













## Specifications

**Quality Factor (Q)** is as follows when measured at 1 MHz

Capacitance Range	Min. Q
1 to 80 pF	500 to 3000
>80 pF	3000

**Insulation Resistance** is no less than 100 GΩ when measured at 100 Vdc

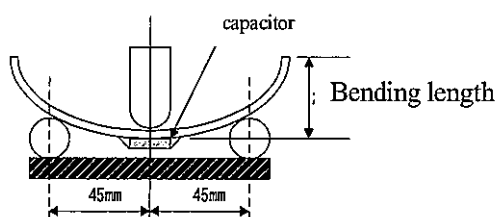
**Withstanding voltage** is two times the rated voltage between 5 seconds and without damage: with 50 mA or less current.

**Life Test:** Subject capacitors to 125 °C ±3 °C with 1.5 times rated voltage applied for 2000 (+72, -0) hours. There will be no visual damage and the capacitors will meet the limits of the table below.

**Vibration Resistance:** Subject the capacitors to simple harmonic motion with an amplitude of 0.06 inches; vary the frequency uniformly from 10 to 55 Hz and return to 10 Hz, all in one minute. Repeat that cycle continuously for two hours in

each of three mutually perpendicular directions. There will be no visual damage and the capacitors will meet the limits of the table below.

**Bending Test:** Mount the capacitor as shown below and press the ram bar until a 2.0 mm deflection is achieved. There will be no visual damage and the capacitors will meet the limits of methods JIS 5102 8.11 and AEC-Q200-005 without cracking or visual damage.



**Moisture Resistance:** Subject the capacitors to 40 ±2 °C at 90 to 95% humidity for 500 (+24, -0) hours. Return to room ambient for 24 hours. There will be no visual damage and the capacitors will meet the limits of the table below.

**Temperature Coefficient and Drift:** Measure the capacitors' capacitance at 25 °C, -55 °C, 25 °C, 125 °C and at 25 °C — all ±3 °C — after stabilizing at each temperature. The capacitor will meet the limits of the Characteristic table in Ordering Information.

**Heat Resistance:** Subject the capacitors to 125 ±2 °C for 2 (+1, -0) hours. Then the insulation resistance will be no less than 5GΩ.

**Solderability:** After 2 ±0.5 seconds in molten solder with Sn-PB between molten and solder at 235 ±5 °C, solder coverage will be no less than 75% when examined at 10X magnification for flow soldering.

**Solder Heat Resistance:** Subject the capacitors to molten solder at 250±5 °C for 5±0.5 seconds after 10 to 30 seconds pre-heating at 80 to 120 °C. There will be no visual damage and the capacitors will meet the limits of the table below.

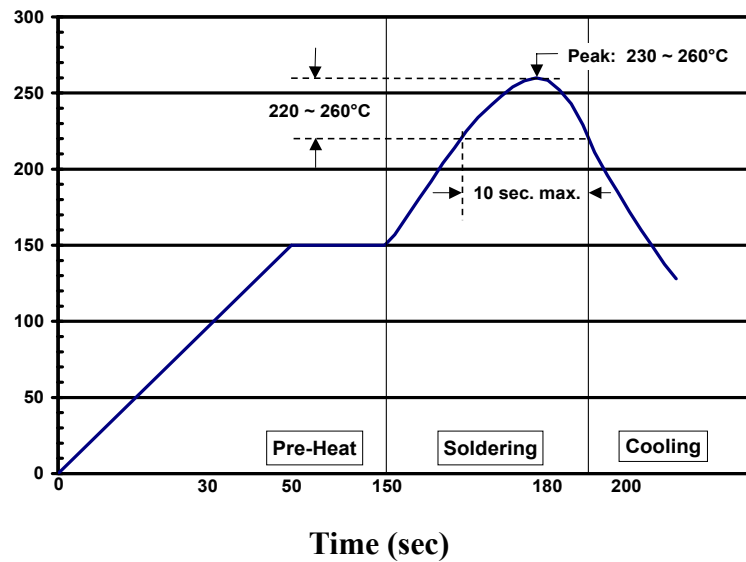
## After-Test Limits

Test	Withstand Voltage	Insulation Resistance	Capacitance (whichever >)	DF	Q
Life Test	IL	IL	IV ±2% or ±.5 pF	150% max IL	2/3 x IL
Vibration Resistance	IL	30 GΩ	IV ±1% or ±1 pF	IL	IL
Bending Test	IL		IV ±.5% or ±1 pF	IL	
Moisture Res.	IL	30 GΩ	IV ±3% or ±.5 pF	150% max IL	2/3 x IL
Solderability	IL	IL	IL	IL	IL
Heat Resistance		5 GΩ			
Solder Heat Res.	IL	30 GΩ	IV ±.5% or ±1 pF	IL	IL

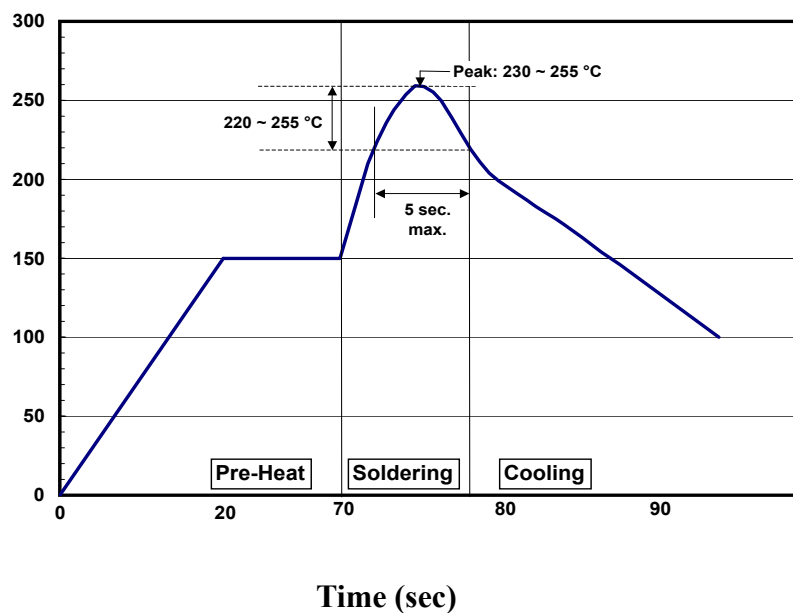
# Types MC and MCN Multilayer RF Capacitors

## Soldering Profiles

### Reflow Solder Profile

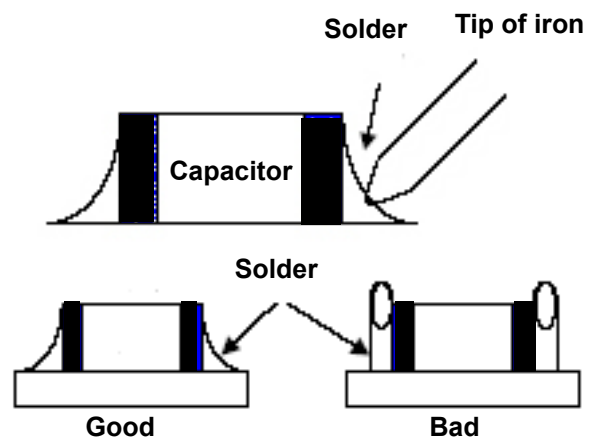


### Wave Solder Profile



### Hand Soldering Method

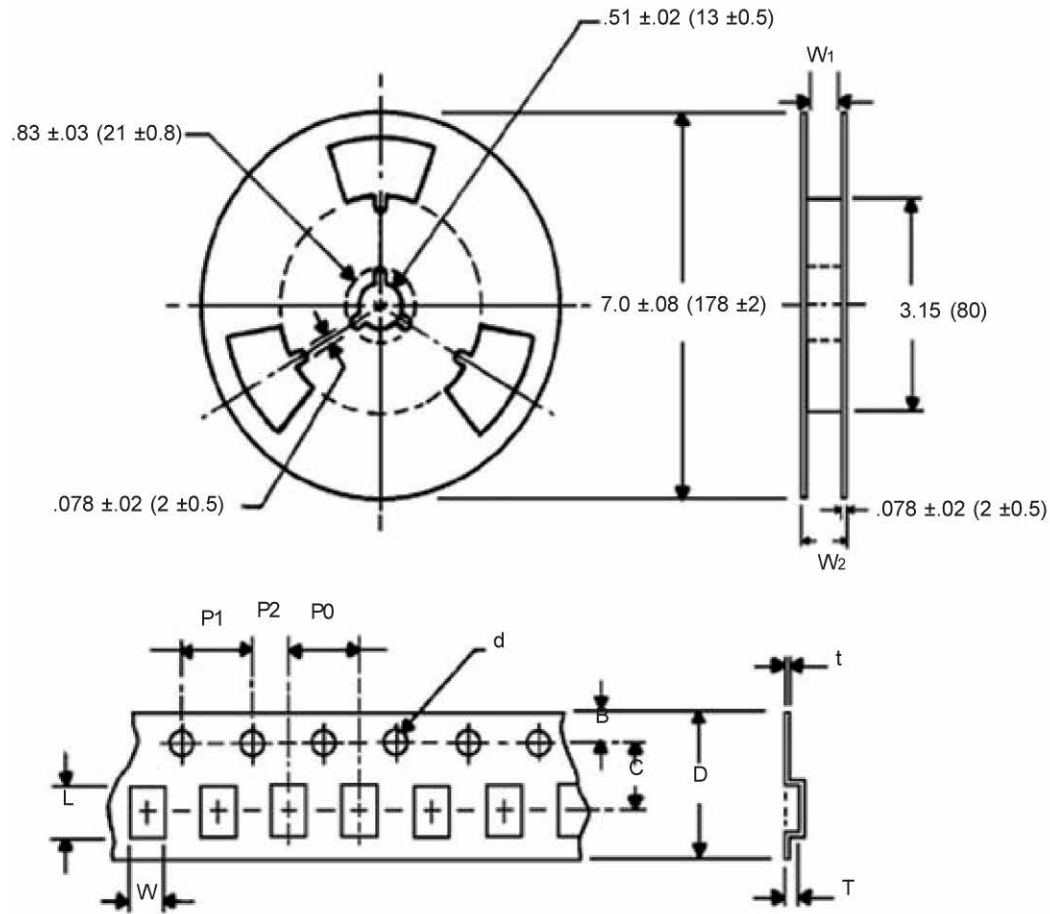
- SnAgCu recommended solder
- Do not use strong acid type flux with RM or RMA
- Soldering iron tip temperature should be 250 °C to 280 °C  $\leq$  5 sec.
- 60 Watt iron or less





# Types MC and MCN Multilayer RF Capacitors

## Surface-Mount Chip Mica Capacitors for Auto Insertion



## Carrier Dimensions

Item	Symbol	Case Code			
		08	12	18	22
Sprocket hole pitch	P1	.157 ± .008 (4.0 ± 0.2)			
Sprocket hole location	B	.069 ± .008 (1.75 ± 0.2)			
Hole center to cavity center	C	.138 ± .002 (3.5 ± 0.05)			
Carrier tape width	D	.315 ± .012 (8.0 ± 0.3)			
Sprocket hole diameter	d	.059 (1.5)			
Cavity pitch	P <sub>0</sub>	.157 ± .004 (4.0 ± 0.1)			
Hole center to cavity center	P <sub>2</sub>	.079 ± .004 (2.0 ± 0.1)			
Cavity length	L	.110 (2.8)	.150 (3.8)	.205 (5.2)	.246 (6.25)
Cavity width	W	.075 ± .008 (1.9 ± 0.2)	.118 ± .008 (3.0 ± 0.2)	.161 ± .008 (4.1 ± 0.2)	.217 ± .008 (5.5 ± 0.2)
Cavity depth	T	.051 ± .004 (1.3 ± 0.1)	.059 ± .004 (1.5 ± 0.1)	.071 ± .004 (1.8 ± 0.1)	.087 ± .004 (2.2 ± 0.1)
Carrier tape thickness	t	.012 ± .002 (0.3 ± 0.05)			
Holder distance	W <sub>1</sub>	.354 (9.0)		.512 (13.0)	
Reel thickness	W <sub>2</sub>	about .47 (12)			
				about .63 (16)	

**Notice and Disclaimer:** All product drawings, descriptions, specifications, statements, information and data (collectively, the "Information") in this datasheet or other publication are subject to change. The customer is responsible for checking, confirming and verifying the extent to which the Information contained in this datasheet or other publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without any guarantee, warranty, representation or responsibility of any kind, expressed or implied. Statements of suitability for certain applications are based on the knowledge that the Cornell Dubilier company providing such statements ("Cornell Dubilier") has of operating conditions that such Cornell Dubilier company regards as typical for such applications, but are not intended to constitute any guarantee, warranty or representation regarding any such matter – and Cornell Dubilier specifically and expressly disclaims any guarantee, warranty or representation concerning the suitability for a specific customer application, use, storage, transportation, or operating environment. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by Cornell Dubilier with reference to the use of any Cornell Dubilier products is given gratis (unless otherwise specified by Cornell Dubilier), and Cornell Dubilier assumes no obligation or liability for the advice given or results obtained. Although Cornell Dubilier strives to apply the most stringent quality and safety standards regarding the design and manufacturing of its products, in light of the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies or other appropriate protective measures) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage. Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated in such warnings, cautions and notes, or that other safety measures may not be required.