

### NK SERIES ▪ BI-POLAR 105°C TYPE

#### KEY FEATURES



- ALUMINUM ELECTROLYTIC CAPACITOR ▪ THT type
- Endurance: 105°C ▪ 2 000 hours
- Bi-Polar, Non-polarized type
- Excellent frequency characteristics
- Minimal capacitance deviation



#### SPECIFICATIONS

Items		Performance Characteristics						
Operating Temperature Range		-40 ~ +105°C			-25 ~ +105°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	$C_R$	1 ~ 3300 $\mu$ F			1 ~ 47 $\mu$ F			
Cap. Tolerance	$\Delta C$	$\pm 20\%$ (120Hz ▪ 20°C)						
Leakage Current (20°C ▪ $V_R$ applied)	$I_{LEAK}$	$\leq 0.03 \cdot C_R \cdot V_R$ or 3 $\mu$ A, whichever is greater ▪ After 1 minute [ $I_{LEAK}$ ( $\mu$ A) ; $C_R$ ( $\mu$ F) ; $V_R$ (V) ]						
Dissipation Factor % (20°C ▪ 120Hz)	tan $\delta$	$V_R$ (V DC)	6.3	10	16	25	35	50
		tan $\delta$ (%)	25	25	20	15	15	13
		$V_R$ (V DC)	63	100	160	200	250	
		tan $\delta$ (%)	10	10	15	15	20	
		For $C_R > 1000\mu$ F, add 2% per every multiple 1000 $\mu$ F of rated capacitance value						
		For capacitance > 1000 $\mu$ F						
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	-	-	-	
Lifetime Test								
Endurance 105°C ( $V_R$ applied)	Test	<b>2 000 hours</b>						
	$\Delta C/C_R$	$\leq \pm 20\%$ of initial measured value						
	tan $\delta$	$\leq 150\%$ of initial specified value						
	$I_{Leak}$	$\leq$ the initial specified value						
Shelf Life 105°C ( $V_R = 0$ )	Test	<b>1 000 hours</b>						
	$\Delta C/C_R$	$\leq \pm 20\%$ of initial measured value						
	tan $\delta$	$\leq 150\%$ of initial specified value						
	$I_{Leak}$	$\leq$ 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)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	$I_R$ - Max. Ripple Current +105°C - 120Hz (mA rms)	CapXon Part Number
6.3	100	5	11	99	NK101M6R3C110A
	220	8	11.5	149	NK221M6R3F115A
	330	8	11.5	190	NK331M6R3F115A
	470	10	12.5	280	NK471M6R3G125A
	1000	10	16	352	NK102M6R3G160A
	2200	13	20	645	NK222M6R3I200A
	3300	16	25	950	NK332M6R3J250A
10	33	5	11	59	NK330M010C110A
	47	5	11	79	NK470M010C110A
	100	6.3	11	99	NK101M010E110A
	220	8	11.5	157	NK221M010F115A
	330	10	12.5	235	NK331M010G125A
	470	10	12.5	290	NK471M010G125A
	1000	10	20	430	NK102M010G200A
	2200	16	25	830	NK222M010J250A
3300	16	31.5	1150	NK332M010J315A	
16	22	5	11	53	NK220M016C110A
	33	5	11	62	NK330M016C110A
	47	6.3	11	90	NK470M016E110A
	100	6.3	11	99	NK101M016E110A
	100	8	11.5	123	NK101M016F115A
	220	8	11.5	200	NK221M016F115A
	220	10	12.5	234	NK221M016G125A
	330	10	12.5	255	NK331M016G125A
	470	10	16	360	NK471M016G160A
	1000	13	20	511	NK102M016I200A
2200	16	31.5	950	NK222M016J315A	
25	10	5	11	34	NK100M025C110A
	22	6.3	11	55	NK220M025E110A
	33	6.3	11	72	NK330M025E110A
	47	6.3	11	96	NK470M025E110A
	100	8	11.5	152	NK101M025F115A
	220	10	12.5	245	NK221M025G125A
	330	10	16	310	NK331M025G160A
	470	13	20	420	NK471M025I200A
35	10	5	11	38	NK100M035C110A
	22	6.3	11	65	NK220M035E110A
	33	8	11.5	75	NK330M035F115A
	47	8	11.5	107	NK470M035F115A
	100	10	12.5	198	NK101M035G125A
	220	10	20	320	NK221M035G200A
	330	13	20	370	NK331M035I200A
	470	13	25	495	NK471M035I250A

See "PACKAGING INFORMATION" to taped or formed products.

**STANDARD RATINGS**

Part number shows bulk version with straight leads

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	$I_R$ - Max. Ripple Current +105°C - 120Hz (mA rms)	CapXon Part Number
50	1	5	11	12	NK010M050C110A
	2.2	5	11	17	NK2R2M050C110A
	3.3	5	11	23	NK3R3M050C110A
	4.7	5	11	30	NK4R7M050C110A
	10	6.3	11	50	NK100M050E110A
	22	8	11.5	85	NK220M050F115A
	33	8	11.5	89	NK330M050F115A
	47	10	12.5	123	NK470M050G125A
	100	10	16	198	NK101M050G160A
	100	10	20	220	NK101M050G200A
	220	13	20	340	NK221M050I200A
	220	13	25	375	NK221M050I250A
330	16	25	500	NK331M050J250A	
63	1	5	11	14	NK010M063C110A
	2.2	5	11	20	NK2R2M063C110A
	3.3	6.3	11	25	NK3R3M063E110A
	4.7	6.3	11	30	NK4R7M063E110A
	10	6.3	11	52	NK100M063E110A
	22	8	11.5	88	NK220M063F115A
	22	10	12.5	92	NK220M063G125A
	33	10	12.5	115	NK330M063G125A
	47	10	16	150	NK470M063G160A
	100	13	20	295	NK101M063I200A
	220	13	25	420	NK221M063I250A
	100	1	5	11	15
2.2		5	11	20	NK2R2M100C110A
2.2		6.3	11	22	NK2R2M100E110A
3.3		6.3	11	28	NK3R3M100E110A
4.7		6.3	11	32	NK4R7M100E110A
4.7		8	11.5	36	NK4R7M100F115A
10		8	11.5	52	NK100M100F115A
10		10	12.5	55	NK100M100G125A
22		10	16	120	NK220M100G160A
33		10	20	175	NK330M100G200A
47		13	20	187	NK470M100I200A
100		16	25	399	NK101M100J250A
160	1	6.3	11	18	NK010M160E110A
	2.2	8	11.5	28	NK2R2M160F115A
	3.3	8	11.5	37	NK3R3M160F115A
	4.7	10	12.5	45	NK4R7M160G125A

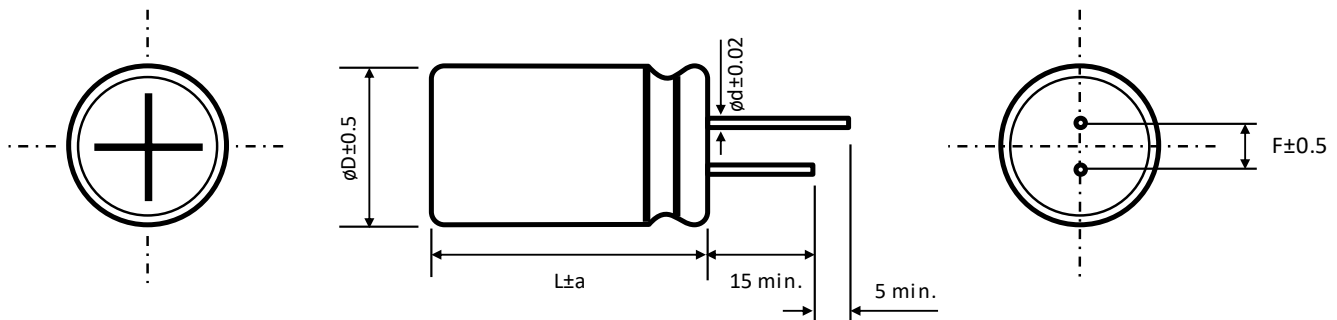
See "PACKAGING INFORMATION" to taped or formed products.

**STANDARD RATINGS**

Part number shows bulk version with straight leads

$V_R$ (V)	$C_R$ ( $\mu F$ )	$\phi D$ (mm)	L (mm)	$I_R$ - Max. Ripple Current +105°C - 120Hz (mA rms)	CapXon Part Number
160	10	10	16	79	NK100M160G160A
	22	13	20	140	NK220M160I200A
	33	13	20	200	NK330M160I200A
	47	13	25	215	NK470M160I250A
200	1	8	11.5	21	NK010M200F115A
	2.2	8	11.5	32	NK2R2M200F115A
	3.3	10	12.5	40	NK3R3M200G125A
	4.7	10	16	52	NK4R7M200G160A
	10	10	20	86	NK100M200G200A
	22	13	20	160	NK220M200I200A
	33	13	25	213	NK330M200I250A
250	1	8	11.5	25	NK010M250F115A
	2.2	10	12.5	39	NK2R2M250G125A
	3.3	10	16	43	NK3R3M250G160A
	4.7	10	20	65	NK4R7M250G200A
	10	10	20	109	NK100M250G200A
	22	13	25	189	NK220M250I250A
	33	16	25	250	NK330M250J250A

Part number shows bulk version with straight leads. See "PACKAGING INFORMATION" to taped or formed products.

**DIMENSIONS** - All dimensions in mm


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

**MULTIPLIER  $K_f$  for RIPPLE CURRENT vs. FREQUENCY**

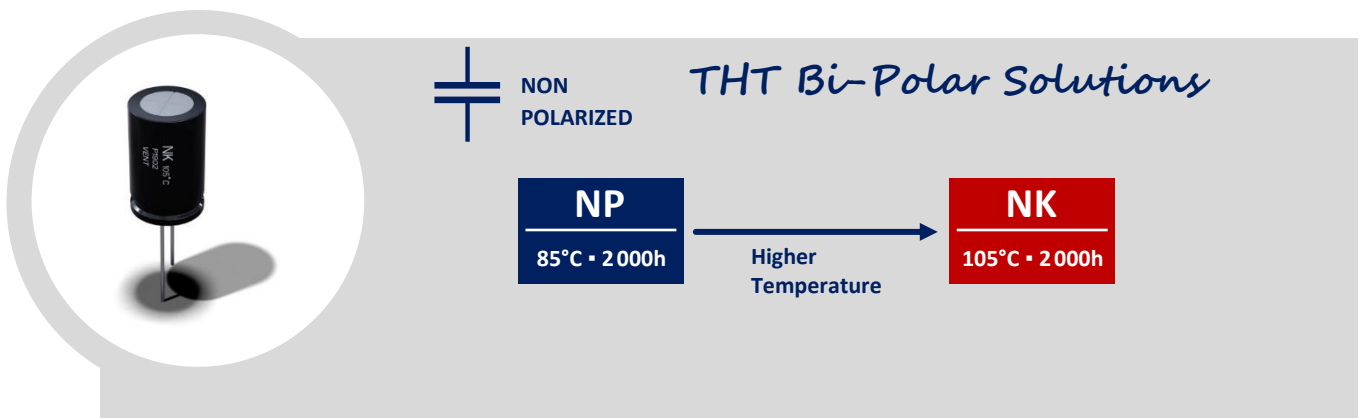
$C_R$ ( $\mu F$ ) / Frequency (Hz)	50/60	100/120	400	1k	10k	50k - 100k
$C_R \leq 10$	0.8	1	1.3	1.45	1.65	1.7
$10 < C_R \leq 100$	0.8	1	1.23	1.36	1.48	1.53
$100 < C_R \leq 1000$	0.8	1	1.16	1.25	1.35	1.38
$1000 \leq C_R$	0.8	1	1.11	1.17	1.25	1.28

**PRECAUTIONS, GUIDELINES AND PACKAGING INFORMATION**

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.

<a href="#">General Precautions &amp; Guidelines</a>	<a href="#">Packaging Information</a>	<a href="#">3D Models</a>	<a href="#">Reliability Tests</a>

**GROUP CHART**



**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.

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