

HRE

Radial Lead Type
series

Low ESR, High ripple current
Load life of 4,000h at 135°C
Compliance with AEC-Q200



• Specifications

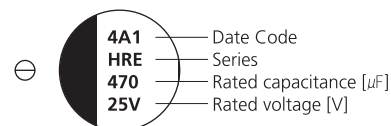
Items	Characteristics				
Category temperature range	-55 to +125℃				
Rated voltage range	25 to 80Vdc				
Capacitance range	33 to 680μF				
Capacitance tolerance	±20% [M] (at 20℃, 120Hz)				
Leakage current	I=0.01CV or 3μA whichever is greater (at 20℃, after 2 minutes)				
Tangent of loss angle(tanδ)	Rated voltage(V)	25	35	50	63
	Tanδ	0.14	0.12	0.10	0.08
	(at 20℃, 120Hz)				
ESR	Less than or equal to the value of Standard Ratings (at 20℃, 100kHz)				
Low temperature characteristics (Impedance ratio at 100kHz)	Z (-25 ℃) / Z (+20 ℃) ≤ 1.5 Z (-55 ℃) / Z (+20 ℃) ≤ 2.0				
Endurance	135℃, 4,000 hrs apply the rated ripple current without exceeding the rated voltage				
	Capacitance change		Within±30% of the initial value		
	Tangent of loss angle (tanδ)		≤200% of the initial specified value		
	ESR(mΩ)		≤200% of the initial specified value		
	Leakage current		≤The initial specified value		
Shelf life	After storage for 1,000 hrs at 135℃ with no voltage applied and then being stabilized at 20℃, capacitors shall meet the specified values for the endurance characteristics listed above.(with voltage treatment)				
Damp Heat (Steady State)	85℃, 85% RH, 2,000 hrs, rated voltage applied				
	Capacitance change		Within±30% of the initial value		
	Tangent of loss angle (tanδ)		≤200% of the initial specified value		
	ESR(mΩ)		≤200% of the initial specified value		
	Leakage current		≤The initial specified value		

• Part numbering system

Example: HRE series, 25V / 470μF

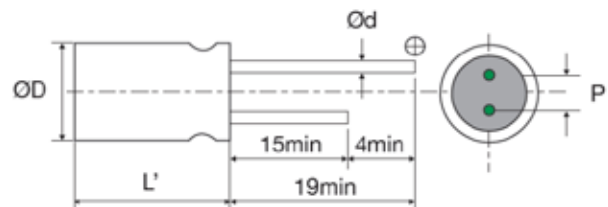
25	HRE	470	M	E	11
Voltage	Series	Capacitance	Tolerance	Diameter	Length

• Marking and Dimensions



• Frequency coefficient for ripple current

Frequency	120Hz	1kHz	10kHz	100kHz
Coefficient	0.15	0.40	0.75	1.00



Size	ØD±0.5	L	L'	P±0.5	Ød
8.0×9.5		9.5	L±1.0	3.5	0.60
10.0×10.5	10.0	10.5		5.0	0.60
10.0×11.5	10.0	11.5		5.0	0.60
10.0×16.0	10.0	16.0		5.0	0.60

● Standard Ratings

Rated Voltage [Vdc]	Rated Capacitance [μF]	Size ØD x L [mm]	ESR (20°C, 100kHz) [mΩ] [max.]	Rated Ripple Current (100kHz) [mAmps]		Part Number
				125°C	135°C	
25	470	10.0 x 11.5	14	3500	2500	25HRE470ME11
	560	10.0 x 16.0	11	4000	2900	25HRE560ME16
	680	10.0 x 16.0	11	5700	4100	32HRE680ME16
35	330	10.0 x 11.5	14	3500	2500	35HRE330ME11
	470	10.0 x 16.0	11	4000	2900	35HRE470ME16
50	150	10.0 x 11.5	17	3200	2250	50HRE150ME11
	220	10.0 x 16.0	13	3700	2600	50HRE220ME16
63	100	10.0 x 11.5	19	3000	2100	63HRE100ME11
	150	10.0 x 16.0	15	3500	2400	63HRE150ME16
	180	10.0 x 16.0	15	4900	3500	63HRE180ME16
80	33	8.0 x 9.5	45	2500	1700	80HRE33MD10
	56	10.0 x 10.5	36	3200	2200	80HRE56ME10
	100	10.0 x 16.0	16	4400	3200	80HRE100ME16