

HIGH CV, HIGH TEMPERATURE, RADIAL LEADS, POLARIZED

FEATURES

- EXTENDED VALUE AND HIGH VOLTAGE
- NEW REDUCED SIZES

RoHS Compliant
includes all homogeneous materials

*See Part Number System for Details



CHARACTERISTICS

Rated Voltage Range		6.3 ~ 50Vdc					160 ~ 250Vdc					350 ~ 450Vdc				
Capacitance Range		100 ~ 10,000 μ F					4.7 ~ 220 μ F					1.5 ~ 68 μ F				
Operating Temperature Range		-55 ~ +105°C					-40 ~ +105°C					-25 ~ +105°C				
Capacitance Tolerance		\pm 20%(M)														
Max. Leakage Current @ 20°C		6.3 ~ 50Vdc					160 ~ 450Vdc									
		0.01CV or 3 μ A whichever is greater after 2 minutes					CV \leq 1,000 μ F					CV>1,000 μ F				
							0.1CV + 40 μ A (1 min.)					0.04CV + 100 μ A (1 min.)				
							.03CV + 15 μ A (5 min.)					0.02CV + 25 μ A (5 min.)				
Max. Tan δ @ 120Hz/20°C	Case Diameter	8 ~ 10	W.V. (Vdc)	6.3	10	16	25	35	50	160	200	250	350	400	450	
			S.V. (Vdc)	8.0	13	20	32	44	63	200	250	300	400	450	500	
		C \leq 1,000 μ F	0.30	0.26	0.20	0.18	0.14	0.12	0.20	0.20	0.20	0.20	0.20	0.20	0.25	
		W.V. (Vdc)	6.3	10	16	25	35	50	160	200	250	350	400	450		
	12 ~ 18	C \leq 1,000 μ F	0.26	0.22	0.18	0.16	0.14	0.12	0.20	0.20	0.20	0.20	0.20	0.20		
		C=2,000 μ F	0.28	0.24	0.20	0.18	0.16	0.14	-	-	-	-	-	-		
		C=3,300 μ F	0.30	0.26	0.22	0.20	0.18	-	-	-	-	-	-	-		
		C=4,700 μ F	0.32	0.28	0.24	0.22	-	-	-	-	-	-	-	-		
		C=6,800 μ F	0.36	0.32	0.28	-	-	-	-	-	-	-	-			
		C=10,000 μ F	0.44	0.40	-	-	-	-	-	-	-	-	-			
Low Temperature Stability Impedance Ratio @ 120Hz	W.V. (Vdc)		6.3	10	16	25	35	50	160	200	250	350	400	450		
	Z-25°C/Z+20°C		4	3	2	2	2	2	3	3	3	6	6	6		
	Z-40°C/Z+20°C		8	6	4	4	3	3	-	-	-	-	-	-		
Load Life Test at Rated W.V. +105°C 2,000 Hours		Capacitance Change					Within \pm 25% of initial measured value									
		Tan δ					Less than 200% of specified maximum value									
		Leakage Current					Less than specified maximum value									

STANDARD PRODUCT AND CASE SIZE TABLE D ϕ xL (mm)

Cap. (μ F)	Code	Working Voltage (Vdc)												
		6.3	10	16	25	35	50	160	200	250	350	400	450	
1.5	1R5	-	-	-	-	-	-	-	-	-	-	-	-	8x9
2.2	2R2	-	-	-	-	-	-	-	-	-	-	-	8x9	10x9
3.3	3R3	-	-	-	-	-	-	-	-	-	-	8x9	10x9	-
4.7	4R7	-	-	-	-	-	-	8x9	8x9	8x9	10x9	10x9	-	-
6.8	6R8	-	-	-	-	-	-	8x9	8x9	10x9	12.5x16	12.5x16	12.5x16	-
10	100	-	-	-	-	-	-	10x9	10x9	-	12.5x16	12.5x16	16x16	-
22	220	-	-	-	-	-	-	-	12.5x16	12.5x16	18x16	16x20	16x20	16x20
33	330	-	-	-	-	-	-	12.5x16	16x16	16x16	16x16	16x20	16x20	18x25
47	470	-	-	-	-	-	-	16x16	16x16	18x16	18x20	18x20	18x20	18x25
68	680	-	-	-	-	-	-	18x16	16x20	16x20	18x25	-	-	-
100	101	-	-	-	-	-	8x9	16x20	16x20	18x25	-	-	-	-
150	151	-	-	-	-	8x9	10x9	18x20	18x25	-	-	-	-	-
220	221	-	-	-	8x9	10x9	-	18x25	-	-	-	-	-	-
330	331	-	-	8x9	10x9	10x9	-	-	-	-	-	-	-	-
470	471	8x9	8x9	8x9	10x9	-	12.5x16	-	-	-	-	-	-	-
680	681	8x9	10x9	10x9	12.5x16	12.5x16	16x16	-	-	-	-	-	-	-
1000	102	10x9	10x9	-	12.5x16	16x16	16x20	-	-	-	-	-	-	-
2200	222	12.5x16	12.5x16	16x16	16x20	18x20	18x25	-	-	-	-	-	-	-
3300	332	16x16	16x16	16x20	18x20	18x25	-	-	-	-	-	-	-	-
4700	472	18x16	16x20	18x20	18x25	-	-	-	-	-	-	-	-	-
6800	682	16x20	18x20	18x25	-	-	-	-	-	-	-	-	-	-
10000	103	18x20	18x25	-	-	-	-	-	-	-	-	-	-	-

LEAD SPACING AND DIAMETER (mm)

Case Dia. (D ϕ)	8	10	12.5	16	18
Lead Dia. (d ϕ)	0.6	0.6	0.6	0.8	0.8
Lead Spacing (F)	3.5	5.0	5.0	7.5	7.5
Dim. α	0.5	0.5	0.5	0.5	0.5



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	Load Life Hours @+105°C
NRE-HS471M6.3V8x9F	470	6.3	0.30	270	2,000
NRE-HS681M6.3V8x9F	680		0.30	300	2,000
NRE-HS102M6.3V10x9F	1000		0.30	460	2,000
NRE-HS222M6.3V12.5x16F	2200		0.28	770	2,000
NRE-HS332M6.3V16x16F	3300		0.30	930	2,000
NRE-HS472M6.3V18x16F	4700		0.32	1000	2,000
NRE-HS682M6.3V16x20F	6800		0.36	1200	2,000
NRE-HS103M6.3V18x20F	10000		0.44	1430	2,000
NRE-HS471M10V8x9F	470	10	0.26	295	2,000
NRE-HS681M10V10x9F	680		0.26	350	2,000
NRE-HS102M10V10x9F	1000		0.26	460	2,000
NRE-HS222M10V12.5x16F	2200		0.24	770	2,000
NRE-HS332M10V16x16F	3300		0.26	930	2,000
NRE-HS472M10V16x20F	4700		0.28	1200	2,000
NRE-HS682M10V18x20F	6800		0.32	1330	2,000
NRE-HS103M10V18x25F	10000		0.40	1680	2,000
NRE-HS331M16V8x9F	330	16	0.20	270	2,000
NRE-HS471M16V8x9F	470		0.20	310	2,000
NRE-HS681M16V10x9F	680		0.20	370	2,000
NRE-HS222M16V16x16F	2200		0.20	930	2,000
NRE-HS332M16V16x20F	3300		0.22	1200	2,000
NRE-HS472M16V18x20F	4700		0.24	1330	2,000
NRE-HS682M16V18x25F	6800		0.28	1680	2,000
NRE-HS221M25V8x9F	220		25	0.18	240
NRE-HS331M25V10x9F	330	0.18		310	2,000
NRE-HS471M25V10x9F	470	0.18		370	2,000
NRE-HS681M25V12.5x16F	680	0.16		640	2,000
NRE-HS102M25V12.5x16F	1000	0.16		670	2,000
NRE-HS222M25V16x20F	2200	0.18		1100	2,000
NRE-HS332M25V18x20F	3300	0.20		1200	2,000
NRE-HS472M25V18x25F	4700	0.22		1490	2,000
NRE-HS151M35V8x9F	150	35	0.14	250	2,000
NRE-HS221M35V10x9F	220		0.14	300	2,000
NRE-HS331M35V10x9F	330		0.14	360	2,000
NRE-HS681M35V12.5x16F	680		0.14	640	2,000
NRE-HS102M35V16x16F	1000		0.14	850	2,000
NRE-HS222M35V18x20F	2200		0.16	1200	2,000
NRE-HS332M35V18x25F	3300		0.18	1490	2,000
NRE-HS101M50V8x9F	100		50	0.12	200
NRE-HS151M50V10x9F	150	0.12		300	2,000
NRE-HS471M50V12.5x16F	470	0.12		570	2,000
NRE-HS681M50V16x16F	680	0.12		710	2,000
NRE-HS102M50V16x20F	1000	0.12		890	2,000
NRE-HS222M50V18x25F	2200	0.14		1320	2,000
NRE-HS4R7M160V8x9F	4.7	160	0.20	54	2,000
NRE-HS6R8M160V8x9F	6.8		0.20	60	2,000
NRE-HS100M160V10x9F	10		0.20	85	2,000
NRE-HS330M160V12.5x16F	33		0.20	175	2,000
NRE-HS470M160V16x16F	47		0.20	245	2,000
NRE-HS680M160V18x16F	68		0.20	305	2,000
NRE-HS101M160V16x20F	100		0.20	381	2,000
NRE-HS151M160V18x20F	150		0.20	464	2,000
NRE-HS221M160V18x25F	220		0.20	602	2,000
NRE-HS4R7M200V8x9F	4.7		200	0.20	54
NRE-HS6R8M200V8x9F	6.8	0.20		60	2,000
NRE-HS100M200V10x9F	10	0.20		85	2,000
NRE-HS220M200V12.5x16F	22	0.20		156	2,000
NRE-HS330M200V12.5x16F	33	0.20		175	2,000
NRE-HS470M200V16x16F	47	0.20		250	2,000
NRE-HS680M200V16x20F	68	0.20		355	2,000
NRE-HS101M200V16x20F	100	0.20		381	2,000
NRE-HS151M200V18x25F	150	0.20		532	2,000



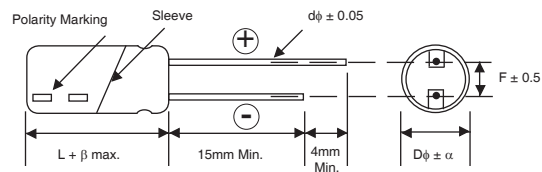
STANDARD VALUES, SPECIFICATIONS AND CASE SIZES (mm)

Part Number	Cap. (μF)	W.V. (Vdc)	Dissipation Factor +20°C/120Hz	Ripple Current Rating (mA) +105°C/120Hz	Load Life Hours @+105°C
NRE-HS4R7M250V8x9F	4.7	250	0.20	54	2,000
NRE-HS6R8M250V10x9F	6.8		0.20	69	2,000
NRE-HS220M250V12.5x16F	22		0.20	156	2,000
NRE-HS330M250V16x16F	33		0.20	238	2,000
NRE-HS470M250V18x16F	47		0.20	309	2,000
NRE-HS680M250V16x20F	68		0.20	397	2,000
NRE-HS101M250V18x25F	100		0.20	451	2,000
NRE-HS3R3M350V8x9F	3.3	350	0.20	37	2,000
NRE-HS4R7M350V10x9F	4.7		0.20	49	2,000
NRE-HS6R8M350V12.5x16F	6.8		0.20	94	2,000
NRE-HS100M350V12.5x16F	10		0.20	100	2,000
NRE-HS220M350V18x16F	22		0.20	183	2,000
NRE-HS330M350V16x20F	33		0.20	238	2,000
NRE-HS470M350V18x20F	47		0.20	309	2,000
NRE-HS680M350V18x25F	68	0.20	397	2,000	
NRE-HS2R2M400V8x9F	2.2	400	0.20	35	2,000
NRE-HS3R3M400V10x9F	3.3		0.20	40	2,000
NRE-HS4R7M400V10x9F	4.7		0.20	49	2,000
NRE-HS6R8M400V12.5x16F	6.8		0.20	94	2,000
NRE-HS100M400V12.5x16F	10		0.20	100	2,000
NRE-HS220M400V16x20F	22		0.20	187	2,000
NRE-HS330M400V16x20F	33		0.20	238	2,000
NRE-HS470M400V18x20F	47	0.20	309	2,000	
NRE-HS1R5M450V8x9F	1.5	450	0.25	19	2,000
NRE-HS2R2M450V10x9F	2.2		0.25	29	2,000
NRE-HS6R8M450V12.5x16F	6.8		0.25	77	2,000
NRE-HS100M450V16x16F	10		0.25	109	2,000
NRE-HS220M450V16x20F	22		0.25	170	2,000
NRE-HS330M450V18x25F	33		0.25	238	2,000
NRE-HS470M450V18x25F	47		0.25	275	2,000

RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

Frequency (Hz)	60	120	500	1K	10K ≥
1.5 ~ 6.8μF	0.65	1.00	1.20	1.30	1.50
10 ~ 68μF	0.80	1.00	1.20	1.30	1.50
100 ~ 1000μF	0.80	1.00	1.10	1.15	1.20
2200 ~ 10000μF	0.80	1.00	1.05	1.10	1.15

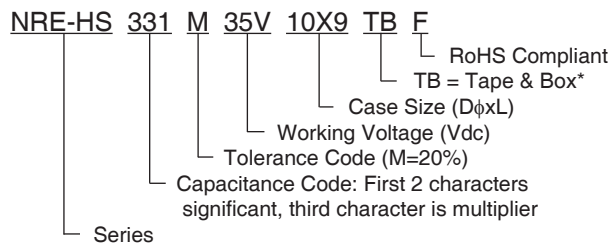
DIMENSIONS (mm)



β max. $L \leq 16\text{mm} = 1.5\text{mm}$, $L \geq 20\text{mm} = 2.0\text{mm}$

Drawing is representative of parts as supplied in bulk or straight lead format, please see taping specification for details on taped format packaging.

PART NUMBER SYSTEM



*see taping specifications for details

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.niccomp.com/precautions. If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: tpmg@niccomp.com

