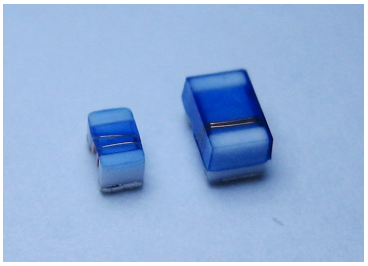
1. WTI -1005M Series (Ceramic Type)



1. SCOPE
   This specification applies to the WTI-1005M series SMD Wound Chip Inductor.
2. STANDARD ATMOSPHERIC CONDITIONS
   Unless otherwise specified the standard range of atmospheric conditions for making measurements and tests is as follows:
   Ambient temperature : 20±15℃
   Relative humidity : 65±20%
   If there may be any doubt on the results, measurements shall be made within the following limits :
   Ambient temperature : 25±5℃
   Relative humidity : 75±10%
3. RATINGS

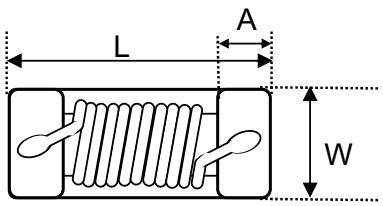
PART NO.	INDUCTANCE (nH)	※Tolerance	Q	DC RESISTANCE	Rated current	S.R.F
			Min (Frequency)	(Ω) Max	(mA) Max	(MHz) Min
WTI-1005M-1N0	1.0@250MHz	±0.2nH,±0.3nH	13 (250MHz)	0.045	1360	6000
WTI-1005M-1N9	1.9@250MHz	±0.2nH,±0.3nH	16 (250MHz)	0.070	1040	6000
WTI-1005M-2N0	2.0@250MHz	±0.2nH,±0.3nH	16 (250MHz)	0.070	1040	6000
WTI-1005M-2N2	2.2@250MHz	±0.2nH,±0.3nH	18 (250MHz)	0.070	960	6000
WTI-1005M-2N4	2.4@250MHz	±0.2nH,±0.3nH	16 (250MHz)	0.068	790	6000
WTI-1005M-2N7	2.7@250MHz	±0.2nH,±0.3nH	16 (250MHz)	0.120	860	6000
WTI-1005M-3N3	3.3@250MHz	±0.2nH,±0.3nH	20 (250MHz)	0.066	840	6000
WTI-1005M-3N6	3.6@250MHz	±0.2nH,±0.3nH	20 (250MHz)	0.066	840	6000
WTI-1005M-3N9	3.9@250MHz	±0.2nH,±0.3nH	20 (250MHz)	0.066	840	5800
WTI-1005M-4N3	4.3@250MHz	±0.2nH,±0.3nH	18 (250MHz)	0.091	700	6000
WTI-1005M-4N7	4.7@250MHz	±0.2nH,±0.3nH	15 (250MHz)	0.130	640	4775
WTI-1005M-5N1	5.1@250MHz	±0.2nH,±0.3nH	23 (250MHz)	0.083	800	5800
WTI-1005M-5N6	5.6@250MHz	±0.2nH,±0.3nH	23 (250MHz)	0.083	760	5800
WTI-1005M-6N2	6.2@250MHz	±0.2nH,±5%,±10%	23 (250MHz)	0.083	760	5800
WTI-1005M-6N8	6.8@250MHz	±0.2nH,±5%,±10%	20 (250MHz)	0.083	680	4800
WTI-1005M-7N5	7.5@250MHz	±0.2nH,±5%,±10%	25 (250MHz)	0.104	680	5800
WTI-1005M-8N2	8.2@250MHz	±0.2nH,±5%,±10%	25 (250MHz)	0.104	680	4400
WTI-1005M-8N7	8.7@250MHz	±0.2nH,±5%,±10%	18 (250MHz)	0.200	480	4100
WTI-1005M-9N0	9.0@250MHz	±0.2nH,±5%,±10%	25 (250MHz)	0.104	680	4160
WTI-1005M-9N5	9.5@250MHz	±0.2nH,±5%,±10%	18 (250MHz)	0.200	680	4000
WTI-1005M-10N	10@250MHz	±2%,±5%,±10%	23 (250MHz)	0.195	480	3900
WTI-1005M-11N	11@250MHz	±2%,±5%,±10%	26 (250MHz)	0.120	640	3680
WTI-1005M-12N	12@250MHz	±2%,±5%,±10%	26 (250MHz)	0.120	640	3600
WTI-1005M-13N	13@250MHz	±2%,±5%,±10%	24 (250MHz)	0.210	560	3450

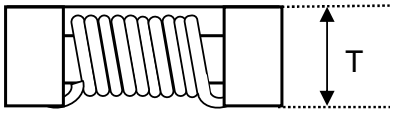
1. WTI -1005M Series (Ceramic Type)

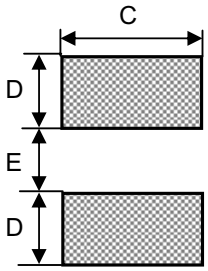
PART NO.	INDUCTANCE (nH)	※Tolerance	Q	DC RESISTANCE	Rated current	S.R.F
			Min (Frequency)	(Ω) Max	(mA) Max	(MHz) Min
WTI-1005M-15N	15@250MHz	±2%,±5%,±10%	26 (250MHz)	0.172	560	3280
WTI-1005M-16N	16@250MHz	±2%,±5%,±10%	24 (250MHz)	0.22	560	3100
WTI-1005M-18N	18@250MHz	±2%,±5%,±10%	58 (900MHz)	0.120	900	3550
WTI-1005M-19N	19@250MHz	±2%,±5%,±10%	26 (250MHz)	0.202	480	3040
WTI-1005M-20N	20@250MHz	±2%,±5%,±10%	25(250MHz)	0.25	420	3000
WTI-1005M-22N	22@250MHz	±2%,±5%,±10%	25(250MHz)	0.3	400	2800
WTI-1005M-23N	23@250MHz	±2%,±5%,±10%	26 (250MHz)	0.214	400	2720
WTI-1005M-24N	24@250MHz	±2%,±5%,±10%	55 (900MHz)	0.210	700	3150
WTI-1005M-27N	27@250MHz	±2%,±5%,±10%	26 (250MHz)	0.298	400	2480
WTI-1005M-30N	30@250MHz	±2%,±5%,±10%	25 (250MHz)	0.3	400	2350
WTI-1005M-33N	33@250MHz	±2%,±5%,±10%	24 (250MHz)	0.35	400	2350
WTI-1005M-36N	36@250MHz	±2%,±5%,±10%	26 (250MHz)	0.403	320	2320
WTI-1005M-39N 0.45A	39@250MHz	±2%,±5%,±10%	56 (900MHz)	0.430	450	2600
WTI-1005M-40N	40@250MHz	±2%,±5%,±10%	26 (250MHz)	0.438	320	2240
WTI-1005M-43N	43@250MHz	±2%,±5%,±10%	25 (250MHz)	0.81	240	2030
WTI-1005M-47N	47@200MHz	±2%,±5%,±10%	26 (200MHz)	0.83	210	2100
WTI-1005M-51N	51@200MHz	±5%,±10%	25 (200MHz)	0.82	210	1750
WTI-1005M-56N	56@200MHz	±5%,±10%	22 (200MHz)	0.97	200	1760
WTI-1005M-68N	68@200MHz	±5%,±10%	22 (200MHz)	1.12	180	1620
WTI-1005M-75N	75@150MHz	±5%,±10%	20 (150MHz)	1.2	160	1550
WTI-1005M-82N	82@150MHz	±5%,±10%	20 (150MHz)	1.25	150	1500
WTI-1005M-91N	91@150MHz	±5%,±10%	20 (150MHz)	2.3	120	1350
WTI-1005M-R10	100@150MHz	±5%,±10%	20 (150MHz)	2.52	120	1300
WTI-1005M-R12	120@150MHz	±5%,±10%	20 (150MHz)	2.66	110	1100

1. WTI-1005M Series (Ceramic Type)

SHAPE:







Recommended land pattern

DIMENSIONS:

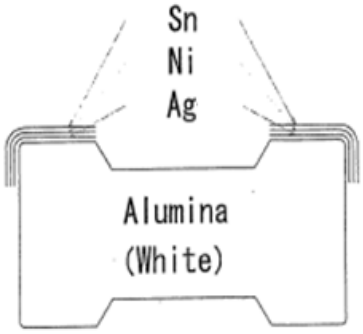
SERIES	L (m/m) (Max.)	W (m/m) (Max.)	T (m/m) (Max.)	A (m/m)	C (m/m)	D (m/m)	E (m/m)
WTI-1005M	1.10	0.66	0.60	0.1~ 0.3	0.66	0.36	0.46
WTI-1608M	1.80	1.07	1.25	0.25~0.45	1.02	0.64	0.64

Part Numbering Systems

WTI- 1005 M - 8N2 B

- INDUCTANCE TOLERANCE
  (K: ±10%, J: ±5%, G:+/-2%, B: ±0.2nH, S: ±0.3nH)
- INDUCTANCE VALUE CODE
  (i.e. 1N2: 1.2nH, 12N: 12nH, R12: 120nH)
- MATERIAL
  (PARAMETER M)
- SIZE CODE
  (0402(1005), 0603(1608))
- PRODUCT SERIES CODE

Ingredient of terminals electrode



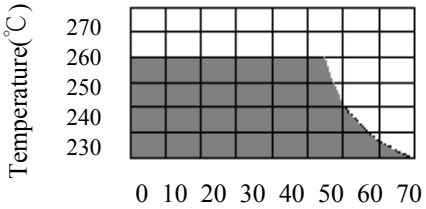
Ceramic Type

Sn
Nickel
Ag

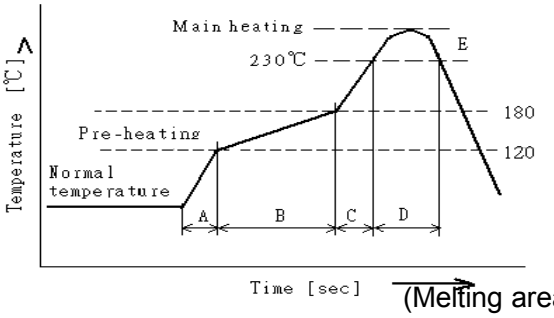
1. WTI -1005M Series (Ceramic Type)

Reflow soldering conditions

- Pre－heating should be in such a way that the temperature difference between solder and ceramic surface is limited to 150℃ max. Also cooling into solvent after soldering should be in such a way that the temperature difference is limited to 100℃ max.
  Insufficient pre－heating may cause cracks on the ceramic, resulting in the deterioration of product quality.
- Products should be soldered within the following allowable range indicated by the slanted line.
  The excessive soldering conditions may cause the corrosion of the electrode, when soldering is repeated, allowable time is the accumulated time.



Temperature Profile



(Melting area of solder)

A	Slope of temp. rise	1 to 5	℃/sec
B	Heat time	50 to 150	sec
	Heat temperature	120 to 180	℃
C	Slope of temp. rise	1 to 5	℃/sec
D	Time over 230℃	90~120	sec
E	Peak temperature	255~260	℃
	Peak hold time	10 max.	sec
No. of mounting		3	times

Reworking with soldering iron

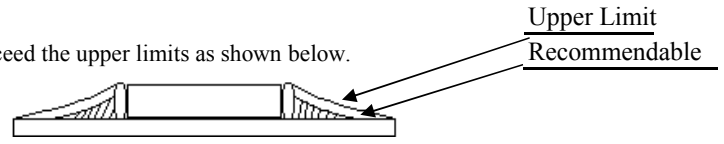
Preheating	150℃, 1 minute
Tip temperature	280℃ max.
Soldering time	3 seconds max.
Soldering iron output	30w max.
End of soldering iron	f3mm max.

- Reworking should be limited to only one time.

Note：Do not directly touch the products with the tip of the soldering iron in order to prevent the crack on the ferrite material due to the thermal shock.

Solder Volume

Solder shall be used not to be exceed the upper limits as shown below.



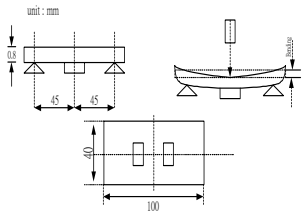
When the amount of solder volume increased, mechanical stress increased as well. Exceeding amount of solder volume may lead to failure of mechanical or electronical characteristics.

1. WTI -1005M Series (Ceramic Type)

Mechanical Characteristics

ITEM	CONDITION	SPECIFICATION
Inductance and Tolerance	Measuring Frequency : As shown in Product Table	Within Specified Tolerance
Quality Factor	Measuring Temperature : + 25 °C	
Insulation Resistance	Measured at 100V DC between inductor terminals and center of case.	1000 mega ohms minimum

Electrical Characteristics

ITEM	CONDITION	SPECIFICATION
Component Adhesion (Push Test)	The component shall be reflow soldered onto a P. C. Board (240 °C ± 5°C for 20 seconds). Then a dynometer force gauge shall be applied to any side of the component.	0402 series - ⩾350g 0603 series - ≥1.0Kg Other series - 2012 ~ 3225 Minimum 1Kg for Pd/Ag termination and 2Kg for Mo/Mn
Drop Test	The inductor shall be dropped two times on the concrete floor or the vinyl tile from 1M naturally.	Change In Inductance: No more than 5%
Thermal Shock Test	Each cycle shall consist of 30 minutes at -40 °C followed by 30 minutes at +85 °C with a 20-second maximum transition time between temperature extremes. Test duration is 10 cycles.	Change In Q: No more than 10% Change In Appearance: Without distinct damage
Substrate Bending Test	SPEC substrate bending test DC resistance shall meet specifications.	After soldering a chip to a test substrate,bend the substrate by 3mm hold for 10s and then return. Soldering shall be done in accordance with the recommended PC board pattern and reflow soldering. 

1. WTI -1005M Series (Ceramic Type)

Endurance Characteristics

ITEM	CONDITION	SPECIFICATION
Solderability	Dip pads in flux and dip in solder pot containing lead free solder at 240 °C ± 5°C for 5 seconds.	A minimum of 80% of the metalized area must be covered with solder.
Resistance to Soldering Hea	Dip the components into flux and dip into solder pot containing lead free solder at 260 °C ± 5 °C for 5 ± 2 seconds.	Change In Inductance: No more than 5%
Vibration (Random)	Inductors shall be randomly vibrated at amplitude of 1.5mm and frequency of 10 - 55 Hz: 0.04 G / Hz for a minimum of 15 minutes per axis for each of the three axes.	Change In Q:No more than 10%
Cold Temperature Storage	Inductors shall be stored at temperature of -40 °C ± 2 °C for 1000hrs (+ 48 -0hrs.) Then inductors shall be subjected to standard atmospheric conditions for 1 hour After that, measurement shall be made.	Change In Appearance : Without distinct damage
High Temperature Storage	Inductors shall be stored at temperature of 85 °C ± 2 °C for 1000hrs (+48 - 0hrs.) Then inductors shall be subjected to standard atmospheric conditions for 1 hour. After that, measurement shall be made.	
Moisture Resistance	Inductors shall be stored in the chamber at 45 °C at 90 - 95 R. H. for 1000 hours. Then inductors are to be tested after 2 hours at room temperature.	Inductors shall not have a shorted or open winding.
High Temperature with Loaded	Inductors shall be stored in the chamber at +85 °C for 1000 hours with rated current applied. Inductors shall be tested at the beginning of test at 500 hours and 1000 hours. Then inductors are to be tested after 1 hour at room temperature.	