

HIGH VOLTAGE, RADIAL, POLARIZED, EXTENDED TEMPERATURE

FEATURES

- HIGH VOLTAGE/TEMPERATURE (UP TO 450VDC/+105°C)
- NEW REDUCED SIZES

CHARACTERISTICS

Rated Voltage Range	160 ~ 450VDC		Compliant includes all homogeneous materials *See Part Number System for Details					
Capacitance Range	0.47 ~ 330μF							
Operating Temperature Range	-40°C ~ +105°C (160 ~ 400V) or -25°C ~ +105°C (450V)							
Capacitance Tolerance	±20% (M)							
Maximum Leakage Current @ 20°C	CV ≤ 1000μF 0.03CV + 15μA, CV > 1000μF 0.02 + 25μA (after 2 minutes)							
Max. Tan δ @ 120Hz/20°C	W.V.	160	200	250	350	400	450	
	S.V.	200	250	300	400	450	500	
	Tan δ	0.20	0.20	0.20	0.25	0.25	0.25	
Low Temperature Stability Impedance Ratio @ 120Hz	Z-25°C/Z+20°C	3	3	3	4	6	6	
	Z-40°C/Z+20°C	6	6	6	8	10	-	
Load Life Test at Rated W.V. +105°C 2,000 Hours: 10φ & Up +105°C 1,000 Hours: 8φ	Capacitance Change	Within ±25% of initial measured value						
	Tan δ	Less than 200% of specified maximum value						
	Leakage Current	Less than specified maximum value						
Shelf Life Test +85°C 1,000 Hours with no load	Shall meet same requirements as in load life test							

RoHS
Compliant
includes all homogeneous materials

*See Part Number System for Details



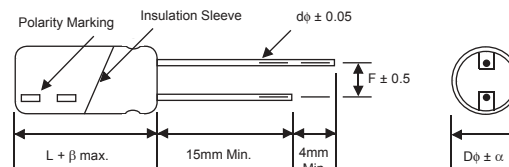
STANDARD PRODUCT AND CASE SIZE D φ x L (mm)

Cap (μF)	Code	Working Voltage (Vdc)					
		160	200	250	350	400	450
0.47	R47	5x11	5x11	5x11	6.3x11	6.3x11	-
1.0	1R0	5x11	5x11	5x11	6.3x11	8x11.5	8x12.5
2.2	2R2	6.3x11	6.3x11	6.3x11	8x11.5	8x11.5	10x16
3.3	3R3	6.3x11	6.3x11	8x11.5	8x12.5	10x12.5	10x20
4.7	4R7	6.3x11	8x11.5	8x11.5	10x12.5	10x16	12.5x20
10	100	8x11.5	8x12.5	10x12.5	10x20	10x20	12.5x25
22	220	10x12.5	10x16	10x20	12.5x25	12.5x25	16x25
33	330	10x20	10x20	12.5x20	16x25	16x25	16x31
47	470	12.5x20	12.5x20	12.5x25	16x31	16x31	18x36
68	680	12.5x20	12.5x25	16x25	16x36	18x36	18x41
100	101	12.5x25	16x25	16x36	18x41	-	-
150	151	16x31	16x36	18x36	-	-	-
220	221	16x36	18x36	-	-	-	-
330	331	18x41	-	-	-	-	-

LEAD SPACING AND DIAMETER (mm)

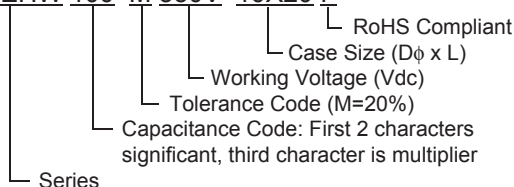
Case Dia. (Dφ)	5	6.3	8	10	12.5	16	18
Lead Dia. (dφ)	0.5	0.5	0.6	0.6	0.6	0.8	0.8
Lead Spacing (F)	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Dim α	0.5	0.5	0.5	0.5	0.5	0.5	0.5

β = L < 20mm = 1.5mm, L > 20mm = 2.0mm



PART NUMBER SYSTEM

NREHW 100 M 350V 10X20 F



PRECAUTIONS

Please review the notes on correct use, safety and precautions found on pages T10 & T11 of NIC's Electrolytic Capacitor catalog.
Also found at www.nicomp.com/precautions
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: tpmg@nicomp.com

STANDARD VALUES, SPECIFICATIONS AND CASE SIZES (mm)

Part Number	Cap. (μF)	W.V. (Vdc)	Dissipation Factor +20°C/120Hz	Ripple Current Rating (mA) +105°C/120Hz	Max. ESR (Ω) +20°C/120Hz	Load Life Hours @+105°C
NRE-HWR47M160V5x11F	0.47	160	0.20	7	706	1,000
NRE-HW1R0M160V5x11F	1.0		0.20	15	332	1,000
NRE-HW2R2M160V6.3x11F	2.2		0.20	22	151	1,000
NRE-HW3R3M160V6.3x11F	3.3		0.20	28	101	1,000
NRE-HW4R7M160V6.3x11F	4.7		0.20	39	70.6	1,000
NRE-HW110M160V8x11.5F	10		0.20	63	33.2	1,000
NRE-HW220M160V10x12.5F	22		0.20	107	15.1	2,000
NRE-HW330M160V10x20F	33		0.20	137	10.1	2,000
NRE-HW470M160V12.5x20F	47		0.20	172	7.06	2,000
NRE-HW680M160V12.5x20F	68		0.20	217	4.88	2,000
NRE-HW101M160V12.5x25F	100		0.20	287	3.32	2,000
NRE-HW151M160V16x31F	150		0.20	385	2.21	2,000
NRE-HW221M160V16x36F	220		0.20	522	1.51	2,000
NRE-HW331M160V18x41F	330		0.20	560	1.01	2,000
NRE-HWR47M200V5x11F	0.47	200	0.20	8	706	1,000
NRE-HW1R0M200V5x11F	1.0		0.20	16	332	1,000
NRE-HW2R2M200V6.3x11F	2.2		0.20	24	151	1,000
NRE-HW3R3M200V6.3x11F	3.3		0.20	32	101	1,000
NRE-HW4R7M200V8x11.5F	4.7		0.20	40	70.6	1,000
NRE-HW100M200V8x12.5F	10		0.20	64	33.2	1,000
NRE-HW220M200V10x16F	22		0.20	112	15.1	2,000
NRE-HW330M200V10x20F	33		0.20	147	10.1	2,000
NRE-HW470M200V12.5x20F	47		0.20	175	7.06	2,000
NRE-HW680M200V12.5x25F	68		0.20	228	4.88	2,000
NRE-HW101M200V16x25F	100		0.20	301	3.32	2,000
NRE-HW151M200V16x36F	150		0.20	403	2.21	2,000
NRE-HW221M200V18x36F	220		0.20	532	1.51	2,000
NRE-HWR47M250V5x11F	0.47	250	0.20	8	706	1,000
NRE-HW1R0M250V5x11F	1.0		0.20	18	332	1,000
NRE-HW2R2M250V6.3x11F	2.2		0.20	25	151	1,000
NRE-HW3R3M250V8x11.5F	3.3		0.20	34	101	1,000
NRE-HW4R7M250V8x11.5F	4.7		0.20	41	70.6	1,000
NRE-HW100M250V10x12.5F	10		0.20	66	33.2	2,000
NRE-HW220M250V10x20F	22		0.20	119	15.1	2,000
NRE-HW330M250V12.5x20F	33		0.20	154	10.1	2,000
NRE-HW470M250V12.5x25F	47		0.20	182	7.06	2,000
NRE-HW680M250V16x25F	68		0.20	235	4.88	2,000
NRE-HW101M250V16x36F	100		0.20	302	3.32	2,000
NRE-HW151M250V18x36F	150		0.20	412	2.21	2,000
NRE-HWR47M350V6.3x11F	0.47	350	0.25	10	882	1,000
NRE-HW1R0M350V6.3x11F	1.0		0.25	20	415	1,000
NRE-HW2R2M350V8x11.5F	2.2		0.25	28	188	1,000
NRE-HW3R3M350V8x12.5F	3.3		0.25	36	126	1,000
NRE-HW4R7M350V10x12.5F	4.7		0.25	47	86.2	2,000
NRE-HW100M350V10x20F	10		0.25	70	41.5	2,000
NRE-HW220M350V12.5x25F	22		0.25	123	18.8	2,000
NRE-HW330M350V16x25F	33		0.25	158	12.6	2,000
NRE-HW470M350V16x31F	47		0.25	182	8.82	2,000
NRE-HW680M350V16x36F	68		0.25	242	6.10	2,000
NRE-HW101M350V18x41F	100		0.25	308	4.15	2,000
NRE-HWR47M400V6.3x11F	0.47	400	0.25	10	882	1,000
NRE-HW1R0M400V8x11.5F	1.0		0.25	20	415	1,000
NRE-HW2R2M400V8x11.5F	2.2		0.25	28	188	1,000
NRE-HW3R3M400V10x12.5F	3.3		0.25	36	126	2,000
NRE-HW4R7M400V10x16F	4.7		0.25	47	86.2	2,000
NRE-HW100M400V10x20F	10		0.25	70	41.5	2,000
NRE-HW220M400V12.5x25F	22		0.25	126	18.8	2,000
NRE-HW330M400V16x25F	33		0.25	161	12.6	2,000
NRE-HW470M400V16x31F	47		0.25	189	8.82	2,000
NRE-HW680M400V18x36F	68		0.25	249	6.10	2,000

STANDARD VALUES, SPECIFICATIONS AND CASE SIZES (mm)

Part Number	Cap. (μ F)	W.V. (Vdc)	Dissipation Factor +20°C/120Hz	Ripple Current Rating (mA) +105°C/120Hz	Max. ESR (Ω) +20°C/120Hz	Load Life Hours @+105°C
NRE-HW1R0M450V8x12.5F	1.0	450	0.25	18	415	1,000
NRE-HW2R2M450V10x16F	2.2		0.25	28	188	2,000
NRE-HW3R3M450V10x20F	3.3		0.25	36	126	2,000
NRE-HW4R7M450V12.5x20F	4.7		0.25	47	86.2	2,000
NRE-HW100M450V12.5x25F	10		0.25	70	41.5	2,000
NRE-HW220M450V16x25F	22		0.25	125	18.8	2,000
NRE-HW330M450V16x31F	33		0.25	154	12.6	2,000
NRE-HW470M450V18x36F	47		0.25	172	8.82	2,000
NRE-HW680M450V18x41F	68		0.25	189	6.10	2,000

RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

Cap. Value	Frequency (Hz)		
	100 ~ 500	1K ~ 5K	10K ~ 100K
<100 μ F	1.00	1.30	1.50
100 ~ 1000 μ F	1.00	1.20	1.30