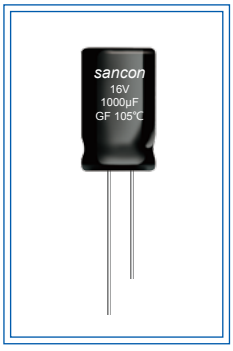
GF (CD288HE)



Features

- Super Low ESR at high frequency, Life time:2000~4000 hours at 105℃ .
- Used in main board, switching power supply, hi-fi acoustics, numeral color-TV circuits, etc.
- Adapted to the RoHS directive.

Specifications

Item	Performance Characteristics	
Operating Temperature Range	-40~+105℃	-25~+105℃
Rated Voltage Range	6.3~100V	160~450V
Nominal Capacitance Range	1~18000μF	
Capacitance Tolerance	±20%(+20℃,120Hz)	
Leakage Current	I ≤ 0.01CV(μA) or 3μA at 20℃ , after 2 minutes ,Whichever is greater	CV ≤ 1000 : I=0.01CV+40 (μA) max CV > 1000 : I=0.04CV+100 (μA) max After 1 minute application of rated voltage at 20℃

Dissipation Factor (tgδ,+20℃,120Hz)

U_R(V)	6.3	10	16	25	35	50	63	100	160-250	400-450
tgδ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.20	0.24

When nominal capacitance exceeds 1000μF,add 0.02 to the value above for each 1000μF increase.

Temperature Characteristics (Impedance ratio at 120Hz)

U_R(V)	6.3	10	16	25	35	50	63	100	160-250	400	450
Z-25℃ /+20℃	4	3	2	2	2	2	2	2	3	5	6
Z-40℃ /+20℃	8	6	4	3	3	3	3	3	-	-	-

Load Life

After applying rated voltage with specified ripple current for specified time at +105℃ and then resumed 16 hours:
Capacitance change : ±20% of the initial measured value
Leakage current : ≤ the initial specified value
Dissipation factor: ≤ 200% of the initial specified value

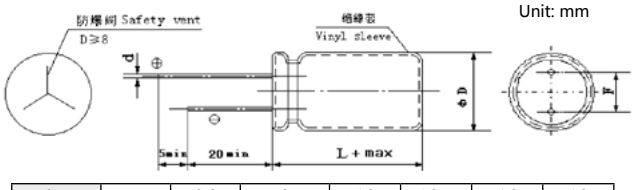
ΦD	Life hours
Φ5-6	2000
Φ8-10	3000
≥ Φ12.5	4000

Shelf Life

After storage for 1000 hours at +105℃ and then resumed 16 hours
Capacitance change : ±20% of the initial measured value
Leakage current : ≤ 200% of the initial specified value
Dissipation factor: ≤ 200% of the initial specified value

Diagram of Dimensions

Unit: mm



ΦD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0	5.0	7.5	
Φd	0.5		0.5、0.6	0.6		0.8	

β	0.5
αMAX	(L<20)1.5
	(L ≥ 20)2.0

Multiplier for Ripple Current

Frequency coefficient

Frequency(Hz)		120	1K	10K	100K
Coefficient	~180	0.40	0.75	0.90	1.00
	220~560	0.50	0.85	0.94	1.00
	680~1800	0.60	0.87	0.95	1.00
	2200~3900	0.75	0.90	0.95	1.00
	4700~18000	0.85	0.95	0.98	1.00

Standard Size

Cap.(μF) \ V(Code) / Item / Code		6.3(0J)			10(1A)			16(1C)		
		Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz
10	100	-	-	-	-	-	-	5x11	1.3	90
22	220	-	-	-	-	-	-	5x11	0.65	120
47	470	-	-	-	-	-	-	5x11	0.45	130
100	101	5x11	0.3	220	5x11	0.198	280	5x11	0.198	200
					6.3x11	0.185	360	6.3x11	0.25	345
120	121	-	-	-	6.3x11			6.3x11	0.198	345
150	151				6.3x11	0.198	345	8x11.5	0.117	645
180	181	6.3x11	0.198	345	6.3x11	0.198	345	8x11.5	0.117	645
220	221	6.3x11	0.198	345	6.3x11	0.198	345	6.3x11	0.198	560
								8x11.5	0.117	645
270	271	6.3x11	0.198	345	8x12	0.117	645	8x11.5	0.117	645
330	331	6.3x11	0.198	345	6.3x11	0.198	345	8x11.5	0.117	645
		8x11.5	0.117	645	8x11.5	0.117	645			
390	391	8x11.5	0.117	645	8x11.5	0.017	645	10x12.5	0.072	870
470	471	6.3x11	0.198	345	6.3x11	0.145	380	8x11.5	0.093	720
		8x11.5	0.117	645	8x11.5	0.117	502	10x12.5	0.072	870
560	561	8x11.5	0.117	645	10x12.5	0.072	870	10x12.5	0.072	870
680	681	8x11.5	0.117	645	8x11.5	0.117	645	8x16	0.078	845
					10x12.5	0.072	870	10x16	0.054	1216
820	821	8x16	0.078	845	8x16	0.078	845	8x16	0.048	7801216
		10x12.5	0.072	870				10x20	0.041	1406
1000	102	8x11.5	0.072	780	10x12.5	0.078	845	8x20	0.062	1056
		10x12.5	0.072	870	8x20	0.062	1056	10x20	0.052	1120
					10x16	0.054	1216			
1200	122	8x14	0.078	845	10x16	0.030	1300	10x25	0.038	1820
		10x12.5	0.072	870	10x20	0.041	1406			
1500	152	8x16	0.078	845	10x16	0.054	1216	10x20	0.038	1820
		10x16	0.054	1216	10x20	0.041	1406	12.5x20	0.032	1906
1800	182	10x25	0.038	1656	10x20	0.041	1406	10x25	0.038	1656
					12.5x20	0.032	1906			
2200	222	10x25	0.038	1656	10x25	0.038	1656	12.5x20	0.035	1850
		16x15	0.045	1886	12.5x20	0.032	1906	12.5x25	0.027	2132
2700	272	10x30	0.028	1916	12.5x25	0.027	2132	12.5x30	0.023	2532
		12.5x20	0.032	1906				16x20	0.027	2480
3300	332	10x25	0.035	1820	12.5x30	0.023	2532	12.5x30	0.023	2430
		12.5x20	0.032	1906	16x20	0.032	2218	18x20	0.031	2503
3900	392	12.5x20	0.032	1906	12.5x35	0.020	2751	16x25	0.025	2560
					16x20	0.032	2218	18x20	0.031	2503
4700	472	12.5x25	0.027	2130	12.5x25	0.027	2132	16x30	0.020	3037
		16x20	0.032	2216				18x25	0.022	2779
5600	562	12.5x30	0.023	2532	16x25	0.025	2560	16x35	0.018	3132
		16x20	0.032	2218	18x20	0.031	2503	18x30	0.018	3608
6800	682	12.5x40	0.017	2198	16x30	0.020	3037	16x40	0.018	3620
		16x25	0.025	2560	18x25	0.022	2779	-	-	-
		18x20	0.031	2503						
8200	822	16x30	0.020	3035	16x35	0.018	3132	18x35	0.017	3646
					18x30	0.018	3608			
10000	103	16x35	0.018	31321	18x35	0.017	3646	18x40	0.014	3789
		18x25	0.022	2779						
12000	123	16x40	0.015	3894	18x40	0.014	3789	-	-	-
		18x30	0.018	3608						
15000	153	18x35	0.017	3646	-	-	-	-	-	-
18000	183	18x40	0.014	3789	-	-	-	-	-	-

Standard Size

Cap.(μF) \ V(Code) / Item / Code		25(1E)			35(1V)			50(1H)		
		Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz
1	010	-	-	-	-	-	-	5x11	2.9	81
2.2	2R2	5x11	1.5	80	-	-	-	5x11	2.5	88
3.3	3R3	-	-	-	-	-	-	5x11	2	98
4.7	4R7	5x11	1.2	90	5x11	0.85	120	5x11	1.7	106
								6.3x11	1.5	129
10	100	5x11	0.65	80	-	-	-	5x11	1.7	106
22	220	5x11	1.95	125	5x11	0.65	180	5x11	0.39	159
								6.3x11	0.36	220
33	330	-	-	-	6.3x11	0.37	240	6.3x11	0.270	300
39	390	-	-	-	-	-	-	6.3x11	0.270	300
								8x11.5		
47	470	-	-	-	6.3x11	0.28	345	6.3x11	0.270	300
56	560	-	-	-	6.3x11	0.198	345	8x11.5	0.153	560
68	680	-	-	-	6.3x11	0.198	345	8x11.5	0.153	560
82	820	6.3x11	0.198	345	8x11.5	0.117	645	8x11.5	0.153	560
100	101	6.3x11	0.198	345	8x11.5	0.117	645	10x12.5	0.108	765
120	121	8x11.5	0.117	645	8x11.5	0.117	645	8x16	0.108	735
								10x12.5	0.108	765
150	151	8x11.5	0.117	645	8x11.5	0.117	645	10x16	0.076	1056
180	181	8x11.5	0.117	645	10x12.5	0.072	870	8x20	0.082	915
								10x16	0.076	1056
220	221	8x11.5	0.117	645	8x16	0.078	845	10x20	0.054	1226
		8x16	0.100	800	10x12.5	0.072	870	12.5x15	0.055	1266
270	271	10x12.5	0.072	870	10x16	0.054	1037	10x25	0.050	1446
330	331	8x16	0.078	645	8x20	0.06	1056	10x30	0.039	1696
		10x12.5	0.072	870	10x16	0.054	1216	12.5x20	0.041	1666
390	391	8x16	0.068	980	10x20	0.041	1406	12.5x20	0.041	1666
		10x16	0.054	1216	12.5x15	0.044	1456	16x15	0.050	1696
470	471	8x20	0.062	1056	10x16	0.048	1400	10x30	0.039	1696
		10x12.5	0.068	990	10x20	0.045	1406	12.5x25	0.031	1956
		10x16	0.054	1216						
560	561	10x20	0.041	1406	10x20	0.045	1430	12.5x25	0.031	1956
		12.5x15	0.044	1456	10x25	0.038	1656			
680	681	10x20	0.041	1406	10x30	0.028	1916	12.5x30	0.027	2318
					12.5x20	0.032	1906	16x20	0.031	2218
820	821	10x20	0.041	1406	12.5x25	0.027	2132	12.5x35	0.023	2518
								18x20	0.032	2498
1000	102	10x20	0.038	1820	12.5x20	0.035	2018	12.5x35	0.019	2928
		10x25	0.032	1906	12.5x25	0.027	2132	16x25	0.023	2563
		12.5x20	0.032	1906	16x20	0.032	2218			
1200	122	12.5x25	0.027	2132	12.5x30	0.023	2532	16x30	0.020	3018
					16x20	0.032	2218	18x25	0.023	2748
1500	152	12.5x20	0.032	2010	12.5x35	0.020	2751	16x35	0.017	3158
		12.5x25	0.027	2132	16x25	0.025	2560			
1800	182	12.5x30	0.025	2532	12.5x40	0.017	3198	16x40	0.017	3600
		16x20	0.032	2218	16x25	0.025	2560	18x30	0.019	3200
					18x20	0.031	2503			
2200	222	12.5x35	0.023	2751	16x30	0.020	3037	18x30	0.019	3200
		18x20	0.027	2503	18x25	0.022	2779	18x35	0.016	3688
2700	272	16x25	0.025	2412	16x35	0.018	3132	18x40	0.014	3808
		16x30	0.021	2430	18x30	0.018	3608	-	-	-
3300	332	16x30	0.020	3037	18x35	0.017	3646	-	-	-
		18x25	0.022	2779				-	-	-
3900	392	16x35	0.018	3132	18x40	0.014	3789	-	-	-
		18x30	0.018	3608	-	-	-	-	-	-
4700	472	18x35	0.017	3646	-	-	-	-	-	-
5600	562	18x40	0.014	3789	-	-	-	-	-	-

Standard Size

Cap.(μF)	Code	V(Code)	63(1J)			100(2A)			160(2C)		
		Item	Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz
4.7	4R7		-	-	-	5X11	1.8	35	8X11.5	3.602	125
10	100		-	-	-	-	-	-	8X11.5	3.602	155
15	150		-	-	-	6.3X11	0.864	120	-	-	-
22	220		6.3X11	0.864	120	8X11.5	0.75	205	10X12.5	2.712	185
27	270		-	-	-	8X11.5	0.454	237	-	-	-
33	330		6.3X11	0.864	120	8X11.5	0.454	285	10X20	1.485	271
39	390		8X11.5	0.454	237	8X16	0.324	305	-	-	-
47	470		8X11.5	0.454	237	10X12.5	0.310	293	10X20	1.485	325
56	560		8X11.5	0.454	237	8X20	0.238	367	-	-	-
68	680		8X11.5	0.454	237	10X16	0.223	362	-	-	-
82	820		10X12.5	0.310	293	10X20	0.151	471	-	-	-
						12.5X16	0.166	471			
100	101		8X16	0.30	320	10X25	0.144	536	16X25	0.324	680
			10X12.5	0.310	293	16X20	0.09	900			
120	121		10X16	0.223	342	10X30	0.108	668	-	-	-
						12.5X20	0.115	695			
150	151		8X20	0.238	367	16X20	0.09	900	-	-	-
180	181		10X20	0.151	471	12.5X25	0.086	789	-	-	-
			12.5X15	0.166	471	18X16	0.086	925			
220	221		10X20	0.151	471	12.5X25	0.086	789	16X35	0.27	1230
			10X25	0.144	536	16X20	0.066	1046	18X35	0.189	1306
			12.5X20	0.115	695						
270	271		16X15	0.101	800	12.5X35	0.059	1056	-	-	-
						16X25	0.052	1256			
330	331		10X30	0.108	668	12.5X40	0.051	1186	-	-	-
			12.5X20	0.115	695	18X20	0.058	1246			
390	391		12.5X25	0.086	789	16X30	0.039	1576	-	-	-
			18X15	0.086	925	18X25	0.041	1496			
470	471		12.5X25	0.072	820	16X35	0.032	1796	18X40	0.162	1313
			16X20	0.066	1046	18X30	0.034	1636			
560	561		16X25	0.052	1256	18X40	0.029	2028	-	-	-
680	681		12.5X35	0.059	1056	18X35	0.029	1796	-	-	-
			16X25	0.052	1256						
			18X20	0.058	1246						
820	821		12.5X40	0.051	1186	18X40	0.026	2338	-	-	-
			16X30	0.039	1576						
			18X25	0.041	1496						
1000	102		16X30	0.039	1576	-	-	-	-	-	-
			16X35	0.032	1796						
1200	122		16X40	0.029	2028	-	-	-	-	-	-
			18X30	0.034	1636						
1500	152		18X35	0.029	1796	-	-	-	-	-	-
1800	182		18X40	0.026	2338	-	-	-	-	-	-

Cap.(μF)	Code	V(Code)	200(2D)			250(2E)			400(2G)			450(2W)		
		Item	Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20℃ /100KHz	Rated ripple (mArms) 105℃ /100KHz
2.2	2R2		-	-	-	-	-	-	-	-	-	8X11.5	11.6	50
3.3	3R3		-	-	-	8X11.5	4.5	92	8X11.5	12.0	93	10X16	10.0	142
4.7	4R7		-	-	-	10X12.5	3.95	95	10X12.5	10.0	188	10X20	5.8	185
10	100		10X12.5	2.700	167	10X12.5	2.58	135	10X16	6.5	198	10X25	3.85	245
22	220		10X16	2.025	213	12.5X20	2.34	245	12.5X20	3.36	200	12.5X25	2.80	485
33	330		10X20	1.485	271	12.5X25	1.62	345	16X25	1.78	310	16X25	2.20	665
47	470		12.5X20	0.963	371	12.5X25	1.62	395	18X25	1.4	613	18X25	1.05	537
												16X35		625
68	680		-	-	-	-	-	-	-	-	-	18X35	0.75	582
100	101		16X30	0.324	972	16X30	0.63	705	18X40	0.61	910	18X40	0.74	715
220	221		18X35	0.189	1148	18X40	0.37	838	-	-	-	-	-	-
470	471		18X50	0.072	1386	-	-	-	-	-	-	-	-	-