

OxiCap® NOS Low ESR Series



Niobium Oxide Capacitor



FEATURES

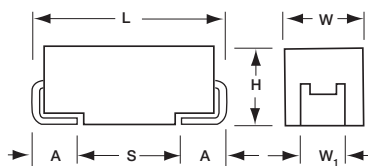
- Low ESR NbO capacitors
- Non-burn safe technology
- Reliability level: 0.2%/1000 hrs.
- CV range: 10-1000µF / 1.8-6.3V
- 9 case sizes available
- IBM global approval received in 2004
- Elektra Award received in 2005



Elektra Award
2005

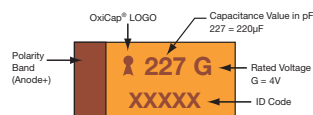
APPLICATIONS

- Medium power DC/DC for transportation and automotive industry



MARKING

A, B, C, D, E, V, W, X, Y CASE



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)
C	2312	6032-28	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	2917	7343-31	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	2917	7343-43	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
V	2924	7361-38	7.30 (0.287)	6.10 (0.240)	3.55 (0.140)	3.10 (0.120)	1.30 (0.051)	4.40 (0.173)
W	2312	6032-15	6.00 (0.236)	3.20 (0.126)	1.50 (0.059) max.	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
X	2917	7343-15	7.30 (0.287)	4.30 (0.169)	1.50 (0.059) max.	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
Y	2917	7343-20	7.30 (0.287)	4.30 (0.169)	2.00 (0.079) max.	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

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

HOW TO ORDER

NOS

Type

D

Case Size
See table above

107

Capacitance Code
1st two digits represent significant figures, 3rd digit represents multiplier in pF

M

Tolerance
M=±20%

006

Rated DC Voltage
001 = 1.8Vdc
002 = 2.5Vdc
004 = 4Vdc
006 = 6.3Vdc

R

Packaging
R = Pure Tin 7" Reel
S = Pure Tin 13" Reel

0100

ESR in mΩ

-

Additional characters may be added for special requirements
V = Dry pack Option (selected codes only) with exception of D, E, X, Y, V cases

TECHNICAL SPECIFICATIONS

Technical Data:

All technical data relate to an ambient temperature of +25°C is not stated

Capacitance Range: 10 µF to 1000 µF

Capacitance Tolerance: ±20%

Leakage Current DCL: 0.02CV

Rated Voltage DC (V_R) ≤ +85°C: 1.8 2.5 4 6.3

Category Voltage (V_C) ≤ +125°C: 0.9 1.3 2 3

Surge Voltage (V_S) ≤ +85°C: 2.3 3.3 5.2 8

Surge Voltage (V_S) ≤ +125°C: 1.2 1.7 2.6 4

Temperature Range: -55°C to +125°C

Reliability: 0.2% per 1000 hours at 85°C, V_R, 0.1Ω/V series impedance, 60% confidence level

Meets requirements of AEC-Q200

OxiCap® NOS Low ESR Series



Niobium Oxide Capacitor

CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V_R) to 85°C / 0.66 DC to 105°C / 0.5 DC to 125°C			
μF	Code	1.8V (x)	2.5V (e)	4.0V (G)	6.3V (J)
4.7	475				
6.8	685				
10	106				A(800, 1000, 2000)
15	156			A(1500)	B(600)
22	226		A(900)	B(600)	B(600)
33	336			B(600)	B(600) C(500) W(250)
47	476		B(500)	B(500) C(300) W(150)	B(500) C(300)
68	686		C(200) W(150)	C(200)	C(75,200) X(100) Y(100)
100	107	B(350) W(150)	C(150)	C(70,150) X(100)	C(150) D(80,100) Y(100)
150	157		C(65,150) X(100)	C(90,150) Y(100)	D(50,70,100) Y(100)
220	227	C(125) X(100)	C(80,125) Y(100)	D(40,60,100) Y(100)	D(45,60,100) E(80,100)
330	337	Y(100)	D(35,50,100) Y(100)	D(35,55,100) E(100)/Y(150)	E(80,100)
470	477	Y(100)	D(35,55,100) E(100)	D(100) E(75,100)	V(75)
680	687		E(60)	V(75)	
1000	108		V(50)		

Available Ratings, (ESR ratings in mOhms in brackets)

Engineering samples - please contact manufacturer

*Codes under development - subject to change

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



LEAD-FREE

LEAD-FREE COMPATIBLE
COMPONENT



RoHS
COMPLIANT



NON-BURN
NON-SMOKE

OxiCap® NOS Low ESR Series



Niobium Oxide Capacitor

RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL (µA) Max.	DF % Max.	ESR Max. (mΩ) @ 100kHz	MSL	100kHz RMS Current (A)		
											25°C	85°C	125°C
1.8 Volt @ 85°C													
NOSB107M001#0350	B	100	1.8	85	0.9	125	3.6	6	350	1	0.540	0.486	0.216
NOSW107M001#0150	W	100	1.8	85	0.9	125	3.6	6	150	1	0.849	0.764	0.339
NOSC227M001#0125	C	220	1.8	85	0.9	125	8.0	8	125	1	1.028	0.925	0.411
NOSX227M001#0100	X	220	1.8	85	0.9	125	8.0	8	100	3	1.095	0.986	0.438
NOSY337M001#0100	Y	330	1.8	85	0.9	125	11.9	8	100	3	1.225	1.102	0.490
NOSY477M001#0100	Y	470	1.8	85	0.9	125	17.0	8	100	3	1.225	1.102	0.490
2.5 Volt @ 85°C													
NOSA226M002#0900	A	22	2.5	85	1.3	125	1.1	6	900	1	0.316	0.285	0.126
NOSB476M002#0500	B	47	2.5	85	1.3	125	2.4	6	500	1	0.452	0.406	0.181
NOSC686M002#0200	C	68	2.5	85	1.3	125	3.4	6	200	1	0.812	0.731	0.325
NOSW686M002#0150	W	68	2.5	85	1.3	125	3.4	6	150	1	0.849	0.764	0.339
NOSC107M002#0150	C	100	2.5	85	1.3	125	5.0	6	150	1	0.938	0.844	0.375
NOSC157M002#0065	C	150	2.5	85	1.3	125	7.5	6	65	1	1.425	1.283	0.570
NOSC157M002#0150	C	150	2.5	85	1.3	125	7.5	6	150	1	0.938	0.844	0.375
NOSX157M002#0100	X	150	2.5	85	1.3	125	7.5	6	100	3	1.095	0.986	0.438
NOSC227M002#0080	C	220	2.5	85	1.3	125	11.0	8	80	1	1.285	1.156	0.514
NOSC227M002#0125	C	220	2.5	85	1.3	125	11.0	8	125	1	1.028	0.925	0.411
NOSY227M002#0100	Y	220	2.5	85	1.3	125	11.0	8	100	3	1.225	1.102	0.490
NOSD337M002#0035	D	330	2.5	85	1.3	125	16.5	10	35	3	2.268	2.041	0.907
NOSD337M002#0050	D	330	2.5	85	1.3	125	16.5	10	50	3	1.897	1.708	0.759
NOSD337M002#0100	D	330	2.5	85	1.3	125	16.5	10	100	3	1.342	1.207	0.537
NOSY337M002#0100	Y	330	2.5	85	1.3	125	16.5	10	100	3	1.225	1.102	0.490
NOSD477M002#0035	D	470	2.5	85	1.3	125	23.5	12	35	3	2.268	2.041	0.907
NOSD477M002#0055	D	470	2.5	85	1.3	125	23.5	12	55	3	1.809	1.628	0.724
NOSD477M002#0100	D	470	2.5	85	1.3	125	23.5	12	100	3	1.342	1.207	0.537
NOSE477M002#0100	E	470	2.5	85	1.3	125	23.5	10	100	3	1.407	1.266	0.563
NOSE687M002#0060	E	680	2.5	85	1.3	125	34.0	14	60	3	1.817	1.635	0.727
NOSV108M002#0050	V	1000	2.5	85	1.3	125	50.0	16	50	3	2.449	2.205	0.980
4 Volt @ 85°C													
NOSA156M004#1500	A	15	4	85	2	125	1.2	6	1500	1	0.245	0.220	0.098
NOSB226M004#0600	B	22	4	85	2	125	1.8	6	600	1	0.412	0.371	0.165
NOSB336M004#0600	B	33	4	85	2	125	2.6	6	600	1	0.412	0.371	0.165
NOSB476M004#0500	B	47	4	85	2	125	3.8	6	500	1	0.452	0.406	0.181
NOSC476M004#0300	C	47	4	85	2	125	3.8	6	300	1	0.663	0.597	0.265
NOSW476M004#0150	W	47	4	85	2	125	3.8	6	150	1	0.849	0.764	0.339
NOSC686M004#0200	C	68	4	85	2	125	5.4	6	200	1	0.812	0.731	0.325
NOSC107M004#0070	C	100	4	85	2	125	8.0	6	70	1	1.373	1.236	0.549
NOSC107M004#0150	C	100	4	85	2	125	8.0	6	150	1	0.938	0.844	0.375
NOSX107M004#0100	X	100	4	85	2	125	8.0	6	100	3	1.095	0.986	0.438
NOSC157M004#0090	C	150	4	85	2	125	12.0	6	90	1	1.211	1.090	0.484
NOSC157M004#0150	C	150	4	85	2	125	12.0	6	150	1	0.938	0.844	0.375
NOSY157M004#0100	Y	150	4	85	2	125	12.0	6	100	3	1.225	1.102	0.490
NOSD227M004#0040	D	220	4	85	2	125	17.6	8	40	3	2.121	1.909	0.849
NOSD227M004#0060	D	220	4	85	2	125	17.6	8	60	3	1.732	1.559	0.693
NOSD227M004#0100	D	220	4	85	2	125	17.6	8	100	3	1.342	1.207	0.537
NOSY227M004#0100	Y	220	4	85	2	125	17.6	10	100	3	1.225	1.102	0.490
NOSD337M004#0035	D	330	4	85	2	125	26.4	8	35	3	2.268	2.041	0.907
NOSD337M004#0055	D	330	4	85	2	125	26.4	8	55	3	1.809	1.628	0.724
NOSD337M004#0100	D	330	4	85	2	125	26.4	8	100	3	1.342	1.207	0.537
NOSE337M004#0100	E	330	4	85	2	125	26.4	8	100	3	1.407	1.266	0.563
NOSY337M004#0150	Y	330	4	85	2	125	26.4	12	150	3	1.000	0.900	0.400
NOSD477M004#0100	D	470	4	85	2	125	37.6	12	100	3	1.342	1.207	0.537
NOSE477M004#0075	E	470	4	85	2	125	37.6	12	75	3	1.625	1.462	0.650
NOSE477M004#0100	E	470	4	85	2	125	37.6	12	100	3	1.407	1.266	0.563
NOSV687M004#0075	V	680	4	85	2	125	54.4	14	75	3	2.000	1.800	0.800
6.3 Volt @ 85°C													
NOSA106M006#0800	A	10	6.3	85	3	125	1.2	6	800	1	0.335	0.302	0.134
NOSA106M006#1000	A	10	6.3	85	3	125	1.2	6	1000	1	0.300	0.270	0.120
NOSA106M006#2000	A	10	6.3	85	3	125	1.2	6	2000	1	0.212	0.191	0.085
NOSB156M006#0600	B	15	6.3	85	3	125	1.8	6	600	1	0.412	0.371	0.165
NOSB226M006#0600	B	22	6.3	85	3	125	2.6	6	600	1	0.412	0.371	0.165
NOSB336M006#0600	B	33	6.3	85	3	125	4.0	6	600	1	0.412	0.371	0.165
NOSC336M006#0500	C	33	6.3	85	3	125	4.0	6	500	1	0.514	0.462	0.206
NOSW336M006#0250	W	33	6.3	85	3	125	4.0	6	250	1	0.657	0.592	0.263
NOSB476M006#0500	B	47	6.3	85	3	125	5.6	6	500	1	0.452	0.406	0.181
NOSC476M006#0300	C	47	6.3	85	3	125	5.7	6	300	1	0.663	0.597	0.265
NOSC686M006#0075	C	68	6.3	85	3	125	8.2	6	75	1	1.327	1.194	0.531
NOSC686M006#0200	C	68	6.3	85	3	125	8.2	6	200	1	0.812	0.731	0.325
NOSX686M006#0100	X	68	6.3	85	3	125	8.2	6	100	3	1.095	0.986	0.438
NOSY686M006#0100	Y	68	6.3	85	3	125	8.2	6	100	3	1.225	1.102	0.490

OxiCap® NOS Low ESR Series



Niobium Oxide Capacitor

RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL (μA) Max.	DF % Max.	ESR Max. (mΩ) @ 100kHz	MSL	100kHz RMS Current (A)		
											25°C	85°C	125°C
NOSC107M006#0150	C	100	6.3	85	3	125	12.0	8	150	1	0.938	0.844	0.375
NOSD107M006#0080	D	100	6.3	85	3	125	12.0	6	80	3	1.500	1.350	0.600
NOSD107M006#0100	D	100	6.3	85	3	125	12.0	6	100	3	1.342	1.207	0.537
NOSY107M006#0100	Y	100	6.3	85	3	125	12.0	6	100	3	1.225	1.102	0.490
NOSD157M006#0050	D	150	6.3	85	3	125	18.0	6	50	3	1.897	1.708	0.759
NOSD157M006#0070	D	150	6.3	85	3	125	18.0	6	70	3	1.604	1.443	0.641
NOSD157M006#0100	D	150	6.3	85	3	125	18.0	6	100	3	1.342	1.207	0.537
NOSY157M006#0100	Y	150	6.3	85	3	125	18.0	6	100	3	1.225	1.102	0.490
NOSD227M006#0045	D	220	6.3	85	3	125	26.4	8	45	3	2.000	1.800	0.800
NOSD227M006#0060	D	220	6.3	85	3	125	26.4	8	60	3	1.732	1.559	0.693
NOSD227M006#0100	D	220	6.3	85	3	125	26.4	8	100	3	1.342	1.207	0.537
NOSE227M006#0080	E	220	6.3	85	3	125	26.4	12	80	3	1.573	1.416	0.629
NOSE227M006#0100	E	220	6.3	85	3	125	26.4	12	100	3	1.407	1.266	0.563
NOSE337M006#0080	E	330	6.3	85	3	125	39.6	12	80	3	1.573	1.416	0.629
NOSE337M006#0100	E	330	6.3	85	3	125	39.6	12	100	3	1.407	1.266	0.563
NOSV477M006#0075	V	470	6.3	85	3	125	56.4	14	75	3	2.000	1.800	0.800

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.

The EIA & CECC standards for capacitors allow an ESR movement to 1.25 times catalog limit post mounting.

For typical weight and composition see page 202.

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

QUALIFICATION TABLE

TEST	NOS series (Temperature range -55°C to +125°C)									
	Condition			Characteristics						
Endurance	Determine after application of rated voltage for 2000 +48/-0 hours at 85±2°C and then leaving 1-2 hours at room temperature. Also determine of 125°C temperature, category voltage for 2000 +48/-0 hours and then leaving 1-2 hours at room temperature. Power supply impedance to be ≤0.1Ω/V.			Visual examination	no visible damage					
				DCL	initial limit					
				ΔC/C	within ±10% of initial value					
				DF	initial limit					
				ESR	1.25 x initial limit					
Storage Life	125°C, 0V, 2000h			Visual examination	no visible damage					
				DCL	initial limit					
				ΔC/C	within ±10% of initial value					
				DF	initial limit					
				ESR	1.25 x initial limit					
Humidity	Determine after storage without applied voltage at 40±2°C and 93±2% relative humidity for 56 days and then recovery 1-2 hours at room temperature.			Visual examination	no visible damage					
				DCL	1.5 x initial limit					
				ΔC/C	within ±10% of initial value					
				DF	1.2 x initial limit					
				ESR	1.25 x initial limit					
Biased Humidity	Determine after leaving for 1000 hours at 85±2°C, 85% relative humidity and rated voltage and then recovery 1-2 hours at room temperature.			Visual examination	no visible damage					
				DCL	2 x initial limit					
				ΔC/C	within ±10% of initial value					
				DF	1.2 x initial limit					
				ESR	1.25 x initial limit					
Temperature Stability	Step	Temperature°C	Duration(min)		+20°C	-55°C	+20°C	+85°C	+125°C	+20°C
	1	+20±2	15	DCL	IL*	n/a	IL*	12 x IL*	15 x IL*	IL*
	2	-55+0/-3	15	ΔC/C	n/a	+0/-10%	±5%	+10/-0%	+12/-0%	±5%
	3	+20±2	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*
	4	+85+3/-0	15							
	5	+125+3/-0	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*
Surge Voltage	Test temperature: 125°C+3/0°C Test voltage: Category voltage at 125°C Surge voltage: 1.3 x category voltage at 125°C Series protection resistance 1000±100Ω Discharge resistance: 1000Ω Number of cycles: 1000x Cycle duration: 6 min; 30 sec charge, 5 min 30 sec discharge			Visual examination	no visible damage					
				DCL	initial limit					
				ΔC/C	within ±5% of initial value					
				DF	initial limit					
				ESR	1.25 x initial limit					

*Initial Limit

