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# GSR Series General Purpose

## Features

- ◆ Wide CV value range.
- ◆ Load life 2000 hrs at 85°C
- ◆ Safety vent construction design.
- ◆ For detail specifications, please refer to Engineering Bulletin No.E101

## Specifications

Item	Performance Characteristics								
Operating Temperature Range	-40 to +85°C						-25 to +85°C		
Rated voltage Range	6.3 to 100 VDC						160 to 450 VDC		
Capacitance Range	0.1 to 15000 uF						0.47 to 470 uF		
Capacitance Tolerance	±20% (120Hz, +20°C)								
Leakage Current(+20°C,max)	I ≤ 0.01 CV or 3uA After 1 minutes whichever is greater measured with rated working voltage applied.						I ≤ 0.03 CV (uA) After 1 minute with rated working voltage applied.		
Dissipation Factor(tan δ)	Working Voltage(VDC)	6.3	10	16	25	35	50	63	100
	D.F.(%)max.	24	20	16	14	12	10	9	8
	Working Voltage(VDC)	160	200	250	350	400	450		
	D.F.(%)max.	16	18	18	20	20	20		
For capacitance > 1000 uF, add 2% per another 1000uF. (+20°C,at 120Hz)									
Low Temperature Characteristics (120Hz)	Impedance radio max.								
	Working Voltage(VDC)	6.3	10	16	25	35	50	63	100
	Z-25°C/Z+20°C	4	3	2	2	2	2	2	2
	Z-40°C/Z+20°C	8	6	4	4	3	3	3	3
	Working Voltage(VDC)	160	200	250	350	400	450		
Load Life	Z-25°C/Z+20°C	2	2	3	5	15	15		
	For Capacitance Value 1000 uF, Add 0.5 per another 1000 uF for -25°C/+ 20°C Add 1 per another 1000 uF for -40°C/+20°C								
	Test conditions								
	Duration time : 2000 Hrs								
	Ambient temperature:+85°C								
Shelf Life	Applied voltage : Rated DC working voltage								
	After test requirements at +20°C								
	Capacitance change: ≤ ±20% of the initial measured value								
	Dissipation factor : ≤ 150% of the initial specified value								
	Test conditions								
	Duration time: 500 Hrs								
	Ambient temperature:+85°C								
	Applied voltage: None								
	After test requirements at +20°C: Same limits as Load life.Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.								

## Multiplier for ripple current vs. Frequency

CAP(uF) \ VHz	50(60)	120	400	1K	10K	50K-100K	
Multiplier	CAP ≤ 10	0.8	1	1.30	1.30	1.65	1.70
	10 < CAP ≤ 100	0.8	1	1.23	1.23	1.48	1.53
	100 < CAP ≤ 1000	0.8	1	1.16	1.16	1.35	1.38
	1000 < CAP	0.8	1	1.11	1.11	1.25	1.28

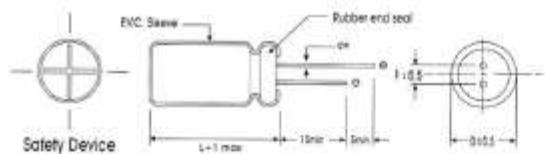
## Multiplier for Ripple Current vs. Temp

Temperature°C	45	60	70	85
Multiplier	1.8	1.50	1.30	1.0

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



D $\phi$	5	6.3	8	10	13	16	18	22
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10
d $\phi$	0.5			0.6			0.8	

**Case Size**

WV(SV) uF	6.3 (8)	10 (13)	16 (20)	25 (32)	35 (44)	50 (63)	63 (79)	100 (125)	160 (200)	200 (250)	250 (300)	350 (400)	400 (450)	450 (500)
0.1						5x11	5x11	5x11	-	-	-	-	-	-
0.22						5x11	5x11	5x11	-	-	-	-	-	-
0.33						5x11	5x11	5x11	-	-	-	-	-	-
0.47						5x11	5x11	5x11	5x11	5x11	5x11	6.3x11	6.3x11	6.3x11
1						5x11	5x11	5x11	5x11	6.3x11	6.3x11	6.3x11	8x11.5	8x11.5
2.2						5x11	5x11	5x11	6.3x11	6.3x11	8x11.5	10x12.5	10x12.5	10x12.5
3.3						5x11	5x11	5x11	6.3x11	6.3x11	8x11.5	10x12.5	10x16	10x20
4.7				→	5x11	5x11	5x11	5x11	6.3x11 8x11.5	8x11.5	10x12.5 10x16	10x12.5	10x16	10x20
10		→	5x11	5x11	5x11	5x11	5x11	6.3x11	8x11.5 10x12.5 10x16	10x12.5 10x16	10x16	10x20	13x20	13x25
22	→	5x11	5x11	5x11	5x11	5x11	5x11 6.3x11	6.3x11 8x11.5	10x16	10x20	10x20	13x25	16x25	16x31.5
33	5x11	5x11	5x11	5x11	5x11	5x11 6.3x11	6.3x11 8x11.5	8x11.5 10x12.5	10x20	13x20	13x20 13x25	16x25	16x25	16x35.5
47	5x11	5x11	5x11	5x11	5x11 6.3x11	5x11 6.3x11	6.3x11 8x11.5	10x12.5 10x16	13x20	13x20 13x25	13x25	16x31.5	16x31.5	16x35.5
100	5x11	5x11	5x11 6.3x11	6.3x11	6.3x11 8x11.5	8x11.5	8x11.5	10x20	13x25	16x25	16x31.5	18x14	-	-
220	5x11 6.3x11	6.3x11 8x11.5	8x11.5	10x12.5	10x12.5 10x16	10x16	13x25 16x25	16x35.5	18x35.5	-	-	-	-	-
330	6.3x11 8x11.5	8x11.5	10x12.5 10x16	10x12.5 10x20	10x16 13x20	10x20	13x25 16x25	18x31.5	18x35.5	-	-	-	-	-
470	6.3x11 8x11.5	8x11.5	8x11.5	10x12.5	10x16 10x20	13x20	13x20 13x25	16x25 16x31.5	18x35	18x41	-	-	-	-
1000	8x11.5	10x12.5	10x16	10x20	13x20	13x25 16x25	16x25 16x31.5	18x41	-	-	-	-	-	-
2200	10x20	10x20	13x20	13x25	16x25 16x31.5	16x35.5 18x41	-	-	-	-	-	-	-	-
3300	10x20 13x20	13x20	13x25	16x25 16x31.5	16x35.5	18x35.5	22x41	-	-	-	-	-	-	-
4700	13x20 13x25	13x25	16x25	16x31.5	18x35.5	22x41	-	-	-	-	-	-	-	-
6800	16x25	16x25	16x31.5	18x35.5	-	-	-	-	-	-	-	-	-	-
10000	16x25 16x31.5	16x35.5 18x35.5	18x35 18x41	-	-	-	-	-	-	-	-	-	-	-
15000	16x35.5 18x35.5	18x35	-	-	-	-	-	-	-	-	-	-	-	-



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### Maximum Ripple Current

WV(SV) uF	6.3 (8)	10 (13)	16 (20)	25 (32)	35 (44)	50 (63)	63 (79)	100 (125)	160 (200)	200 (250)	250 (300)	350 (400)	400 (450)	450 (500)
0.1	—	—	—	—	→	8	8	10	—	—	—	—	—	—
0.22	—	—	—	—	→	8	8	10	—	—	—	—	—	—
0.33	—	—	—	—	→	8	8	10	—	—	—	—	—	—
0.47	—	—	—	—	→	11	11	12	12	12	12	15	15	15
1	—	—	—	—	→	17	17	22	17	17	17	22	22	22
2.2	—	—	—	—	→	25	28	33	33	33	36	39	39	39
3.3	—	—	—	—	→	35	35	40	36	36	43	53	32 53	35 45
4.7	—	—	→	31	40	42	45	48	34 48	51	51	39 63	69	75
10	—	→	60	60	60	65	70	80	58 83	11 83	90	115	115	70 85
22	→	70	75	90	95	100	100 115	130 135	135	135	160	180	200	120 130
33	65	75	85	95	105	120 125	130 140	170 180	170	170	140 180	190	190	210
47	80	95	130	130	130 140	150	170 190	230 250	230	160 230	240	250	250	280
100	130	180	160 185	190	210 230	250	300	390	350 400	420	450	460	—	—
220	200 240	250	260 320	320	370	410 440	470 490	620 710	720	750	—	—	—	—
330	300	290 330	360	420	470 490	520 580	680 710	760 860	880	910	—	—	—	—
470	320 380	400	470	540	580 640	760	880 900	1000 1100	1120	1150	—	—	—	—
1000	580	630	790	950	1100	700 1350	1300 1550	1550	—	—	—	—	—	—
2200	1050	1100	1350	1550	1550 1800	2090	2120 2300	—	—	—	—	—	—	—
3300	1050 1250	1400	1700	1650 1950	2200	2280	2360	—	—	—	—	—	—	—
4700	1350 1700	1800	2100	2360	2380	2500	—	—	—	—	—	—	—	—
6800	1900	2150	2500	2600	—	—	—	—	—	—	—	—	—	—
10000	2000 2250	2350	2600	2700	—	—	—	—	—	—	—	—	—	—
15000	2550 2680	2700	—	—	—	—	—	—	—	—	—	—	—	—