

### FEATURES

- CYLINDRICAL LEADLESS TYPE FOR SURFACE MOUNTING
- LOW IMPEDANCE AT 100KHz (Up to 20% lower than NACZ)
- WIDE TEMPERATURE RANGE (-55 +105°C)
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING

## RoHS Compliant

\*See Part Number System for Details

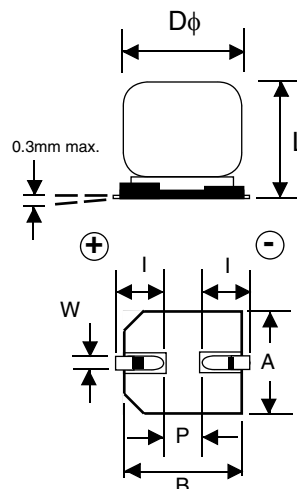


### CHARACTERISTICS

Rated Capacitance Range		4.7 ~ 3300 $\mu$ F						
Operating Temperature Range		- 55°C + 105°C						
Capacitance Tolerance		$\pm$ 20% (120Hz/+20°C)						
Max. Leakage Current after 2 minutes at 20°C		0.01CV or 3 $\mu$ A						
Max. Tan $\delta$ at 120Hz & 20°C	W.V.(Vdc)	6.3	10	16	25	35	50	
	S.V.(Vdc)	8	13	20	32	44	63	
	Tan $\delta$	$\phi$ 4 to $\phi$ 6.3	0.24	0.20	0.16	0.14	0.12	0.12
		$\phi$ 8 ~ $\phi$ 12.5	C=1000 $\mu$ F	0.28	0.24	0.20	0.16	0.14
C=2200 $\mu$ F			-	0.26	-	-	-	-
Low Temperature Stability (Impedance Ratio at 120 Hz)	Z -40°C/Z +20°C	3	2	2	2	2	2	
	Z -55°C/Z +20°C	5	4	4	3	3	3	
Load Life Test AT 105°C 4 ~ 6.3mm Dia 1,000 Hours 8 ~ 12.5mm Dia 2,000 Hours	Capacitance Change	Within $\pm$ 25% of initial measured value						
	Tan $\delta$	Less than 200% of the specified value						
	Leakage Current	Less than the specified maximum value						

### STANDARD PRODUCTION SIZE D $\phi$ xL (mm)

Cap ( $\mu$ F)	Code	Working Voltage (Vdc)					
		6.3	10	16	25	35	50
4.7	4R7	-	-	-	-	4x6.3	4x6.3
10	100	-	-	-	4x6.3	5x6.3	6.3x6.3
15	150	-	-	4x6.3	5x6.3	5x6.3	-
22	220	-	4x6.3	5x6.3	5x6.3	5x6.3	6.3x6.3
27	270	4x6.3	-	-	-	-	-
33	330	-	5x6.3	-	6.3x6.3	6.3x6.3	6.3x8
47	470	5x6.3	-	6.3x6.3	6.3x6.3	6.3x6.3	6.3x8
56	560	5x6.3	-	-	6.3x6.3	-	-
68	680	-	6.3x6.3	6.3x6.3	6.3x6.3	6.3x8	-
100	101	6.3x6.3	-	6.3x6.3	6.3x8	8x10.5	8x10.5
150	151	6.3x6.3	6.3x6.3	6.3x8	8x10.5	8x10.5	-
220	221	6.3x6.3	6.3x8	6.3x8	8x10.5	8x10.5	10x10.5
330	331	6.3x8	8x10.5	8x10.5	8x10.5	10x10.5	12.5x14
470	471	8x10.5	8x10.5	8x10.5	10x10.5	12.5x14	-
680	681	8x10.5	-	10x10.5	-	12.5x14	-
1000	102	8x10.5	10x10.5	-	12.5x14	-	-
1500	152	10x10.5	-	12.5x14	-	-	-
2200	222	-	12.5x14	-	-	-	-
3300	332	12.5x14	-	-	-	-	-



**SEE PAGE 38**  
For Case Size Data  
**SEE PAGE 39**  
For Taping/Packaging Data

Case Size	A	B	I	P	W
4x6.3	4.3	4.3	2.0	1.0	0.5 ~ 0.8
5x6.3	5.3	5.3	2.3	1.4	0.5 ~ 0.8
6.3x6.3	6.6	6.6	2.5	2.2	0.5 ~ 0.8
6.3x8	6.6	6.6	2.5	2.2	0.5 ~ 0.8
8x10.5	8.3	8.3	2.9	3.2	0.7 ~ 1.0
10x10.5	10.3	10.3	3.2	4.6	1.1 ~ 1.4
12.5x14	12/8	12/8	4.5	4.6	1.1 ~ 1.4

## MAXIMUM IMPEDANCE (Ω AT 20°C AND 100KHz)

Cap (μF)	Working Voltage (Vdc)					
	6.3	10	16	25	35	50
4.7	-	-	-	-	1.45	2.55
10	-	-	-	1.45	0.7	0.52
15	-	-	1.45	0.7	0.7	-
22	-	1.45	0.7	0.7	0.7	0.52
27	1.45	-	-	-	-	-
33	-	0.7	-	0.39	0.39	0.44
47	0.7	-	0.39	0.39	0.39	0.44
56	0.7	-	-	0.39	-	-
68	-	0.39	0.39	0.39	0.3	-
100	0.39	-	0.39	0.3	0.15	0.22
150	0.39	0.39	0.3	0.15	0.15	-
220	0.39	0.3	0.3	0.15	0.15	0.13
330	0.3	0.15	0.15	0.15	0.08	0.1
470	0.15	0.15	0.15	0.08	0.058	-
680	0.15	-	0.08	-	0.058	-
1000	0.15	0.08	-	0.058	-	-
1500	0.08	-	0.058	-	-	-
2200	-	0.058	-	-	-	-
3300	0.058	-	-	-	-	-

## MAXIMUM PERMISSIBLE RIPPLE CURRENT (mA rms AT 100KHz AND 105°C)

Cap (μF)	Working Voltage (Vdc)					
	6.3	10	16	25	35	50
4.7	-	-	-	-	90	64
10	-	-	-	90	170	215
15	-	-	90	170	170	-
22	-	90	170	170	170	215
27	90	-	-	-	-	-
33	-	170	-	250	250	243
47	170	-	250	250	250	243
56	170	-	-	250	-	-
68	-	250	250	250	300	-
100	250	-	250	300	600	400
150	250	250	300	600	600	-
220	250	300	300	600	600	585
330	300	600	600	600	850	800
470	600	600	600	850	1150	-
680	600	-	850	-	1150	-
1000	600	850	-	1150	-	-
1500	850	-	1150	-	-	-
2200	-	1150	-	-	-	-
3300	1150	-	-	-	-	-

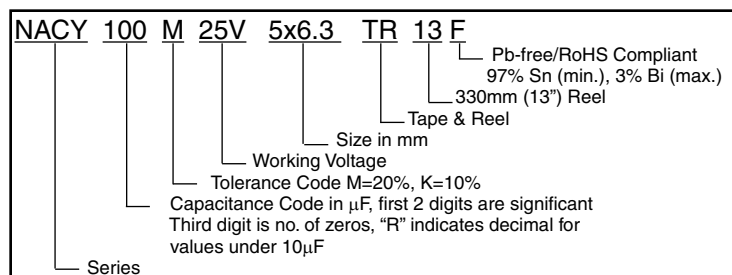
### RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

Frequency	≤ 120Hz	≤ 1K Hz	≤ 10KHz	≤ 100KHz
Correction Factor	0.75	0.85	0.95	1.0

### RIPPLE CURRENT TEMPERATURE CORRECTION FACTOR

Temperature	≤ + 65°C	≤ +85°C	≤ 105°C
Correction Factor	1.5	1.3	1.0

## PART NUMBER SYSTEM



\*\*F" denotes RoHS compliant parts