

Multi-layer ceramic chip capacitors

MCH21 (2012 (0805) size, chip capacitor)

●Features

- 1) Miniature, high capacitance
- 2) Achieved high capacitance by thin and multi layer technology
- 3) Lead-free plating terminal
- 4) No polarity

●Quick Reference

The design and specifications are subject to change without prior notice. Please check the most recent technical specifications prior to placing orders or using the product. For more detail information regarding packaging style code, please check product designation.

Thermal compensation

Part No.	Size code	Temperature characteristics		Operating temp. range (°C)	Rated voltage (V)	Capacitance(pF)	Capacitance tolerance	Thickness (mm)
		code	(ppm/°C)					
MCH21	2012 (0805)	A(AN)	0±30 (CG)(C0G)	-55 to +125	50	2,200 to 3,300 (E12 Series)	J(±5%)	0.6±0.15
						3,900 to 5,600 (E12 Series)		0.85±0.15
						6,800 to 10,000 (E12 Series)		1.25±0.2

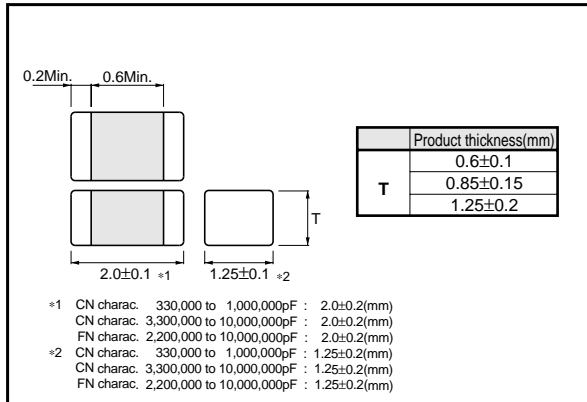
* : 0.5pF/0.75pF/2pF/3pF/4pF/5pF/6pF/7pF/8pF/9pF available

●High dielectric constant

Part No.	Size code	Temperature characteristics		Operating temp. range (°C)	Rated voltage (V)	Capacitance(pF)	Capacitance tolerance	Thickness (mm)	
		code							
MCH21	2012	CN	±10% (B)	-25 to +85	50	220 to 47,000(E6 Series)	K (±10%)	0.6 ± 0.15	
						68,000(E6 Series)		0.85 ± 0.15	
						100,000(E6 Series)		1.25 ± 0.2	
					25	150,000 to 220,000(E6 Series)		0.6 ± 0.15	
						220 to 47,000(E6 Series)		0.85 ± 0.15	
						68,000(E6 Series)		1.25 ± 0.2	
			±15% (R) (X7R)	-55 to +125	50	100,000(E6 Series)		0.6 ± 0.15	
						150,000 to 220,000(E6 Series)		0.85 ± 0.15	
						330,000 to 1,000,000(E6 Series)		1.25 ± 0.2	
				±15% (X5R)	-55 to +85	10		1,500,000 to 2,200,000(E6 Series)	0.85 ± 0.15
								3,300,000 to 4,700,000(E6 Series)	1.25 ± 0.2
								10,000,000(E6 Series)	1.25 ± 0.2
		6.3	10,000,000(E3 Series)		50	1,000 to 220,000(E3 Series)	0.6 ± 0.15		
						470,000(E3 Series)	0.85 ± 0.15		
						1,000,000(E3 Series)	1.25 ± 0.2		
			FN	+30%, -80% (F)	-25 to +85	16	2,200,000 to 4,700,000(E3 Series)	1.25 ± 0.2	
							10,000,000(E3 Series)	0.6 ± 0.15	
							22,000,000(E3 Series)	0.85 ± 0.15	
		6.3			10,000,000(E3 Series)	50	1,000 to 220,000(E3 Series)	0.6 ± 0.15	
							470,000(E3 Series)	0.85 ± 0.15	
							1,000,000(E3 Series)	1.25 ± 0.2	
		+22%, -82% (Y5V)	-30 to +85	25	2,200,000 to 4,700,000(E3 Series)	0.6 ± 0.15			
					10,000,000(E3 Series)	0.85 ± 0.15			
					22,000,000(E3 Series)	1.25 ± 0.2			
10	10,000,000(E3 Series)		6.3	22,000,000(E3 Series)	1.25 ± 0.2				

Ceramic capacitors

●External dimensions (Unit : mm)



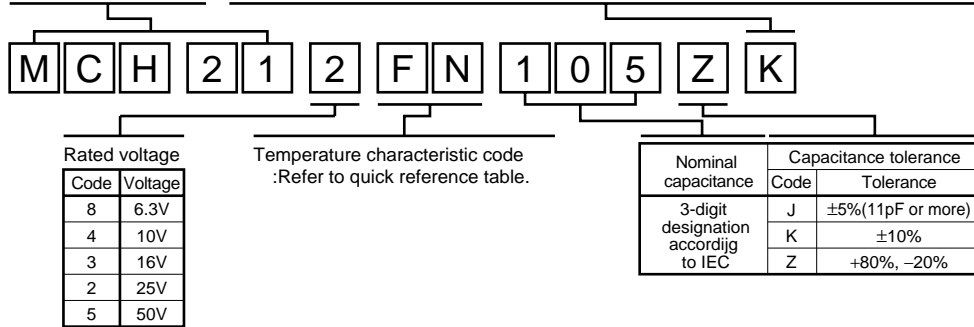
●Product designation

Code	Product thickness	Packing specification	Reel	Basic ordering unit(pcs.)
K	0.6,0.85mm	Paper tape(width 8mm, pitch 4mm)	φ180mm (7in.)	4,000
P	1.25mm	Pulastic tape(width 8mm, pitch 4mm)	φ180mm (7in.)	2,000

Reel(φ180mm):compatible with EIAJ ET-7200A

Part No.

Packaging Style



●Product No.list

●Thermal compensation capacitors

Capacitance (pF)	Temperature		A•AN(CG) (COG) (CH)Characteristic
	Rated voltage(V)	Product thickness(mm)	
			25V
			Product No.
2,200	J (±5%)	0.6±0.15	MCH215A (AN) 222Jk
2,700			MCH215A (AN) 272Jk
3,300			MCH215A (AN) 332Jk
3,900		0.85±0.15	MCH215A (AN) 392Jk
4,700			MCH215A (AN) 472Jk
5,600			MCH215A (AN) 562Jk
6,800		1.25±0.15	MCH215A (AN) 682Jk
8,200			MCH215A (AN) 822Jk
10,000			MCH215A (AN) 103Jk

Ceramic capacitors

•High dielectric constant capacitors

Capacitance (pF)	Temperature		CN (R) (B) (X7R)Characteristic		CN (X5R)Characteristic					
	Rated voltage(V)		50V	25V	16V	10V	6.3V			
	Tolerance	Product thickness(mm)	Product No.	Product No.	Product No.	Product No.	Product No.			
220	K (±10%)	0.6 ± 0.1	MCH215CN221KK							
330			MCH215CN331KK							
470			MCH215CN471KK							
680			MCH215CN681KK							
1,000			MCH215CN102KK							
1,500			MCH215CN152KK							
2,200			MCH215CN222KK							
3,300			MCH215CN332KK							
4,700			MCH215CN472KK							
6,800			MCH215CN682KK							
10,000			MCH215CN103KK							
15,000			MCH215CN153KK							
22,000			MCH215CN223KK							
33,000			MCH215CN333KK							
47,000			MCH215CN473KK							
68,000			0.85 ± 0.15	MCH215CN683KK						
100,000				MCH215CN104KP						
150,000			1.25 ± 0.2			MCH212CN154KP				
220,000						MCH212CN224KP				
330,000							MCH213CN334KP			
470,000							MCH213CN474KP			
680,000							MCH213CN684KP			
1,000,000						MCH213CN105KP				
1,500,000			0.85 ± 0.15				MCH214CN155KK			
2,200,000							MCH214CN225KK			
3,300,000			1.25 ± 0.2				MCH214CN335KP			
4,700,000							MCH214CN475KP			
10,000,000									MCH218CN106KP	

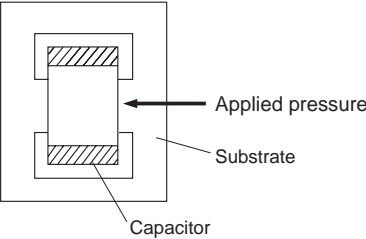
Capacitance (pF)	Temperature		FN (F) (Y5V)Characteristic						
	Rated voltage(V)		50V	25V	16V	10V	6.3V		
	Tolerance	Product thickness(mm)	Product No.	Product No.	Product No.	Product No.	Product No.		
1,000	Z (+80%, -20%)	0.6 ± 0.15	MCH215FN102ZK						
2,200			MCH215FN222ZK						
4,700			MCH215FN472ZK						
10,000			MCH215FN103ZK						
22,000			MCH215FN223ZK						
47,000			MCH215FN473ZK						
100,000			MCH215FN104ZK						
220,000			MCH215FN224ZK						
470,000					MCH212FN474ZK				
1,000,000			0.85 ± 0.15				MCH213FN105ZK		
2,200,000			0.6 ± 0.15				MCH213FN225ZK		
4,700,000			0.85 ± 0.15				MCH213FN475ZK		
10,000,000			1.25 ± 0.2				MCH214FN106ZP		
22,000,000									MCH218FN226P

Ceramic capacitors

•Performance and test method

No.	Items	Performance	Test Method (As per JIS C 5101-1, JIS C 5101-10)														
1	Appearance and dimensions	No marked defects shall be allowed for appearance. Dimensions shall be as specified in the clause 4.	As per 4.4 of JIS C 5101-1. As per 4.5 of JIS C 5101-10 Using a Magnifier.														
2	Withstanding voltage	No dielectrical breakdown or other damage shall be allowed.	As per 4.6 of JIS C 5101-1. As per 4.6.4 of JIS C 5101-10 Voltage shall be applied as per Table 1. <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Table 1</caption> <thead> <tr> <th>Characteristic</th> <th>Voltage</th> </tr> </thead> <tbody> <tr> <td>A, AN</td> <td>300% Rated voltage</td> </tr> <tr> <td>CN</td> <td rowspan="2">250% Rated voltage</td> </tr> <tr> <td>FN</td> </tr> </tbody> </table> Voltage shall be applied for 1 to 5s with 50mA charging and discharging current.	Characteristic	Voltage	A, AN	300% Rated voltage	CN	250% Rated voltage	FN							
Characteristic	Voltage																
A, AN	300% Rated voltage																
CN	250% Rated voltage																
FN																	
3	Insulation resistance	Not less than 10000M Ω or 500M Ω · μ F, whichever is less. (For products with rated voltage less than 16V, it is not less than 10000M Ω or 100M Ω · μ F, whichever is less.)	As per 4.5 of JIS C 5101-1. As per 4.6.3 of JIS C 5101-10 Measurements shall be made after 60+/-5s period of the rated voltage applied.														
4	Capacitance	Capacitance shall be within specified tolerance range.	As per 4.7 of JIS C 5101-1. As per 4.6.1 of JIS C 5101-10 Measurements shall be made under the conditions specified in Table 2. <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Table 2</caption> <thead> <tr> <th rowspan="2">Characteristic</th> <th colspan="2">Frequency · Voltage</th> </tr> <tr> <th>≤ 1000 pF</th> <th>> 1000 pF</th> </tr> </thead> <tbody> <tr> <td>A, AN</td> <td>1+/-0.1MHz 1+/-0.1Vrms.</td> <td>1+/-0.1kHz 1+/-0.1Vrms.</td> </tr> <tr> <td>CN</td> <td colspan="2">1+/-0.1kHz</td> </tr> <tr> <td>FN</td> <td colspan="2">1+/-0.1Vrms.</td> </tr> </tbody> </table>	Characteristic	Frequency · Voltage		≤ 1000 pF	> 1000 pF	A, AN	1+/-0.1MHz 1+/-0.1Vrms.	1+/-0.1kHz 1+/-0.1Vrms.	CN	1+/-0.1kHz		FN	1+/-0.1Vrms.	
Characteristic	Frequency · Voltage																
	≤ 1000 pF	> 1000 pF															
A, AN	1+/-0.1MHz 1+/-0.1Vrms.	1+/-0.1kHz 1+/-0.1Vrms.															
CN	1+/-0.1kHz																
FN	1+/-0.1Vrms.																
5	Dielectric loss tangent	<table border="1" style="width: 100%;"> <tbody> <tr> <td style="width: 10%;">A, AN</td> <td>$\tan \delta \leq 0.1\%$</td> </tr> <tr> <td>C N</td> <td>Rated voltage=50,25V $\tan \delta \leq 3.0\%$ Rated voltage=16,10V $\tan \delta \leq 5.0\%$ Rated voltage=6.3V $\tan \delta \leq 10.0\%$</td> </tr> <tr> <td>F N</td> <td>Rated voltage=50V $\tan \delta \leq 5.0\%$ Rated voltage=25V $\tan \delta \leq 7.5\%$ Rated voltage=16V $\tan \delta \leq 10.0\%$ Rated voltage=10V, 6.3V $\tan \delta \leq 12.5\%$</td> </tr> </tbody> </table>	A, AN	$\tan \delta \leq 0.1\%$	C N	Rated voltage=50,25V $\tan \delta \leq 3.0\%$ Rated voltage=16,10V $\tan \delta \leq 5.0\%$ Rated voltage=6.3V $\tan \delta \leq 10.0\%$	F N	Rated voltage=50V $\tan \delta \leq 5.0\%$ Rated voltage=25V $\tan \delta \leq 7.5\%$ Rated voltage=16V $\tan \delta \leq 10.0\%$ Rated voltage=10V, 6.3V $\tan \delta \leq 12.5\%$	As per 4.8 of JIS C 5101-1. As per 4.6.2 of JIS C 5101-10 Measurements shall be made under the conditions specified in Table 2.								
A, AN	$\tan \delta \leq 0.1\%$																
C N	Rated voltage=50,25V $\tan \delta \leq 3.0\%$ Rated voltage=16,10V $\tan \delta \leq 5.0\%$ Rated voltage=6.3V $\tan \delta \leq 10.0\%$																
F N	Rated voltage=50V $\tan \delta \leq 5.0\%$ Rated voltage=25V $\tan \delta \leq 7.5\%$ Rated voltage=16V $\tan \delta \leq 10.0\%$ Rated voltage=10V, 6.3V $\tan \delta \leq 12.5\%$																

Ceramic capacitors

No.	Items	Performance		Test Method (As per JIS C 5101-1, JIS C 5101-10)						
6	Temperature characteristic	A, AN	0+/-30ppm / °C (-55°C to +125°C)	As per 4.24 of JIS C 5101-1. As per 4.7 of JIS C 5101-10 Temperature coefficient shall be calculated at 20°C and 85°C. As per 4.24 of JIS C 5101-1. As per 4.7 of JIS C 5101-10 If required, measurements shall be made at a given temperature. Temperature coefficient shall be calculated at 20°C.						
		C N	X7R · R +/-15% (-55°C to +125°C)							
			B +/-10% (-25°C to +85°C)							
		F N	+30%, -80% (-25°C to +85°C) ----- +22%, -82% (-30°C to +85°C)							
7	Solderability	More than 3/4 of each end termination shall be covered with new solder.		As per 4.15.2 of JIS C 5101-1. As per 4.11 of JIS C 5101-10 The solder specified in JIS Z 3282 H63A shall be used. Ans the flux containing 25% rosin and ethanol solution shall be used. The specimens shall be immersed into the solder at 235+/-5°C for 2+/-0.5s So that both end terminations are completely under solder.						
8	Resistance to solderin heat	Appearance	Without mechanical damage.		As per 4.14 of JIS C 5101-1. As per 4.10 of JIS C 5101-10 The solder specified in JIS Z 3282. H63A shall be used. The specimens shall be immersed into the solder at 260+/-5°C for 5+/-0.5s so that both end terminations are completely under the solder. Pre-heating at 150+/-10°C for 1 to 2min Initial measurements prior to test shall be performed after the thermal Pre-conditioning specified in Remarks (1). Final measurements shall be made after the specimens have been left at room temperature as per Table3.					
		Change rate from initial value	A, AN	Within +/-2.5%						
			C N	Within +/-7.5%						
			F N	Within +/-20%						
		Dielectric loss tangent	Within specified initial value.							
		Insulation resistance	Within specified initial value.							
Withstanding voltage	No defects shall be allowed.									
Table3										
<table border="1"> <thead> <tr> <th>Charac-teristic</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>A, AN</td> <td>24+/-2 h</td> </tr> <tr> <td>CN, FN</td> <td>48+/-4 h</td> </tr> </tbody> </table>					Charac-teristic	Time	A, AN	24+/-2 h	CN, FN	48+/-4 h
Charac-teristic	Time									
A, AN	24+/-2 h									
CN, FN	48+/-4 h									
9	End termination adherence	Without peeling or sign of peeling shall be allowed on the end terminations.		As per 4.13 of JIS C 5101-1. As per 4.8 of JIS C 5101-10 A 5N weight for 10+/-1s shall be applied to the soldered specimens as shown by the arrow mark in the below sketch. 						

Ceramic capacitors

No.	Items		Performance		Test Method (As per JIS C 5101-1, JIS C 5101-10)																					
10	Bending strength	Appearance	Without mechanical damage.		As per 4.35 of JIS C 5101-1. As per 4.9 of JIS C 5101-10 Glass epoxy board with soldered specimens shall be bent till 1mm by 1.0mm/s.																					
11	Vibration	Appearance	Without mechanical damage.		As per 4.17 of JIS C 5101-1 The specimens shall be soldered on the specified test jig. Initial measurements shall be made after the thermal pre-conditioning specified in Remarks(1). Final measurements shall be made after the specimens have been left at room temperature as per Table3. [Condition] Directions : 2h each X, Y and Z directions Total : 6h Frequency range : 10 to 55 to 10Hz(1min) Applitude : 1.5mm (shall not exceed acceleration196m/s ²) Table3 <table border="1"> <thead> <tr> <th>Charac-teristic</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>A, AN</td> <td>24+/-2 h</td> </tr> <tr> <td>CN, FN</td> <td>48+/-4 h</td> </tr> </tbody> </table>	Charac-teristic	Time	A, AN	24+/-2 h	CN, FN	48+/-4 h															
		Charac-teristic	Time																							
		A, AN	24+/-2 h																							
		CN, FN	48+/-4 h																							
Change rate from initial value	A, AN	Capacitance shall be within specified tolerance range.																								
	C N	Within +/-7.5%																								
	F N	Within +/-20%																								
	Dielectric loss tangent	Within specified initial value.																								
12	Temperature cycling	Appearance	Without mechanical damage.		As per 4.16 of JIS C 5101-1 As per 4.12 of JIS C 5101-10 The specimens shall be soldered on the test jig shown in Remarks. Temperature cycle : 100cycles Initial measurements prior to test shall be performed after the thermal per-conditioning specified in Remarks (1). Final measurements shall be made after the specimens have been left at room temperature as per Table3. Test condition <table border="1"> <thead> <tr> <th>Step</th> <th>Temp. (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Min operating temp.</td> <td>30+/-3</td> </tr> <tr> <td>2</td> <td>Room temp.</td> <td>≤ 3</td> </tr> <tr> <td>3</td> <td>Max operating temp.</td> <td>30+/-3</td> </tr> <tr> <td>4</td> <td>Room temp.</td> <td>≤ 3</td> </tr> </tbody> </table> Table3 <table border="1"> <thead> <tr> <th>Charac-teristic</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>A, AN</td> <td>24+/-2 h</td> </tr> <tr> <td>CN, FN</td> <td>48+/-4 h</td> </tr> </tbody> </table>	Step	Temp. (°C)	Time (min)	1	Min operating temp.	30+/-3	2	Room temp.	≤ 3	3	Max operating temp.	30+/-3	4	Room temp.	≤ 3	Charac-teristic	Time	A, AN	24+/-2 h	CN, FN	48+/-4 h
		Step	Temp. (°C)	Time (min)																						
		1	Min operating temp.	30+/-3																						
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		3	Max operating temp.	30+/-3																						
		4	Room temp.	≤ 3																						
		Charac-teristic	Time																							
A, AN	24+/-2 h																									
CN, FN	48+/-4 h																									
Change rate from initial value	A, AN		Within +/-2.5%																							
	C N	Rated voltage 25V,16,10V	Within +/-7.5%																							
		Rated voltage 6.3V	Within +/-15.0%																							
	F N		Within +/-20%																							
	Dielectric loss tangent	Within specified initial value.																								
	Insulation resistance	Within specified initial value.																								
	Withstanding voltage	No defects shall be allowed.																								

Ceramic capacitors

No.	Items		Performance		Test Method (As per JIS C 5101-1, JIS C 5101-10)	
13	Humidity (Steady)	Appearance	Without mechanical damage.		As per 4.22 of JIS C 5101-1 JIS C 5101-10 Test temperature : 60+/-2°C Relative humidity : 90 to 95% Test time : 500 +24/-0 h Initial measurements prior to test shall be made after the voltage pre-conditioning specified in Remarks (2). Final measurements have been left at room temperature as per Table3.	
		Change rate from initial value	A, AN			Within +/-5.0%
			C N	Rated voltage 25V,16,10V		Within +/-12.5%
				Rated voltage 6.3V		Within +/-25.0%
			F N			Within +/-30.0%
		Dielectric tangent	A, AN			$\tan \delta \leq 0.3\%$
			C N			Less than 200% of initial spec.
F N			Less than 150% of initial spec.			
Insulation resistance	Not less than 1000MΩ or 50MΩ · μF, whichever is less. (For products with rated voltage less than 16V, it is not less than 1000MΩ or 10MΩ · μF, whichever is less.)					
Table3						
		Charac-teristic	Time			
		A, AN	24+/-2 h			
		CN, FN	48+/-4 h			
14	Humidity life test	Appearance	Without mechanical damage.		As per 4.22 of JIS C 5101-1 As per 4.14 of JIS C 5101-10 Test temperature : 60+/-2°C Relative humidity : 90 to 95% Voltage : Rated voltage Test time : 500 +24/-0 h Initial measurements prior to test shall be made after the voltage pre-conditioning specified in Remarks (2). Final measurements shall be made after the specimens have been left at room temperature as per Table3.	
		Change rate from initial value	A, AN			Within +/-7.5%
			C N	Rated voltage 25V,16,10V		Within +/-12.5%
				Rated voltage 6.3V		Within +/-25.0%
			F N			Within +/-30.0%
		Dielectric loss tangent	A, AN			$\tan \delta \leq 0.5\%$
			C N			Less than 200% of initial spec.
F N			Less than 150% of initial spec.			
Insulation resistance	Not less than 500MΩ or 25MΩ · μF, whichever is less. (For products with rated voltage less than 16V, it is not less than 500mΩ or 5MΩ · μF, whichever is less.)					
Table3						
		Charac-teristic	Time			
		A, AN	24+/-2 h			
		CN, FN	48+/-4 h			

Ceramic capacitors

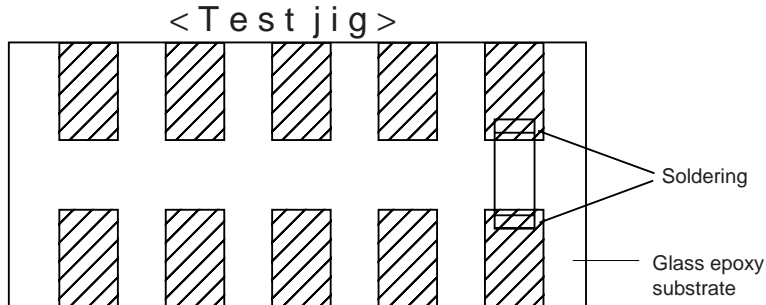
No.	Items	Performance	Test Method (As per JIS C 5101-1, JIS C 5101-10)																								
15	Heat life test	Appearance	Without mechanical damage.																								
		Change rate from initial value	A, AN	Within +/-3.0%																							
			C N	Rated voltage 25V,16,10V	Within +/-15.0%																						
				Rated voltage 6.3V	Within +/-25.0%																						
			F N	Within +/-30.0%																							
		Dielectric loss tangent	A, AN	$\tan \delta \leq 0.5\%$																							
			C N	Less than 200% of initial spec.																							
			F N	Less than 150% of initial spec.																							
		Insulation resistance	Not less than 1000MΩ or 50MΩ · μF, whichever is less. (For products with rated voltage less than 16V, it is not less than 1000mΩ or 10MΩ · μF, whichever is less.)																								
					As per 4.23 of JIS C 5101-1. As per 4.15 of JIS C 5101-10 <table border="1"> <thead> <tr> <th></th> <th>Test temperature(°C)</th> <th>Voltage</th> <th>Test time (h)</th> </tr> </thead> <tbody> <tr> <td>A, AN</td> <td>125</td> <td>200% Rated voltage</td> <td>1000 +48/-0</td> </tr> <tr> <td rowspan="2">C N</td> <td>85 (B/X5R)</td> <td>200% Rated voltage</td> <td rowspan="2">1000 +48/-0</td> </tr> <tr> <td>125 (X7R)</td> <td>200% Rated voltage</td> </tr> <tr> <td>FN</td> <td>85</td> <td>200% Rated voltage</td> <td>1000 +48/-0</td> </tr> </tbody> </table> <p>Initial measurements prior to test shall be made after the voltage pre-conditioning specified in Remarks (2). Final measurements shall be made after the specimens have been left at room temperature</p> <p style="text-align: center;">Table3</p> <table border="1"> <thead> <tr> <th>Charac-teristic</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>A, AN</td> <td>24+/-2 h</td> </tr> <tr> <td>CN, FN</td> <td>48+/-4 h</td> </tr> </tbody> </table>		Test temperature(°C)	Voltage	Test time (h)	A, AN	125	200% Rated voltage	1000 +48/-0	C N	85 (B/X5R)	200% Rated voltage	1000 +48/-0	125 (X7R)	200% Rated voltage	FN	85	200% Rated voltage	1000 +48/-0	Charac-teristic	Time	A, AN	24+/-2 h
	Test temperature(°C)	Voltage	Test time (h)																								
A, AN	125	200% Rated voltage	1000 +48/-0																								
C N	85 (B/X5R)	200% Rated voltage	1000 +48/-0																								
	125 (X7R)	200% Rated voltage																									
FN	85	200% Rated voltage	1000 +48/-0																								
Charac-teristic	Time																										
A, AN	24+/-2 h																										
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[Remarks]

Pre-conditioning

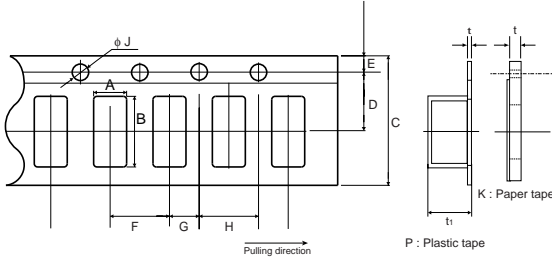
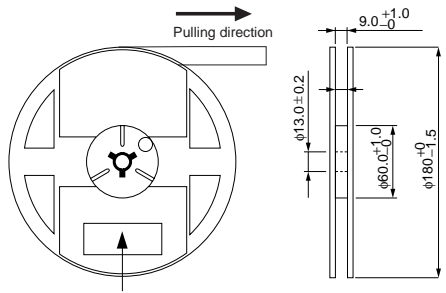
If specified in test method of as per 3(Performance and test method), capacitors of CN, FN characteristics shall be pre-conditioned as follows.

- (1) Thermal pre-conditioning
Prior to initial measurements, specimens shall be conditioned at a temperature of 150 0/-10°C for a period of 1hr., and shall be allowed to stabilize at room temperature for 48+/-4h
- (2) Voltage pre-conditioning
Prior to initial measurements, voltage specified as a test condition shall be applied to specimens for a period of 1hr., and the specimens shall be allowed to stabilize at room temperature for 48+/-4h



Ceramic capacitors

●Packaging specifications

Taping dimensions	Reel dimensions																																						
 <table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Symbol</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> <th>G</th> <th>H</th> <th>J</th> <th>t</th> <th>t</th> <th>t₁</th> </tr> <tr> <th colspan="2">Paper</th> <th colspan="3">Plastic</th> <th colspan="5"></th> </tr> </thead> <tbody> <tr> <td>Dimensions</td> <td>8.0 +/-0.3</td> <td>3.5 +/-0.05</td> <td>1.75 +/-0.1</td> <td>4.0 +/-0.1</td> <td>2.0 +/-0.05</td> <td>4.0 +/-0.1</td> <td>φ1.5 +0.1/-0</td> <td>1.1 MAX.</td> <td>0.3 MAX.</td> <td>2.5 MAX.</td> </tr> </tbody> </table> <table border="1" style="margin-top: 10px; width: 50%; border-collapse: collapse;"> <thead> <tr> <th>Symbol Style</th> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>MCH21</td> <td>1.5 +/-0.2</td> <td>2.3 +/-0.2</td> </tr> </tbody> </table> <p style="text-align: center; font-size: small;">(Unit : mm)</p>	Symbol	C	D	E	F	G	H	J	t	t	t ₁	Paper		Plastic								Dimensions	8.0 +/-0.3	3.5 +/-0.05	1.75 +/-0.1	4.0 +/-0.1	2.0 +/-0.05	4.0 +/-0.1	φ1.5 +0.1/-0	1.1 MAX.	0.3 MAX.	2.5 MAX.	Symbol Style	A	B	MCH21	1.5 +/-0.2	2.3 +/-0.2	 <p style="text-align: center;">As per EIAJ ET-7002A</p> <p style="text-align: right; font-size: small;">(Unit : mm)</p>
Symbol		C	D	E	F	G	H	J	t	t	t ₁																												
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MCH21	1.5 +/-0.2	2.3 +/-0.2																																					

(1) The quantity for one reel is as follows.

Kind of reel	Series	Paper tape		Plastic tape	
		Quantity	Symbol	Quantity	Symbol
φ180 reel	MCH21	4,000 pcs.	K	2,000 pcs.	P

- (2) When the tape is pulled out towards the operator with the cover tape facing upward, the feeding holes shall be found on the right portion of the tape.
- (3) Specification of beginning and ending of the tape are as follows.
 - Ending(reel's center) : Approx. Over 160mm (no chips)
 - Beginning(reel's round) : Approx. Over 160mm (no chips)
 - : Approx. 240mm (cover tape only)
- (4) No juncture of tape shall be allowed.
- (5) The share strength of tape shall be more than 5N at the break down strength.
- (6) The peel strength of the cover tape shall be 0.1 to 0.7(N) when the cover tape are peeled 0 to 15° degree from the surface.
- (7) The number of missing components shall not exceed 0.1% of the total number of components (marked number) or one whichever is the larger, and no consecutive missing exceeding two is allowed.
- (8) The reels made from resin shall be used, as per EIAJ ET-7200A.

●Marking

No marking shall be performed on the chip.
 Trademark, parts number, quantity, lot No. , and country of origin shall be labeled on each reel.

●Numbering system for LOT No.

Example	04	01	A0001	F
	(1)	(2)	(3)	(4)

- (1) The end of the Christian Era <two digits> of production finish.
- (2) Week in completing part of production finish.
- (3) Manufacture continuity number.
- (4) The symbol of manufacturing plant.

Ceramic capacitors

●Label expression

The Figure below is label expression

< Label Example > Part Number : MCH213CN105KPM006

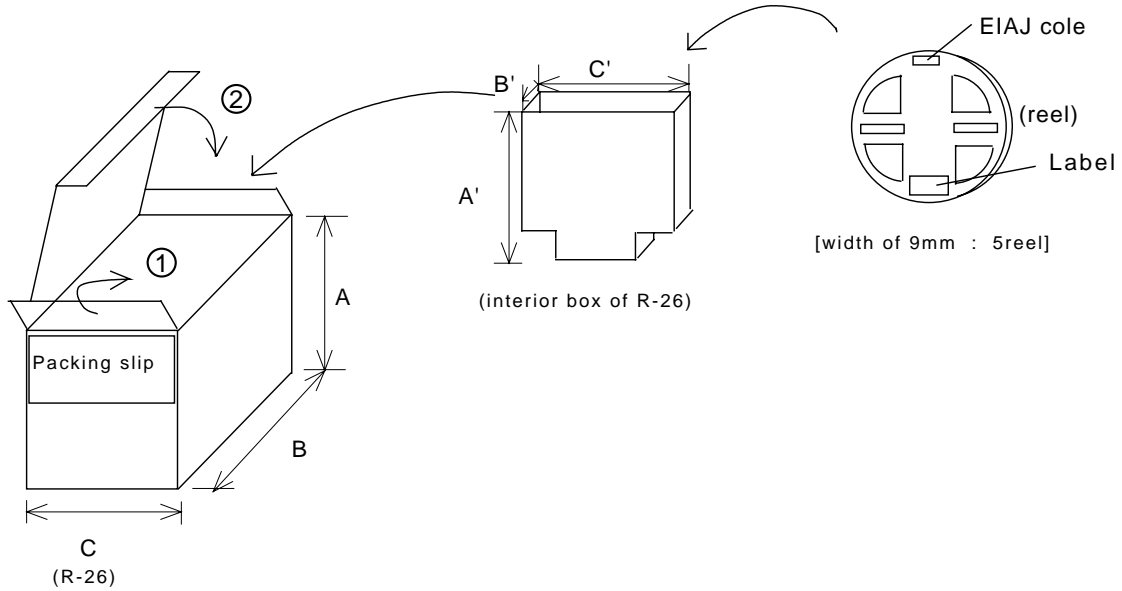


- ① Part Number
- ② Division cord
- ③ Quantity
- ④ Lot No.
- ⑤ The Country of origin
- ⑥ Inspector
- ⑦ QR code
- ⑧ Trademark

Ceramic capacitors

●Packing method

1) ϕ 180mm Reel



< Packaging unit >

Symbol	K
Quantity of reel in interior box	5
Quantity of reel in box of R-26	20

Dimensions	Packaging	
	R-26	interior box of R-26
A (A')	195	185
B (B')	255	60
C (C')	190	185

(Unit : mm)

< Appearance >

Carton

< Accumulation >

You must do accumulation by ten boxes

< Packaging slip >

1. Customer
2. Parts number
3. Quantity
4. Box quantity
5. Trade mark

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