SCOPE :

This specification applies to the Pb Free high current type SMD inductors for MSCDRI-5010X-SERIES

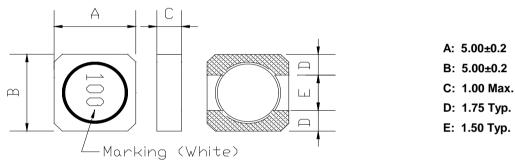
Warn: It is here not to use synchronous rectification circuit !

PRODUCT INDENTIFICATION

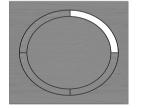
<u>MSCDRI</u> -	<u>5010X</u> -	<u>100</u>	M
1	2	3	4

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

(1) SHAPES AND DIMENSIONS



Void Appearance Tolerance Limit



 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.
 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

SEE TADLE T

TEST INSTRUMENTS

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



mm

mm

mm

mm

mm

TABLE [•]	1
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MAGLAYERS	Inductance	Percent	Test	Resistance	Rated D	C Current	Mortsing
PT/NO.	L(µH)	Tolerance	Frequency	RDC(Ω)Max.	IDC1(A)	IDC2(A)	Marking
MSCDRI-5010X-R33	0.33	Ν	100kHz/0.1V	30m	3.50	3.00	R33
MSCDRI-5010X-R68	0.68	Ν	100kHz/0.1V	48m	2.50	2.00	R68
MSCDRI-5010X-1R0	1.0	M,N	100kHz/0.1V	72m	1.70	1.40	1R0
MSCDRI-5010X-1R5	1.5	M,N	100kHz/0.1V	72m	1.70	1.40	1R5
MSCDRI-5010X-2R2	2.2	M,N	100kHz/0.1V	0.100	1.40	1.20	2R2
MSCDRI-5010X-3R3	3.3	M,N	100kHz/0.1V	0.125	1.10	1.10	3R3
MSCDRI-5010X-4R7	4.7	М	100kHz/0.1V	0.175	1.00	0.98	4R7
MSCDRI-5010X-5R6	5.6	М	100kHz/0.1V	0.240	0.90	0.92	5R6
MSCDRI-5010X-6R8	6.8	М	100kHz/0.1V	0.255	0.84	0.85	6R8
MSCDRI-5010X-100	10	М	100kHz/0.1V	0.35	0.68	0.80	100
MSCDRI-5010X-150	15	М	100kHz/0.1V	0.50	0.55	0.75	150
MSCDRI-5010X-220	22	М	100kHz/0.1V	0.67	0.45	0.62	220
MSCDRI-5010X-330	33	М	100kHz/0.1V	1.05	0.38	0.55	330
MSCDRI-5010X-470	47	М	100kHz/0.1V	1.45	0.30	0.44	470
MSCDRI-5010X-680	68	М	100kHz/0.1V	2.00	0.26	0.35	680
MSCDRI-5010X-101	100	М	100kHz/0.1V	3.10	0.22	0.28	101
MSCDRI-5010X-121	120	М	100kHz/0.1V	3.50	0.20	0.25	121
MSCDRI-5010X-151	150	М	100kHz/0.1V	4.25	0.18	0.23	151
MSCDRI-5010X-221	220	М	100kHz/0.1V	6.25	0.15	0.20	221
MSCDRI-5010X-331	330	М	100kHz/0.1V	8.60	0.12	0.185	331
MSCDRI-5010X-471	470	М	100kHz/0.1V	12.7	0.09	0.150	471
MSCDRI-5010X-561	560	М	100kHz/0.1V	15.7	0.085	0.135	561

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

% IDC1 : Based on inductance change (\triangle L/Lo : drop 30% Max.) @ ambient temp. 25 $^{\circ}$ C

IDC2 : Based on temperature rise ($\triangle T$: 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	∆L/Lo≦±5%	The sample shall be soldered onto the printed circuit board			
		in figure 1 and a load applied unitil the figure in the arrow			
	There shall be	direction is made approximately 3mm.(keep time 30 seconds)			
	no mechanical	PCB dimension shall the page 7/9			
	damage or elec-	F(Pressurization)			
	trical damage.	Ţ			
		R5 45±2 45±2 10 20 R340			
		PRESSURE ROD figure-1			
Vibration	∆L/Lo≦±5%	The sample shall be soldered onto the printed circuit board			
		and when a vibration having an amplitude of 1.52mm			
	There shall be	and a frequency of from 10 to 55Hz/1 minute repeated should			
	no mechanical	be applied to the 3 directions (X,Y,Z) for 2 hours each.			
	damage.	(A total of 6 hours)			
	New solder	Flux (rosin, isopropyl alcohol{JIS-K-1522}) shall be coated			
Solderability	More than 90%	over the whole of the sample before hard, the sample shall			
		then be preheated for about 2 minutes in a temperature of			
		$130 \sim 150^{\circ}$ 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℃.			
		More than 90% of the electrode sections shall be couered			
		with new solder smoothly when the sample is taken out of			
		the solder bath.			



MECHANICAL

TEST ITEM	SPECIFICATION			
Resistance to The Soldering heat no	There shall be no damage or problems.	Temperature profile of reflow soldering (2) 300 $soldering$ (2) 300 $(Peak \ temperature \ 260\pm3^{\circ}C \ 10 \ sec$ 300 250 $(Peak \ temperature \ 260\pm3^{\circ}C \ 10 \ sec$ 300 200 $(Peak \ temperature \ 260\pm3^{\circ}C \ 10 \ sec$ 300 $sec \ Min$ $(230^{+0}\ C)$ 150 $150 \ 150 \ -180^{\circ}C$ Slow cooling $(Stored \ at \ room \ temperature)$ $temperature$		
		The specimen shall be passed through the reflow oven with the condition shown in the above profile for 1 time. The specimen shall be stored at standard atmospheric condition for 1 hour, after which the measurement shall be made.		

ELECTRICAL

TEST ITEM	SPECIFICATION	TEST DETAILS
Temperature	∆L/L20℃≦±10%	The test shall be performed after the sample has stabilized in
characteristics	0∼2000 ppm/° C	an ambient temperature of -20 to +85 $^\circ\!\!{ m C}$,and the value
		calculated based on the value applicable in a normal
		temperature and narmal humidity shall be $\triangle L/L20^\circ C \leq \pm 10\%$.



ENVIROMENT CHARACTERISTICS

∆L/Lo≦±5%	The sam	nple sł	hall be left for 96±4 hour	s in an atmospere with	
				•	
	a temperature of 125 $^\circ\!\!\mathrm{C}$ and a normal humidity.				
There shall be	Upon co	Upon completion of the measurement shall be made after the			
no mechanical	sample	sample has been left in a normal temperature and normal			
damage.	humidit	y for 1	hour.		
∆L/Lo≦±5%	The sam	The sample shall be left for 96±4 hours in an atmosphere with			
	a tempe	rature	of -25±3℃.		
There shall be	Upon co	Upon completion of the test, the measurement shall be made			
no mechanical	after the) samp	ole has been left in a nor	mal temperature and	
damage.	normal	humid	lity for 1 hour.		
∆L/Lo≦±5%	The sam	nple sl	hall be subject to 5 cont	inuos cycles, such as show	vn
	in the ta	ble 2 l	below and then it shall b	be subjected to standard	
There shall be	atmospl	heric c	conditions for 1 hour, af	ter which measurement	
no other dama-	shall be made.				
ge of problems					
			table 2		
			Temperature	Duration	
			-		
		1		30 min.	
			Standard		_
		2	atmospheric	No.1→No.2	
			-		
		3		30 min.	
		4		No.2→No.1	
		L	annoophono		
∆L/Lo≦±5%	The sample shall be left for 96±4 hours in a temperature of				
	40±2 $^{\circ}$ C and a humidity(RH) of 90 \sim 95%.				
There shall be	Upon completion of the test, the measurement shall be made				
no mechanical	after the sample has been left in a normal temperature and				
damage.	normal humidity more than 1 hour.				
	no mechanical damage. $\triangle L/Lo \leq \pm 5\%$ There shall be no mechanical damage. $\triangle L/Lo \leq \pm 5\%$ There shall be no other dama- ge of problemsge of problems $\triangle L/Lo \leq \pm 5\%$ There shall be no other dama- ge of problems	no mechanical damage.sample humiditi $\triangle L/Lo \leq \pm 5\%$ The sam a tempeThere shall be no mechanical damage.Upon co after the normal li $\triangle L/Lo \leq \pm 5\%$ The sam in the ta atmosplThere shall be no other dama- ge of problemsThe sam in the ta atmosplge of problemsShall be shall be atmospl $\triangle L/Lo \leq \pm 5\%$ The sam atmosplThere shall be no other dama- ge of problemsThe sam atmospl $\triangle L/Lo \leq \pm 5\%$ The sam 40 ± 2°C a after the after the after the	no mechanical damage.sample has be humidity for 1 $\triangle L/Lo \leq \pm 5\%$ The sample sl a temperatureThere shall be no mechanical damage.Upon complet normal humid $\triangle L/Lo \leq \pm 5\%$ The sample sl in the table 2 l a throspheric co shall 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shall be no mechanicalThe sample has been left in a nor after the sample has been left in a nor</td> <td>no mechanical damage.sample has been left in a normal temperature and normal humidity for 1 hour.$\triangle L/Lo \leq \pm 5\%$The sample shall be left for 96±4 hours in an atmosphere with a temperature of -25±3°C.There shall be no mechanical damage.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.$\triangle L/Lo \leq \pm 5\%$The sample shall be subject to 5 continuos cycles, such as show in the table 2 below and then it shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made.ge of problems$table 2$table 2Temperature Duration 1$2$$Standard$ atmospheric$3$$85\pm 2^{\circ}C$ 30 min.$3$$85\pm 2^{\circ}C$ 30 min.$3$$85\pm 2^{\circ}C$ 30 min.$4$$Standard$ atmospheric$4$$Standard$ <math>atmospheric$4$$Standard$ <math>atmospheric$4$$Standard$ <math>atmospheric$\Delta L/Lo \leq \pm 5\%$The sample shall be left for 96±4 hours in a temperature of $40\pm 2^{\circ}C$ and a humidity(RH) of 90~95%.There shall be no mechanicalThe sample has been left in a normal temperature and</math></math></math></td>	no mechanical damage.sample has been left in a normal temp humidity for 1 hour. $\triangle L/Lo \leq \pm 5\%$ The sample shall be left for 96±4 hour a temperature of -25±3°C.There shall be no mechanical damage.Upon completion of the test, the meas after the sample has been left in a nor normal humidity for 1 hour. $\triangle L/Lo \leq \pm 5\%$ The sample shall be subject to 5 cont in the table 2 below and then it shall be atmospheric conditions for 1 hour, after shall be made.There shall be no other dama- ge of problemsTemperature 1 -25±3°C (Themostat No.1)2Standard atmospheric3 $85\pm 2°C$ (Themostat No.2)4Standard atmospheric $\triangle L/Lo \leq \pm 5\%$ The sample shall be left for 96±4 hour 40±2°C and a humidity(RH) of 90~95%There shall be no mechanicalThe sample has been left in a nor after the sample has been left in a nor	no mechanical damage.sample has been left in a normal temperature and normal humidity for 1 hour. $\triangle L/Lo \leq \pm 5\%$ The sample shall be left for 96±4 hours in an atmosphere with a temperature of -25±3°C.There shall be no mechanical damage.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. $\triangle L/Lo \leq \pm 5\%$ The sample shall be subject to 5 continuos cycles, such as show in the table 2 below and then it shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made.ge of problems $table 2$ table 2Temperature Duration 1 2 $Standard$ atmospheric 3 $85\pm 2^{\circ}C$ 30 min. 3 $85\pm 2^{\circ}C$ 30 min. 3 $85\pm 2^{\circ}C$ 30 min. 4 $Standard$ atmospheric 4 $Standard$ $atmospheric4Standardatmospheric4Standardatmospheric\Delta 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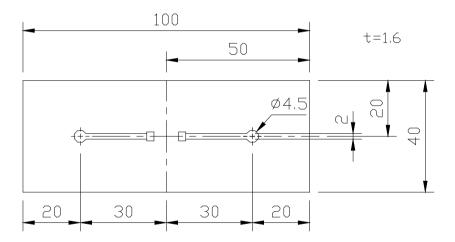


PCB: GLASS EPOXY t=1.6mm

(5)-1 LAND PATTERN DIMENSIONS

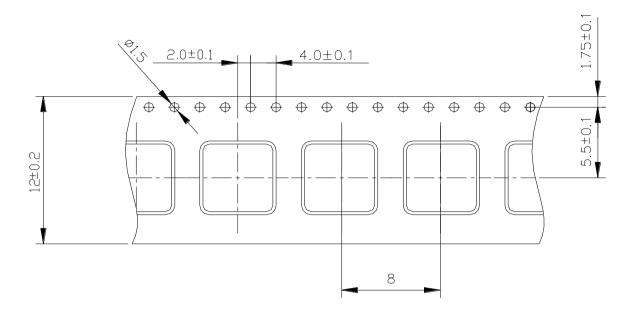
(STANDARD PATTERN) unit : mm

(5)-2 SUBSTRATE BENDING TEST BENDING TEST BOARD

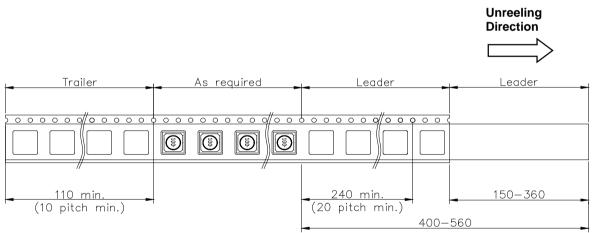




(6) PACKAGING (6)-1 CARRIER TAPE DIMENSIONS (mm)

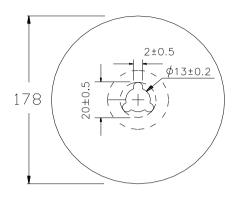


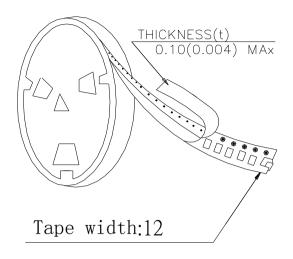
(6)-2 TAPING DIMENSIONS (mm)





(6)-3 REEL DIMENSIONS (mm)





(6)-4 QUANTITY

1000pcs/Reel

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



MSCDRI-5010X-SERIES