Ceramic Chip Inductor – *C1 Series*

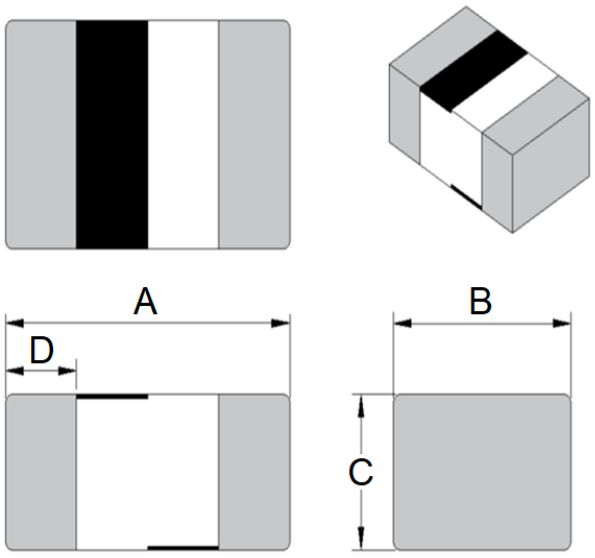
1. Part No. Expression

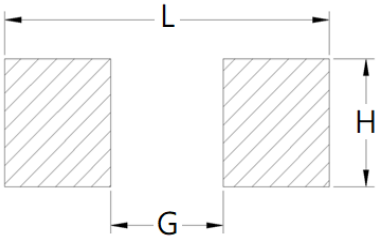
C 1 - 1 N 0 S - E - 1 0

(a) (b) (c) (d) (e) (f)

(a) Series Code
(b) Dimension Code
(c) Inductance Code
(d) Tolerance Code
(e) Controlled Code
(f) Internal Code

2. Configuration & Dimensions (Unit: mm)





Recommended PCB Layout

A	B	C	D	L	G	H
1.00±0.10	0.50±0.05	0.50±0.05	0.10~0.30	1.50 Ref	0.50 Ref	0.55 Ref

3. General Specifications

(a) Operating Temp.: - 55°C to +125°C (including self-temperature rise)
(b) Storage Temp.: - 40°C to +85°C (on board)
(c) All test data referenced to 25°C ambient.
(d) Storage Condition (Component in its packaging)
  i) Temperature: Less than 40°C
  ii) Humidity: Less than 70% RH

NOTE: Specifications subject to change without notice. Please check our website for latest information.

4. Electrical Characteristics

Part Number	Inductance (nH) ±0.3	Test Frequency	Q Min	SRF (GHz) Min	DCR (Ω) Max	Rated Current (mA) Max
C1-1N0S-E-10	1.0	250mV/100MHz	8	8	0.10	300
C1-1N2S-E-10	1.2	250mV/100MHz	8	8	0.10	300
C1-1N5S-E-10	1.5	250mV/100MHz	8	8	0.10	300
C1-1N8S-E-10	1.8	250mV/100MHz	8	6	0.10	300
C1-2N0S-E-10	2.0	250mV/100MHz	8	6	0.12	300
C1-2N2S-E-10	2.2	250mV/100MHz	8	6	0.15	300
C1-2N4S-E-10	2.4	250mV/100MHz	8	6	0.16	300
C1-2N7S-E-10	2.7	250mV/100MHz	8	6	0.17	300
C1-3N0S-E-10	3.0	250mV/100MHz	8	6	0.18	300
C1-3N3S-E-10	3.3	250mV/100MHz	8	6	0.19	300
C1-3N6S-E-10	3.6	250mV/100MHz	8	6	0.19	300
C1-3N9S-E-10	3.9	250mV/100MHz	8	6	0.19	300
C1-4N3S-E-10	4.3	250mV/100MHz	8	4	0.21	300
C1-4N7S-E-10	4.7	250mV/100MHz	8	6	0.23	300
C1-5N1S-E-10	5.1	250mV/100MHz	8	6.0	0.24	300
C1-5N6S-E-10	5.6	250mV/100MHz	8	5.3	0.26	300
C1-6N2S-E-10	6.2	250mV/100MHz	8	5.3	0.26	300

Tolerance Code: S=±0.3nH, J=±5%

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Part Number	Inductance (nH) ±5%	Test Frequency	Q Min	SRF (GHz) Min	DCR (Ω) Max	Rated Current (mA) Max
C1-6N8J-E-10	6.8	250mV/100MHz	8	4.2	0.29	300
C1-7N5J-E-10	7.5	250mV/100MHz	8	4.2	0.31	300
C1-8N2J-E-10	8.2	250mV/100MHz	8	3.6	0.33	300
C1-9N1J-E-10	9.1	250mV/100MHz	8	3.4	0.34	300
C1-10NJ-E-10	10	250mV/100MHz	8	3.2	0.35	300
C1-12NJ-E-10	12	250mV/100MHz	8	2.8	0.41	300
C1-15NJ-E-10	15	250mV/100MHz	8	2.3	0.46	300
C1-18NJ-E-10	18	250mV/100MHz	8	2.1	0.51	300
C1-22NJ-E-10	22	250mV/100MHz	8	1.8	0.58	300
C1-27NJ-E-10	27	250mV/100MHz	8	1.6	0.67	300
C1-33NJ-E-10	33	250mV/100MHz	8	1.5	0.67	200
C1-39NJ-E-10	39	250mV/100MHz	8	1.2	1.06	200
C1-47NJ-E-10	47	250mV/100MHz	8	1.0	1.15	200
C1-56NJ-E-10	56	250mV/100MHz	8	0.8	1.2	200
C1-68NJ-E-10	68	250mV/100MHz	8	0.8	1.25	180
C1-82NJ-E-10	82	250mV/100MHz	8	0.6	1.6	150
C1-R10J-E-10	100	250mV/100MHz	8	0.6	1.6	150
C1-R12J-E-10	120	250mV/100MHz	8	0.6	1.6	150
C1-R15J-E-10	150	250mV/100MHz	8	0.5	2.99	140
C1-R18J-E-10	180	250mV/100MHz	8	0.5	3.38	150
C1-R22J-E-10	220	250mV/100MHz	8	0.5	3.77	120
C1-R27J-E-10	270	250mV/100MHz	8	0.4	4.9	110

Tolerance Code: S=±0.3nH, J=±5%

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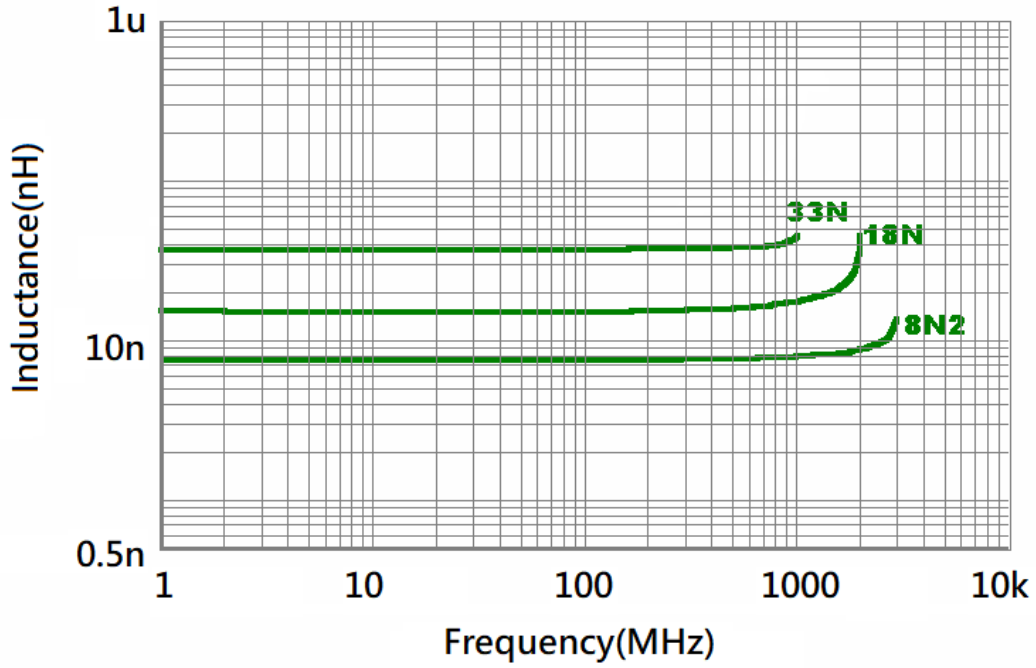
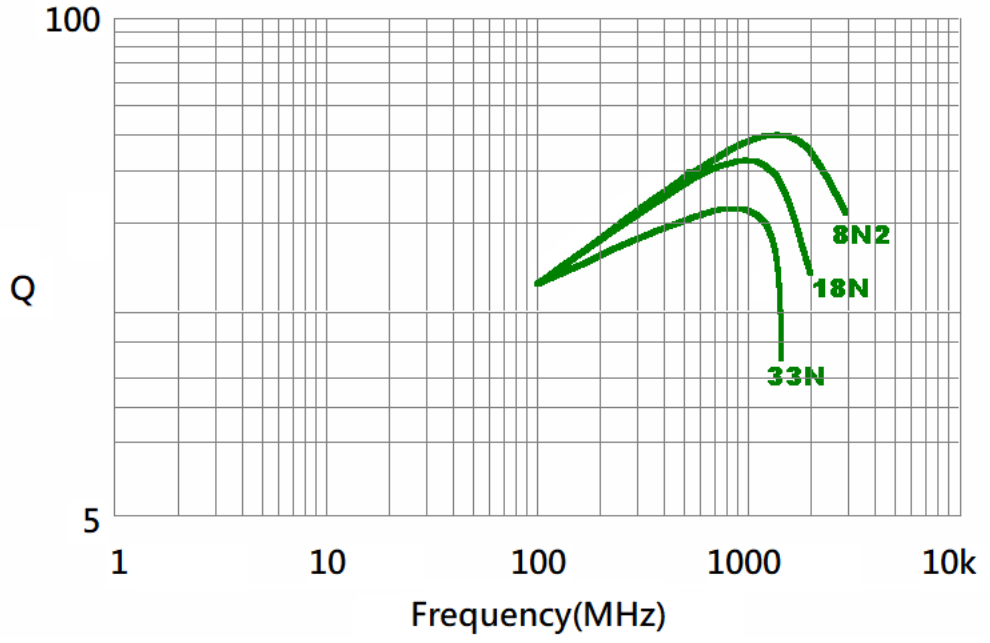
5. Characteristics Curve





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6. Soldering Specification

Mildly activated rosin fluxes are preferred. Our terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

6-1. IR Soldering Reflow

Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020F).

6-2. Iron Reflow

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended (Figure 2).

Note:

(a) Preheat circuit and products to 150°C.

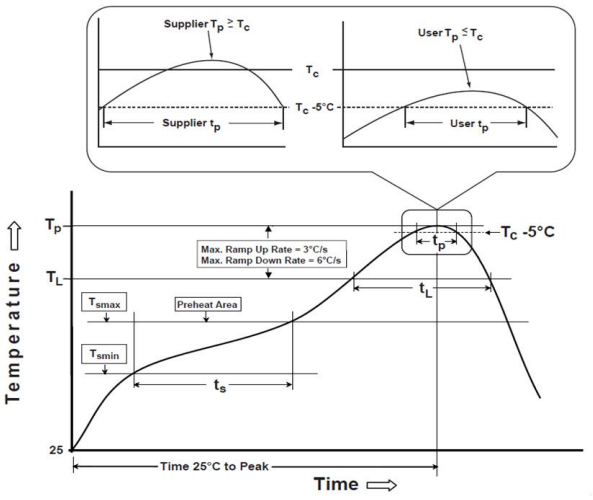
(b) 350°C tip temperature (Max.)

(c) Never contact the ceramic with the iron tip

(d) 1.0mm tip diameter (Max.)

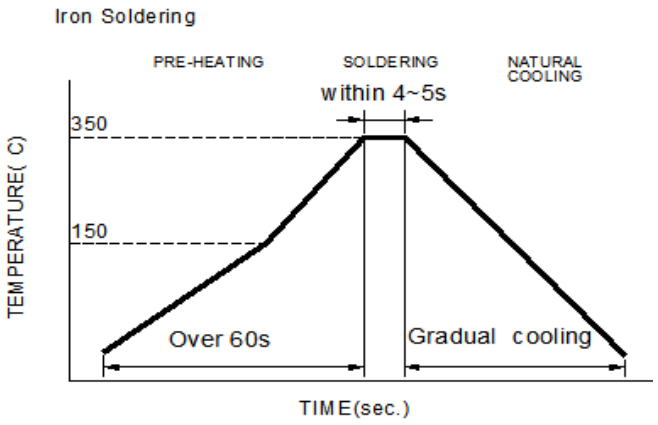
(e) Use a 20 watt soldering iron with tip diameter of 1.0mm

(f) Limit soldering time to 4~5 sec.



Reflow times: 3 times Max

Figure 1: IR Soldering Reflow



Iron Soldering times：1 times max

Figure 2: Iron soldering temperature profiles

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Table (1.1) Reflow Profiles

Profile Type:	Pb-Free Assembly
Preheat -Temperature Min (T_{smin}) -Temperature Max (T_{smax}) -Time (t_s) from (T_{smin} to T_{smax})	 150°C 200°C 60-120seconds
Ramp-up rate ($T_L$to T_p)	3°C /second max.
Liquids temperature (T_L) Time (t_L) maintained above T_L	217°C 60-150 seconds
Classification temperature (T_c)	See Table (1.2)
Time (t_p) at Tc- 5°C (Tp should be equal to or less than Tc.)	< 30 seconds
Ramp-down rate (T_p to T_L)	6°C /second max.
Time 25°C to peak temperature	8 minutes max.

Tp: maximum peak package body temperature, **Tc**: the classification temperature.

For user (customer) **Tp** should be equal to or less than **Tc.**

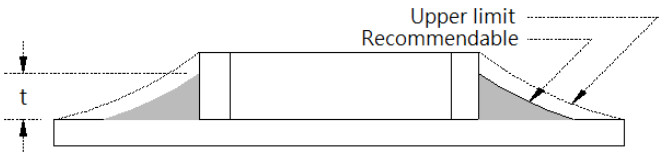
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	Package Thickness	Volume mm^3 <350	Volume mm^3 350-2000	Volume mm^3 >2000
PB-Free Assembly	<1.6mm	260°C	260°C	260°C
	1.6-2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

Reflow is referred to standard IPC/JEDEC J-STD-020F.

6-3. Soldering Volume

Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceeded as shown in the Figure below. Minimum fillet height = soldering thickness + 25% product height.



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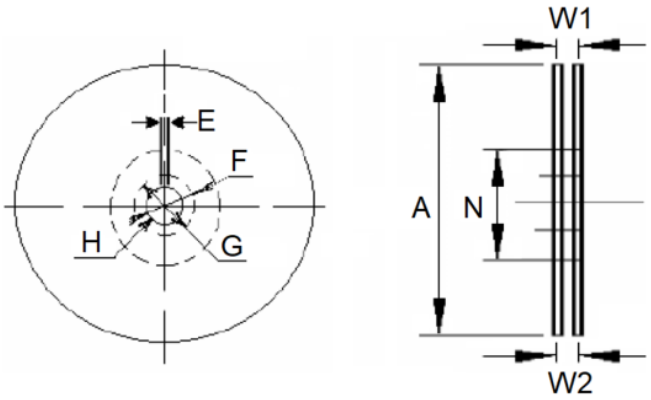
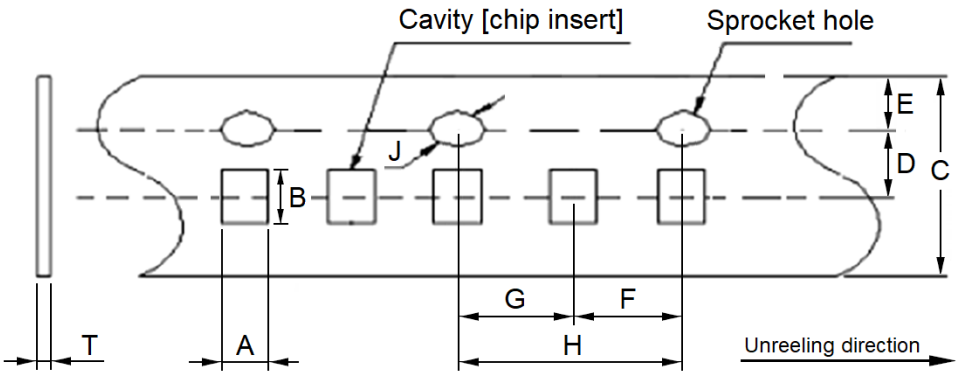
7. Packaging Information

7-1. Reel Dimension (Unit: mm)



Type	A	N	W1	W2
	178.0 Ref	50.0 Ref	10.0 Ref	20.0 Ref
7”x8mm	E	F	G	H
	2.0 Ref	13.0 Ref	21.0 Ref	R1.0

7-2. Tape Dimension (Unit: mm)



A	B	C	D	E
0.62±0.05	1.12±0.05	8.00±0.10	3.50±0.05	1.75±0.10
F	G	H	J	T
2.00±0.05	2.00±0.05	4.00±0.10	1.55±0.05	0.60±0.05

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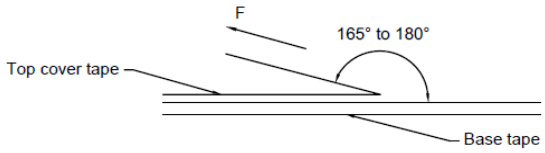
7-3. Packaging Quantity (Unit: Pcs)

Chip/ Reel	10,000
Inner Box	50,000
Outer Box	300,000

7-4. Tearing Off Force



The force for tearing off cover tape is according to the follow table, in the arrow direction under the following conditions.
(Referenced ANSI/EIA-481-D-2008 of 4.11 standard)

Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed (mm/min)
5~35	45~85	860~1060	300±10

Tape Size	8 mm	12 to 56 mm	72 mm or Wider
Tearing Off Force (grams)	10~100	10~130	10~150

Application Notice

1. Storage Conditions

To maintain the solderability of terminal electrodes:

(a) Products meet IPC/JEDEC J-STD-020F standard-MSL, level 1.

(b) Recommended products should be used within 12 months from the time of delivery.

(c) The packaging material should be kept where no chlorine or sulfur exists in the air.

2. Transportation

(a) Products should be handled with care to avoid damage or contamination from perspiration and skin oils.

(b) Vacuum pick up is strongly recommended for individual components.

(c) Bulk handling should ensure that abrasion and mechanical shock are minimized.