



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.

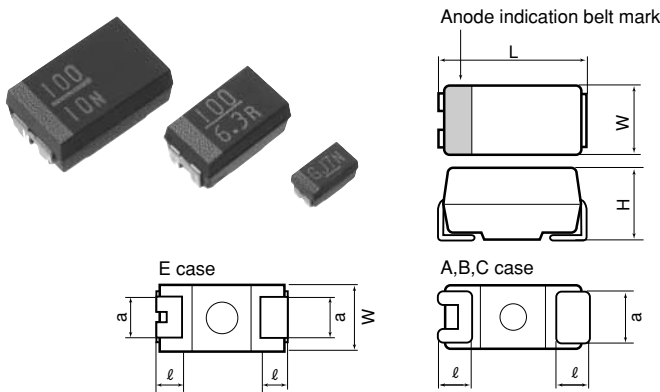
It has small and large capacitance and flame retardant feature. Moreover, it is environmental-friendly component which meet lead-free soldering.

Product symbol : (Example) NMC Series A case 4V 10μF ±20%

NMC A 0G 106 M T R F

- NMC: Type
- A: Case size code
- 0G: Rated voltage code
- 106: Capacitance code (M : ±20%)
- M: Capacitance tolerance code (M : ±20%)
- T: Packing method code (T:carrier tape)
- R: Packing polarity code
- F: Terminal code

Outline of drawings and dimensions



Dimensions (Unit : mm)

Case code	Case size				
	L ^{+0.2}	W ^{+0.2}	H ^{+0.2}	l ^{+0.3}	a ^{+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±0.3	2.8	1.3	2.4

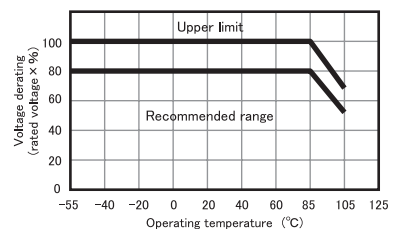
Standard value and case size

Capacitance	Code	Rated voltage (V.DC)					
		2.5	4	6.3	10	12.5	16
μF		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	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 ~ 470μF	120 Hz, 1.5V				
Capacitance tolerance	±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.				
tanδ	Refer to Standard product table	Paragraph 4.8, 120Hz, 1.5V				
Temperature characteristics	Specified initial value	-55	85	105	Paragraph 4.24	
	ΔC/C	-	-20 ~ 0%	0 ~ +20%		0 ~ +25%
	tanδ	0.08	0.11	0.10		0.11
	Electromotive force or less	0.10	0.13	0.12		0.13
		0.12	0.16	0.14		0.16
		0.15	0.21	0.19		0.21
LC	0.02CV or less	0.02CV or less	0.2CV or less	0.25CV or less		
Solder heat resistance	ΔC/C	±30% or less			Reflow 260±5°C or less 10 ± 1 sec.	
	tanδ	Specified initial value or less				
	LC	Specified initial value or less				
Moisture resistance no load	ΔC/C	±30% or less			Paragraph 4.22, 40°C 90 ~ 95%RH, 500hrs	
	tanδ	Specified initial value or less				
	LC	Specified initial value or less				
High-temperature load	ΔC/C	±30% or less			Paragraph 4.23 85°C The Rated voltage is applied for 2000 hours.	
	tanδ	Specified initial value or less				
	LC	200% Specified initial value or less				
Thermal shock	ΔC/C	±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.	
	tanδ	Specified initial value or less				
	LC	Specified initial value or less				
Moisture resistance load	ΔC/C	±30% or less			40°C, humidity 90 to 95%RH The rated voltage is applied for 500 hours.	
	tanδ	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).				

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.

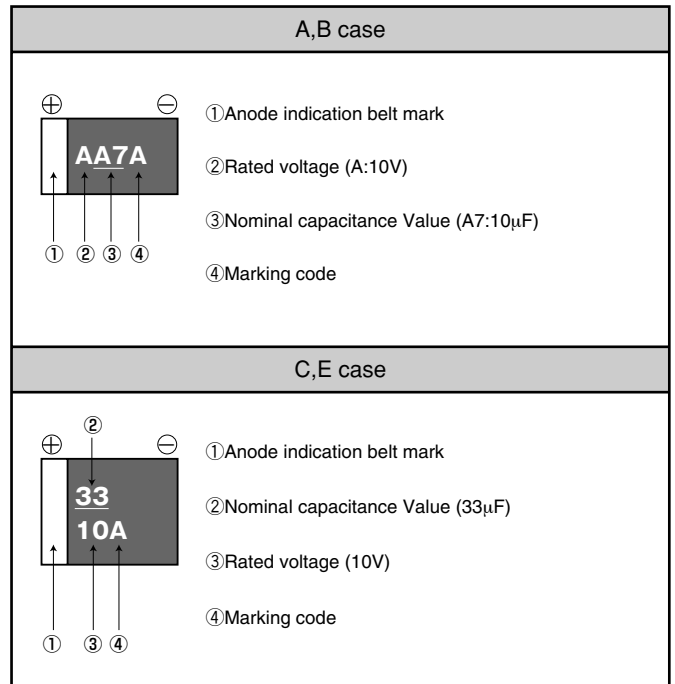
Please inquire of our Sales Department to confirm specifications prior to us.

Standard product tables - NMC series

Standard product table - NMC series

Rated voltage V. DC	Capacitance μ F	$\tan\delta$	Leakage current μ A	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
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
	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
15		0.10	3.0	B	NMCB1A156
22		0.10	4.4	B	NMCB1A226
		0.15	6.6	B	NMCB1A336
33		0.10	6.6	C	NMCC1A336
		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
12.5	4.7	0.12	1.2	A	NMCA1B475
	6.8	0.12	1.7	A	NMCA1B685
	10	0.15	2.5	B	NMCB1B106
	22	0.30	5.5	C	NMCC1B226
16	4.7	0.12	1.5	A	NMCA1C475
	6.8	0.12	2.2	A	NMCA1C685
	10	0.15	3.2	B	NMCB1C106
	22	0.30	7.0	C	NMCC1C226

Marking indication



Marking code

Month Year	1	2	3	4	5	6	7	8	9	10	11	12
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
2013	A	B	C	D	E	F	G	H	J	K	L	M
2014	N	P	Q	R	S	T	U	V	W	X	Y	Z