Ⅰ. SCOPE：

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

MSI-200904CP-SERIES-□-□□

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

PRODUCT INDENTIFICATION

MSI - 200904CP - R050 M - E - □□

① ② ③ ④ ⑤

① Product Code

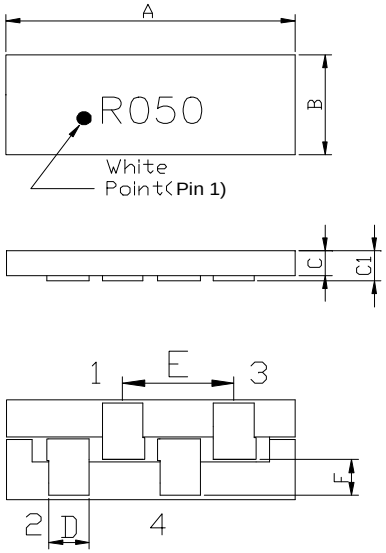
② Dimensions Code

③ Inductance Code

④ Tolerance Code

⑤ Inner Control Code

(1) SHAPES AND DIMENSIONS



A: 20.0±0.5	mm
B: 9.0±0.5	mm
C: 4.0 Max.	mm
C1: 4.2 Max.	mm
D: 2.5±0.15	mm
E: 7.3±0.25	mm
F: 3.3±0.15	mm

(2) ELECTRICAL SPECIFICATIONS

SEE TABLE 1

TEST INSTRUMENTS

L : HP 4285A PRECISION LCR METER (or equivalent)

RDC : CHROMA MODEL 16502 MILLIOHMMETER (or equivalent)

IDC1 : CH3302/G LCR METER
CH1320,CH1320S BIAS CURRENT SOURCE(or equivalent)

(3) CHARACTERISTICS

(3)-1 Ambient temperature ..... +60℃ Max.

(3)-2 Operate temperature range ..... −40℃～+125℃
(Including self temp. rise)

(3)-3 Storage temperature range ..... −40℃～+125℃

TABLE

MAGLAYERS	Leakage Inductance(nH) Pin(2-3)@(1-4 short)/Phase	Inductance(μH) Pin(1-2) Pin(3-4)	RDC(mΩ) Pin(1-2) Pin(3-4)	Rated DC Current (Max.)	
				Isat/Phase(A) Pin(2-3 @1-4 short)	Irms/Phase(A) Pin(1-2) Pin(3-4)
MSI-200904CP-R050M-E-□□	50±20%	0.3±30%	0.285±10%	80	50

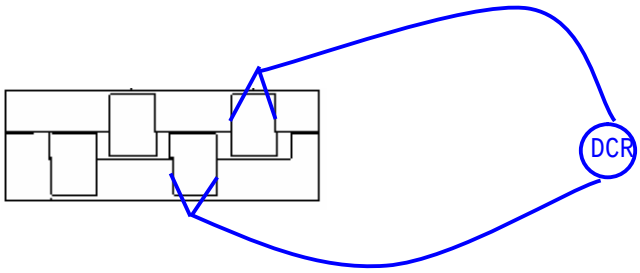
*Inductance Test Frequency : 1MHz/1V

*L BIAS Test Frequency:100kHz/1V

※ Isat/Phase： Based on inductance change (△L/Lo： drop 20% Max.) @ ambient temp. 25℃

Irms：Based on temperature rise (△T： 40℃ TYP.)

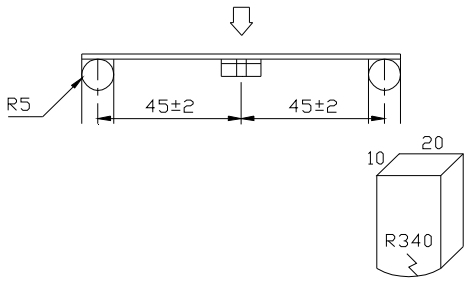
RDC TEST POINT



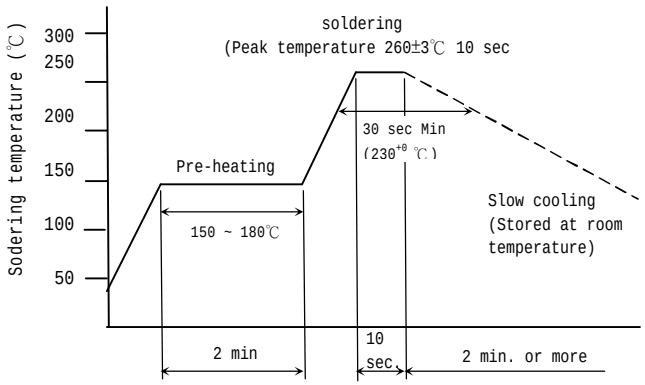
SCHEMATIC

(4) RELIABILITY TEST METHOD

MECHANICAL

	SPECIFICATION	TEST DETAILS
P.2/9 Product picture &	△L/Lo≦±5% no mechanical damage or electrical damege.	The sample shall be soldered onto the printed circuit board in figure 1 and a load applied unitil the figure in the arrow direction is made approximately 3mm.(keep time 30 seconds) PCB dimension shall the page 7/9 F(Pressurization)  PRESSURE ROD figure-1
Vibration	△L/Lo≦±5% There shall be no mechanical damage.	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)
Solderability	New solder More than 90%	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℃. 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	
P.2/9 Product picture & (reflow soldering)	There shall be no damage or problems.	Temperature profile of reflow soldering  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.

ELECTRICAL

TEST ITEM	SPECIFICATION	TEST DETAILS
Temperature characteristics	△L/L20℃ ≦±10% 0～2000 ppm/℃	The test shall be performed after the sample has stabilized in calculated based on the value applicable in a normal temperature and narmal humidity shall be △L/L20℃ ≦±10%.

ENVIROMENT CHARACTERISTICS

TEST ITEM	SPECIFICATION	
P.2/9 Product picture & dimensions is adde	△L/Lo≦±5% There shall be damage.	The sample shall be left for 96±4 hours in an atmospere with a temperature of 125℃ 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	△L/Lo≦±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℃. 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	△L/Lo≦±5% There shall be no other dama-ge 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.
Moisture storage	△L/Lo≦±5% There shall be no mechanical damage.	The sample shall be left for 96±4 hours in a temperature of 40±2℃ 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.

table 2

	Temperature	Duration
1	－25±3℃ (Themostat No.1)	30 min.
2	Standard atmospheric	No.1→No.2
3	(Themostat No.2)	30 min.
4	Standard atmospheric	No.2→No.1

Test conditions：

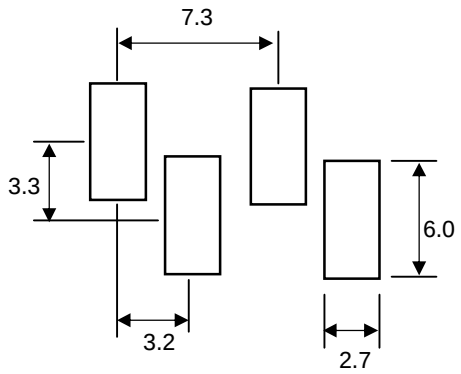
The sample shall be reflow soldered onto the printed circuit board in every test.

(5) LAND DIMENSION (Ref.)

P.2/9 Product picture & dimensions is added

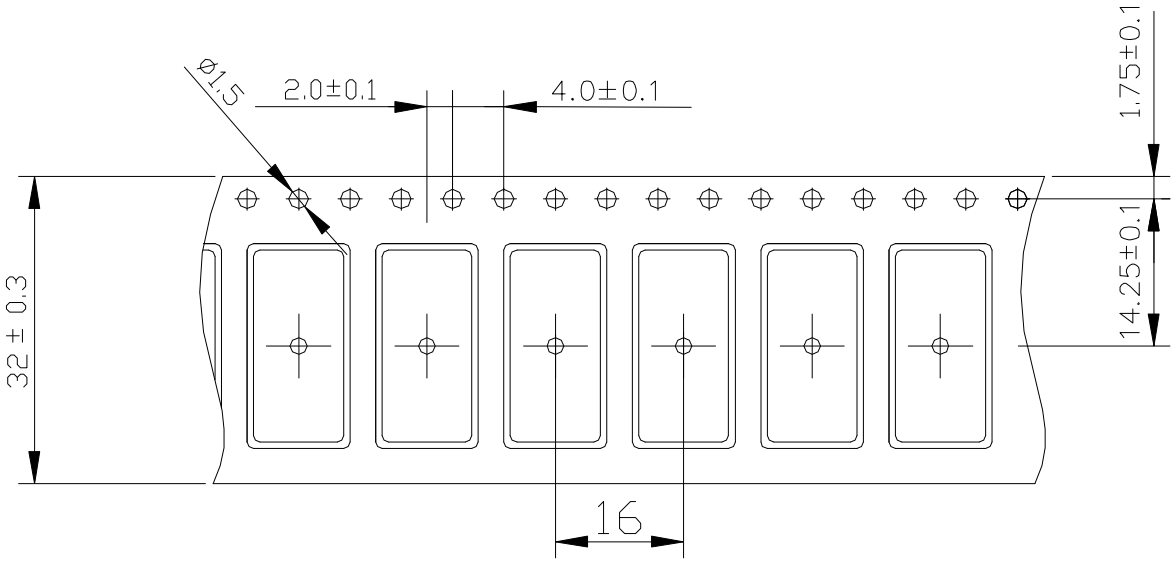
(5)-1 LAND PATTERN DIMENSIONS(mm)

Unit : mm

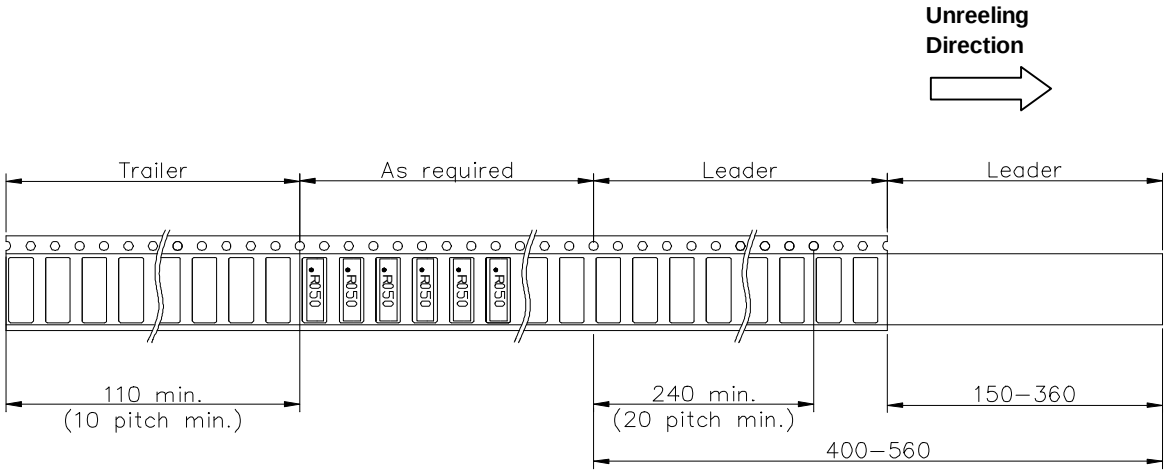


(6) PACKAGING

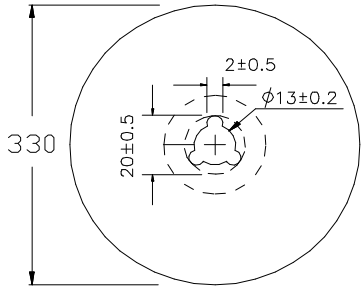
(6)-1 CARRIER TAPE DIMENSIONS (mm)

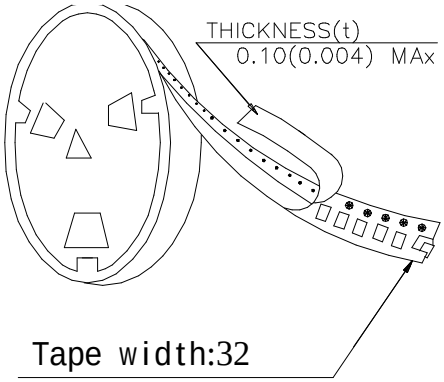


(6)-2 TAPING DIMENSIONS (mm)



(6)-3 REEL DIMENSIONS (mm)





(6)-4 QUANTITY

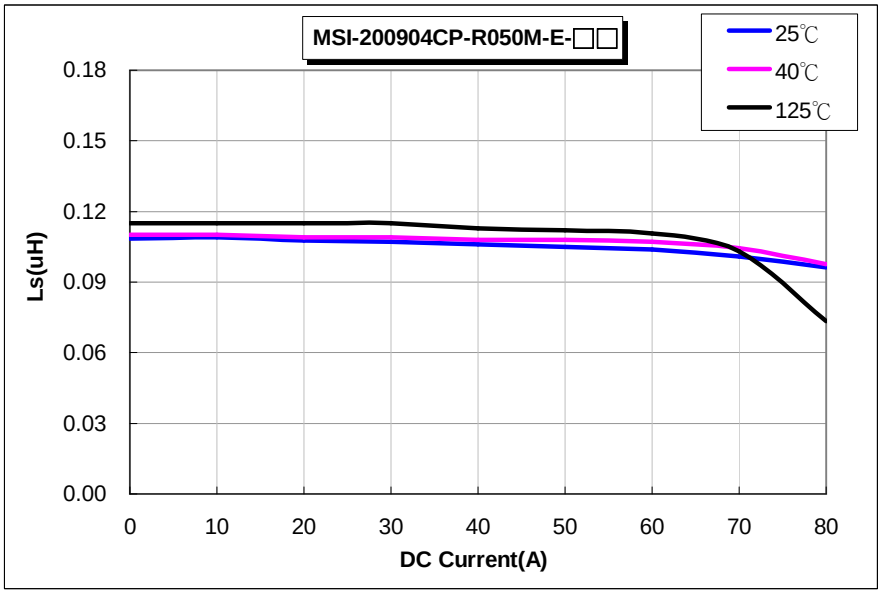
800 pcs/Reel

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

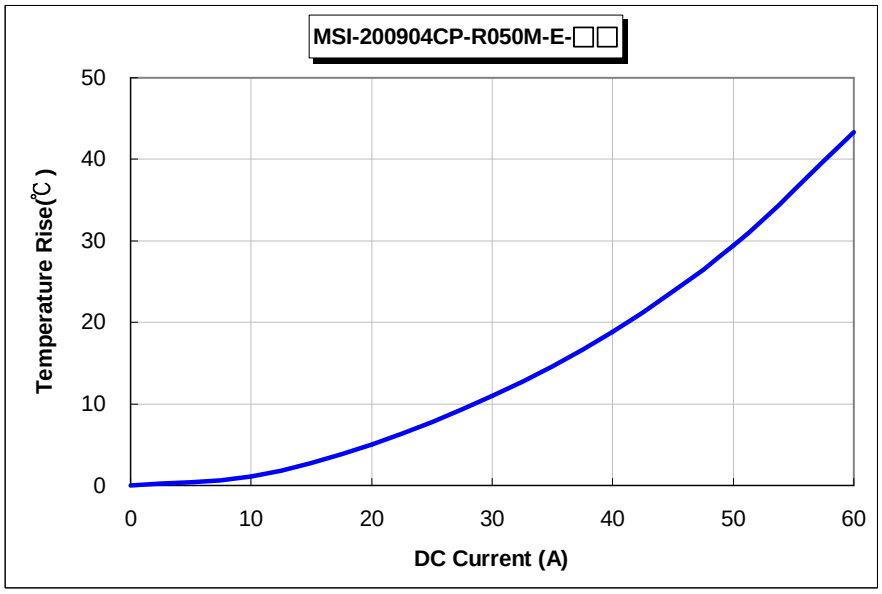
TYPICAL ELECTRICAL CHARACTERISTICS

INDUCTANCE vs. DC CURRENT

L(P.2/9 Product picture & dimensions is added



Temperature Rise vs. DC Current 【Pin (1-2)】



TYPICAL ELECTRICAL CHARACTERISTICS

Inductance vs Frequency

L(1-4)@(2-3 Short) @Ambient Temperature : 25℃