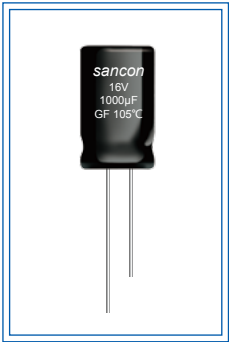


GF (CD288HE)

Features

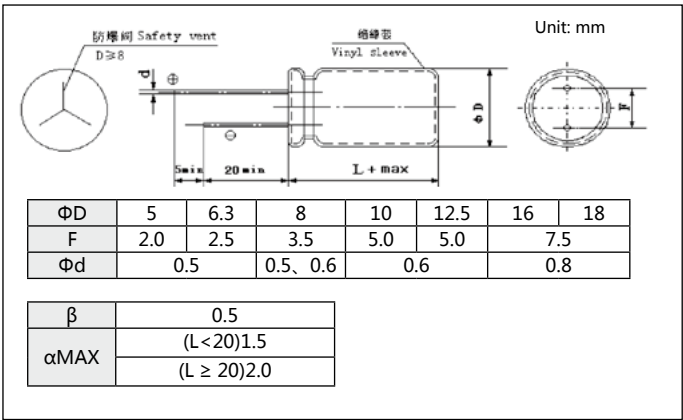
- Super Low ESR at high frequency, Life time:2000~4000 hours at 105°C .
- Used in main board, switching power supply, hi-fi acoustics, numeral color-TV circuits, etc.
- Adapted to the RoHS directive.



Specifications

Item	Performance Characteristics	
Operating Temperature Range	-40~+105°C	-25~+105°C
Rated Voltage Range	6.3~100V	160~450V
Nominal Capacitance Range	1~18000μF	
Capacitance Tolerance	±20%(+20°C,120Hz)	
Leakage Current	I ≤ 0.01CV(μA) or 3μA at 20°C , after 2 minutes ,Whichever is greater	
Dissipation Factor (tgδ,+20°C ,120Hz)	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°C	
	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
Temperature Characteristics (Impedance ratio at 120Hz)	When nominal capacitance exceeds 1000μF,add 0.02 to the value above for each 1000μF increase.	
	U _R (V)	6.3 10 16 25 35 50 63 100 160-250 400 450
	Z-25°C /+20°C	4 3 2 2 2 2 2 2 3 5 6
Load Life	Z-40°C /+20°C	8 6 4 3 3 3 3 3 - - -
	After applying rated voltage with specified ripple current for specified time at +105°C 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
Shelf Life	Φ5-6	2000
	Φ8-10	3000
	≥ Φ12.5	4000
Shelf Life	After storage for 1000 hours at +105°C 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



Multiplier for Ripple Current

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

Standard Size

Cap.(μF)	V(Code)		6.3(0J)			10(1A)			16(1C)		
	Item	Code	Case size ΦD×L (mm)	Impedance (Ω)MAX 20°C /100KHz	Rated ripple (mArms) 105°C /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20°C /100KHz	Rated ripple (mArms) 105°C /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20°C /100KHz	Rated ripple (mArms) 105°C /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°C /100KHz	Rated ripple (mAmps) 105°C /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20°C /100KHz	Rated ripple (mAmps) 105°C /100KHz	Case size ΦD×L (mm)	Impedance (Ω)MAX 20°C /100KHz	Rated ripple (mAmps) 105°C /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
			8x20	0.062	1056	10x16	0.048	1400	10x30	0.039	1696
470	471		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	-	-	-	-	-	-

