

# Types MCM and MIN SMT Clad RF Capacitors

## Multilayer High Power, High Temperature Mica and PTFE Capacitors



Types MCM and MIN SMT clad PTFE and mica capacitors are top performers for high power applications requiring low inductance at high frequencies and can operate at temperatures up to 200 °C and voltages to 1000 Vdc. Choosing from 16 different configurations offers easy mounting with options for surface mount as well as through-hole and mechanical assembly. To assure high current capability in the smallest capacitors, low-capacitance ratings use polytetrafluorethylene (PTFE) that has ultra-low dielectric absorption - better than polypropylene, polystyrene and NPO ceramic.

### Highlights

- 200 °C rated with no voltage derating
- Wave solderable
- No cracking or delaminating
- CTE  $\approx$  18 ppm/°C compatible with FR4 PCBs
- Highly thermal conductive package
- Gull-wing terminal minimizes stress
- Typical 100 pF ESR, <11 m $\Omega$  @ 100 MHz
- Nonmagnetic for minimal RF loss
- Very low ESL for excellent by-pass action
- Ultra stable: no change with (t), (V) and (f)
- Exact capacitance with tolerances from  $\pm 0.25$  pF

### RoHS Compliant

### Specifications

**Capacitance Range:**  
**Voltage Ratings:**  
**Temperature Range:**  
**Capacitance Tolerance:**  
**Dielectric Strength:**  
**Insulation Resistance:**  
**Aging Rate:**  
**Marking:**

MCM	MIN
1 to 1500 pF	1 to 350 pF
300 to 1000 Vdc	300 Vdc
-55 °C to +200 °C with no voltage derating	
$\pm 0.25$ pF, $\pm 0.5$ pF, $\pm 1$ pF, $\pm 0.5\%$ , $\pm 1\%$ , $\pm 2\%$ , $\pm 5\%$	
200% of rated voltage for 5 seconds	
1000 M $\Omega$ · $\mu$ F Need not exceed 100,000 M $\Omega$ at 25 °C	
None	

**MIN** - Capacitance in pF and ID letters CD  
**MCM** - Capacitance, ID letters CD and voltage if other than 500 when space permits  
 RoHS Compliant - marked in green ink

### Design Kits for Engineers

**MIN300VKIT1** 300 Vdc  
 5 pieces each  
 13 ratings 3.3 – 150 pF

**MCM500VKIT2**  
 Nonmagnetic to 500 Vdc  
 5 pieces each  
 10 ratings 10 – 1000 pF

**MCM1000VKIT3** 1 kVdc  
 5 pieces each  
 7 ratings 100 – 750 pF



### Applications

RF Power Amplifiers  
 Lasers  
 Mobile Radio  
 Plasma generators  
 MRI Coils  
 RF Medical Equipment  
 Land Mobile antennas 27 to 900 MHz

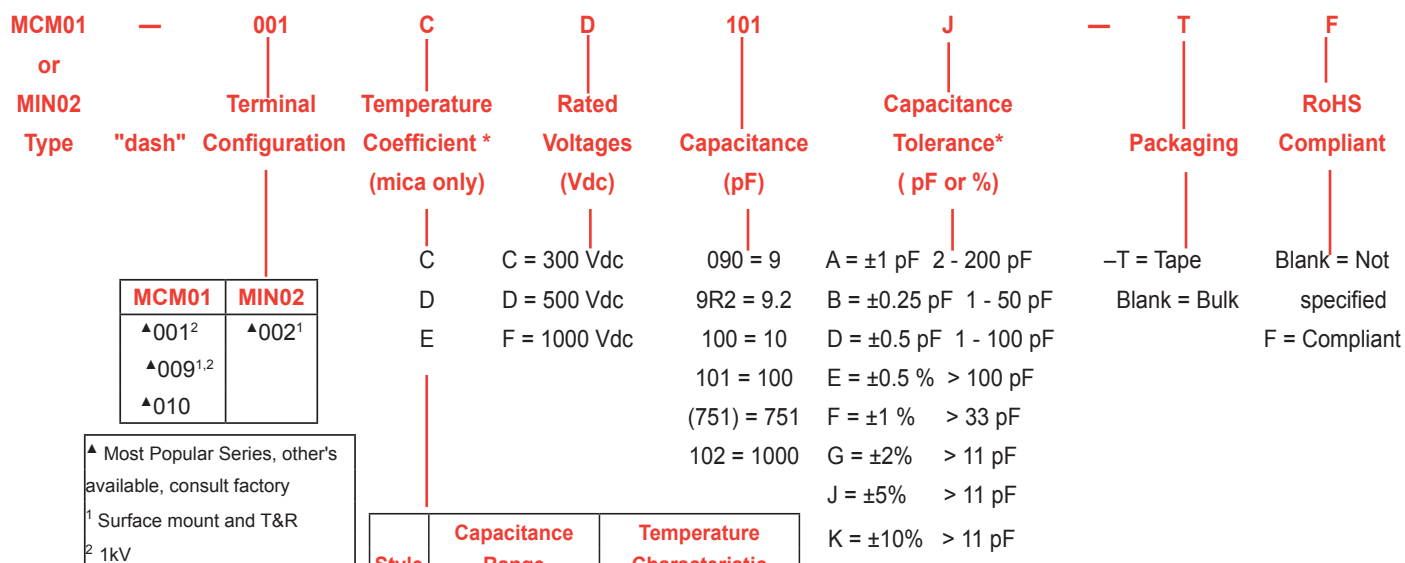
# Types MCM and MIN SMT Clad RF Capacitors

## Ratings Available

Capacitance (pF)	Voltage Ratings (Vdc)			Dielectric
	300	500	*1000	
<b>MIN02</b>				
1 - 2.9	X			PTFE
3 - 9.9	X			PTFE or Mica
10 - 60	X			Mica
61 - 120	X			Mica
121 - 180	X			Mica
181 - 240	X			Mica
241 - 300	X			Mica
301 - 350	X			Mica
<b>MCM01</b>				
1 - 7		X	X	PTFE
8 - 32		X	X	PTFE or Mica
33 - 250		X	X	Mica
251 - 500		X	X	Mica
501 - 750		X	X	Mica
751 - 1000		X		Mica
1001 - 1280		X		Mica
1281 - 1500	X			Mica

\*1000 V available in MCM01-001 and -009 style

## Part Numbering System

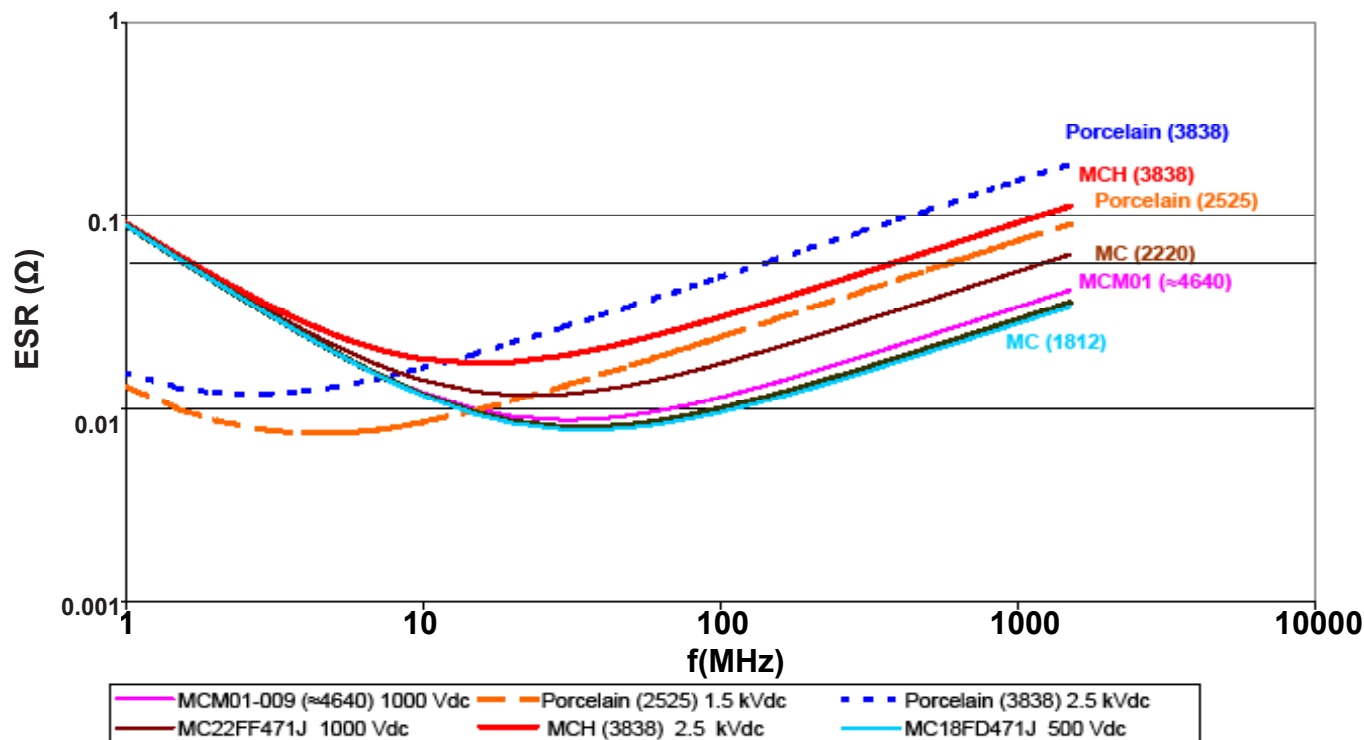


▲ Most Popular Series, other's available, consult factory  
<sup>1</sup> Surface mount and T&R  
<sup>2</sup> 1kV

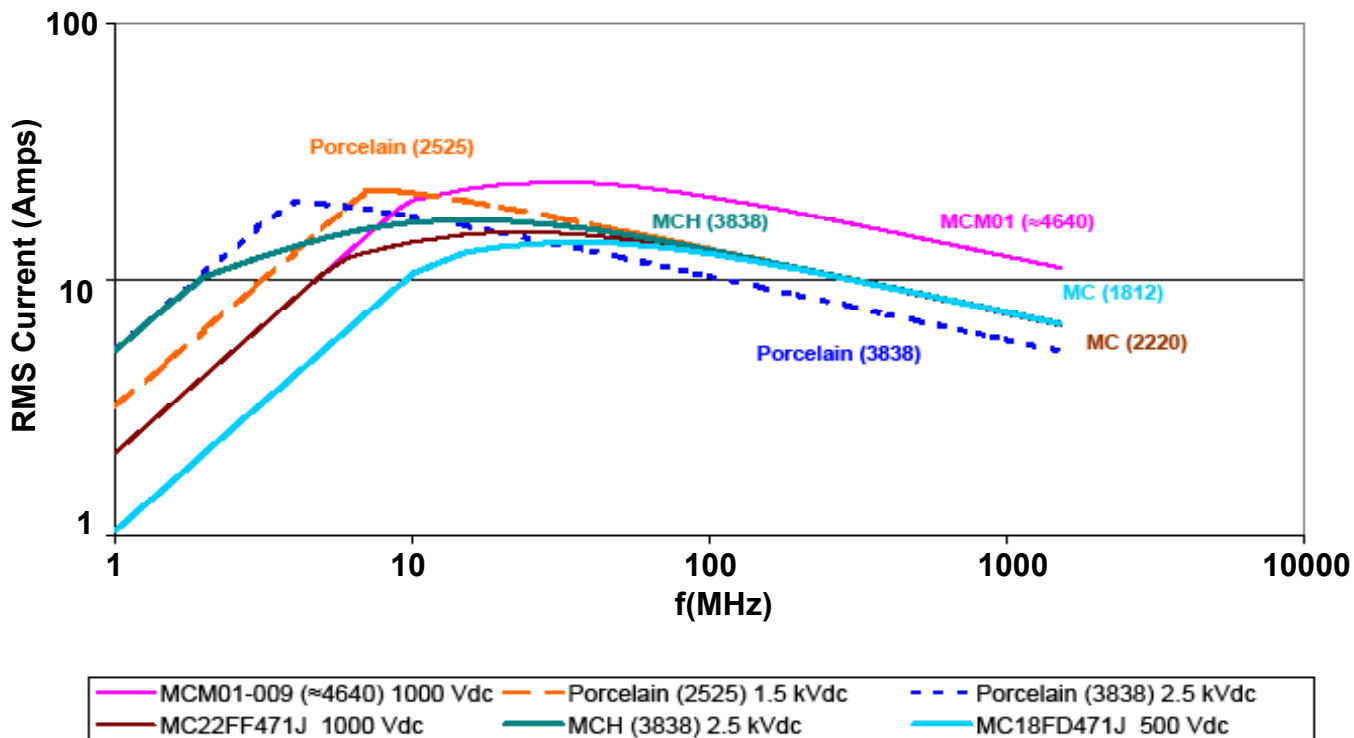
Measured at 1 MHz for ≤1000 pF and 1 kHz for >1000 pF

\*TC code letter is left blank for PTFE items

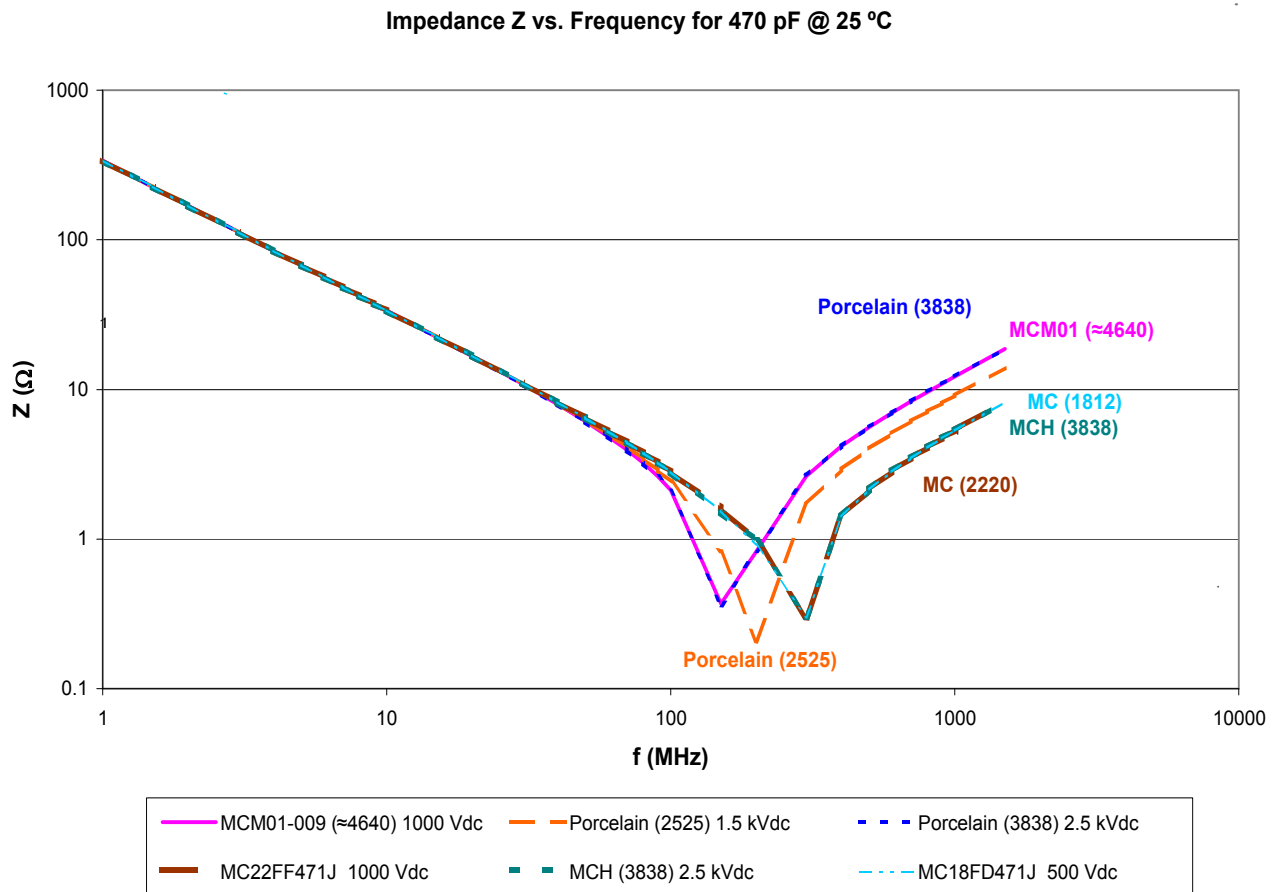
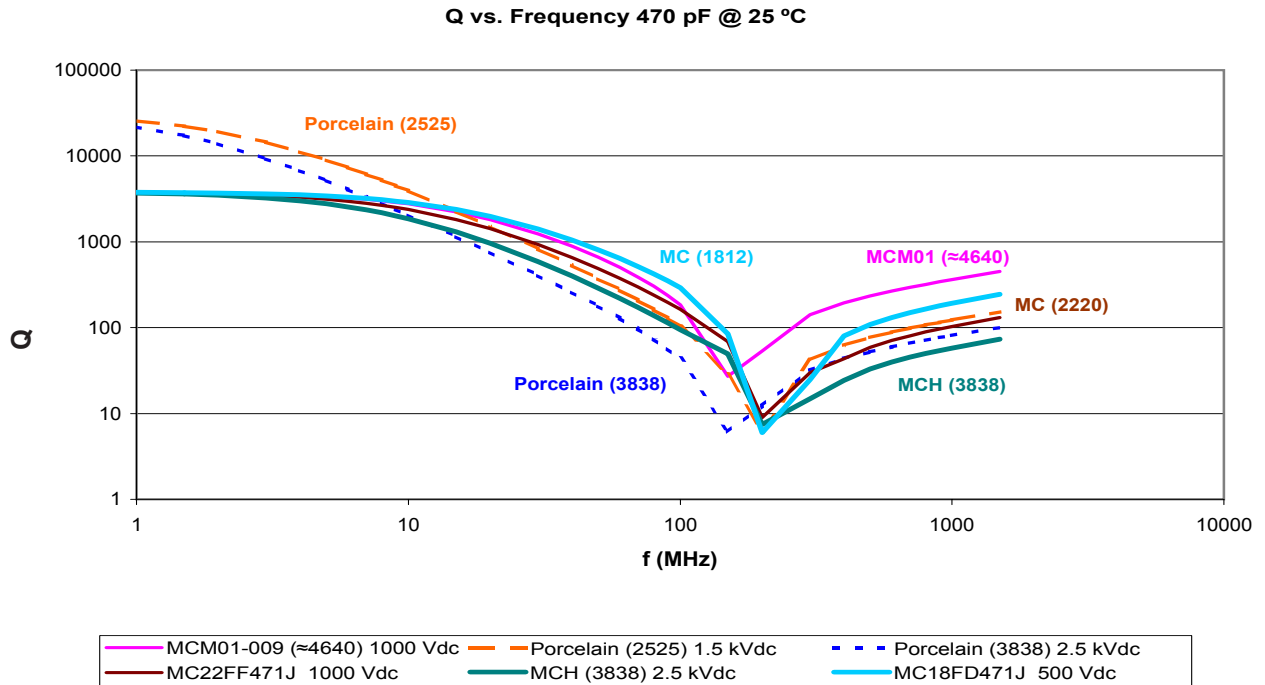
### ESR vs. Frequency for 470 pF



### Current Rating (IRMS) for 470 pF at 60 °C Rise



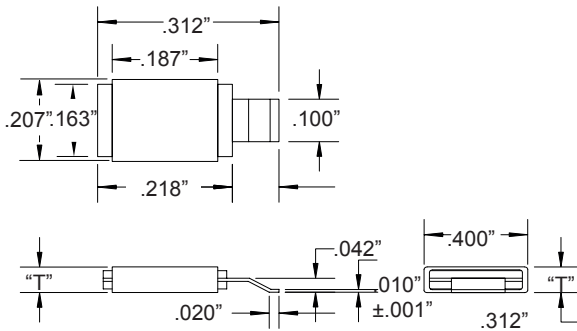
# Types MCM and MIN SMT Clad RF Capacitors



# Types MCM and MIN SMT Clad RF Capacitors

## Outline Drawings for Popular Items

**MIN02-002**



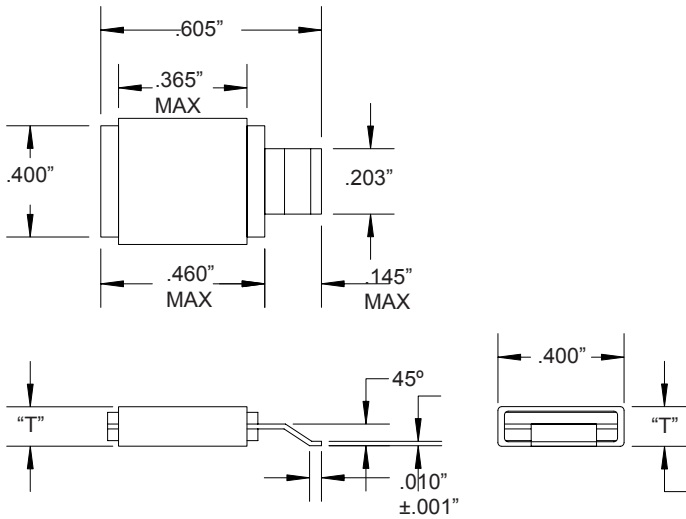
"T" (thickness) depending on capacitance value = .065 to .125±.015

**MCM01-001**



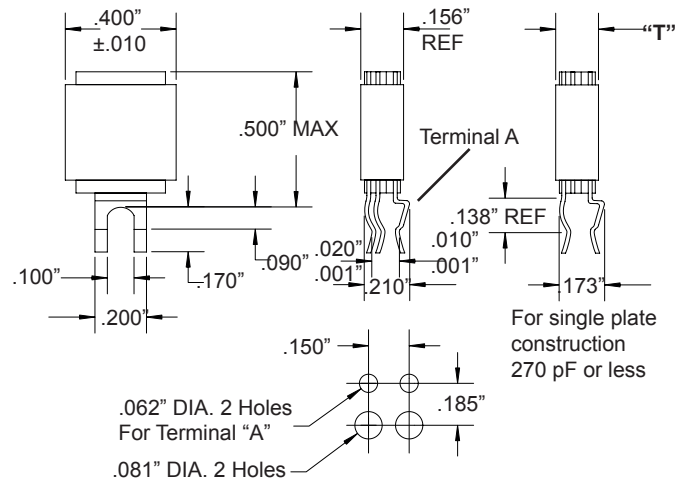
"T" (thickness) depending on capacitance value = .110 to .165±.015

**MCM01-009**



"T" (thickness) depending on capacitance value = .110 to .165±.015

**MCM01-010**



"T" (thickness) depending on capacitance value = .110 to .165±.015

"T" varies with capacitance

# Types MCM and MIN SMT Clad RF Capacitors

## Standard Minimum Quantities

Bulk Pack: 100 pieces per bag

Reel Pack: 500 pieces per reel

## Tape Specifications



Tape Dimensions (mm)						
Case	W	A	B	P1	F	t
MIN02-002 < 150 pF	16	5.56	8.18	8	7.5	2.16
MIN02-002 ≥ 150 pF	16	5.66	8.10	8	7.5	3.20

Note: 24 mm tape for MCM01-009 and 32 mm tape for MCM01-004 are available upon request.

## Solder Profile

### Specifications:

Lead free finish

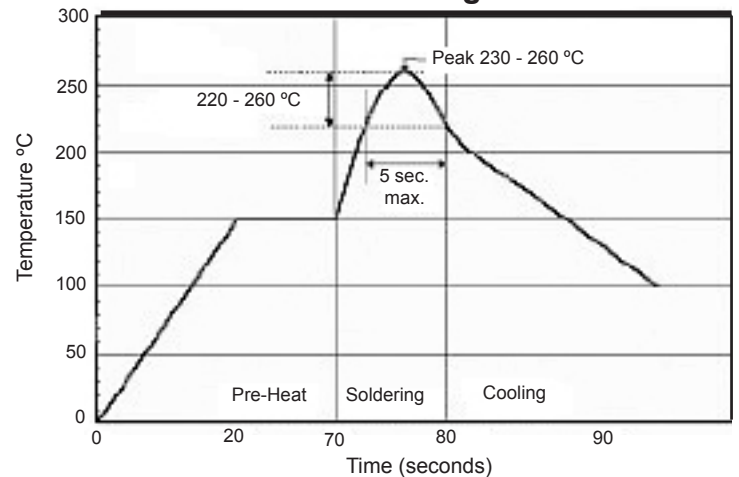
### Case and Terminal Material:

Silver plated, copper flashed, brass

### Reflow Soldering Method



### Wave Soldering Method



**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.