



# SPECIFICATION FOR APPROVAL

**CUSTOMER :** STD

**CUSTOMER PART NO :**

**PRODUCTS :** Hight Frequency Multilayer Chip Inductors

**PART NO:** MCCH Series

**DATE:** 2019.08.20

**SALES:** 产品部

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APPROVAL SIGNATURE 客户承认签章	

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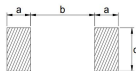
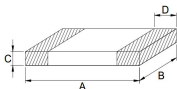
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## High Frequency Multilayer Chip Inductors --MCCH Series



PCB Pattern



### Featur

1. Monolithic structure
2. Closed magnetic circuit avoids crosstalk
3. S.M.T.type
4. Suitable for flow and reflow soldering
5. Shapes and dimensions follow E.I.A. SPEC
6. Available in various sizes
7. Excellent soldering ability and heat resistance
8. High S.R.F up to 6 GHz and above

### Application

Wireless communications, cellular phone, cordless phone, pager, etc.  
Miscellaneous high-frequency circuits. EMI countermeasure  
in high-frequency circuits.

### Product Identification

$\frac{MC}{A}$     $\frac{CH}{B}$     $\frac{0603Z}{C}$     $\frac{12N}{D}$     $\frac{J}{E}$

**A:** Company code

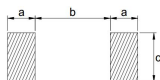
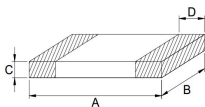
**D:** Inductance. 12N=12 nH

**B:** Series name

**E:** Inductance Tolerance (S=±0.3nH, J=±5% , K=±1C

**C:** Dimension.

## Hight Frequency Multilayer Chip Inductors --MCCH Series



PCB Pattern

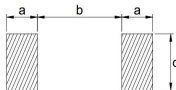
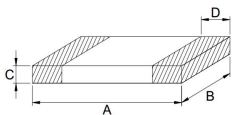
P/N	A (mm)	B (mm)	C (mm)	D (mm)	a (mm)	b (mm)	c (mm)
MCCH 0603Z	0.60 ± 0.03	0.30 ± 0.03	0.30 ± 0.03	0.15 ± 0.05	0.25~0.30	0.20~0.30	0.25~0.40
MCCH 1005Z	1.0 ± 0.10	0.5 ± 0.10	0.5 ± 0.10	0.25 ± 0.1	0.80	0.50	0.55
MCCH 1608Z	1.6 ± 0.15	0.8 ± 0.15	0.8 ± 0.15	0.3 ± 0.2	1.00	0.60	0.80
MCCH 2012Z	2.0 ± 0.20	1.25 ± 0.20	0.85 ± 0.20	0.5 ± 0.3	1.00	1.00	1.00

P/N	Characteristic Range (nH)				I-sat (Amps)	DCR (mΩ)	SRF (MHz)
	10	100	300	500			
MCCH 0603Z	1			100	60~470	0.11~3.74	900~10000
MCCH 1005Z	1			270	110~300	0.08~4.80	400~10000
MCCH 1608Z	1			220	300	0.05~1.50	400~10000
MCCH 2012Z	1			470	300	0.10~1.50	200~4000

# High Frequency Multilayer Chip Inductors --MCCH0603Z Series

## 1. Mechanical & Dimensions

(UNIT: mm)



PCB Pattern

A	0.60 ± 0.03
B	0.30 ± 0.03
C	0.30 ± 0.03
D	0.15 ± 0.05
a	0.25~0.30
b	0.20~0.30
c	0.25~0.40

## 2. Electrical characteristics

Part Number	Inductance		Q@100MHz		Rated Current	DCR	SRF
	nH	Test Frequency (MHz)	Normal Value	min.	(mA) max.	(Ω) max.	(MHz) min.
MCCH0603Z1N0S	1.0	100	6	4	470	0.11	10000
MCCH0603Z1N2S	1.2	100	6	4	450	0.12	10000
MCCH0603Z1N5S	1.5	100	6	4	430	0.13	10000
MCCH0603Z1N8S	1.8	100	6	4	390	0.16	10000
MCCH0603Z2N0S	2.0	100	6	4	380	0.17	10000
MCCH0603Z2N2S	2.2	100	6	4	360	0.19	8800
MCCH0603Z2N4S	2.4	100	6	4	350	0.20	8300
MCCH0603Z2N7S	2.7	100	7	5	340	0.21	7700
MCCH0603Z3N0S	3.0	100	7	5	330	0.22	7200
MCCH0603Z3N3S	3.3	100	7	5	320	0.23	6700
MCCH0603Z3N6S	3.6	100	7	5	310	0.25	6400
MCCH0603Z3N9S	3.9	100	7	5	300	0.27	6000
MCCH0603Z4N3S	4.3	100	7	5	280	0.30	5700
MCCH0603Z4N7S	4.7	100	7	5	280	0.30	5300
MCCH0603Z5N1S	5.1	100	7	5	270	0.33	5000
MCCH0603Z5N6S	5.6	100	7	5	260	0.36	4600
MCCH0603Z6N2S	6.2	100	7	5	250	0.38	4200
MCCH0603Z6N8J	6.8	100	7	5	250	0.39	3900
MCCH0603Z7N5J	7.5	100	7	5	240	0.41	3600
MCCH0603Z8N2J	8.2	100	7	5	230	0.45	3400
MCCH0603Z9N1J	9.1	100	7	5	220	0.48	3200
MCCH0603Z10NJ	10.0	100	7	5	220	0.51	2900
MCCH0603Z12NJ	12.0	100	7	5	190	0.68	2700
MCCH0603Z15NJ	15.0	100	7	5	180	0.71	2300
MCCH0603Z18NJ	18.0	100	7	5	170	0.81	2100
MCCH0603Z22NJ	22.0	100	7	5	150	1.00	1800
MCCH0603Z27NJ	27.0	100	6	4	120	1.35	1800
MCCH0603Z33NJ	33.0	100	6	4	110	1.47	1700
MCCH0603Z39NJ	39.0	100	6	4	100	1.72	1500
MCCH0603Z47NJ	47.0	100	6	4	100	1.90	1300
MCCH0603Z56NJ	56.0	100	6	4	80	2.27	1100
MCCH0603Z68NJ	68.0	100	6	4	80	2.66	1100
MCCH0603Z82NJ	82.0	100	6	4	70	3.37	1000
MCCH0603ZR10J	100.0	100	6	4	60	3.74	900

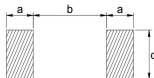
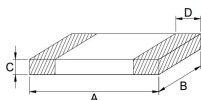
NOTE: Tolerance S=±0.3nH, J=±5% , K=±10%

**3. Operating:** -55℃ ~ +105℃ ( Including self-temperature rise)

# Hight Frequency Multilayer Chip Inductors --MCCH1005Z Seri

## 1.Mechanical & Dimensions

(UNIT: mm)



PCB Pattern

A	1.00 ± 0.10
B	0.50 ± 0.10
C	0.50 ± 0.10
D	0.25 ± 0.10
a	0.80
b	0.50
c	0.55

## 2.Electrical characteristics

Part Number	Inductance		Q@100MHz		Rated Current	DCR	SRF
	nH	Test Frequency (MHz)	Normal Value	min.	(mA) max.	(Ω) max.	(MHz) min.
MCCH1005Z1N0S	1.0	100	11	8	300	0.08	10000
MCCH1005Z1N2S	1.2	100	11	8	300	0.09	10000
MCCH1005Z1N5S	1.5	100	11	8	300	0.10	6000
MCCH1005Z1N8S	1.8	100	11	8	300	0.12	6000
MCCH1005Z2N0S	2.0	100	11	8	300	0.12	6000
MCCH1005Z2N2S	2.2	100	10	8	300	0.13	6000
MCCH1005Z2N4S	2.4	100	10	8	300	0.13	6000
MCCH1005Z2N7S	2.7	100	10	8	300	0.13	6000
MCCH1005Z3N0S	3.0	100	10	8	300	0.16	6000
MCCH1005Z3N3S	3.3	100	10	8	300	0.16	6000
MCCH1005Z3N6S	3.6	100	10	8	300	0.20	5000
MCCH1005Z3N9S	3.9	100	10	8	300	0.21	4000
MCCH1005Z4N3S	4.3	100	10	8	300	0.20	4000
MCCH1005Z4N7S	4.7	100	10	8	300	0.21	4000
MCCH1005Z5N1S	5.1	100	10	8	300	0.21	4000
MCCH1005Z5N6S	5.6	100	10	8	300	0.23	4000
MCCH1005Z6N2S	6.2	100	10	8	300	0.25	3900
MCCH1005Z6N8J	6.8	100	10	8	300	0.25	3900
MCCH1005Z7N5J	7.5	100	10	8	300	0.25	3700
MCCH1005Z8N2J	8.2	100	10	8	300	0.28	3600
MCCH1005Z9N1J	9.1	100	10	8	300	0.30	3400
MCCH1005Z10NJ	10.0	100	10	8	300	0.31	3200
MCCH1005Z12NJ	12.0	100	11	8	300	0.10	2700
MCCH1005Z15NJ	15.0	100	11	8	300	0.46	2300
MCCH1005Z18NJ	18.0	100	11	8	300	0.55	2100
MCCH1005Z22NJ	22.0	100	11	8	300	0.60	1900
MCCH1005Z27NJ	27.0	100	11	8	300	0.70	1600
MCCH1005Z33NJ	33.0	100	11	8	200	0.80	1300
MCCH1005Z39NJ	39.0	100	11	8	200	0.90	1200
MCCH1005Z47NJ	47.0	100	11	8	200	1.00	1000
MCCH1005Z56NJ	56.0	100	11	8	200	1.00	750
MCCH1005Z68NJ	68.0	100	11	8	180	1.20	750
MCCH1005Z82NJ	82.0	100	10	8	150	1.30	600
MCCH1005ZR10J	100.0	100	10	8	150	1.50	600
MCCH1005ZR12J	120.0	100	10	8	150	1.60	600
MCCH1005ZR15J	150.0	100	12	8	140	3.20	550
MCCH1005ZR18J	180.0	100	12	8	130	3.70	500
MCCH1005ZR22J	220.0	100	12	8	120	4.20	450
MCCH1005ZR27J	270.0	100	12	8	110	4.80	400

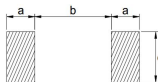
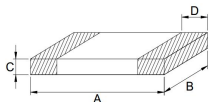
NOTE:Tolerance S=±0.3nH,J=±5% , K=±10%

## 3.Operating: -55°C ~ +105°C ( Including self-temperature rise)

# High Frequency Multilayer Chip Inductors --MCCH1608Z Seri

## 1. Mechanical & Dimensions

(UNIT: mm)



PCB Pattern

A	1.6 ± 0.15
B	0.8 ± 0.15
C	0.8 ± 0.15
D	0.3 ± 0.20
a	1.00
b	0.60
c	0.80

## 2. Electrical characteristics

Part Number	Inductance		Q@100MHz		Rated Current (mA) max.	DCR (Ω) max.	SRF (MHz) min
	nH	Test Frequency (MHz)	Normal Value	min.			
MCCH1608Z1N0S	1.0	100	14	8	300	0.05	10000
MCCH1608Z1N2S	1.2	100	14	8	300	0.05	10000
MCCH1608Z1N5S	1.5	100	14	8	300	0.10	6000
MCCH1608Z1N8S	1.8	100	10	8	300	0.10	6000
MCCH1608Z2N2S	2.2	100	12	8	300	0.10	6000
MCCH1608Z2N7S	2.7	100	13	10	300	0.10	6000
MCCH1608Z3N3S	3.3	100	14	10	300	0.12	6000
MCCH1608Z3N9S	3.9	100	13	10	300	0.14	6000
MCCH1608Z4N7S	4.7	100	13	10	300	0.16	4000
MCCH1608Z5N6S	5.6	100	14	10	300	0.18	4000
MCCH1608Z6N8J	6.8	100	14	10	300	0.22	4000
MCCH1608Z8N2J	8.2	100	14	10	300	0.24	3500
MCCH1608Z10NJ	10.0	100	14	12	300	0.26	3400
MCCH1608Z12NJ	12.0	100	14	12	300	0.28	2600
MCCH1608Z15NJ	15.0	100	15	12	300	0.32	2300
MCCH1608Z18NJ	18.0	100	15	12	300	0.35	2000
MCCH1608Z22NJ	22.0	100	16	12	300	0.40	1600
MCCH1608Z27NJ	27.0	100	16	12	300	0.45	1400
MCCH1608Z33NJ	33.0	100	17	12	300	0.55	1200
MCCH1608Z39NJ	39.0	100	18	12	300	0.60	1100
MCCH1608Z47NJ	47.0	100	17	12	300	0.70	900
MCCH1608Z56NJ	56.0	100	17	12	300	0.75	900
MCCH1608Z68NJ	68.0	100	18	12	300	0.85	700
MCCH1608Z82NJ	82.0	100	18	12	300	0.95	600
MCCH1608ZR10J	100.0	100	18	12	300	1.00	600
MCCH1608ZR12J	120.0	50	16	8	300	1.20	500
MCCH1608ZR15J	150.0	50	13	8	300	1.20	500
MCCH1608ZR18J	180.0	50	13	8	300	1.30	400
MCCH1608ZR22J	220.0	50	12	8	300	1.50	400

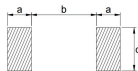
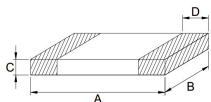
NOTE:Tolerance S=±0.3nH,J=±5% , K=±10%

**3. Operating:** -55°C ~ +105°C ( Including self-temperature rise)

# High Frequency Multilayer Chip Inductors --MCCH2012Z Series

## 1. Mechanical & Dimensions

(UNIT: mm)



PCB Pattern

A	2.00 ± 0.20
B	1.25 ± 0.20
C	0.85 ± 0.20
D	0.50 ± 0.30
a	1.00
b	1.00
c	1.00

## 2. Electrical characteristics

Part Number	Inductance		Q@100MHz		Rated Current (mA) max.	DCR (Ω) max.	SRF (MHz) min.
	nH	Test Frequency (MHz)	Normal Value	min.			
MCCH2012Z1N5S	1.5	100	21	10	300	0.10	4000
MCCH2012Z1N8S	1.8	100	18	10	300	0.10	4000
MCCH2012Z2N2S	2.2	100	18	10	300	0.10	4000
MCCH2012Z2N7S	2.7	100	19	12	300	0.10	4000
MCCH2012Z3N3S	3.3	100	16	12	300	0.13	4000
MCCH2012Z3N9S	3.9	100	18	12	300	0.15	4000
MCCH2012Z4N7S	4.7	100	18	12	300	0.20	3500
MCCH2012Z5N6S	5.6	100	20	15	300	0.23	3200
MCCH2012Z6N8J	6.8	100	20	15	300	0.25	2800
MCCH2012Z8N2J	8.2	100	21	15	300	0.28	2400
MCCH2012Z10NJ	10.0	100	20	15	300	0.30	2100
MCCH2012Z12NJ	12.0	100	21	15	300	0.35	1900
MCCH2012Z15NJ	15.0	100	22	15	300	0.40	1600
MCCH2012Z18NJ	18.0	100	24	15	300	0.45	1500
MCCH2012Z22NJ	22.0	100	23	18	300	0.50	1400
MCCH2012Z27NJ	27.0	100	23	18	300	0.55	1300
MCCH2012Z33NJ	33.0	100	24	18	300	0.60	1200
MCCH2012Z39NJ	39.0	100	23	18	300	0.65	1000
MCCH2012Z47NJ	47.0	100	23	18	300	0.70	900
MCCH2012Z56NJ	56.0	100	23	18	300	0.75	800
MCCH2012Z68NJ	68.0	100	25	18	300	0.80	700
MCCH2012Z82NJ	82.0	100	24	18	300	0.90	600
MCCH2012ZR10J	100.0	100	23	18	300	0.90	600
MCCH2012ZR12J	120.0	50	22	13	300	0.95	500
MCCH2012ZR15J	150.0	50	22	13	300	1.00	500
MCCH2012ZR18J	180.0	50	23	13	300	1.10	400
MCCH2012ZR22J	220.0	50	20	12	300	1.20	350
MCCH2012ZR27J	270.0	50	20	12	300	1.30	300
MCCH2012ZR33J	330.0	50	22	12	300	1.40	250
MCCH2012ZR39J	390.0	50	17	10	300	1.30	250
MCCH2012ZR47J	470.0	50	17	10	300	1.50	200

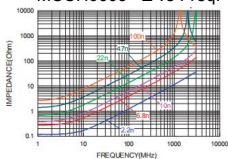
NOTE: Tolerance S=±0.3nH, J=±5%, K=±10%

**3. Operating:** -55°C ~ +105°C ( Including self-temperature rise)

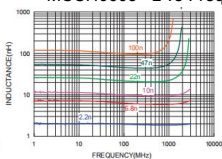
# Hight Frequency Multilayer Chip Inductors --MCCH Series

## 4. Impedance Frequency Characteristics(Typical)

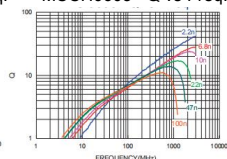
MCCH0603 Z vs Freq.



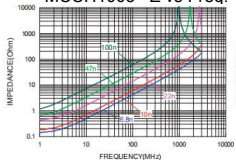
MCCH0603 L vs Freq.



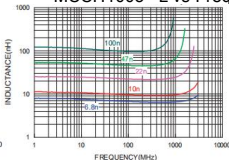
MCCH0603 Q vs Freq.



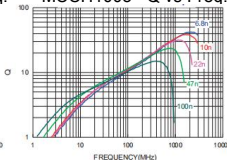
MCCH1005 Z vs Freq.



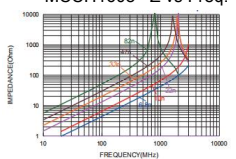
MCCH1005 L vs Freq.



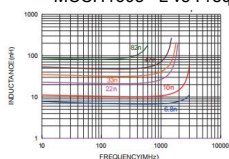
MCCH1005 Q vs Freq.



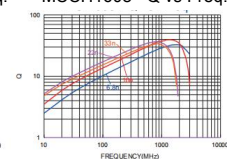
MCCH1608 Z vs Freq.



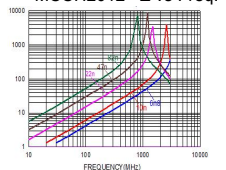
MCCH1608 L vs Freq.



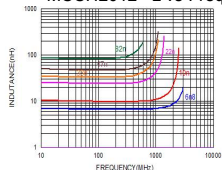
MCCH1608 Q vs Freq.



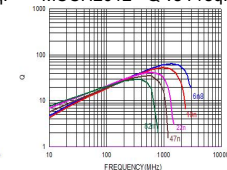
MCCH2012 Z vs Freq.



MCCH2012 L vs Freq.



MCCH2012 Q vs Freq.





# SPECIFICATION FOR APPROVAL

## 4. Reliability and Testing Conditions / Pin Type Power Inductors

Item	Specification	Conditions															
Operating temperature range	-55°C ~ +105°C ( Including self-temperature rise)																
Storage temperature and humidity range	-55°C ~ +105°C , 70% RH Max																
Solderability	More than 90% of the terminal electrode should be covered with solder.	<p>Unit: Secor</p>															
Solder Heat Resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	<p>Unit: Secor</p>															
Heat resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 1000 hours in 105±5°C and 2 hour drying under normal condition.															
Cold resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 1000 hours in -55±2°C and 2 hour drying under normal condition.															
Thermal shock	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 100 cycles of following condition. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Times (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55±2°C</td> <td>30</td> </tr> <tr> <td>2</td> <td>Room Temperature</td> <td>Within 3</td> </tr> <tr> <td>3</td> <td>105±5°C</td> <td>30</td> </tr> <tr> <td>4</td> <td>Room Temperature</td> <td>Within 3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Times (min.)	1	-55±2°C	30	2	Room Temperature	Within 3	3	105±5°C	30	4	Room Temperature	Within 3
Step	Temperature (°C)	Times (min.)															
1	-55±2°C	30															
2	Room Temperature	Within 3															
3	105±5°C	30															
4	Room Temperature	Within 3															
Humidity Resistance	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 1000 hours in 40±2°C and 90 to 95% humidity , and 2 hour drying under normal condition.															
Vibration Test	Inductance within ±5% of initial value and appearance shall not break.	After vibration for 1hour, In each of three orientations at sweep vibration (10~55~10Hz) with 1.52mm P-P Amplitudes.															
Terminal strength	The terminal electrode and the ferrite must not be damaged	Solder a chip to test substrate, and then laterally apply a load 10N in the arrow direction, Duration : 5s															

# High Frequency Multilayer Chip Inductors --MCCH Series

## 5.Recommended Soldering Conditions

Figure 1. Re-flow Soldering

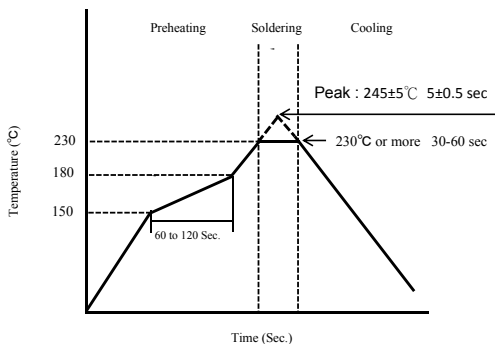
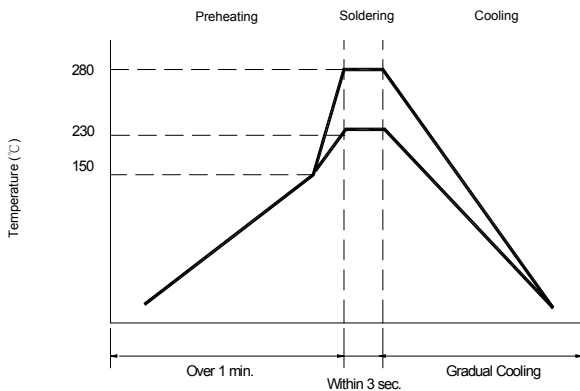
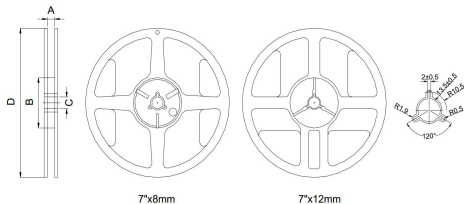


Figure 2. Hand Soldering

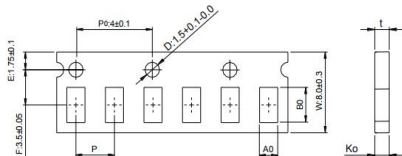


# High Frequency Multilayer Chip Inductors --MCCH Series

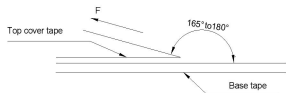
## 6. Packaging



Type	A(mm)	B(mm)	C(mm)	D(mm)
7" x 8mm	9.0 ± 0.5	60 ± 2	13.5 ± 0.5	178 ± 2
7" x 12mm	13.5±0.5	60 ± 2	13.5 ± 0.5	178 ± 2



P/N	Bo (mm)	Ao(mm)	Ko (mm)	P (mm)	t (mm)	D1 (mm)	Quantity
MCCH0603Z	0.68±0.05	0.38±0.05	0.50 max	2.0±0.1	0.50 max	none	15000pcs/Reel
MCCH1005Z	1.12±0.10	0.67±0.05	0.54±0.05	2.0±0.1	0.23±0.05	none	10000pcs/Reel
MCCH1608Z	1.80±0.10	1.01±0.10	1.02±0.10	4.0±0.1	0.22±0.05	none	4000pcs/Reel
MCCH2012Z	2.25±0.10	1.42±0.10	1.04±0.10	4.0±0.1	0.22±0.05	1.0±0.1	4000pcs/Reel



### ※Storage Conditions

1. Temperature and humidity conditions: -55°C ~ +105°C and 70% RH.
2. Recommended products should be used within 6 months from the time of delivery.
3. The packaging material should be kept where no chlorine or sulfur exists in the air.

The force tearing off cover tape is 15 to 60 grams in the arrow direction under the following conditions

Room Temp (°C)	Room Humidity (%)	Room atrn (hPa)	Teaming Speed (mm/min)
5-35	45-85	860-1060	300

### ※Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.