

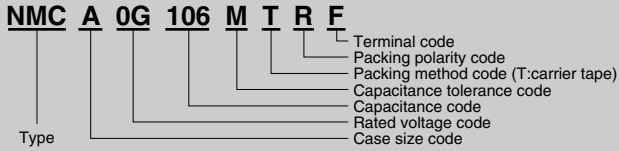
NMC Series (Miniaturized Niobium Capacitors)

Features

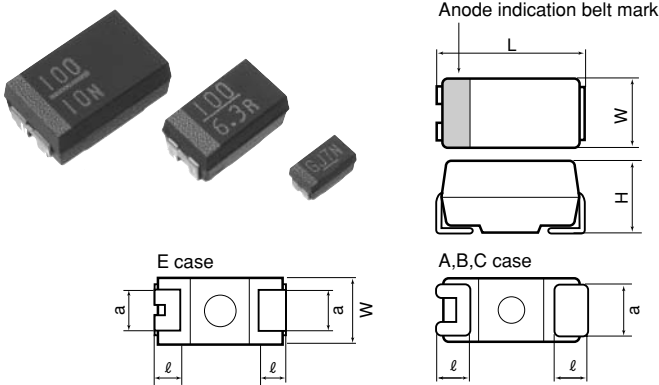
A niobium capacitor is a polar capacitor which makes a dielectric the pent-oxidization niobium formed in the sintering body surface side of niobium metal powder.

It has small and large capacitance and flame retardant feature. Moreover, it is environmental-friendly component which meet lead-free soldering.

Product symbol : (Example) NMC Series A case 4V 10 μ F \pm 20%



Outline of drawings and dimensions



Dimensions (Unit : mm)

Case code	Case size				
	L \pm 0.2	W \pm 0.2	H \pm 0.2	ℓ \pm 0.3	a \pm 0.2
A	3.2	1.6	1.6	0.7	1.2
B	3.5	2.8	1.9	0.8	2.2
C	5.8	3.2	2.5	1.3	2.2
E	7.3	4.3 \pm 0.3	2.8	1.3	2.4

Standard value and case size

Capacitance		Rated voltage (V.DC)			
μ F	Code	2.5	4	6.3	10
10	106			A	A
15	156		A	A	B
22	226	A	A	A,B	B
33	336	B	A,B	A,B	B,C
47	476	B	A,B	B	C
68	686	B,C	B,C	B,C	C
100	107	B,C	B,C	B,C,E	E
150	157	C,E	C,E	E	E
220	227	C,E	E	E	E
330	337	E	E	E	
470	477	E	E		

Product specifications	NMC	Test conditions JIS C5101-1:1998				
Operating temperature range	-55°C ~ +105°C					
Rated voltage	DC2.5 ~ 10V	85°C				
Surge voltage	DC3.3 ~ 13V	85°C				
Derated voltage	DC1.7 ~ 7V	105°C				
Capacitance	10 ~ 470 μ F	120 Hz, 1.5V				
Capacitance tolerance	\pm 20%	Paragraph 4.7, 120 Hz, 1.5V				
Leakage current	Refer to Standard product table	Paragraph 4.9, in 5 minutes after the rated voltage is applied.				
tan δ	Refer to Standard product table	Paragraph 4.8, 120Hz, 1.5V				
Surge withstanding voltage	Δ C/C	\pm 10% or less				
	tan δ	Specified initial value or less				
	LC	Specified initial value or less				
Temperature characteristics	Δ C/C	Specified initial value	-55	85	105	
			-	-20 ~ 0%	0 ~ +20%	0 ~ +25%
	tan δ		0.08	0.11	0.10	0.11
		Maximum value or less	0.10	0.13	0.12	0.13
	LC		0.15	0.21	0.19	0.21
			0.30	0.39	0.36	0.39
		0.02CV or less	0.02CV or less	0.2CV or less	0.25CV or less	
Solder heat resistance	Δ C/C	\pm 30% or less	Reflow 260 \pm 5°C or less 10 \pm 1 sec.			
	tan δ	Specified initial value or less				
	LC	Specified initial value or less				
Moisture resistance no load	Δ C/C	\pm 30% or less	Paragraph 4.22, 40°C 90 ~ 95%RH, 500hrs			
	tan δ	Specified initial value or less				
	LC	Specified initial value or less				
High-temperature load	Δ C/C	\pm 30% or less	Paragraph 4.23 85°C The Rated voltage is applied for 2000 hours.			
	tan δ	Specified initial value or less				
	LC	200% Specified initial value or less				
Thermal shock	Δ C/C	\pm 20% or less	Leave at -55°C, normal temperature, 105°C, and normal temperature for 30 min., 3 min., 30 min., and 3 min. Repeat this operation 5 times running.			
	tan δ	Specified initial value or less				
	LC	Specified initial value or less				
Moisture resistance load	Δ C/C	\pm 30% or less	40°C, humidity 90 to 95%RH The rated voltage is applied for 500 hours.			
	tan δ	Specified initial value or less				
	LC	200% Specified initial value or less				
Failure rate	1% / 1000hrs	85°C. The rated voltage is applied (through a protective resistor of 1 Ω /V).				

※ This catalog is designed for providing general information. Please inquire of our Sales Department to confirm specifications prior to use.

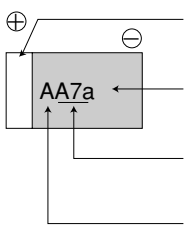
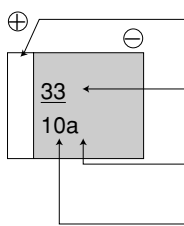
Standard product tables - NMC series

Standard product table - NMC series

Rated voltage V. DC	Capacitance μF	$\tan\delta$	Leakage current μA	Case code	Product name
2.5	22	0.08	1.1	A	NMCA0E226
	33	0.10	1.6	B	NMCB0E336
	47	0.10	2.3	B	NMCB0E476
	68	0.12	3.4	B	NMCB0E686
		0.10	3.4	C	NMCC0E686
	100	0.30	5.0	B	NMCB0E107
		0.10	5.0	C	NMCC0E107
		0.10	7.5	C	NMCC0E157
	150	0.12	7.5	E	NMCE0E157
		0.10	11.0	C	NMCC0E227
	220	0.12	11.0	E	NMCE0E227
		0.12	16.5	E	NMCE0E337
		0.30	23.5	E	NMCE0E477
	4	15	0.08	1.2	A
22		0.08	1.7	A	NMCA0G226
33		0.15	2.6	A	NMCA0G336
		0.10	2.6	B	NMCB0G336
47		0.15	3.7	A	NMCA0G476
		0.10	3.7	B	NMCB0G476
68		0.12	5.4	B	NMCB0G686
		0.10	5.4	C	NMCC0G686
100		0.30	8.0	B	NMCB0G107
		0.10	8.0	C	NMCC0G107
150		0.30	12.0	C	NMCC0G157
		0.12	12.0	E	NMCE0G157
220		0.12	17.6	E	NMCE0G227
330		0.12	26.4	E	NMCE0G337
470		0.30	37.6	E	NMCE0G477

Rated voltage V. DC	Capacitance μF	$\tan\delta$	Leakage current μA	Case code	Product name
6.3	10	0.08	1.2	A	NMCA0J106
	15	0.08	1.8	A	NMCA0J156
	22	0.08	2.7	A	NMCA0J226
		0.10	2.7	B	NMCB0J226
	33	0.15	4.1	A	NMCA0J336
		0.10	4.1	B	NMCB0J336
	47	0.10	5.9	B	NMCB0J476
		0.12	8.5	B	NMCB0J686
	68	0.10	8.5	C	NMCC0J686
		0.30	12.6	B	NMCB0J107
	100	0.15	12.6	C	NMCC0J107
		0.12	12.6	E	NMCE0J107
		0.12	18.9	E	NMCE0J157
	220	0.12	27.7	E	NMCE0J227
0.30		41.5	E	NMCE0J337	
10	10	0.08	2.0	A	NMCA1A106
	15	0.10	3.0	B	NMCB1A156
	22	0.10	4.4	B	NMCB1A226
	33	0.15	6.6	B	NMCB1A336
		0.10	6.6	C	NMCC1A336
	47	0.10	9.4	C	NMCC1A476
	68	0.30	13.6	C	NMCC1A686
	100	0.12	20.0	E	NMCE1A107
	150	0.12	30.0	E	NMCE1A157
	220	0.30	44.0	E	NMCE1A227

Marking indication

A,B case	C,E case
 <p>Anode indication belt mark</p> <p>Lot indication (a: for manufacturing in January, 2007)</p> <p>Nominal capacitance Value (A7: 10μF)</p> <p>Rated voltage (A: 10V)</p>	 <p>Anode indication belt mark</p> <p>Nominal capacitance Value (33μF)</p> <p>Lot indication (a: for manufacturing in January, 2007)</p> <p>Rated voltage (10V)</p>