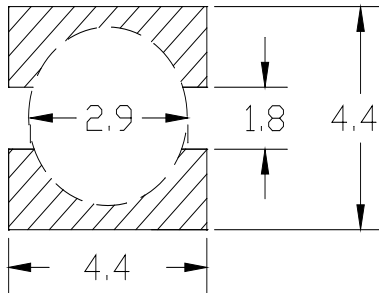
(5) LAND DIMENSION (Ref.)

PCB: GLASS EPOXY t=1.6mm

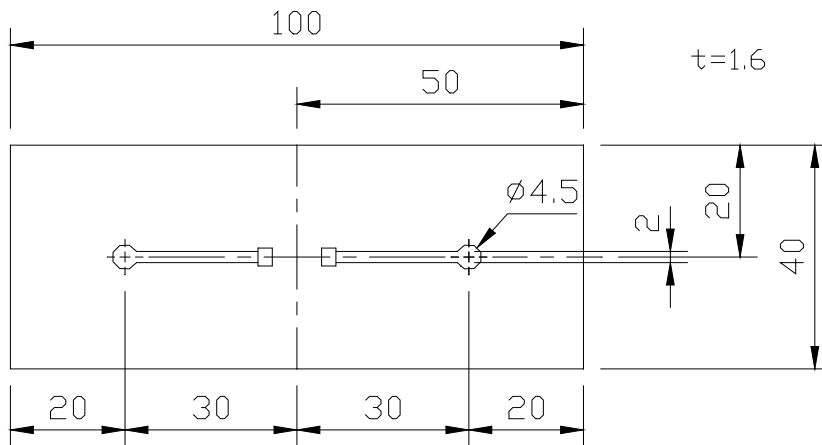
(5)-1 LAND PATTERN DIMENSIONS

(STANDARD PATTERN)

unit : mm



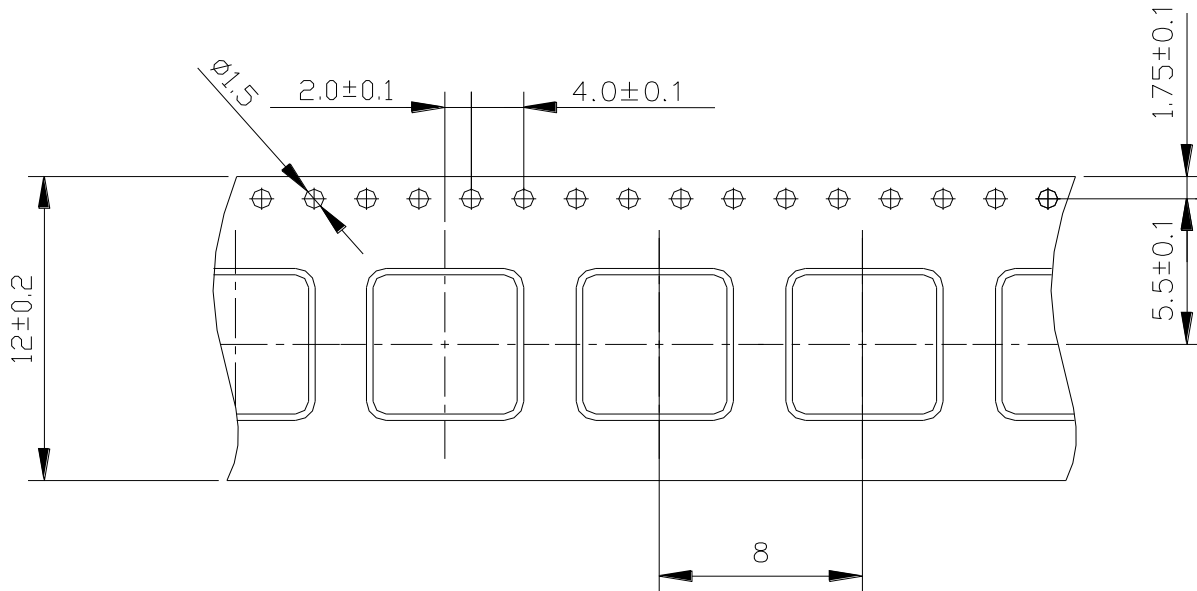
(5)-2 SUBSTRATE BENDING TEST BENDING TEST BOARD



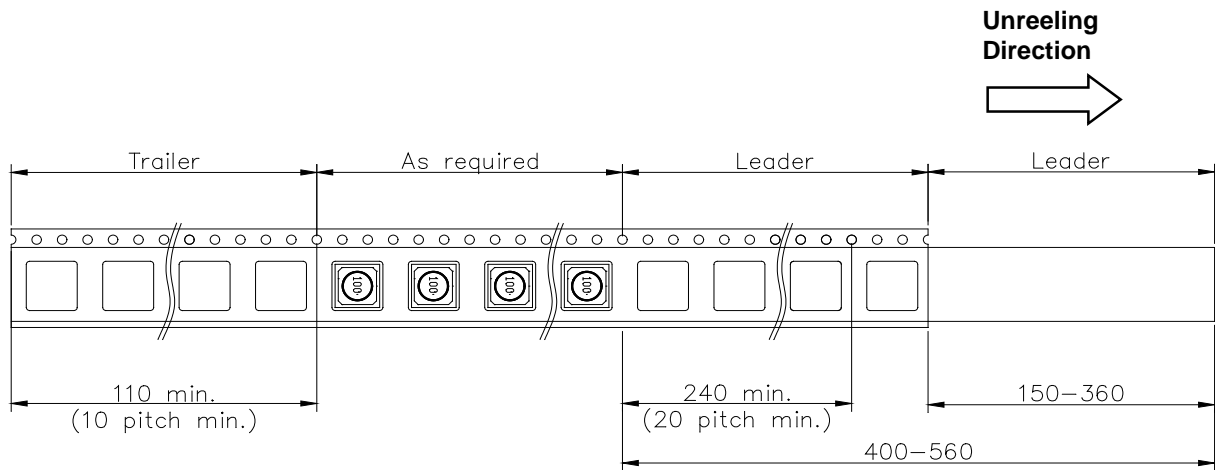
MAG.LAYERS

(6) PACKAGING

(6)-1 CARRIER TAPE DIMENSIONS (mm)

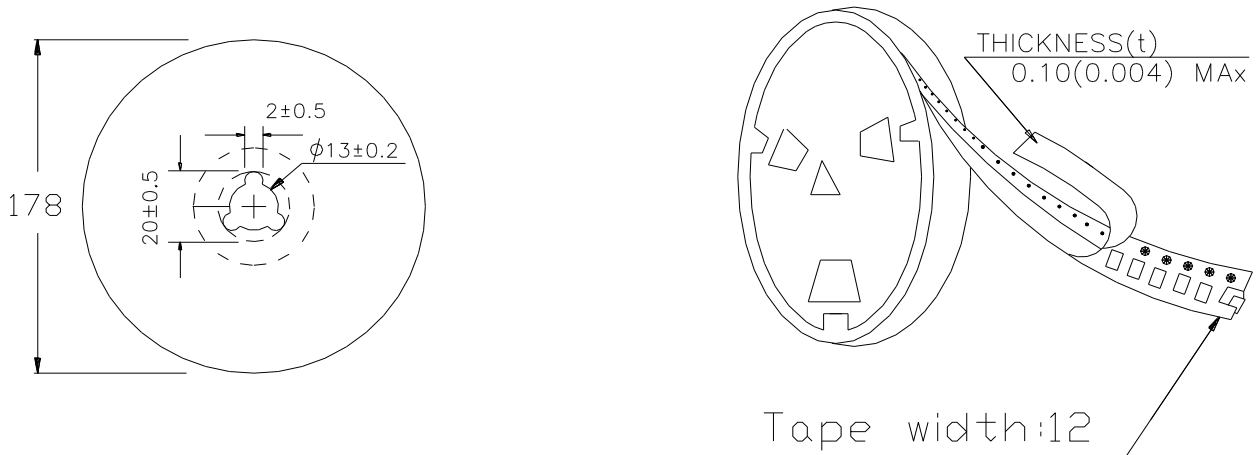


(6)-2 TAPING DIMENSIONS (mm)



MAG.LAYERS

(6)-3 REEL DIMENSIONS (mm)



(6)-4 QUANTITY

1000pcs/Reel

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



MAG.LAYERS