

**Features**

- ◆ Low ESR & high ripple current capability
- ◆ Endurance: 2,000 hours at 125°C
- ◆ Compliant to the RoHS directive
- ◆ Suitable for LED Lighting, telecommunication & power unit applications.



**Specifications**

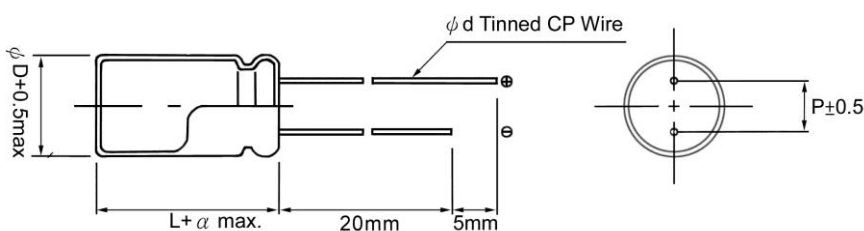
Item	Performance Characteristics	
Operating Temperature range	-55 + 125°C	
Rated Voltage Range	16V ~ 160V	
Capacitance Tolerance	± 20% (at 120 Hz / 20°C)	
Surge Voltage	Rated Voltage x 1.15	
Leakage Current	Within the specified value as in standard rating	
Dissipation Factor (tan δ)	Less than or equal to the specified value at 20°C, 120 Hz	
Temperature Characteristics (Impedance ratio at 100 KHz)	Z (-55°C) / Z (+20°C)	≤ 1.25
	Z (-125 °C) / Z (+20°C)	≤ 1.25
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 16V~25V 2,000 hours, ≥ 35V 1,500 hours at 125°C.	
	Capacitance change	≤ ± 30% of the initial value
	D. F. (Tan δ)	≤ 300% of initial specified value
	ESR	≤ 300% of initial specified value
	Leakage current	Initial specified value or less
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to DC voltage at 60°C, 90 to 95% RH for 1,000 hours.	
	Capacitance change	≤ ± 20% of the initial value
	D. F. (Tan δ)	≤ 150% of initial specified value
	ESR	≤ 150% of initial specified value
	Leakage current	Initial specified value or less
Surge Voltage Test	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified At 105°C for 30 seconds through a protective resistor (R=1KΩ) and discharge for 5 minutes 30 seconds.	
	Capacitance change	≤ ± 20% of the initial value
	D. F. (Tan δ)	≤ 150% of initial specified value
	ESR	≤ 150% of initial specified value
	Leakage current	Initial specified value or less
Failure Rate	0.5% per 1,000 hours maximum (Confidence level 60% at 125°C)	

\* In case of any doubt arises, measure the leakage current after voltage applied for 120 minutes at 125°C.

**Frequency Coefficient for Ripple Current**

Frequency	120 Hz ≤ f < 1 KHz	1 KHz ≤ f < 10 KHz	10 KHz ≤ f < 100 KHz	100 KHz ≤ f ≤ 300 KHz
Coefficient	0.05	0.30	0.70	1.00

**Diagram of Dimensions:(unit:mm)**



(mm)		
φ D +0.5max	<b>8</b>	<b>10</b>
φ d ± 0.05	0.6	0.6
F	3.5	5
α (max)	1.5	1.5

## Dimensions & Characteristics

Rated voltage (V.DC)	Rated Capacitance (μF)	Case Size D x L (mm)	tan δ	Leakage Current (μA)	ESR (mΩ max./ 20°C 100KHz to 300KHz)	Rated ripple current (mArms, 100 KHz)		Part Number
						T <sub>x</sub> ≤ 105°C	105°C < T <sub>x</sub> ≤ 125°C	
16V	330	8 x 8	0.12	1,056	15	4,300	1,720	GPL-330M16V0808
	470	8 x 8	0.12	1,504	15	4,300	1,720	GPL-470M16V0808
	470	8 x 12	0.12	1,504	13	4,650	1,860	GPL-470M16V0812
	820	8 x 12	0.12	2,624	13	4,650	1,860	GPL-820M16V0812
	820	10 x 12	0.12	2,624	12	5,600	2,240	GPL-820M16V1012
	1,000	10 x 12	0.12	3,200	12	5,600	2,240	GPL-1000M16V1012
	1,200	10 x 12	0.12	3,840	12	5,600	2,240	GPL-1200M16V1012
	1,500	10 x 12	0.12	4,800	12	5,600	2,240	GPL-1500M16V1012
25V	100	8 x 8	0.12	500	24	2,900	1,160	GPL-100M25V0808
	150	8 x 8	0.12	750	24	2,900	1,160	GPL-150M25V0808
	220	8 x 12	0.12	1,100	18	4,250	1,700	GPL-220M25V0812
	330	8 x 12	0.12	1,650	18	4,250	1,700	GPL-330M25V0812
	470	8 x 12	0.12	2,350	18	4,250	1,700	GPL-470M25V0812
	470	10 x 12	0.12	2,350	16	4,700	1,880	GPL-470M25V1012
	560	10 x 12	0.12	2,800	16	4,700	1,880	GPL-560M25V1012
	680	10 x 12	0.12	3,400	16	4,700	1,880	GPL-680M25V1012
35V	47	8 x 8	0.12	329	30	2,600	1,040	GPL-47M35V0808
	68	8 x 8	0.12	476	30	2,600	1,040	GPL-68M35V0808
	100	8 x 12	0.12	700	26	2,950	1,180	GPL-100M35V0812
	150	8 x 12	0.12	1,050	26	2,950	1,180	GPL-150M35V0812
	180	8 x 12	0.12	1,260	26	2,950	1,180	GPL-180M35V0812
	220	8 x 12	0.12	1,540	26	2,950	1,180	GPL-220M35V0812
	220	10 x 12	0.12	1,540	24	3,400	1,360	GPL-220M35V1012
	330	10 x 12	0.12	2,310	24	3,400	1,360	GPL-330M35V1012
50V	390	10 x 12	0.12	2,730	24	3,400	1,360	GPL-390M35V1012
	47	8 x 12	0.12	470	32	2,250	900	GPL-47M50V0812
	68	8 x 12	0.12	680	32	2,250	900	GPL-68M50V0812
	82	8 x 12	0.12	820	32	2,250	900	GPL-82M50V0812
	120	8 x 12	0.12	1,200	32	2,250	900	GPL-120M50V0812
	120	10 x 12	0.12	1,200	28	2,620	1,040	GPL-120M50V1012
	180	10 x 12	0.12	1,800	28	2,620	1,040	GPL-180M50V1012
63V	220	10 x 12	0.12	2,200	28	2,620	1,040	GPL-220M50V1012
	82	8 x 12	0.12	1,033	32	2,100	840	GPL-82M63V0812
	100	8 x 12	0.12	1,260	32	2,100	840	GPL-100M63V0812
	150	10 x 12	0.12	1,890	28	2,550	1,020	GPL-150M63V1012
100V	180	10 x 12	0.12	2,268	28	2,550	1,020	GPL-180M63V1012
	15	8 x 12	0.12	300	40	1,850	740	GPL-15M100V0812
	22	8 x 12	0.12	440	40	1,850	740	GPL-22M100V0812
	33	10 x 12	0.12	660	38	2,100	840	GPL-33M100V1012
160V	47	10 x 12	0.12	940	38	2,100	840	GPL-47M100V1012
	4.7	8 x 12	0.12	150	130	720	280	GPL-4.7M160V0812
	6.8	8 x 12	0.12	217	130	720	280	GPL-6.8M160V0812
	12	10 x 12	0.12	384	130	960	380	GPL-12M160V1012