MULTILAYER CERAMIC CHIP INDUCTORS

1005(0402) GC / 1608(0603) GC Series

Features

1. Designed for high frequency RF application.
2. High self resonant frequency(SRF)and excellent Q.
3. Multilayered ceramic construction provides high reliability.
4. Miniature size : 1005(0402) / 1608(0603)

Applications

For high frequency RF and wireless equipments, automotive electronics and computer communications, etc.

- Cellular, PCS, Pager, CT-2, TRS
- Cordless Phone
- GSM, PDA, DECT, PHS
- Wireless CATV, Wireless LAN
- GMPCS
- Portable Hand Held PC.

Ordering Information

CODE :	1608	GC	2	T	1N2	S	00
	(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) Series Dimensions

(2) Material Code

(3) Termination

2	Ag	Ni	Sn	Pb
3	Ag	Ni	Sn	-

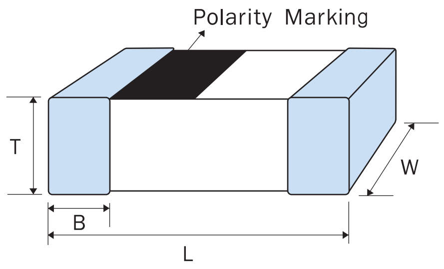
(4) Packaging Type
B : Bulk
T : Tape & Reel

(5) Inductance Value
1N2 : 1.2nH
12N : 12nH
R10 : 100nH

(6) Inductance Tolerance Code
S : ±0.3nH
J : ±5%

(7) Internal Code

Shape and Dimensions



unit:mm[inch]

Dimension / Series	L	W	T	B
1005 GC2	1.0[0.040] ±0.10[0.004]	0.5[0.020] ±0.10[0.004]	0.5[0.020] ±0.10[0.004]	0.25[0.010] ±0.10[0.004]
1608 GC2	1.6[0.063] ±0.15[0.005]	0.8[0.031] ±0.15[0.005]	0.8[0.032] ±0.15[0.005]	0.3[0.012] ±0.20[0.005]

Electrical Characteristics Table for 1005 GC Series

(Reel & Taping)

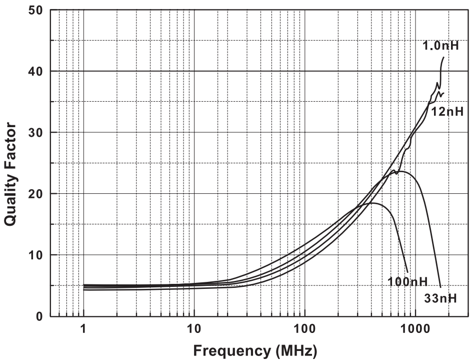
Ordering Code	L (nH)	Tol	Q Min	Q Typical			SRF(MHz)	RDC(Ω)	IDC(mA)
			100(MHz)	100(MHz)	800(MHz)	1800(MHz)	Typical	Max	Max
1005GC2T1N0S00	1.0	S	8	9	27	44	13000	0.12	300
1005GC2T1N2S00	1.2	S	8	9	25	45	12000	0.12	300
1005GC2T1N5S00	1.5	S	8	9	23	43	10000	0.13	300
1005GC2T1N8S00	1.8	S	8	9	24	43	9000	0.14	300
1005GC2T1N9S00	1.9	S	8	9	24	43	9000	0.14	300
1005GC2T2N0S00	2.0	S	8	9	26	45	9000	0.16	300
1005GC2T2N2S00	2.2	S	8	9	26	45	9000	0.16	300
1005GC2T2N4S00	2.4	S	8	9	26	42	9000	0.17	300
1005GC2T2N7S00	2.7	S	8	9	26	42	8000	0.17	300
1005GC2T3N0S00	3.0	S	8	9	26	42	8000	0.19	300
1005GC2T3N3S00	3.3	S	8	9	26	42	6500	0.19	300
1005GC2T3N6S00	3.6	S	8	9	26	40	6000	0.22	300
1005GC2T3N9#00	3.9	S.K	8	9	26	40	6000	0.22	300
1005GC2T4N7#00	4.7	S.K	8	9	27	46	5000	0.23	300
1005GC2T5N6#00	5.6	S.K	8	10	28	40	4700	0.27	300
1005GC2T6N8#00	6.8	J.K	8	10	28	36	4500	0.32	250
1005GC2T8N2#00	8.2	J.K	8	10	28	36	4000	0.37	250
1005GC2T10N#00	10	J.K	8	10	27	33	3500	0.42	250
1005GC2T12N#00	12	J.K	8	11	31	41	3000	0.48	250
1005GC2T15N#00	15	J.K	8	10	27	33	2900	0.53	250
1005GC2T18N#00	18	J.K	8	11	29	31	2200	0.65	200
1005GC2T20N#00	20	J.K	8	10	26	15	2100	0.80	200
1005GC2T22N#00	22	J.K	8	10	26	15	2100	0.80	200
1005GC2T27N#00	27	J.K	8	10	21	27	1700	0.90	200
1005GC2T33N#00	33	J.K	8	10	*22	**24	1900	1.00	200
1005GC2T39N#00	39	J.K	8	10	*19	**20	1800	1.20	200
1005GC2T43N#00	43	J.K	8	10	*22	**20	1500	1.30	200
1005GC2T47N#00	47	J.K	8	12	*22	**20	1500	1.30	200
1005GC2T56N#00	56	J.K	8	12	*22	**18	1400	1.60	200
1005GC2T68N#00	68	J.K	8	11	*18	**10	1200	1.90	180
1005GC2T82N#00	82	J.K	8	12	*20	**7	1100	2.10	150
1005GC2TR10#00	100	J.K	8	11	*18	-	930	2.30	100

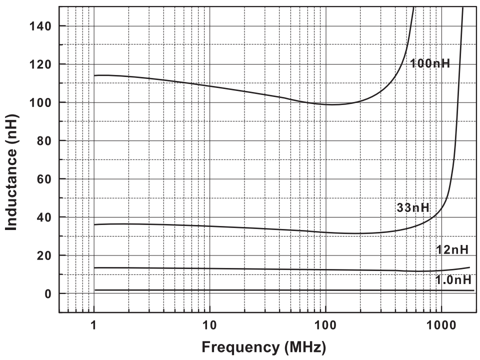
* at 500MHz ** at 1000MHz

- ● Inductance Tolerance Code(S=±0.3nH, J=±5%)
- ● The tolerance of C(=±0.2nH) and T(=±3%) are available upon customer's reguest.

● Test Instruments - L, Q : HP4291B (Test Fixture:HP16192A)
SRF : Anritsu 37247B
R_{DC} : HP4263B
I_{DC} : HP6612C

Typical Electrical Characteristics Graph





MULTILAYER CERAMIC CHIP INDUCTORS

Electrical Characteristics Table for 1608 GC Series

(Reel & Taping)

Ordering Code	L (nH)	Tol	Q Min	Q Typical			SRF(MHz) Typical	RDC(Ω) Max	IDC(mA) Max
			100(MHz)	100(MHz)	800(MHz)	1800(MHz)			
1608GC2T1N0S00	1.0	S	8	13	44	60	8100	0.10	300
1608GC2T1N2S00	1.2	S	8	13	44	60	8100	0.10	300
1608GC2T1N5S00	1.5	S	8	14	37	56	8100	0.10	300
1608GC2T1N8S00	1.8	S	8	12	37	55	8300	0.10	300
1608GC2T2N2S00	2.2	S	8	12	38	54	8000	0.10	300
1608GC2T2N7S00	2.7	S	8	13	38	53	7600	0.10	300
1608GC2T3N3S00	3.3	S	8	12	37	49	5800	0.12	300
1608GC2T3N9#00	3.9	S	8	14	44	62	5100	0.14	300
1608GC2T4N7#00	4.7	S	8	15	43	63	4600	0.16	300
1608GC2T5N6#00	5.6	S	8	15	45	59	4200	0.18	300
1608GC2T6N8#00	6.8	J	8	15	43	58	3700	0.22	300
1608GC2T8N2#00	8.2	J	8	15	44	52	3600	0.24	300
1608GC2T10N#00	10	J	12	17	49	50	3500	0.26	300
1608GC2T12N#00	12	J	12	15	41	37	2500	0.28	300
1608GC2T15N#00	15	J	12	17	45	35	2600	0.32	300
1608GC2T18N#00	18	J	12	16	45	39	2000	0.35	300
1608GC2T22N#00	22	J	12	16	43	21	1800	0.40	300
1608GC2T27N#00	27	J	12	16	41	11	1600	0.45	300
1608GC2T33N#00	33	J	12	19	41	11	1500	0.55	300
1608GC2T39N#00	39	J	12	19	42	17	1400	0.60	300
1608GC2T47N#00	47	J	12	17	35	-	1300	0.70	300
1608GC2T56N#00	56	J	12	18	31	-	1300	0.75	300
1608GC2T68N#00	68	J	12	18	26	-	1150	0.85	300
1608GC2T82N#00	82	J	12	19	21	-	1000	0.95	300
1608GC2TR10#00	100	J	12	19	20	-	1000	1.00	300
1608GC2TR12#00	120	J	12	19	16	-	950	1.20	300
1608GC2TR15#00	150	J	12	19	-	-	800	1.50	300
1608GC2TR18#00	180	J	12	19	-	-	750	1.90	300
1608GC2TR22#00	220	J	12	18	-	-	680	2.20	300
1608GC2TR27#00	270	J	12	20	-	-	600	2.50	300

- Inductance Tolerance Code(S=±0.3nH, J=±5%)
- The tolerance of C(=±0.2nH) and T(=±3%) are available upon customer's reguest.

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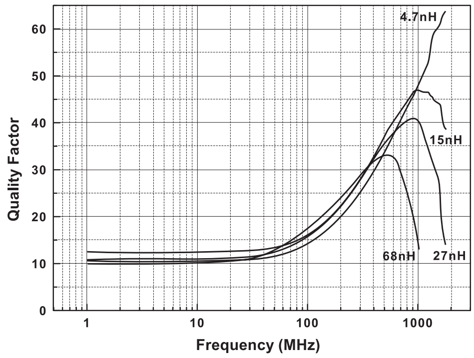
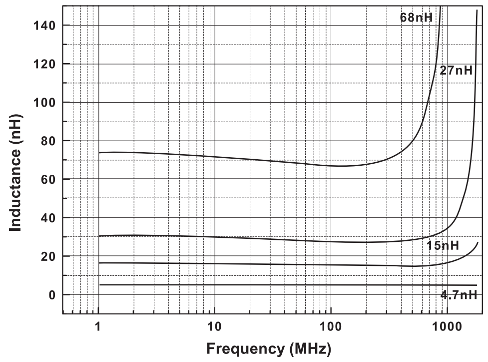




Mechanical Characteristics

Item	Test Condition	Requirements
Flexure Resistance	Bent down to 2mm(3point)	No mechanical damage
Solderability	Preheating at 160℃, 2~3min. Solder Temperature : 230±5℃ Dipping Time : 4±1sec	No mechanical damage Terminal electrode is covered by new solder : ≧75%
Solder Heat Resistance	Preheating at 160℃, 2~3min. Solder Temperature : 260±5℃ Dipping Time : 10±0.5sec	No mechanical damage Remaining terminal electrode : ≧70%
Vibration	Frequency : 10~55Hz Amplitude : 1.52mm Time & Direction : 2hours & each X, Y, Z	No mechanical damage Inductance ≦±10% Q factor≦±20%
Drop Shock Resistance	Height : 1m high 10times	No mechanical damage Inductance ≦±10% Q factor≦±20%

Reliability Test

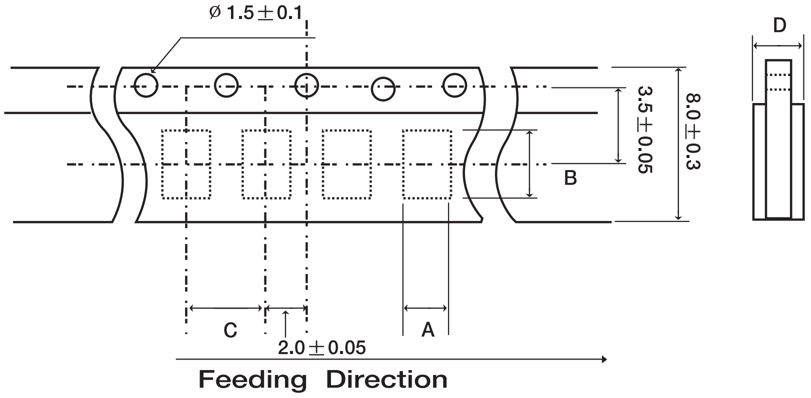
Item	Test Condition	Requirements
Humidity Resistance	Humidity : 90~95%RH Temperature : 60℃ Time : 500±12hours	No mechanical damage Inductance ≦±10% Q factor≦±20%
High Temperature Resistance under Unloading	Temperature : 1005 GC2 : 125±2℃ 1608 GC2 : 125±2℃ Time : 1000±12hours	No mechanical damage Inductance ≦±10% Q factor≦±20%
Low Temperature Resistance under Unloading	Temperature : -40±2℃ Time : 1000±12hours	No mechanical damage Inductance ≦±10% Q factor≦±20%
8585 Test	Humidity : 85±5%RH Temperature : 85±2℃ Time : 100±12hours	No mechanical damage Inductance ≦±10% Q factor≦±20%
Temperature Coefficient (TCL)	Temperature : -40~125℃,	No mechanical damage Inductance ≦±10%
Temperature Cycle (TC)	Conditions for 1 cycle Step 1 : -40±2℃, 30min. Step 2 : Room Temp. 5min Step 3 : 1005 GC2 / 125±2℃, 1608 GC2 / 125±2℃,30min. Step 4 : Room Temp. 5min Number of cycle : 100	No mechanical damage Inductance ≦±10% Q factor≦±20%

MULTILAYER CERAMIC CHIP INDUCTORS

Packing Specification

1. Carrier Tape Dimensions

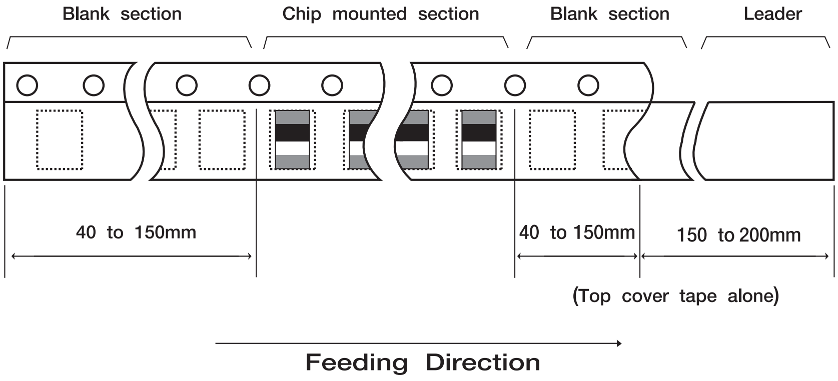
- Carrier Tape Material : Paper
- Dimension in Millimeters



Series	Chip cavity		Insertion pitch	Tape thickness
	A	B	C	D
1005 GC2	0.65±0.1	1.15±0.1	2.0±0.1	0.8 max
1608 GC2	1.0±0.1	1.8±0.1	4.0±0.1	1.2 max

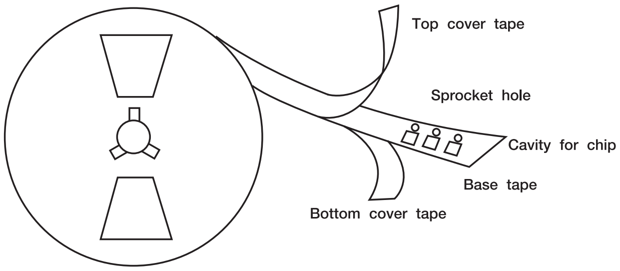
2. Dimension of Taping

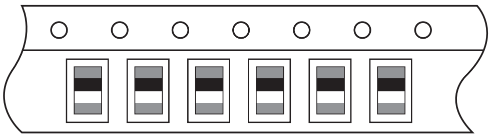
2.1 Leader and Blank section



Packing Specification

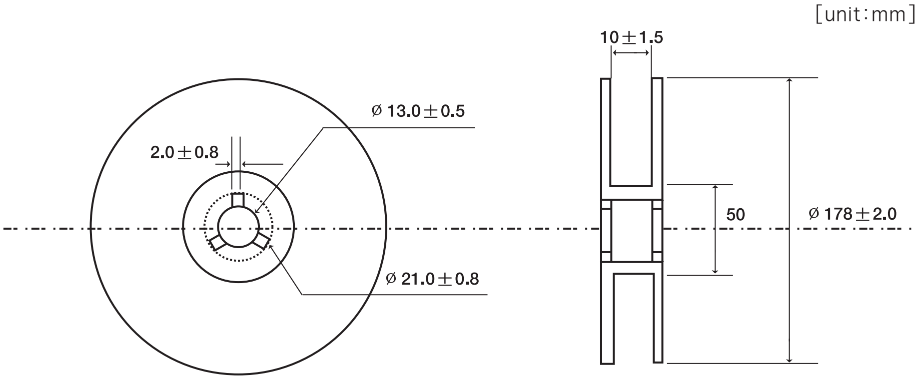
2.2 Appearance of Taping





Packed chip

2.3 Reel Dimension



(1) Reel Material : Polystyrene
(2) Ordering Code number, Quantity, Batch number and Pilkor(supplier Name)are labeled on each reel.
(3) Parts per Reel : 1005; 10,000 pcs/ reel,
1608; 4,000 pcs/ reel

Standard Soldering Conditions

And please contact us about peak temperature when you use lead-free paste.

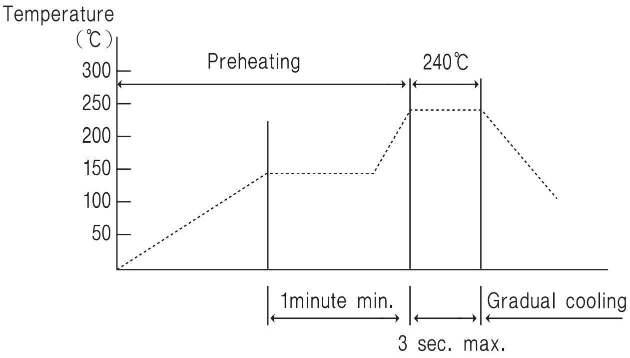
1. Selection of solder and flux

-Solder : Use solder paste H60A or equivalent.
-Flux : Use rosin-based flux, but not strongly acidic flux(with chlorine content less than 0.2wt%).
Do not use water-soluble flux.

2. Recommended conditions for soldering

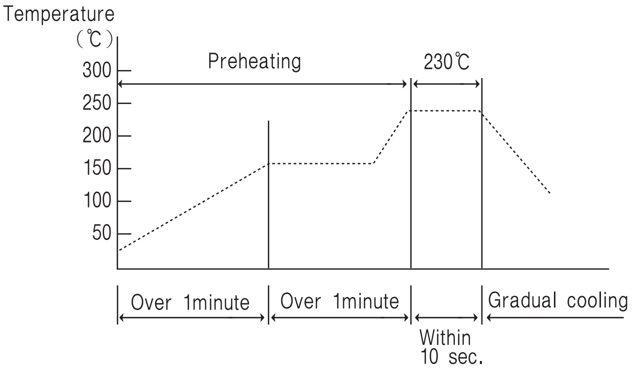
Flow soldering

-Temperature profile



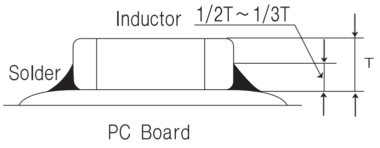
Reflow soldering

-Temperature profile



Caution

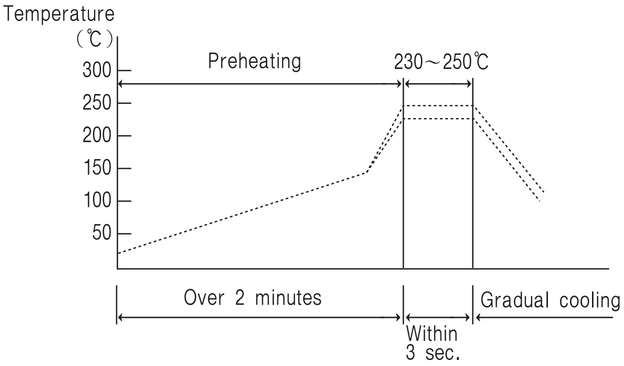
-The ideal condition is to solder mass(fillet) controlled from 1/2 to 1/3 of the thickness of the inductor, as shown below :



-Because excessive dwell times can detrimentally effect solderability,
soldering duration should be kept as close to recommended times as possible.

Wave soldering

-Temperature profile



Caution

-Make sure the inductors are preheated sufficiently.
-The temperature difference between the inductor and melted solder should not be greater than 100 to 130℃.
-Cooling after soldering should be as gradual as possible.
-Wave soldering must not be applied to the inductors designated as for reflow soldering only.