



## • Specifications

Items	Characteristics														
Category temperature range	-55 to +105°C														
Rated voltage range	16 to 80Vdc														
Capacitance range	22 to 1800μF														
Capacitance tolerance	±20% [M] (at 20°C, 120Hz)														
Leakage current	I=0.01CV or 3μA whichever is greater (at 20°C, after 2 minutes)														
Tangent of loss angle(tanδ)	<table border="1"> <thead> <tr> <th>Rated voltage(V)</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>80</th> </tr> </thead> <tbody> <tr> <td>Tanδ</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> <td>0.08</td> </tr> </tbody> </table> <p style="text-align: right;">(at 20°C, 120Hz)</p>	Rated voltage(V)	16	25	35	50	63	80	Tanδ	0.16	0.14	0.12	0.10	0.08	0.08
Rated voltage(V)	16	25	35	50	63	80									
Tanδ	0.16	0.14	0.12	0.10	0.08	0.08									
ESR	Less than or equal to the value of Standard Ratings (at 20°C, 100kHz)														
Low temperature characteristics (Impedance ratio at 100kHz)	$Z(-25\text{ }^{\circ}\text{C}) / Z(+20\text{ }^{\circ}\text{C}) \leq 1.5$ $Z(-55\text{ }^{\circ}\text{C}) / Z(+20\text{ }^{\circ}\text{C}) \leq 2.0$														
Endurance	105°C, 10,000 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 105°C with no voltage applied and then being stabilized at 20°C, capacitors shall meet the specified values for the endurance characteristics listed above.(with voltage treatment)														
	85°C, 85% RH, 2,000 hrs, rated voltage applied														
Damp Heat (Steady State)	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: HRS series, 25V / 220μF

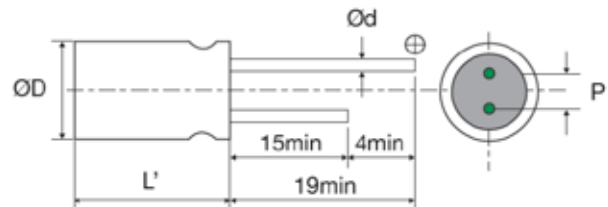
25	HRS	220	M	D	10
Voltage	Series	Capacitance	Tolerance	Diameter	Length

## • 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
6.3×7.7	6.3	7.7	L±0.5	2.5	0.50
8.0×9.5	8.0	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 (105°C, 100kHz) [mA rms]	Part Number
16	560	8.0 x 9.5	27	3100	16HRS560MD10
	1200	10.0 x 11.5	16	4100	16HRS1200ME11
	1800	10.0 x 16.0	11	5200	16HRS1800ME16
25	150	8.0 x 9.5	27	2300	25HRS150MD10
	220	8.0 x 9.5	27	2300	25HRS220MD10
	330	10.0 x 10.5	20	2500	25HRS330ME10
	680	10.0 x 16.0	16	4100	35HRS680ME10
	1200	10.0 x 16.0	11	5200	35HRS1200ME16
35	68	6.3 x 7.7	35	2700	35HRS68MC8
	100	8.0 x 9.5	27	2300	35HRS100MD10
	150	8.0 x 9.5	27	2300	35HRS150MD10
	220	10.0 x 10.5	20	2500	35HRS220ME10
	270	10.0 x 10.5	20	2500	35HRS270ME10
	330	10.0 x 10.5	14	4700	35HRS330ME10
	470	8.0 x 11.5	11	5200	35HRS470MD11
	680	10.0 x 16.0	11	5700	35HRS680MD16
50	47	8.0 x 9.5	30	1800	50HRS47MD10
	68	8.0 x 9.5	30	1800	50HRS68MD10
	100	10.0 x 10.5	28	2000	50HRS100ME10
	220	10.0 x 16.0	13	5100	50HRS220ME16
63	33	8.0 x 9.5	40	1700	63HRS33MD10
	47	8.0 x 9.5	40	1700	63HRS47MD10
	56	10.0 x 10.5	30	1800	63HRS56ME10
	68	10.0 x 10.5	30	1800	63HRS68ME10
	82	10.0 x 10.5	30	1800	63HRS82ME10
	180	10.0 x 16.0	15	4900	63HRS180ME16
80	22	8.0 x 9.5	45	1550	80HRS22MD10
	33	10.0 x 10.5	36	1700	80HRS33ME10
	47	10.0 x 10.5	36	1700	80HRS47ME10
	100	10.0 x 16.0	16	4400	80HRS100ME16