

NIOBIUM ELECTROLYTIC CAPACITORS

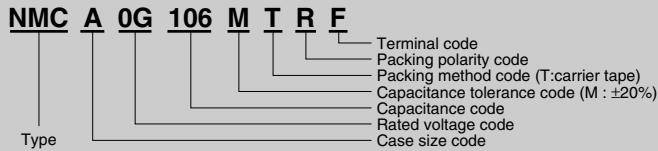
NMC Series (Miniaturized Niobium Capacitors)

Features

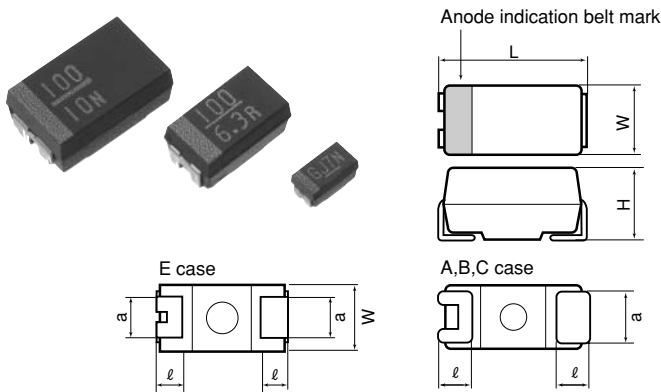
A niobium capacitor is a polar capacitor which makes a dielectric the pent-oxidization niobium formed in the sintering body surface side of niobium metal powder.

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

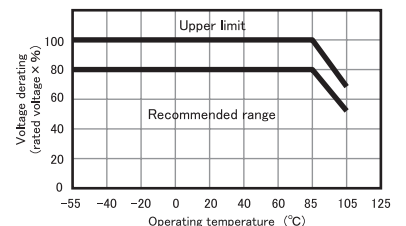
Standard value and case size

Capacitance		Rated voltage (V.DC)					
		2.5	4	6.3	10	12.5	16
μ F	Code	0E	0G	0J	1A	1B	1C
4.7	475					A	A
6.8	685					A	A
10	106			A	A	B	B
15	156		A	A	B		
22	226	A	A	A,B	B	C	C
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 ~ 16V	85°C					
Surge voltage	DC3.0~ 19V	85°C					
Derated voltage	DC1.7 ~ 10.7V	105°C					
Capacitance	4.7 ~ 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	Paragraph 4.24	
			-	-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		0.12	0.16	0.14		0.16
			0.15	0.21	0.19		0.21
		0.30	0.39	0.36	0.39		
Solder heat resistance	Δ C/C	\pm 30% or less	Reflow 260 \pm 5°C or less				
	tan δ	Specified initial value or less	10 \pm 1 sec.				
	LC	Specified initial value or less					
Moisture resistance no load	Δ C/C	\pm 30% or less	Paragraph 4.22, 40°C				
	tan δ	Specified initial value or less	90 ~ 95%RH, 500hrs				
	LC	Specified initial value or less					
High-temperature load	Δ C/C	\pm 30% or less	Paragraph 4.23				
	tan δ	Specified initial value or less	85°C				
	LC	200% Specified initial value or less	The Rated voltage is applied for 2000 hours.				
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				
	tan δ	Specified initial value or less	The rated voltage is applied for 500 hours.				
	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).					

Operating Voltage

※The voltage derating factor should be as great as possible. Under normal conditions, the operating voltage should be reduced to 80% or less of the rated.



※This catalog is designed for providing general information.

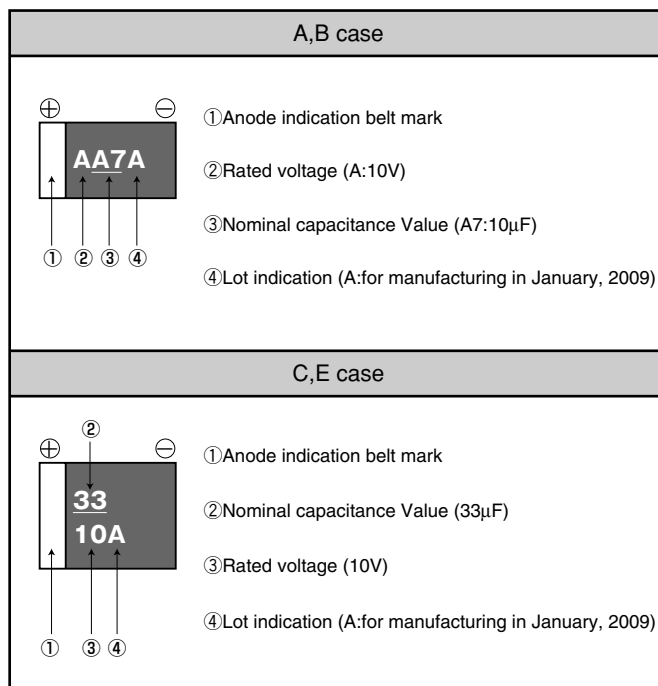
Please inquire of our Sales Department to confirm specifications prior to us.

Standard product tables - NMC series

Standard product table - NMC series

Rated voltage V. DC	Capacitance μF	tanδ	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	
	150	0.12	7.5	C	NMCC0E157	
		0.12	7.5	E	NMCE0E157	
	220	0.12	11.0	C	NMCC0E227	
		0.12	11.0	E	NMCE0E227	
	330	0.12	16.5	E	NMCE0E337	
	470	0.30	23.5	E	NMCE0E477	
	4	15	0.08	1.2	A	NMCA0G156
22		0.08	1.7	A	NMCA0G226	
33		0.30	2.6	A	NMCA0G336	
		0.10	2.6	B	NMCB0G336	
47		0.30	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	
6.3		10	0.08	1.2	A	NMCA0J106
		15	0.08	1.8	A	NMCA0J156
		22	0.10	2.7	A	NMCA0J226
	0.10		2.7	B	NMCB0J226	
	33	0.30	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	
	330	0.30	41.5	E	NMCE0J337	
	10	10	0.08	2.0	A	NMCA1A106
		15	0.10	3.0	B	NMCA1A156
		22	0.10	4.4	B	NMCA1A226
0.15			6.6	B	NMCA1A336	
33		0.10	6.6	C	NMCA1A336	
		0.10	9.4	C	NMCA1A476	
68		0.30	13.6	C	NMCA1A686	
100		0.12	20.0	E	NMCA1A107	
150		0.12	30.0	E	NMCA1A157	
220		0.30	44.0	E	NMCA1A227	
12.5	4.7	0.12	1.2	A	NMCA1B475	
	6.8	0.12	1.7	A	NMCA1B685	
	10	0.15	2.5	B	NMCA1B106	
	22	0.30	5.5	C	NMCA1B226	
16	4.7	0.12	1.5	A	NMCA1C475	
	6.8	0.12	2.2	A	NMCA1C685	
	10	0.15	3.2	B	NMCA1C106	
	22	0.30	7.0	C	NMCA1C226	

Marking indication



Lot indication

Year	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
2009	A	B	C	D	E	F	G	H	J	K	L	M
2010	N	P	Q	R	S	T	U	V	W	X	Y	Z
2011	a	b	c	d	e	f	g	h	j	k	l	m
2012	n	p	q	r	s	t	u	v	w	x	y	z