TECATE INDUSTRIES,INC.

MICA SMD CAPACITORS

TYPE SM

FEATURES:

- The stable electrical characteristics of natural mica
- Extremely high Q.
- Minimum capacitance tolerance ± 0.25% or ± 0.25 pf, whichever is greater
- Excellent crackfree capability
- Outstanding solderability
- Taping & Reel available

ORDERING CODE:

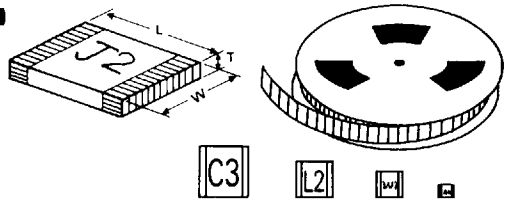
SM	12	— 100	/ 220	J
Chip Mica Capacitor	Style	Rated Voltage	Nominal Capacitance	Capacitance Tolerance

• **Nominal Capacitance and Multiplier:** First two digits are the significant figures of capacitance. Third digit indicates the additional number of zeros. For example, order 221 pF as 220. (For values below 10pF, use "R" in place of decimal point, e.g., 1R4 = 1.4pF).

Temperature Characteristic

Nominal Capacitance (PF)	Temperature Coefficient(ppm/°C)	Drift of Capacitance
1≦C≦10	0~+200	±(0.5% +0.1PF)
10<C≦30	0~+100	±(0.1% +0.1PF)
30<C	0~+ 50	±(0.05% +0.1PF)

Capacitance, Rated Voltage and Dimensions



Style	Capacitance Range(PF)		Dimension (mm)		
	100WV	500WV	L	W	T max
SM12	1 ~ 43	—	$2.0^{+0.5}_{-0}$	$1.25^{+0.5}_{-0}$	1.4
SM23	43.5~ 240	1 ~ 91	$3.2^{+0.6}_{-0.1}$	$2.5^{+0.6}_{-0.1}$	1.5
SM34	241 ~ 820	91.5~ 470	$4.5^{+0.6}_{-0.2}$	$3.2^{+0.8}_{-0}$	2.0
SM55	821 ~2000	471 ~1200	$5.7^{+0.4}_{-0.3}$	$5.0^{+0.4}_{-0.3}$	2.0

MARKING:

MARKING: Nominal capacitance, identified by an alphabet letter and one digit number. The first letter represents significant figures in pf.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z	a	b	d	e	f	m	n	t	y
1	1.1	1.2	1.3	1.5	1.6	1.8	2	2.2	2.4	2.7	3	3.3	3.6	3.9	4.3	4.7	5.1	5.6	6.2	6.8	7.5	8.2	9.1	2.5	3.5	4	4.5	5	6	7	8	9

MARKING: The last digit number specifies a multiplier.

0	1	2	3	9
—	10^1	10^2	10^3	10^{-1}

EXAMPLES:

f 9 = [5 x 10^{-1}] = 0.5 pf
R 1 = [4.3 x 10^1] = 43 pf
J 2 = [2.2 x 10^2] = 220 pf

RATED VOLTAGE:
Identified by color coating.

100 vdc	=	brown
500 vdc	=	green

MARKING:
SM-100/430F
43pf 100v ± 1%

	R 1	

coated brown

Applicable Capacitance Range

Capacitance Range	Capacitance Step
1PF≦C≦ 100PF	0.5PF Step
100PF<C≦1000PF	1PF Step
1000PF<C≦2000PF	10PF Step

Capacitance Tolerance

*With a minimum of ±0.25pF

Marked on Reel	Tolerance	
	1PF≦C≦10PF	10PF<C*
C	±0.25PF	±0.25%
D	±0.5PF	±0.5%
F	±1PF	±1%
G	±2PF	±2%
J	±5PF	±5%

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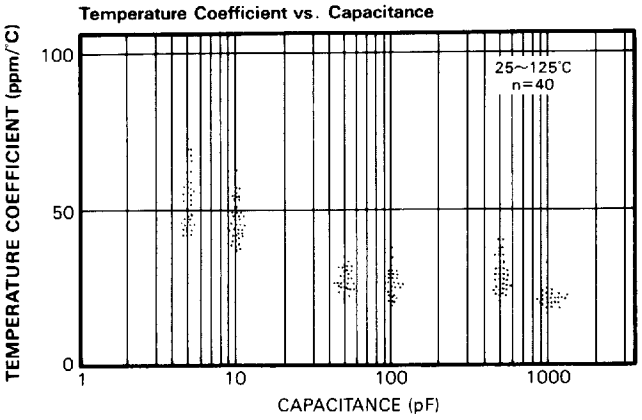
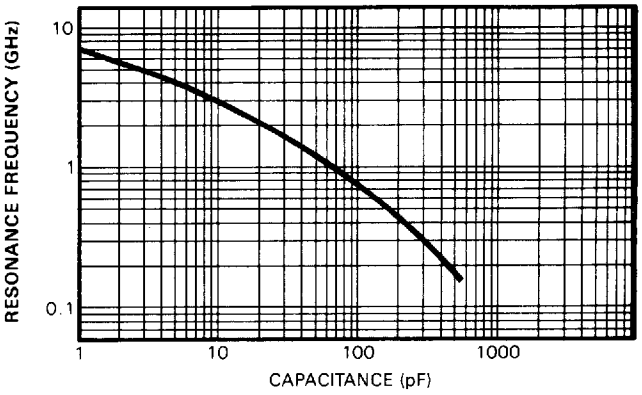
CHARACTERISTICS DATA:

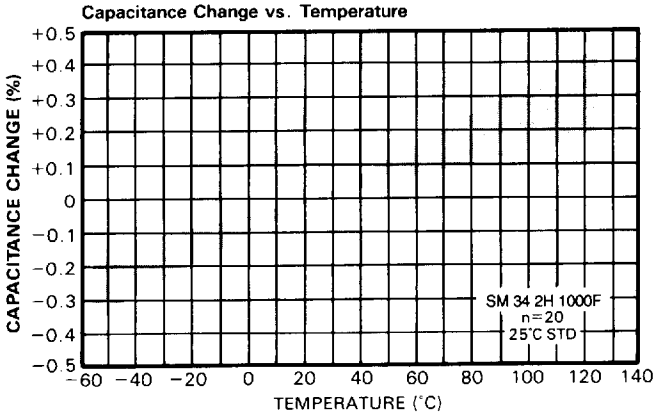
Temperature Coefficient vs. Capacitance



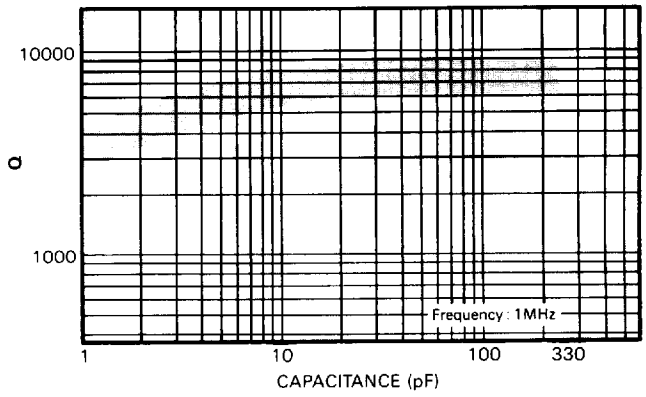
Resonance Frequency vs. Capacitance



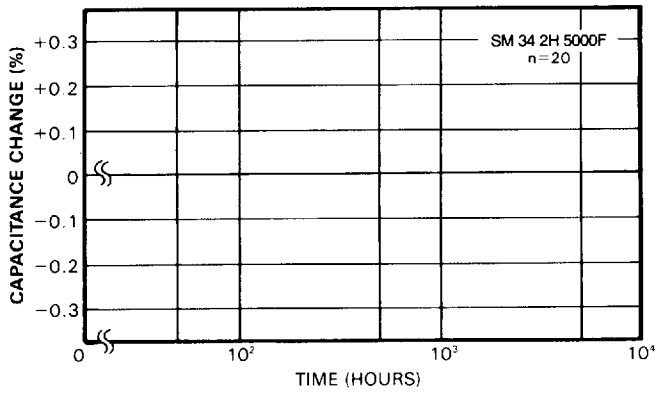
Capacitance Change vs. Temperature



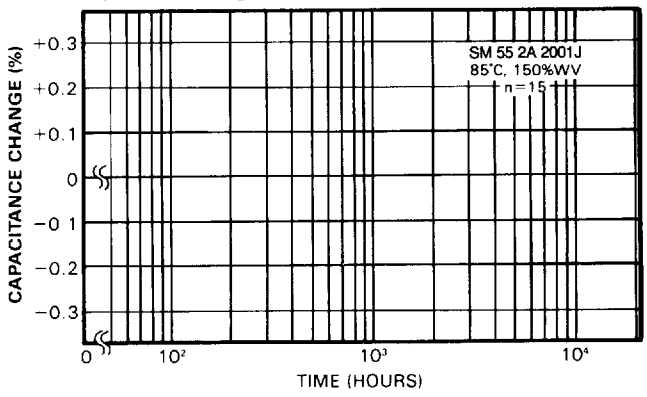
Q vs. Capacitance



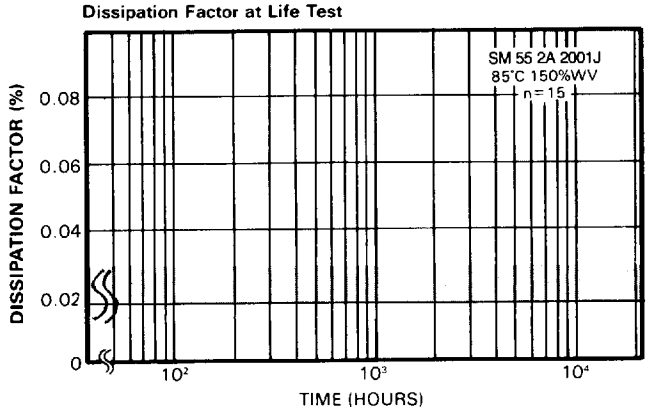
Capacitance Change vs. Time



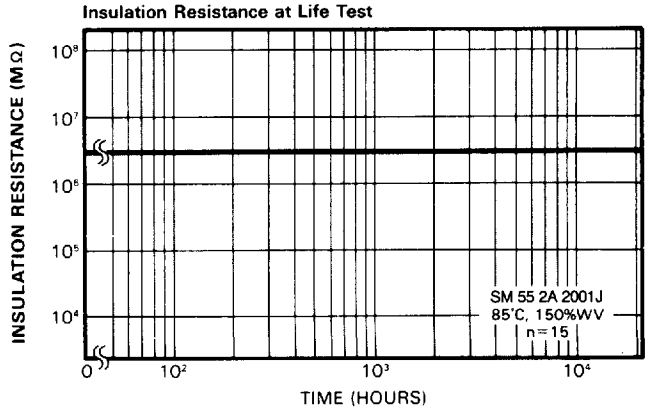
Capacitance Change at Life Test



Dissipation Factor at Life Test



Insulation Resistance at Life Test



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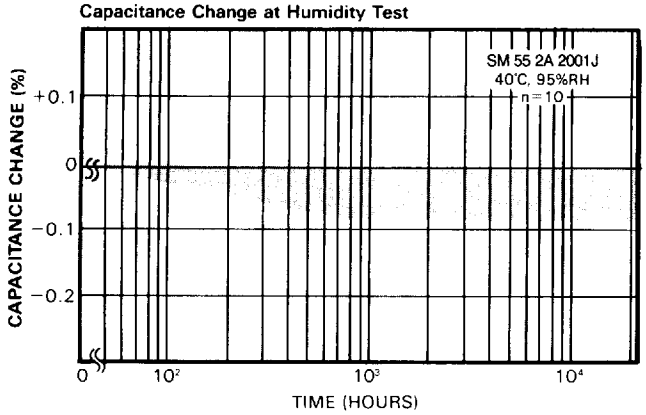
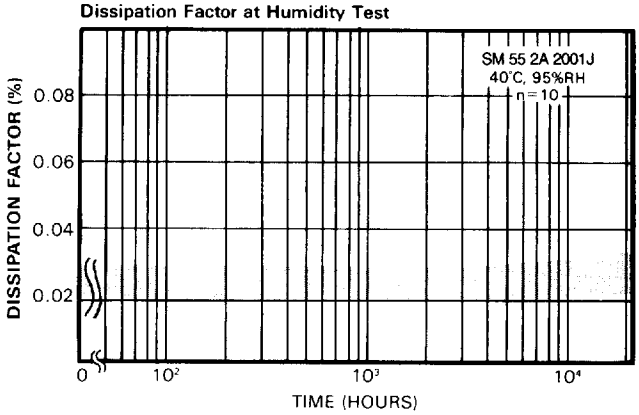
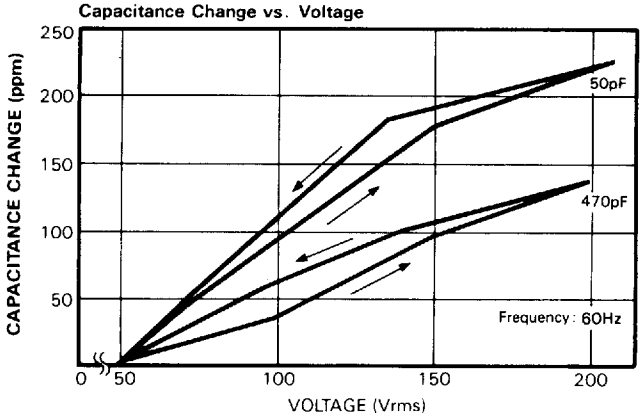
Capacitance Change at Humidity Test



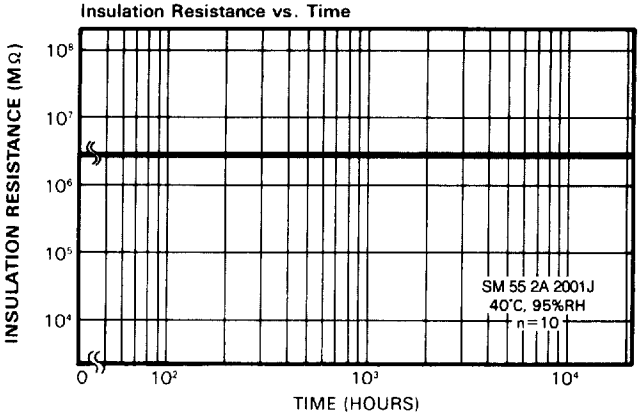
Dissipation Factor at Humidity Test



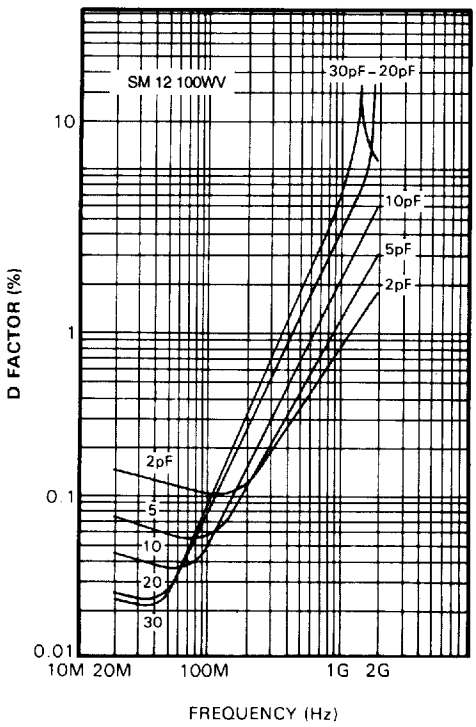
Capacitance Change vs. Voltage



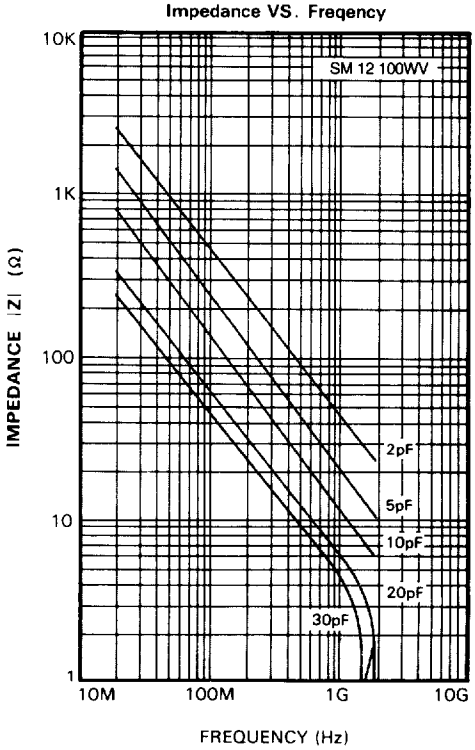
Insulation Resistance vs. Time



Dissipation Factor VS. Frequency



Impedance VS. Freqency



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TECATE INDUSTRIES, INC.

SPECIFICATIONS:

Solderability
After immersing capacitors in molten solder for 2±0.5 seconds at 230±5°C, more than 75 percent of terminal area shall be covered with a new smooth solder coating.

Operating Temperature Range
−55 to +125°C.

Withstanding Voltage
Capacitors shall withstand twice the rated voltage for 1 to 5 seconds without damage, arcing or breakdown.

Insulation Resistance
When measured to 100V DC, insulation resistance shall not be less than 100,000 MΩ.

Capacitance
When measured at 1 KHz ±20%, the capacitance shall be within the specified tolerance.

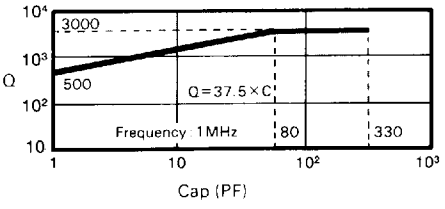
Dissipation Factor (330pF < C)
D Factor shall not exceed 0.1%.

Quality Factor (C ≤330pF)
Q shall not be less than the value in Fig. 1

Heat Resistance
Capacitors shall be subjected to a temperature of 125±2°C for 2 $^{+1}_{-0}$ hours, the insulation resistance shall exceed 5,000 MΩ.

Soldering Heat Resistance
Immersing capacitors in molten solder for 3±0.5 seconds at 270±5°C with 5 minutes preheating at 150±3°C.
Withstanding Voltage: Shall withstand twice the rated voltage for 1 to 5 seconds without damage, arcing or breakdown.
Insulation Resistance: Shall not be less than 30,000 MΩ.
D Factor: Shall not exceed 0.1%.
Q: Shall not be less than the value in Fig. 1.
Capacitance Change: Shall not exceed ±0.5%, or ±1pF, whichever is greater.

Q vs. Capacitance
Fig. 1



Vibration Resistance
Capacitors shall be subjected to a simple harmonic motion having an amplitude of 1.5mm, the frequency being varied uniformly between 10 and 55Hz. The entire frequency range, from 10 to 55Hz and return to 10Hz, shall be traversed in one minute. The motion shall be applied for 2 hours for each direction, totalling to 6 hours for three directions.
Visual Examination: There shall be no cracks or other mechanical damage.
Withstanding Voltage: Shall withstand twice the rated voltage for 1 to 5 seconds without damage, arcing or breakdown.
Insulation Resistance: Shall not be less than 30,000 MΩ.
D Factor: Shall not exceed 0.1%.
Q: Shall not be less than the value in Fig. 1.
Capacitance Change: Shall not exceed ±1% or ±1pF, whichever is greater.

Moisture Resistance
Capacitors shall be subjected to a temperature of 40±2°C at 90 to 95% relative humidity for 500 $^{+24}_{-0}$ hours. After being maintained at room temperature for 24 hours, following requirements shall be satisfied.
Visual Examination: There shall be no cracks or other mechanical damage.
Withstanding Voltage: Shall withstand twice the rated voltage for 1 to 5 seconds without damage, arcing or breakdown.
Insulation Resistance: Shall not be less than 30,000 MΩ.
D Factor: Shall not exceed 0.15%.
Q: Shall not be less than 2/3 of the value in Fig. 1.
Capacitance Change: Shall not exceed ±3% or ±0.5pF, whichever is greater.

Life
Capacitors shall be subjected to a temperature of 125±3°C with 150 percent of the rated voltage for 2000 $^{+32}_{-0}$ hours. After testing, following requirements shall be satisfied.
Visual Examination: There shall be no cracks or other mechanical damage.
Withstanding Voltage: Shall withstand twice the rated voltage for 1 to 5 seconds without damage, arcing or breakdown.
Insulation Resistance: Shall not be less than 100,000 MΩ.
D Factor: Shall not exceed 0.15%.
Q: Shall not be less than 2/3 of the value in Fig. 1.
Capacitance Change: Shall not exceed ±2% or ±0.5pF, whichever is greater.

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