

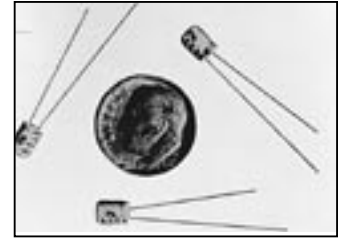
FEATURES

- LOW PROFILE 5mm HEIGHT
- SPACE SAVING AT COMPETITIVE PRICING

**RoHS
Compliant**

includes all homogeneous materials

*See Part Number System for Details



CHARACTERISTICS

Rated Working Voltage Range	4 ~ 50Vdc							
Capacitance Range	0.1 ~ 470μF							
Operating Temperature Range	-40°C~+85°C							
Capacitance Tolerance	±20% (M)							
Max. Leakage Current After 1minutes At 20°C	0.01CV or 3μA Whichever is greater							
Surge Voltage & Dissipation Factor (Tan δ)	W.V. (Vdc)	4	6.3	10	16	25	35	50
	S.V. (Vdc)	5	8	13	20	32	44	63
	Tan δ @ 120Hz	0.35	0.24	0.20	0.16	0.14 (8φ=0.15)	0.12	0.10
Low Temperature Stability (Impedance Ratio @ 120Hz)	W.V. (Vdc)	4	6.3	10	16	25	35	50
	Z-20°C/Z+20°C	7	4	3	2	2	2	2
	Z-40°C/Z+20°C	15	10	8	6	4	4	4
Life Test @ +85°C 1,000 hours	Capacitance Change	Within ±25% of initial value						
	Dissipation Factor	Less than 200% of specified maximum value						
	Leakage Current	Less than specified maximum value						

MAXIMUM PERMISSIBLE RIPPLE CURRENT (mA rms) AT 85°C/120 KHz

Cap (μF)	Working Voltage (Vdc)						
	4	6.3	10	16	25	35	50
0.1	-	-	-	-	-	-	1.0
0.22	-	-	-	-	-	-	2.3
0.33	-	-	-	-	-	-	3.5
0.47	-	-	-	-	-	-	5.0
1.0	-	-	-	-	-	-	10
2.2	-	-	-	-	-	8.4	15
3.3	-	-	-	-	10	17	18
4.7	-	-	-	12	19	20	23
10	-	13	17	25	28	30	34
22	-	31	35	39	52	54	54
33	26	39	43	57	63	68	-
47	34	47	59	68	73	73	-
100	61	71	76	86	110	-	-
220	82	90	90	-	-	-	-
330	85	92	-	-	-	-	-
470	145	-	-	-	-	-	-

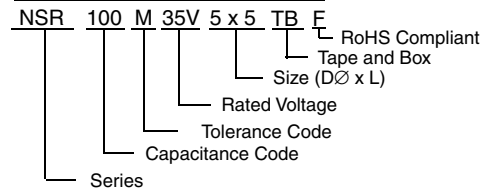
MAXIMUM ESR (Ω) AT 20°C/120Hz

Cap (μF)	Working Voltage (Vdc)						
	4	6.3	10	16	25	35	50
0.1	-	-	-	-	-	-	1659
0.22	-	-	-	-	-	-	754
0.33	-	-	-	-	-	-	503
0.47	-	-	-	-	-	-	353
1.0	-	-	-	-	-	-	166
2.2	-	-	-	-	-	90.5	75.4
3.3	-	-	-	-	70.4	60.3	50.3
4.7	-	-	-	56.5	49.4	42.4	35.3
10	-	39.8	33.2	26.5	23.2	19.9	16.6
22	-	18.1	15.1	12.1	10.6	9.00	7.50
33	17.6	12.1	10.1	8.00	7.00	6.00	-
47	12.4	8.50	7.10	5.60	4.90	4.20	-
100	5.80	4.00	3.30	2.70	2.49	-	-
220	2.60	1.80	1.50	-	-	-	-
330	1.80	1.20	-	-	-	-	-
470	1.23	-	-	-	-	-	-

RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

Frequency (Hz)		120	1K	10K	100K
Correction Factor	3 x 5/4 x 5	1.00	1.30	1.50	1.60
	5 x 5	1.00	1.20	1.30	1.35
	6.3 x 5	1.00	1.15	1.20	1.25
	8 x 5	1.00	1.13	1.15	1.20

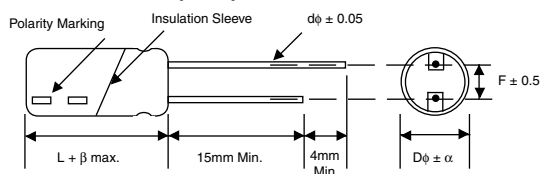
PART NUMBER SYSTEM



STANDARD PRODUCT AND CASE SIZE TABLE D ϕ x L (mm)

Cap(μ F)	Code	Working Voltage (Vdc)						
		4	6.3	10	16	25	35	50
0.1	R10	-	-	-	-	-	-	3 x 5
0.22	R22	-	-	-	-	-	-	3 x 5
0.33	R33	-	-	-	-	-	-	3 x 5
0.47	R47	-	-	-	-	-	-	3 x 5
1.0	1R0	-	-	-	-	-	-	3 x 5
								4 x 5
2.2	2R2	-	-	-	-	-	3 x 5	3 x 5
								4 x 5
3.3	3R3	-	-	-	-	3 x 5	3 x 5	3 x 5
								4 x 5
4.7	4R7	-	-	-	3 x 5	3 x 5	4 x 5	5 x 5
10	100	-	3 x 5	3 x 5	3 x 5	5 x 5	5 x 5	6.3 x 5
					4 x 5			
22	220	-	4 x 5	5 x 5	5 x 5	6.3 x 5	6.3 x 5	6.3 x 5
33	330	4 x 5	5 x 5	5 x 5	6.3 x 5	6.3 x 5	6.3 x 5	-
47	470	4 x 5	5 x 5	6.3 x 5	6.3 x 5	6.3 x 5	6.3 x 5	-
100	101	5 x 5	6.3 x 5	6.3 x 5	6.3 x 5	8 x 5	-	-
220	221	6.3 x 5	6.3 x 5	6.3 x 5	-	-	-	-
330	331	6.3 x 5	6.3 x 5	-	-	-	-	-
470	471	8 x 5	-	-	-	-	-	-

DIMENSIONS (mm)



LEAD SPACING AND DIAMETER (mm)

Case Dia. (D ϕ)	3	4	5	6.3	8*
Leads Dia. (d ϕ)	0.4	0.45	0.45	0.45	0.45
Lead Spacing (F)	1.0	1.5	2.0	2.5	2.5*
Dim. α	0.5	0.5	0.5	0.5	0.5
Dim. β	1.0	1.0	1.0	1.0	1.0

* NOTE THAT LEAD SPACING OF 8x5mm SIZE IS 2.5mm.