NR SERIES ▪ STANDARD, BI-POLAR, AUDIO 85°C TYPE

KEY FEATURES

BI-POLAR AUDIO

- **ALUMINUM ELECTROLYTIC CAPACITOR** ▪ THT type
- Endurance: 85°C ▪ 2 000 hours
- Bi-Polar, Non-polarized type
- Excellent frequency characteristics
- Especially for audio applications

RoHS & REACH COMPLIANT

SPECIFICATIONS

Items		Performance Characteristics								
Operating Temperature Range		-40 ~ +85°C								
Rated Voltage Range	V_R	6.3 ~ 100V DC								
Surge Voltage	V_S	$V_S = 1.15 \cdot V_R$								
Capacitance Range	C_R	0.15 ~ 1000µF								
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 1 minute [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	63	100
		tanδ (%)	24	20	16	16	14	12	10	10
		For $C_R \geq 1000$µF, 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	63	100
		Z-25°C/Z+20°C	4	3	2	2	2	2	2	2
		Z-40°C/Z+20°C	8	6	4	4	3	3	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**
	△C/C_R	≤ ±20% of initial measured value
	tanδ	≤ 200% of initial specified value
	I_{Leak}	≤ the initial specified value
Shelf Life 85°C (V_R = 0)	Test	**1 000 hours**
	△C/C_R	≤ ±20% of initial measured value
	tanδ	≤ 200% 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	

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

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	33	5	11	62	NR330M6R3C110A
	47	6.3	11	76	NR470M6R3E110A
	100	8	11.5	154	NR101M6R3F115A
	220	10	12.5	245	NR221M6R3G125A
	330	10	16	330	NR331M6R3G160A
	470	10	20	360	NR471M6R3G200A
	1000	13	25	910	NR102M6R3I250A
10	22	5	11	60	NR220M010C110A
	33	6.3	11	70	NR330M010E110A
	47	6.3	11	95	NR470M010E110A
	100	10	12.5	188	NR101M010G125A
	220	10	16	294	NR221M010G160A
	330	10	20	360	NR331M010G200A
	470	13	20	538	NR471M010I200A
	1000	16	25	940	NR102M010J250A
16	10	5	11	43	NR100M016C110A
	22	6.3	11	71	NR220M016E110A
	33	6.3	11	90	NR330M016E110A
	47	8	11.5	122	NR470M016F115A
	100	10	12.5	208	NR101M016G125A
	220	10	20	360	NR221M016G200A
	330	13	20	480	NR331M016I200A
	470	13	25	638	NR471M016I250A
	1000	16	31.5	1090	NR102M016J315A
25	4.7	5	11	26	NR4R7M025C110A
	10	5	11	44	NR100M025C110A
	22	6.3	11	71	NR220M025E110A
	33	8	11.5	110	NR330M025F115A
	47	10	12.5	150	NR470M025G125A
	100	10	16	250	NR101M025G160A
	220	13	25	478	NR221M025I250A
	330	13	25	615	NR331M025I250A
	470	16	25	720	NR471M025J250A
35	4.7	5	11	34	NR4R7M035C110A
	10	6.3	11	48	NR100M035E110A
	22	8	11.5	96	NR220M035F115A
	33	10	12.5	135	NR330M035G125A
	47	10	12.5	154	NR470M035G125A
	100	10	20	275	NR101M035G200A
	220	13	25	560	NR221M035I250A
	330	16	25	670	NR331M035J250A

See "PACKAGING INFORMATION" to taped or formed products.

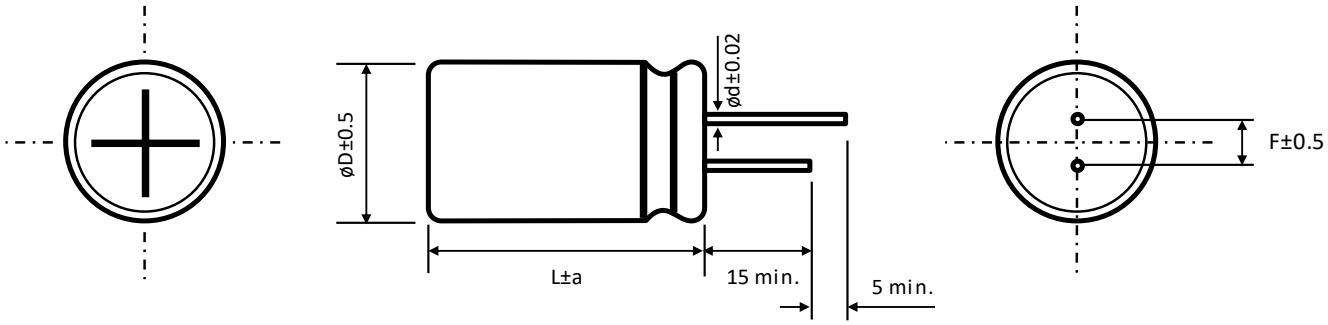
STANDARD RATINGS

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
50	0.47	5	11	12	NRR47M050C110A
	1	5	11	18	NR010M050C110A
	1.8	5	11	22	NR1R8M050C110A
	2.2	5	11	27	NR2R2M050C110A
	3.3	5	11	29	NR3R3M050C110A
	4.7	6.3	11	42	NR4R7M050E110A
	10	8	11.5	65	NR100M050F115A
	22	10	12.5	118	NR220M050G125A
	33	10	16	155	NR330M050G160A
	47	10	20	200	NR470M050G200A
	100	13	25	370	NR101M050I250A
	220	16	25	645	NR221M050J250A
	330	16	31.5	760	NR331M050J315A
63	0.47	6.3	11	14	NRR47M063E110A
	1	6.3	11	22	NR010M063E110A
	1.8	6.3	11	26	NR1R8M063E110A
	2.2	6.3	11	33	NR2R2M063E110A
	3.3	8	11.5	36	NR3R3M063F115A
	4.7	8	11.5	44	NR4R7M063F115A
	10	8	11.5	73	NR100M063F115A
	22	10	12.5	125	NR220M063G125A
	33	10	16	170	NR330M063G160A
	47	10	20	215	NR470M063G200A
	100	13	25	384	NR101M063I250A
100	0.15	6.3	11	13	NRR15M100E110A
	0.47	6.3	11	17	NRR47M100E110A
	1	6.3	11	25	NR010M100E110A
	1.8	6.3	11	32	NR1R8M100E110A
	2.2	6.3	11	39	NR2R2M100E110A
	3.3	8	11.5	49	NR3R3M100F115A
	4.7	10	12.5	60	NR4R7M100G125A
	10	10	16	98	NR100M100G160A
	22	10	20	165	NR220M100G200A
	33	13	20	275	NR330M100I200A

See "PACKAGING INFORMATION" to taped or formed products.

DIMENSIONS ▪ All dimensions in mm



ø D	5	6.3	8	10	13	16
F	2	2.5	3.5	5	5	7.5
ø d	0.5			0.6		0.8
a	1.5			1.5		1.5

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

DISCLAIMER

All product related data (e.g. specification, statements and general information) are subject to change without any notice. It is necessary that the customer observes all product related technical / application information and handling instructions.

CapXon products are designed and manufactured according to severe quality and safety standards. Under no circumstance, CapXon warrants that any CapXon product is suitable for the purposes intended for your application, even CapXon knows the application. It is customer's duty and obligation to check and make sure that CapXon products are suitable for the purposes intended and select the correct and proper CapXon product. Customers are requested to perform a sufficient validation and reliability evaluation to assure needed safety level and reliability performance by suitable designs and to apply proper safeguards (e.g. redundancies, protective circuits).

Particular operating conditions (ambient temperature, ripple current, voltage, thermal resistance, etc.) as well as storage, production or assembly may affect the performance and the lifetime of the capacitor. Please consult CapXon for lifetime estimation, failure mode considerations or worst-case scenarios according to the product technology, product tolerances / deviations or change of the characteristics of the capacitor due to shipment, storage, handling, production and usage.

For aerospace or military application, life-saving, life-sustaining, safety critical applications or any application where failure may cause severe personal injury or death, please consult us before design-in the capacitor in your application.

Except for the written expressed warranties, CapXon does not impliedly, by assumption or whatever else, warrant, undertake, promise any other warranty or guaranty for any CapXon product.

For further information, please visit our website www.capxongroup.com or contact CapXon directly.