NP SERIES ▪ BI-POLAR 85°C TYPE

KEY FEATURES

BI-POLAR

- **ALUMINUM ELECTROLYTIC CAPACITOR** ▪ THT type
- Endurance: 85°C ▪ 2 000 hours
- Bi-Polar, Non-polarized type
- Excellent frequency characteristics
- Minimal capacitance deviation

RoHS & REACH COMPLIANT

SPECIFICATIONS

Items		Performance Characteristics						
Operating Temperature Range		-40 ~ +85°C				-25 ~ +85°C		
Rated Voltage Range	V_R	6.3 ~ 100V DC				160 ~ 250V DC		
Surge Voltage	V_S	$V_S = 1.15 \cdot V_R$						
Capacitance Range	C_R	0.47 ~ 3300µF				0.47 ~ 47µF		
Cap. Tolerance	ΔC	±20% (120Hz ▪ 20°C)						
Leakage Current (20°C ▪ V_R applied)	I_{LEAK}	≤ $0.03 \cdot C_R \cdot V_R$ or 3µA, whichever is greater ▪ After 2 minutes [I_{LEAK} (µA) ; C_R (µF) ; V_R (V)]						
Dissipation Factor % (20°C ▪ 120Hz)	tanδ	V_R (V DC)	6.3	10	16	25	35	50
		tanδ (%)	25	25	20	15	15	13
		V_R (V DC)	63	100	160	200	250	
		tanδ (%)	10	10	15	15	20	
		For C_R ≥ 1000µF, add 2% per every multiple 1000µF of rated capacitance value						
Low Temperature Characteristics at 120Hz	Z ratio max.	V_R (V DC)	6.3	10	16	25	35	50
		Z-25°C/Z+20°C	4	3	2	2	2	2
		Z-40°C/Z+20°C	8	6	4	3	3	3
		V_R (V DC)	63	100	160	200	250	
		Z-25°C/Z+20°C	2	2	2	2	3	
		Z-40°C/Z+20°C	3	3	-	-	-	
		For capacitance > 1000µF						
		Z-25°C/Z+20°C	Add 0.5 for every multiple 1000µF of rated capacitance value					
		Z-40°C/Z+20°C	Add 1 for every multiple 1000µF of rated capacitance value					

Lifetime Test		
Endurance 85°C (V_R applied)	Test	**2 000 hours**
	ΔC/C_R	≤ ±20% of initial measured value
	tanδ	≤ 150% of initial specified value
	I_{Leak}	≤ the initial specified value
Shelf Life 85°C (V_R = 0)	Test	**1 000 hours**
	ΔC/C_R	≤ ±20% of initial measured value
	tanδ	≤ 150% of initial specified value
	I_{Leak}	≤ the initial specified value
	Before measurement: Restore capacitor to 20°C, apply V_R for 30 min according JIS-C-5101-4	

STANDARD RATINGS

Part number shows bulk version with straight leads

V_R (V)	C_R (µF)	ø D (mm)	L (mm)	I_R ▪ Max. Ripple Current +85°C ▪ 120Hz (mA rms)	CapXon Part Number
6.3	100	6.3	11	120	NP101M6R3E110A
	220	6.3	11	175	NP221M6R3E110A
	330	8	11.5	250	NP331M6R3F115A
	470	10	12.5	330	NP471M6R3G125A
	1000	10	20	650	NP102M6R3G200A
	2200	13	20	850	NP222M6R3I200A
	3300	16	25	970	NP332M6R3J250A
10	22	5	11	55	NP220M010C110A
	33	5	11	66	NP330M010C110A
	47	5	11	82	NP470M010C110A
	100	6.3	11	125	NP101M010E110A
	220	8	11.5	205	NP221M010F115A
	330	10	12.5	270	NP331M010G125A
	330	10	16	300	NP331M010G160A
	470	10	16	388	NP471M010G160A
	1000	13	20	700	NP102M010I200A
	2200	16	25	1000	NP222M010J250A
	3300	18	35.5	1300	NP332M010K355A
16	22	5	11	57	NP220M016C110A
	33	5	11	75	NP330M016C110A
	47	6.3	11	97	NP470M016E110A
	100	8	11.5	162	NP101M016F115A
	220	10	12.5	270	NP221M016G125A
	330	10	16	350	NP331M016G160A
	470	10	20	455	NP471M016G200A
	1000	13	20	730	NP102M016I200A
	1000	13	25	800	NP102M016I250A
	2200	16	31.5	1100	NP222M016J315A
25	10	5	11	34	NP100M025C110A
	22	6.3	11	65	NP220M025E110A
	33	6.3	11	86	NP330M025E110A
	47	6.3	11	100	NP470M025E110A
	100	8	11.5	175	NP101M025F115A
	220	10	12.5	295	NP221M025G125A
	220	10	16	310	NP221M025G160A
	330	10	20	440	NP331M025G200A
	470	13	20	530	NP471M025I200A
35	10	5	11	43	NP100M035C110A
	22	6.3	11	75	NP220M035E110A
	33	8	11.5	105	NP330M035F115A
	47	8	11.5	120	NP470M035F115A
	100	10	12.5	210	NP101M035G125A
	100	10	16	230	NP101M035G160A
	220	10	20	400	NP221M035G200A

See "PACKAGING INFORMATION" to taped or formed products.

STANDARD RATINGS

Part number shows bulk version with straight leads

V_R (V)	C_R (µF)	ø D (mm)	L (mm)	I_R ▪ Max. Ripple Current +85°C ▪ 120Hz (mA rms)	CapXon Part Number
35	330	13	20	495	NP331M035I200A
	470	13	25	655	NP471M035I250A
50	0.47	5	11	11	NPR47M050C110A
	1	5	11	17	NP010M050C110A
	2.2	5	11	25	NP2R2M050C110A
	3.3	5	11	27	NP3R3M050C110A
	4.7	5	11	34	NP4R7M050C110A
	10	6.3	11	52	NP100M050E110A
	22	8	11.5	92	NP220M050F115A
	33	8	11.5	109	NP330M050F115A
	47	10	12.5	150	NP470M050G125A
	100	10	20	265	NP101M050G200A
	220	13	20	475	NP221M050I200A
	330	13	25	560	NP331M050I250A
63	0.47	5	11	12	NPR47M063C110A
	1	5	11	18	NP010M063C110A
	2.2	5	11	26	NP2R2M063C110A
	3.3	6.3	11	28	NP3R3M063E110A
	4.7	6.3	11	34	NP4R7M063E110A
	10	6.3	11	57	NP100M063E110A
	22	8	11.5	97	NP220M063F115A
	33	10	12.5	140	NP330M063G125A
	47	10	16	180	NP470M063G160A
	100	13	20	320	NP101M063I200A
	220	13	25	510	NP221M063I250A
100	0.47	5	11	14	NPR47M100C110A
	1	5	11	21	NP010M100C110A
	2.2	5	11	34	NP2R2M100C110A
	3.3	6.3	11	39	NP3R3M100E110A
	4.7	8	11.5	47	NP4R7M100F115A
	10	8	11.5	71	NP100M100F115A
	22	10	16	140	NP220M100G160A
	33	10	16	190	NP330M100G160A
	33	10	20	220	NP330M100G200A
	47	10	20	195	NP470M100G200A
	47	13	20	240	NP470M100I200A
	100	16	25	425	NP101M100J250A
	220	16	25	520	NP221M100J250A
	220	16	31.5	550	NP221M100J315A
160	0.47	5	11	17	NPR47M160C110A
	1	6.3	11	25	NP010M160E110A
	2.2	8	11.5	38	NP2R2M160F115A
	3.3	8	11.5	43	NP3R3M160F115A
	4.7	10	12.5	52	NP4R7M160G125A

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STANDARD RATINGS

Part number shows bulk version with straight leads

V_R (V)	C_R (µF)	ø D (mm)	L (mm)	I_R ▪ Max. Ripple Current +85°C ▪ 120Hz (mA rms)	CapXon Part Number
160	10	10	16	89	NP100M160G160A
	22	13	20	155	NP220M160I200A
	33	13	20	230	NP330M160I200A
	47	13	25	250	NP470M160I250A
200	0.47	6.3	11	21	NPR47M200E110A
	1	8	11.5	28	NP010M200F115A
	2.2	8	11.5	42	NP2R2M200F115A
	3.3	10	12.5	46	NP3R3M200G125A
	4.7	10	16	56	NP4R7M200G160A
	10	10	20	95	NP100M200G200A
	22	13	20	180	NP220M200I200A
	33	13	25	250	NP330M200I250A
250	0.47	6.3	11	28	NPR47M250E110A
	1	8	11.5	32	NP010M250F115A
	2.2	10	12.5	48	NP2R2M250G125A
	3.3	10	16	57	NP3R3M250G160A
	4.7	10	20	88	NP4R7M250G200A
	10	10	20	130	NP100M250G200A
	22	13	25	224	NP220M250I250A
	33	16	25	305	NP330M250J250A
	33	16	25	305	NP330M250J250A

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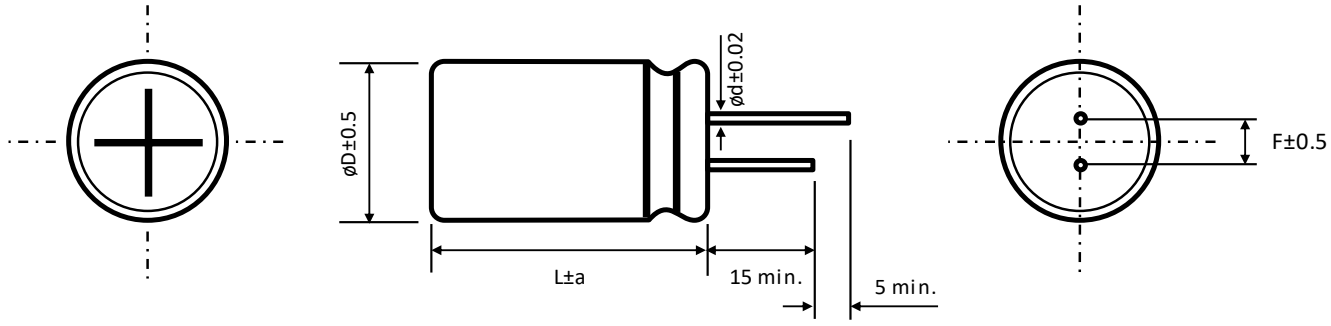
DIMENSIONS ▪ All dimensions in mm



ø D	5	6.3	8		10	13	16	18
F	2	2.5	3.5		5	5	7.5	7.5
ø d	0.5		L < 20	L ≥ 20	0.6		0.8	
			0.5	0.6				

a	ø D < 16	ø D = 16		ø D = 18	
	1.5	L = 25 to 35.5	L < 25 and L ≥ 40	L = 25 to 31.5	L < 25 and L ≥ 35.5
		1.5	2	1.5	2

MULTIPLIER K_f for RIPPLE CURRENT vs. FREQUENCY

C_R (µF) / Frequency (Hz)	50/60	100/120	400	1k	10k	50k - 100k
$C_R \leq 10$	0.8	1	1.3	1.45	1.65	1.7
$10 < C_R \leq 100$	0.8	1	1.23	1.36	1.48	1.53
$100 < C_R \leq 1000$	0.8	1	1.16	1.25	1.35	1.38
$1000 \leq C_R$	0.8	1	1.11	1.17	1.25	1.28

PRECAUTIONS, GUIDELINES AND PACKAGING INFORMATON

Unless otherwise agreed in individual specifications, all products are subject to our “General Precautions and Guidelines” as well as our “Packaging Information”. Please refer to the following links in the table.

General Precautions & Guidelines	Packaging Information	3D Models