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Customer : _____

Document No. : AP 10 - PI - 0913

Date : 2010. 09. 13

**Approval Sheet
[for Product Specification]**

Product	POWER INDUCTOR
Part No	JCPN2016F2R2MNT

Approved by Customer : [Signing or Stamping here]

Joinset Co., Ltd.			
QA	Production	R&D	Sales Part



Joinset Co., Ltd.

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■ Features

1. EU-RoHS Compliance
2. Increase rated current of component using by CAE and material technology
3. Low DC resistance and High Q
4. Reduce radiation noise over 60% of coil type
5. Excellent solderability and high heat resistance for either flow or reflow soldering.
6. Closed magnetic circuit avoids crosstalk and is suitable for high density printed circuit boards.

■ Applications

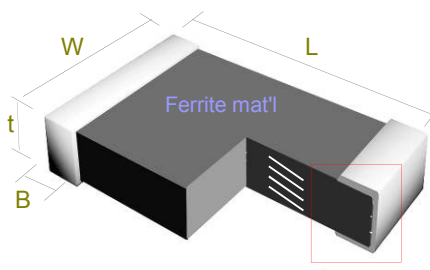
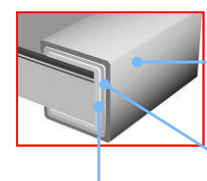
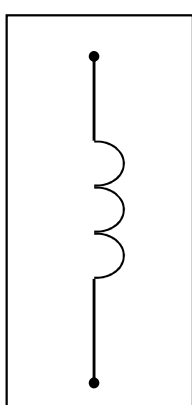
1. DC-DC converters and power modules of mobile and compact electronics such as mobile phone, DSC, PMP, DVC and HDD
2. Can be used in various power line.

■ Part Numbering



(1)	Series	Multilayer Chip Power Inductor
(2)	Type	Type of multilayer Chip Power Inductor (N: Normal, H: High Current)
(3)	Size	Refer to Shape & Dimension
(4)	Material	Material Code
(5)	Inductance	Numer means value, letter means decimal and unit (R:uH, N:nH) (Example : 1R0 means 1.0uH, 1N0 means 1.0nH)
(6)	Tolerance	Variation of inductance (K:±10%, M:±20%)
(7)	User code	This code will be lettered due to customer
(8)	Packing	T : Carrier Tape & Plastic Reel

■ Shape & Dimension & Circuit diagram

Shape					Circuit diagram
 					
Dimension	L	W	t	B	
2012	2.0±0.2	1.25±0.2	Max. 1.0	0.2~0.8	
2016	2.0±0.2	1.60±0.2	Max. 1.0	0.2~0.8	
2520	2.5±0.2	2.00±0.2	Max. 1.0	0.2~0.8	

■ Specifications

1. Normal Type 2012 series

Part Number	Inductance (μH)	Tol.	DC Resistance (Ω)	Tol.	Rated Current (mA) Max.
JCPN2012F1R0MNT	1.0	±20%	0.11	±20%	1200
JCPN2012F1R5MNT	1.5	±20%	0.14	±20%	1100
JCPN2012F2R2MNT	2.2	±20%	0.17	±20%	1000
JCPN2012F3R3MNT	3.3	±20%	0.23	±20%	900
JCPN2012F4R7MNT	4.7	±20%	0.26	±20%	800

2. Normal Type 2016 series

Part Number	Inductance (μH)	Tol.	DC Resistance (Ω)	Tol.	Rated Current (mA) Max.
JCPN2016F1R0MNT	1.0	±20%	0.09	±30%	1600
JCPN2016F1R5MNT	1.5	±20%	0.11	±30%	1500
JCPN2016F2R2MNT	2.2	±20%	0.12	±30%	1400
JCPN2016F3R3MNT	3.3	±20%	0.15	±30%	1300
JCPN2016F4R7MNT	4.7	±20%	0.18	±30%	1200

3. Normal Type 2520 series

Part Number	Inductance (μH)	Tol.	DC Resistance (Ω)	Tol.	Rated Current (mA) Max.
JCPN2520F1R0MNT	1.0	±20%	0.07	±30%	1700
JCPN2520F1R5MNT	1.5	±20%	0.10	±30%	1600
JCPN2520F2R2MNT	2.2	±20%	0.11	±30%	1500
JCPN2520F3R3MNT	3.3	±20%	0.13	±30%	1400
JCPN2520F4R7MNT	4.7	±20%	0.16	±30%	1300
JCPN2520F6R8MNT	6.8	±20%	0.20	±30%	1200
JCPN2520F100MNT	10.0	±20%	0.30	±30%	1100

a. Inductance/Q : Tested at 1 MHz and test equipment is High Accuracy RF Impedance / Material Analyzer - HP4291B

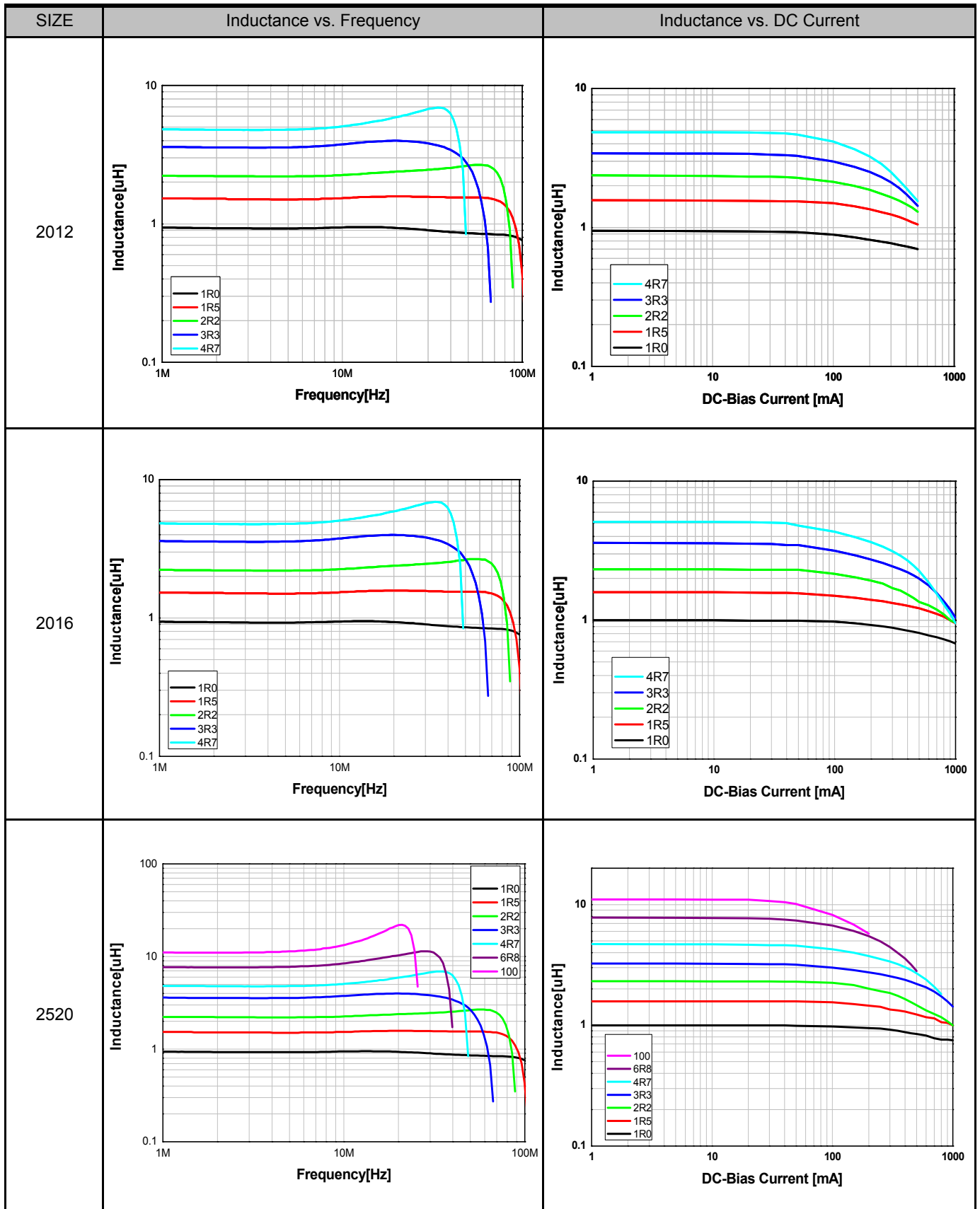
b. DC Resistance : Test equipment is High Accuracy Milliohmmeter HP4338B

c. Rated Current :

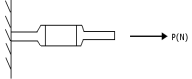
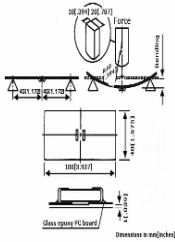
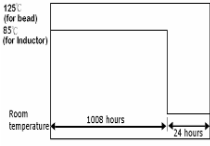
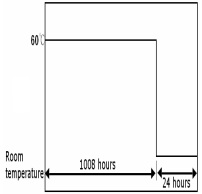
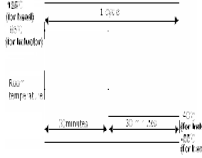
- Test equipment: Electric Power, Electric current meter, Thermometer.

- Definition of Rated Current (IDC): IDC is direct electric current as initial surface temperature of component increase to 40°C

■ Electrical Characteristics graph



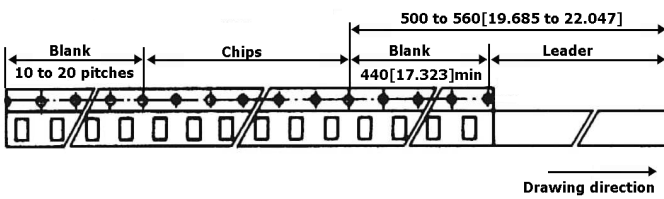
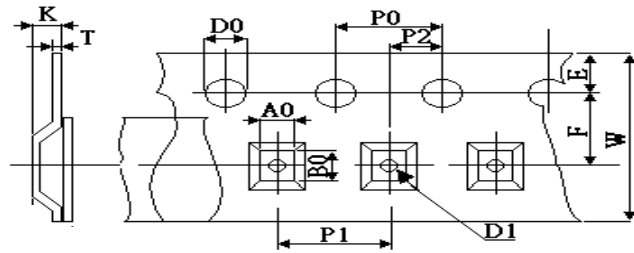
■ Specifications

No	ITEM	Requirements	Test condition				
1	Operating Temp. Range	-40℃ ~ +85℃					
2	Storage Temperature and Humidity Range	-10 ~ +40℃, 70%RH max					
3	Solderability	More than 95% of the terminal electrode must be covered with new solder.	Preheat: 150℃, 60seconds Solder: Sn-3Ag-0.5Cu [H63A] Flux: Rosin Temp & Time : 230±5℃, 5±1sec.				
4	Reflow soldering	No Serious mechanical damage More than 50% of the terminal electrode shall be covered with new solder	Solder: Sn-3Ag-0.5Cu [H63A] Temp & Time : max 260+/-5℃, min 10sec * Refer to the soldering profile of page 8				
5	Terminal Strength	The terminal electrode and the ferrite must not be damaged by the force applied on the right conditions	After soldering a lead wire to a terminal electrode, apply a load power in the arrow direction within 25 sec. 				
		Size		2012	2016	2520	
		Force(kgf)		0.6	0.6	1.0	
6	Substrate bending test	The terminal electrode and the ferrite must not be damaged by the force applied on the right condition.	After soldering a chip a test substrate bend the substrate by 3m/m(0.118 inches) and for 10 sec. then return. Soldering shall be done in accordance with the recom-mended PC board pattern and reflow soldering 				
7	High Temperature Loading Test	Appearance : Ferrite shall not be damaged Inductance: within 20% of initial value	Temperature:85±5℃ Applied current: Rated Current Duration: 1000±12 hours Measurement: After placing for 24 hours 				
8	Humidity Loading Test	Appearance : Ferrite shall not be damaged Inductance: within 20% of initial value	Humidity: 80 to 90%RH Temperature: +85±5℃ Applied current: Rated Current Duration: 1000±12 hours Measurement: After placing for 24 hours 				
9	Low Temperature Storage Life Test	Appearance: Cracking, chipping or any other defects harmful to the characteristics shall not be allowed. Inductance: within 20% of initial value	Temperature: -55 2℃ (For bead) Duration: 1000±12 hours Measurement: After placing for 24 hours				
10	Thermal Shock	Appearance: Cracking, chipping or any other defects harmful to the characteristics shall not be allowed. Inductance: within 20% of initial value	Temperature: -40, +85℃ Kept stabilized for 30 minute Cycle: 100 cycles Measurement: After placing for 24 hours 				

■ Packing specifications

unit : mm

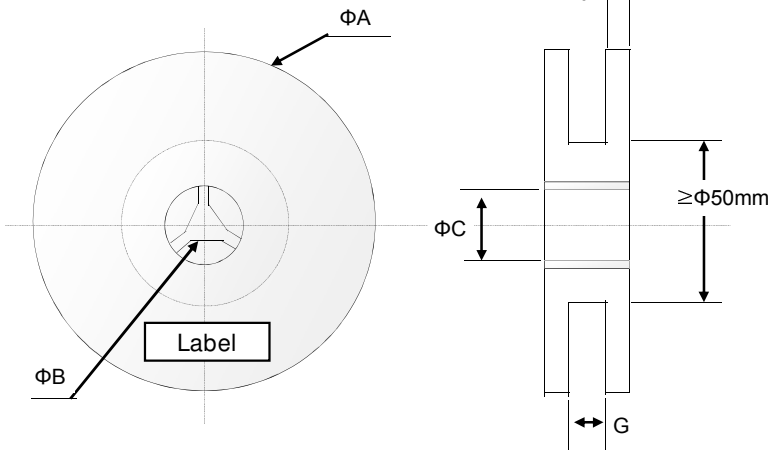
1. Carrier tape



EMBOSSED CARRIER			
code	2012	2016	2520
A0	1.40±0.1	1.87±0.1	2.22±0.1
B0	2.30±0.1	2.30±0.1	2.79±0.1
W	8.00±0.2	8.00±0.2	8.00±0.2
E	1.75±0.1	1.75±0.1	1.75±0.1
F	3.50±0.05	3.50±0.05	3.50±0.05
D0	1.50±0.1	1.50±0.1	1.50±0.1
D1	1.00±0.1	1.00±0.1	1.00±0.1
P0	4.00±0.05	4.00±0.05	4.00±0.05
P1	4.00±0.1	4.00±0.1	4.00±0.1
P2	2.00±0.05	2.00±0.05	2.00±0.05
K	1.10±0.1	1.10±0.1	1.10±0.1
T	0.23±0.05	0.2±0.05	0.2±0.05

2. Reel & Label

[Plastic Reel]



unit : mm

code	dimension
ΦA	178+/-2.0
ΦB	13.0+/-0.5
ΦC	22.0+/-2.0
G	10.0+/-1.5
t	2.5+/-0.5

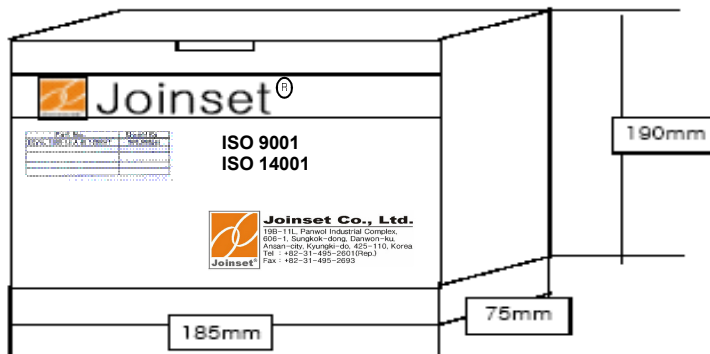
[Label]



code	description
①	Part no.
②	Lot no.
③	Quantity
④	Sequence no.
⑤	Inspector
⑥	Packing date
⑦	Manufacturer

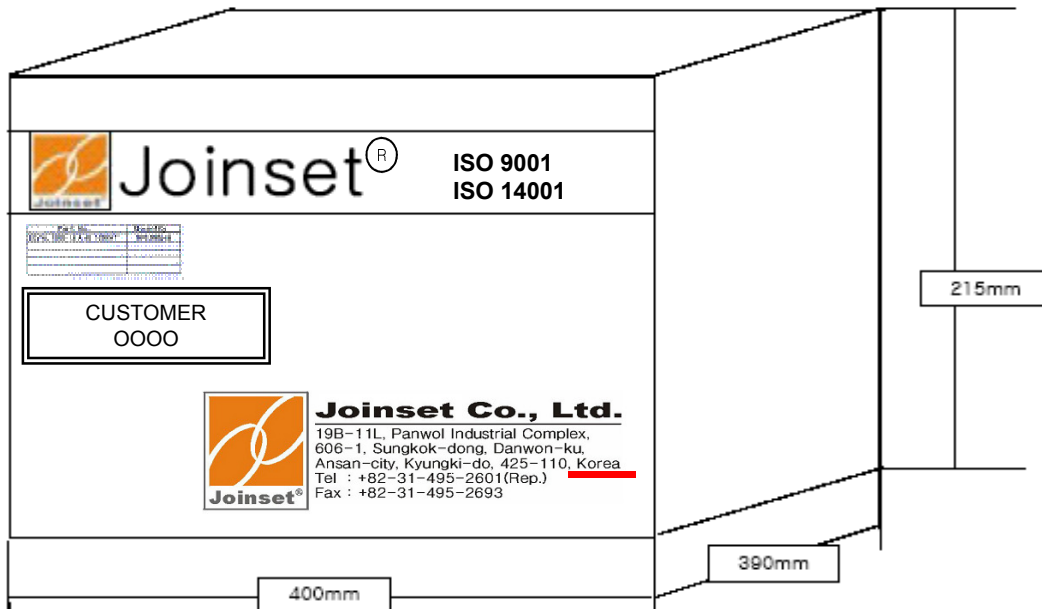
3. Box

1) Inner box



* 5 Reels in each Inner Box
* Label : Part no. & Quantity

2) Outer box



* Outer Box contains 10 Inner Box (50 Reels)
* Label : ① Part no. & Quantity ② Customer

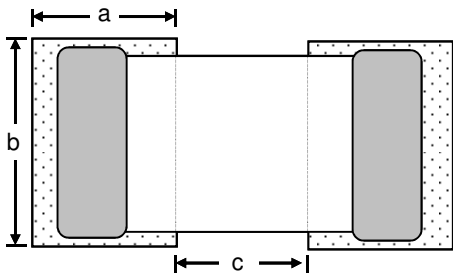
3) Packing Quantity

unit : pcs

Chip size	2012	2016	2520	Carrier Tape
pcs/reel	3,000	3,000	2,000	Embossed
Inner Box	15,000	15,000	10,000	-
Outer	150,000	150,000	100,000	-

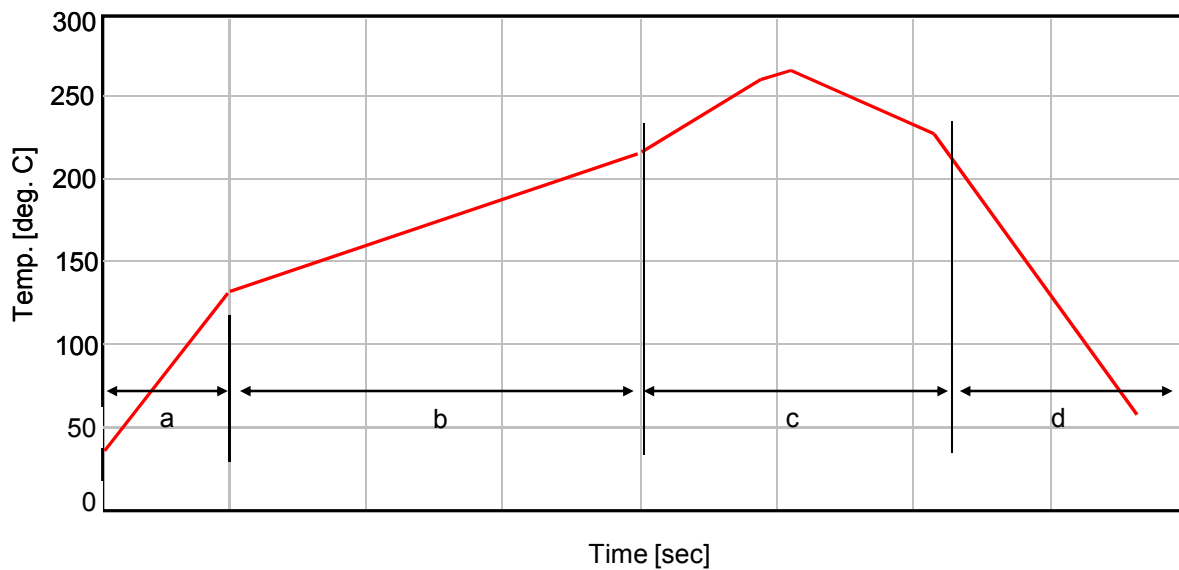
■ Recommended Soldering condition

1) Land Pattern Design



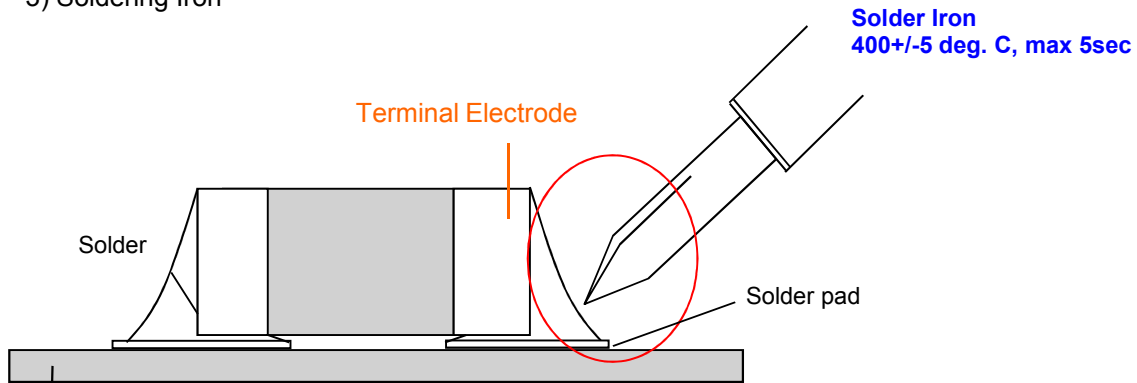
Code	Land Dimension with Chip Size [mm]			remark
	2012	2016	2520	
a	1.00~1.20	1.00~1.20	1.10~1.30	
b	1.40~1.80	1.90~2.30	2.30~2.70	
c	0.40~0.80	0.40~0.80	0.80~1.20	

2) Reflow Soldering



Zone		temp. range [deg. C]	time [sec]	Remark
a	Curing	RT ~ 130	60	* Solder : Sn-Ag-Cu * 260deg. C, over 10sec
b	Preheat	max 220	90 ~ 150	
c	Soldering	220 ~ 260 [max 270]	90 ~ 150	
d	Cooling	220 ~ RT	min 60	

3) Soldering Iron



To prevent a defective crack from thermal shock due to solder iron, the end of iron-tip must be located on between terminal electrode and solder pad