

DISCONTINUED PRODUCT NOTICE

PRODUCTS: **AXIAL** LEADED ELECTROLYTIC CAPACITORS



NIC PRODUCT SERIES: **NAE, NAE-WT, NASA, NASS & NNA**

EFFECTIVE: APRIL 1st, 2002

LAST-TIME BUY:

ORDERS FROM EXISTING AXIAL LEADED PRODUCTS CUSTOMERS WILL BE ACCEPTED
UNTIL JULY 1st, 2002

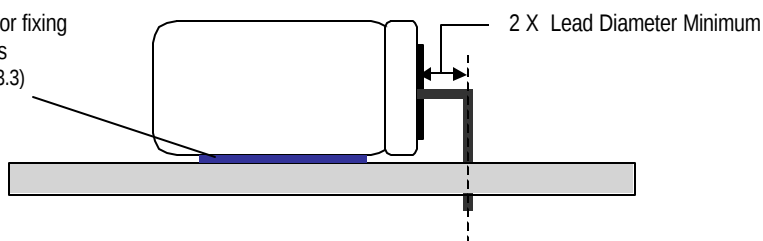
LAST DELIVERY: NOT BEYOND OCTOBER 1st, 2002

TERMS: ALL ORDERS WILL BE NON CANCELABLE / NON RETURNABLE

REPLACEMENTS – ALTERNATES:

- FOR LOW PROFILE APPLICATIONS SUGGEST USE OF RADIAL LEADED VERSION
MOUNTED HORIZONTALLY
+ SEE DRAWING BELOW

Adhesive suggested for fixing
large size components
(Ref IPC-CM-770 20.1.3.3)



- SUGGEST UPGRADE TO SURFACE MOUNT (SMT) VERSION
+ AVAILABLE IN HIGH VOLTAGES (UP TO 450VDC)
+ AVAILABLE IN HIGH CAPACITANCE (UP TO 6800µF)



Miniature Aluminum Electrolytic Capacitors

NASA Series

AXIAL LEADS, REDUCED SIZE, POLARIZED



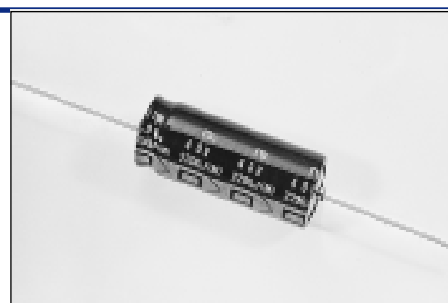
FEATURES

2000~3000 HOUR LIFE

CHARACTERISTICS

GENERAL PURPOSE, +85°C

NAE → NASA → NASS
(old sizes) (today's standard) (reduced sizes)



LEADED

Rated Voltage Range		6.3 ~ 100 VDC									
Capacitance Range		0.47 ~ 22,000μF									
Operating Temperature Range		-40 ~ +85°C									
Capacitance Tolerance		± 20%									
Max. Leakage Current @ (20°C)	After 1 min.	0.03CV or 4μA , whichever if greater									
	After 2 min.	0.01CV or 3μA , whichever if greater									
Max. Tan δ @ 120Hz/20°C		W.V. (Vdc)	6.3	10	16	25	35	50	63	100	
		S.V. (Vdc)	8	13	20	32	44	63	79	125	
		C ≤ 1,000μF	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	
		C = 1,500μF	0.23	0.20	0.17	0.15	0.13	0.11	0.10	0.09	
		C = 2,200μF	0.24	0.21	0.18	0.16	0.14	0.12	0.11	0.10	
		C = 3,300μF	0.26	0.23	0.20	0.18	0.16	0.14	0.13		
		C = 4,700μF	0.28	0.25	0.22	0.20	0.18	0.16	0.15		
		C = 6,800μF	0.32	0.29	0.26	0.24	0.22	0.20			
		C = 10,000μF	0.40	0.37	0.32	0.30					
		C = 15,000μF	0.50	0.47	0.44	0.42					
Low Temperature Stability Impedance Ratio @ 120Hz		Z-25°C/Z+20°C	D < 10 Ø	4	3	2	2	2	2	2	2
			D ≥ 12.5 Ø	6	4	3	2	2	2	2	2
		Z-40°C/Z+20°C	D < 10 Ø	8	6	4	4	3	3	3	3
			D ≥ 12.5 Ø	10	8	6	4	4	4	4	4
Load Life Test at Rated W.V. 85°C 2,000 Hours: 5 ~ 8Ø 3,000 Hours: 10 Ø ~		Capacitance Change	Within ±20% of initial measured value								
		Tan δ	Less than 200% of specified maximum value								
		Leakage Current	Less than specified maximum value								
Shelf Life Test 85°C 1,000 Hours No Load		Capacitance Change	Within ±20% of initial measured value								
		Tan δ	Less than 200% of specified maximum value								
		Leakage Current	Less than specified maximum value								

Note: Capacitors shall conform to JIS-C-5141, unless otherwise specified here.

MAXIMUM RIPPLE CURRENT AT 85°C, 120Hz (mA Arms)

Cap. (μF)	Working Voltage (Vdc)							
	6.3	10	16	25	35	50	63	100
0.47						8		10
1.0						13		15
2.2						19		23
3.3						24		32
4.7						30	35	40
10					40	50	60	70
22				65	75	90	110	120
33			80	100	120	130	145	160
47		100	110	120	135	160	185	200
100	130	150	200	220	270	310	340	370
220	250	250	320	350	400	500	570	750
330	300	340	405	450	530	600	680	830
470	380	400	480	570	650	710	800	1000
1,000	520	580	700	1000	1000	1100	1100	1570
1,500	610	700	850	1100	1200	1580	1760	2100
2,200	800	980	1000	1200	1420	1860	1990	2340
3,300	970	1160	1340	1530	1850	2300	2400	
4,700	1200	1400	1650	1970	2200	2600	2700	
6,800	1500	1700	2080	2360	2600	2900		
10,000	1900	2200	2400	2700	2800			
15,000	2300	2480	2800	2900				
22,000	2500	2800	3100					

MAXIMUM E.S.R. AT 120Hz AND 20°C (Ω)

Cap. (μF)	Working Voltage (Vdc)							
	6.3	10	16	25	35	50	63	100
0.47						353		283
1.0						166		133
2.2						75.4		60.4
3.3						50.3		40.3
4.7						35.3	31.8	28.3
10					19.9	16.6	15.0	13.3
22				10.6	9.05	7.54	6.79	6.04
33			8.05	7.04	6.04	5.03	4.53	4.03
47		6.71	5.65	4.94	4.24	3.53	3.18	2.83
100	3.65	3.16	2.66	2.33	1.99	1.66	1.50	1.33
220	1.66	1.44	1.21	1.06	0.905	0.754	0.679	0.604
330	1.11	0.956	0.805	0.704	0.604	0.503	0.453	0.403
470	0.777	0.671	0.565	0.494	0.424	0.353	0.318	0.283
1,000	0.365	0.316	0.266	0.233	0.199	0.166	0.150	0.133
1,500	0.254	0.221	0.188	0.166	0.144	0.122	0.111	0.0995
2,200	0.181	0.159	0.136	0.121	0.106	0.0905	0.0830	0.0754
3,300	0.131	0.116	0.101	0.0905	0.0805	0.074	0.0654	
4,700	0.0988	0.0883	0.0777	0.0706	0.0635	0.0565	0.0530	
6,800	0.0781	0.0708	0.0653	0.0586	0.0537	0.0488		
10,000	0.0663	0.0614	0.0564	0.0531	0.0498	0.0488		
15,000	0.0553	0.0520	0.0487					
22,000	0.0483	0.0460	0.0437					

RIPPLE CURRENT CORRECTION FACTOR

1. Temperature Factor

Ambient Temperature (°C)	≤ +60	+70	+85
Correction Rate	1.50	1.30	1.00

2. Frequency Factor

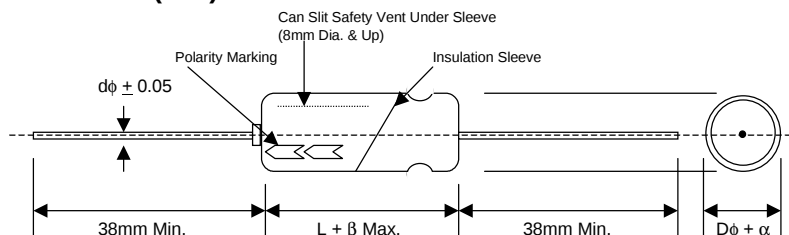
Frequency (Hz)	50	120	300	1K	10K	100K
0.47 ~ 3.3μF	0.65	1.0	1.35	1.75	2.30	2.50
4.7 ~ 33μF	0.75	1.0	1.25	1.50	1.75	1.80
47 ~ 1000μF	0.80	1.0	1.15	1.30	1.40	1.50
2200 ~ 10,000μF	0.85	1.0	1.03	1.05	1.08	1.08
15,000 ~ 22,000μF	0.85	1.0	1.03	1.05	1.08	1.08



NIC COMPONENTS CORPORATION

70 Maxess Rd., Melville, NY 11747 • (631)396-7500 FAX (631)396-7575

DIMENSIONS (mm)



SLEEVE COLOR: DARK BLUE

DIMENSIONS (mm)

Case Dia. (DØ)	5 to 10	12.5	16 to 18	22 to 25
Lead Dia. (dØ)	0.6	0.8	0.8	0.8
Dim. a	0.5	0.5	0.5	1.0
Dim. b	1.0	1.0	2.0	2.0

*VENTS ON CANS OVER 8mm DIAMETER AND OVER.

STANDARD PRODUCTS AND CASE SIZE TABLE: Dφ x L (mm)*

Cap. (μF)	Code	Working Voltage (WVDC)							
		6.3	10	16	25	35	50	63	100
.47	R47	-	-	-	-	-	-	-	5x13
1.0	1R0	-	-	-	-	-	-	-	5x13
2.2	2R2	-	-	-	-	-	-	-	5x13
3.3	3R3	-	-	-	-	-	-	5x13	6.3x13
4.7	4R7	-	-	-	-	-	-	5x13	6.3x13
10	100	-	-	-	-	-	5x13	6.3x13	6.3x16
22	220	-	-	-	5x13	-	6.3x13	6.3x16	8x16
33	330	-	-	5x13	6.3x13	6.3x13	6.3x16	8x16	8x20
47	470	-	5x13	6.3x13	6.3x13	-	8x16	8x16	8x20
100	101	-	6.3x13	6.3x16	8x16	8x16	8x16	8x20	10x25
220	221	6.3x16	-	8x16	8x16	8x20	10x20	10x25	12.5x31
330	331	-	8x16	8x16	8x20	10x20	10x25	12.5x25	16x26
470	471	-	8x16	8x20	10x20	10x25	12.5x25	12.5x25	16x31
1,000	102	8x20	10x20	10x25	12.5x25	12.5x31	16x26	16x31	18x50
1,500	152	10x20	10x25	12.5x25	12.5x31	16x31	16x40	16x40	22x50
2,200	222	12.5x25	12.5x25	12.5x31	16x25	16x31	16x40	18x40	25x50
3,300	332	12.5x31	12.5x31	16x26	16x31	16x40	18x50	22x50	-
4,700	472	12.5x31	16x26	16x31	16x40	18x50	22x50	25x50	-
6,800	682	16x31	16x31	16x40	18x50	22x50	25x50	-	-
10,000	103	16x40	16x40	18x50	22x50	25x50	-	-	-
15,000	153	18x40	18x50	22x50	25x50	-	-	-	-
22,000	223	18x50	22x50	25x50	-	-	-	-	-

* See NASS for new reduced sizes

PART NUMBERING SYSTEM

