

OxiCap® NLJ Series

Niobium Oxide Capacitors High CV Consumer Series



FEATURES

- High Volumetric Efficiency
- Environmentally Friendly
- 3x Reflow 260°C Compatible
- 100% Surge Current Tested
- Consumer Applications
- OxiCap® Non-Burn Technology
- RoHS Compliance
- Lead-Free Solution
- 6 Case Sizes Available
- CV Range: 22-150µF / 4-10V

APPLICATIONS

- Consumer Handhelds and Entertainment



LEAD-FREE

LEAD-FREE COMPATIBLE COMPONENT



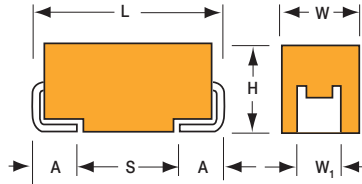
RoHS COMPLIANT



NON-BURN
NON-SMOKE



Elektra Award
2005



CASE DIMENSIONS:

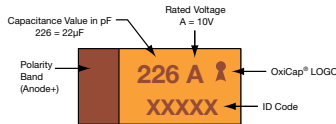
millimeters (inches)

Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W ₁ ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
A	1206	3216-18	3.20 (0.126)	1.60 (0.063)	1.60 (0.063)	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
B	1210	3528-21	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
G	1206	3216-15	3.20 (0.126)	1.60 (0.063)	1.50 (0.059) max	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
P	0805	2012-15	2.05 (0.081)	1.35 (0.053)	1.50 (0.059) max	1.00±0.10 (0.039±0.004)	0.50 (0.020)	0.85 (0.033)
S	1206	3216-12	3.20 (0.126)	1.60 (0.063)	1.20 (0.047) max	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
T	1210	3528-12	3.50 (0.138)	2.80 (0.110)	1.20 (0.047) max	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)

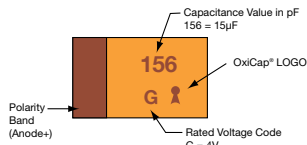
W₁ dimension applies to the termination width for A dimensional area only.

MARKING

A, B, G, S, T CASE



P CASE



HOW TO ORDER

NLJ	A	476	M	006	R	1600
Type	Case Size See table above	Capacitance Code 1st two digits represent significant figures, 3rd digit represents multiplier in pF	Tolerance M = ±20%	Rated DC Voltage 004 = 4Vdc 006 = 6.3Vdc 010 = 10Vdc	Packaging R = Pure Tin 7" Reel S = Pure Tin 13" Reel	ESR in mΩ

TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C			
Capacitance Range:	22 µF to 150 µF			
Capacitance Tolerance:	±20%			
Leakage Current DCL:	0.1CV			
Rated Voltage (V _R)	-55°C ≤ +40°C:	4	6.3	10
Category Voltage (V _C)	at 85°C:	2	3.2	5
Category Voltage (V _C)	at 105°C:	1.3	2	3.3
Temperature Range:	-55°C to +105°C with category voltage			
Reliability:	0.2% per 1000 hours at 85°C, 0.5xV _R , 0.1Ω/V series impedance with 60% confidence level			

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<https://avx.nt-rt.ru/> || axv@nt-rt

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CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC to 40°C		
µF	Code	4V (G)	6.3V (J)	10V (A)
22	226	P(4000)	S(1800)	A(4000)/G(3000)
33	336		G(2200)	A(1700)
47	476		A(1600)/T(1600)	B(1000)
68	686			
100	107		B(1700)	
150	157	B(1500)		

Released ratings, (ESR ratings in mOhms in parentheses)

Note: Voltage ratings are minimum values. KYOCERA AVX reserves the right to supply higher voltage ratings in the same case size, to the same reliability standards.

RATINGS & PART NUMBER REFERENCE

Part Number	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	Maximum Surge Current (A)	DCL Max. (µA)	ESR Max. @100kHz (mΩ)	100kHz RMS Current (mA)			MSL
										25°C	85°C	105°C	
4 Volt @ 85°C													
NLJP226M004#4000	P	22	4	85	1.3	105	0.4	8.8	4000	134	121	54	3
NLJB157M004#1500	B	150	4	85	1.3	105	1.0	60.0	1500	261	235	104	3
6.3 Volt @ 85°C													
NLJS226M006#1800	S	22	6.3	85	2	105	1.4	13.2	1800	208	187	83	3
NLJG336M006#2200	G	33	6.3	85	2	105	1.2	19.8	2200	195	176	78	3
NLJA476M006#1600	A	47	6.3	85	2	105	1.5	28.2	1600	237	213	98	3
NLJT476M006#1600	T	47	6.3	85	2	105	1.5	28.2	1600	245	220	98	3
NLJB107M006#1700	B	100	6.3	85	2	105	1.5	60.0	1700	245	220	98	3
10 Volt @ 85°C													
NLJA226M010#4000	A	22	10	85	3.3	105	1.1	22.0	4000	150	135	60	3
NLJG226M010#3000	G	22	10	85	3.3	105	1.4	22.0	3000	167	151	67	3
NLJA336M010#1700	A	33	10	85	3.3	105	2.3	33.0	1700	230	207	92	3
NLJB476M010#1000	B	47	10	85	3.3	105	3.4	47.0	1000	319	287	128	3

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V

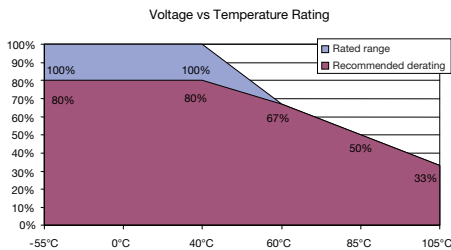
RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

ESR allowed to move up to 1.25 times catalogue limit post mounting

DCL allowed to move up to 2.00 times catalogue limit post mounting

For typical weight and composition see page 259.

NOTE: KYOCERA AVX reserves the right to supply higher voltage ratings or tighter tolerance part in the same case size, to the same reliability standards.



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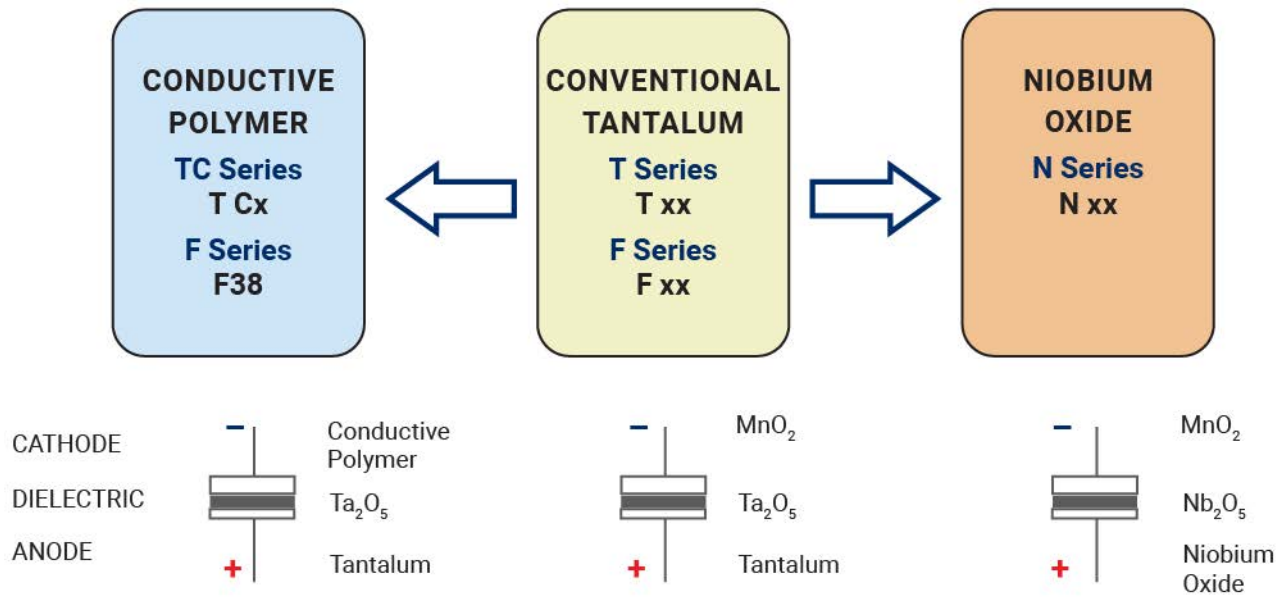
QUALIFICATION TABLE

TEST	NLJ series (Temperature range -55°C to +105°C)										
	Condition			Characteristics							
Endurance	Apply rated voltage (Ur) at 40°C and / or category voltage (Uc) at 85°C for 2000 hours through a circuit impedance of $\leq 0.1\Omega/V$. Stabilize at room temperature for 1-2 hours before measuring.			Visual examination	no visible damage						
				DCL	2 x initial limit						
				$\Delta C/C$	within $\pm 10\%$ of initial value						
				ESR	1.25 x initial limit						
Humidity	Store at 65°C and 90-95% relative humidity for 500 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.			Visual examination	no visible damage						
				DCL	2 x initial limit						
				$\Delta C/C$	within $\pm 10\%$ of initial value						
				ESR	1.25 x initial limit						
Temperature Stability	Step	Temperature°C	Duration(min)		+20°C	-55°C	+20°C	+85°C	+105°C	+20°C	
	1	+20	15	DCL	2 x IL*	n/a	2 x IL**	10 x IL*	12.5 x IL*	2 x IL*	
	2	-55	15		$\Delta C/C$	n/a	+0/-20%	$\pm 5\%$	+20/-0%	+25/-0%	$\pm 5\%$
	3	+20	15	ESR		1.25 x IL*	2.5 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*
	4	+85	15		ESR	1.25 x IL*	2.5 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*
	5	+105	15			ESR	1.25 x IL*	2.5 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*
	6	+20	15								
Surge Voltage	Apply 1.3x rated voltage (Ur) at 40°C for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000 Ω			Visual examination	no visible damage						
				DCL	2 x initial limit						
				$\Delta C/C$	within $\pm 5\%$ of initial value						
				ESR	1.25 x initial limit						
Mechanical Shock	MIL-STD-202, Method 213, Condition C			Visual examination	no visible damage						
				DCL	initial limit						
				$\Delta C/C$	within $\pm 5\%$ of initial value						
				DF	initial limit						
				ESR	initial limit						
Vibration	MIL-STD-202, Method 204, Condition D			Visual examination	no visible damage						
				DCL	initial limit						
				$\Delta C/C$	within $\pm 5\%$ of initial value						
				DF	initial limit						
				ESR	initial limit						

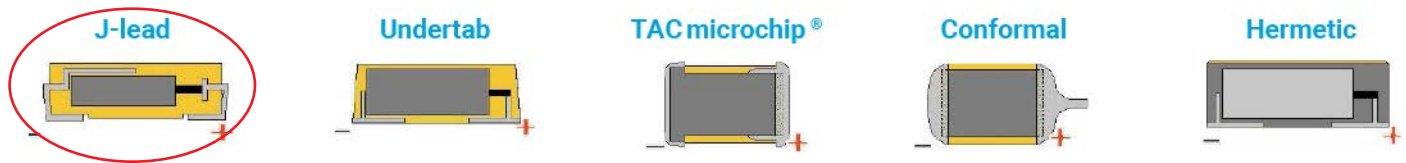
*Initial Limit

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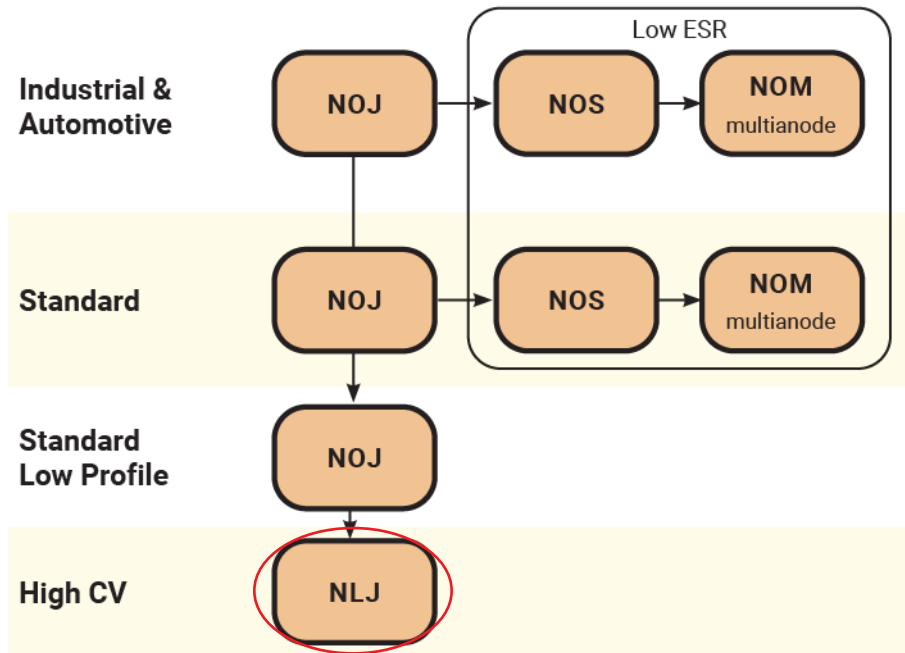
SOLID ELECTROLYTIC CAPACITOR ROADMAP



FIVE CAPACITOR CONSTRUCTION STYLES



SERIES LINE UP : NIOBIUM OXIDE OxiCap® CAPACITORS



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