SCOPE :

This specification applies to the Pb Free high current type SMD inductors for

MSI-400406-SERIES-

Warn : This product series can't be used in synchronous rectification circuit that is over 24V.

PRODUCT INDENTIFICATION

<u>MSI-400406-R10 N - E</u>

- 1 2 3 4 5
- ① Product Code
- ② Dimensions Code
- **③ Inductance Code**
- (4) Tolerance Code
- **⑤ Inner Control Code**

(1) SHAPES AND DIMENSIONS



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



mm

mm

mm

mm

mm

TABLE

MAGLAYERS	Inductance	Percent	Test	Resistance	Rated DC Current		Marking
PT/NO.	L(uH)	Tolerance	Frequency	RDC(mΩ)	IDC1(A)	IDC2(A)	Marking
MSI-400406-R10 <u></u> -E	0.10	M × N	100kHz/1.0V	0.30±10%	16	40	R10

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

% IDC1 : Based on inductance change (\triangle L/Lo : drop 20% Typ.)@ ambient temp. 25°C

IDC2 : Based on temperature rise ($\triangle T$: 40°C TYP.)

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

RDC TEST POINT

The nominal DCR is measured from point a'' to point b''.





(4) RELIABILITY TEST METHOD

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/℃	an ambient temperature of -20 to +85 $^\circ\!\mathrm{C}$,and the value
		calculated based on the value applicable in a normal
		temperature and narmal humidity shall be $ riangle L/L20^\circ\!C \leq \pm 10\%$.

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.	$\overline{\nabla}$
		10 20 R340
		PRESSURE ROD figure-1



MECHANICAL

TEST ITEM	SPECIFICATION				
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)			
Solderability	New solder	Flux (rosin, isopropyl alcohol{JIS-K-1522}) shall be coated			
	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°C. More than 90% of the electrode sections shall be couered			
		with new solder smoothly when the sample is taken out of			
		the solder bath.			
Desistance (s	The second set the	Towns and the start law as blocks			
Resistance to	There shall be	Temperature profile of reflow soldering			
Soldering heat	no damage or				
(reflow soldering)	problems.	© 300 - soldering (Peak temperature 260±3℃ 10 sec)			
		200 / 30 sec Min			
		(230 sec Min (230 ⁺⁰ ℃)			
		250 300 (Peak temperature $260\pm3^{\circ}$ C 10 sec) 250 300			
		$\begin{bmatrix} \Theta & 100 \\ 0 & - \end{bmatrix}$ (Stored at room (Stored at room)			
		50 / iso iso too too temperature)			
		2 min ← → ← 2 min. or more			
		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 conditions			
		for 1 hour, after which the measurement shall be made.			



ENVIROMENT CHARACTERISTICS

<pre>△L/Lo≦±5%</pre> There shall be no mechanical damage. △L/Lo≦±5% There shall be no mechanical damage.	a tempe Upon co sample humidity The sam a tempe Upon co	rature omplet has bo y for 1 nple sl rature	nall be left for 96±4 hour of -40±3℃.	humidity. t shall be made after f perature and normal	the				
no mechanical damage. ∆L/Lo≦±5% There shall be no mechanical	Upon co sample humidity The sam a tempe Upon co	omplet has be y for 1 nple sl rature	tion of the measuremen een left in a normal tem hour. nall be left for 96±4 hour of -40±3℃.	t shall be made after t					
no mechanical damage. ∆L/Lo≦±5% There shall be no mechanical	sample humidity The sam a tempe Upon co	has be y for 1 nple sl rature	een left in a normal tem hour. nall be left for 96±4 hour of -40±3℃.	perature and normal					
damage. △L/Lo≦±5% There shall be no mechanical	humidity The sam a tempe Upon co	y for 1 nple sl rature	hour. nall be left for 96±4 hour of -40±3℃.		vith				
∆L/Lo≦±5% There shall be no mechanical	The sam a tempe Upon co	nple sl rature	nall be left for 96±4 hour of -40±3℃.	rs in an atmosphere v	vith				
There shall be no mechanical	a tempe Upon co	rature	of -40±3℃.	rs in an atmosphere v	vith				
There shall be no mechanical	a tempe Upon co	rature	of -40±3℃.	rs in an atmosphere v	vith				
no mechanical	Upon co				The sample shall be left for 96±4 hours in an atmosphere with				
no mechanical	-	omplet		a temperature of -40±3°C.					
	after the	Upon completion of the test, the measurement shall be made							
damage.		after the sample has been left in a normal temperature and							
	normal humidity for 1 hour.								
∆L/Lo≦±5%	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								
There shall be	stmospheric conditions for 1 hour, after which measurement								
no other dama-	shall be made.								
ge of problems									
	table 2								
			Temperature	Duration					
		1	-40±3 ℃	30 min.					
		2		No.1→No.2					
			atmospheric						
		3	125±2℃	30 min.					
		, ,							
	4	4	Standard	No.2→No.1					
			atmospheric						
∆L/Lo≦±5%	The sample shall be left for 96±4 hours in a temperature of								
	$^{\circ}$ 40±2 $^{\circ}$ 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.								
	Δ L/Lo≦±5% There shall be no other dama- ge of problems Δ L/Lo≦±5% There shall be no mechanical damage.	Δ L/Lo≦±5% The sam in the ta There shall be no other dama- ge of problems shall be Δ L/Lo≦±5% The sam 40±2°C a There shall be no mechanical after the damage. normal	△L/Lo≤±5%The sample sl in the table 2 l stmospheric c shall be madeThere shall be no other dama- ge of problemsImage: 1112344△L/Lo≤±5%The sample sl 40±2°C and a l Upon complet after the samp normal humid	△L/Lo≤±5%The sample shall be subject to 5 cont in the table 2 below and then it shall I stmospheric conditions for 1 hour, af shall be made.There shall be no other dama- ge of problemstable 2Image of problemsImage of the table 2Image of problemsImage of table 2Image of table 2<	△L/Lo≤±5%The sample shall be subject to 5 continuos cycles, such as in the table 2 below and then it shall be subjected to stand stmospheric conditions for 1 hour, after which measurement shall be made.There shall be no other dama- ge of problemstable 2Image of problemsImage of problems <thimage of="" problems<="" th=""><t< td=""></t<></thimage>				



(5) LAND DIMENSION (Ref.)

PCB: GLASS EPOXY t=1.6mm

(5)-1 LAND PATTERN DIMENSIONS(mm)

(STANDARD PATTERN)



(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

1200 pcs/Reel

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

Please note that the contents may change without any prior notice due to reasons such as upgrading.



MSI-400406-SERIES-D