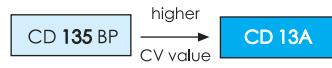


2000h at 85°C

- Features
 - Capacitance improved by 40%, comparison with the CD135 model
 - RoHS Compliant
- Applications
 - Product primarily designed for circuits requiring large energy momentarily like those for the uninterruptible power supply (UPS) and X-ray power supply.

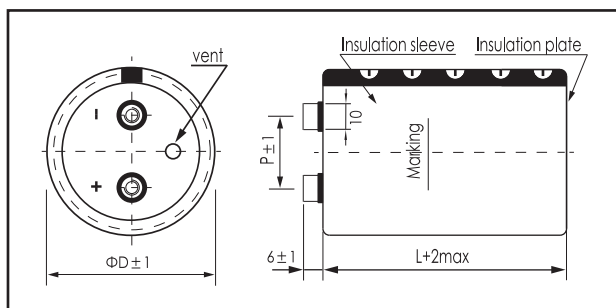


Items	Characteristics
Operating Temperature Range (°C)	-10 ~ +85
Voltage Range (V)	350 ~ 500
Capacitance Range (μF)	5600 ~ 39000
Capacitance Tolerance (20°C, 120Hz)	± 20%
Leakage Current (μA)	After 5 minutes at 20°C application of rated voltage, leakage current is not more than 0.01CV or 7mA, whichever is smaller. C: Nominal Capacitance (μF) V: Rated Voltage (V)
Dissipation Factor (20°C, 120Hz)	Less than 0.70
Stability at Low Temperature (120Hz)	$C_{-25^{\circ}\text{C}} / C_{+20^{\circ}\text{C}} \geq 0.7$

Lifetime	Useful Life		Load Life	Endurance Test	Shelf Life
	4000h	>65000h	2000h	2000h	500h
Leakage Current	Not more than specified value		Not more than specified value	Not more than specified value	Not more than specified value
Capacitance Change	Within ± 30% of initial value		Within ± 20% of initial value	Within ± 10% of initial value	Within ± 20% of initial value
Dissipation Factor	Not more than 300% of specified value		Not more than 200% of specified value	Not more than 130% of specified value	Not more than 200% of specified value
Condition: Applied Voltage Applied Current Applied Temperature	U_R I_R 85°C	U_R $1.2 \times I_R$ 40°C	U_R I_R 85°C	U_R $I_R = 0$ 85°C	$U_R = 0$ $I_R = 0$ 85°C After test: U_R to be applied for 60min >24h before measurement

Dimensions

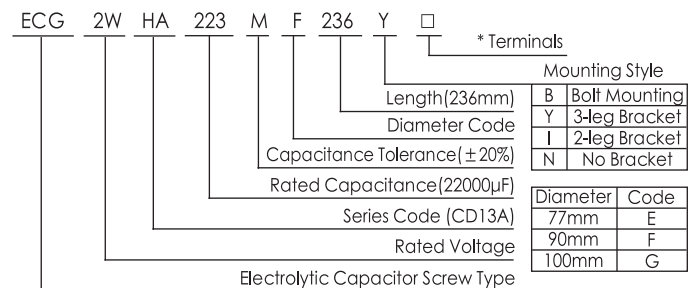
mm



ΦD/mm	77	90	101
P/mm	31.4	31.4	41.5

*Hex head screw M5 x 10 and M8 x 16 are standard screws. Other screws are available on request.
 *Max tightening torque for screw terminal: M5: 3Nm, M5: 4 Nm, M8: 6Nm.
 Max torque for bolt mounting M12: 12.5Nm.
 *Screws, Bracket and cap nut will be delivered separately.
 See "Accessories" (page 104.105) for shape and dimensions.

Part Number System (Ex: 450v22000μF)



*See page 105 for detailed dimensions of terminals.

Ripple Current Coefficient

Frequency(Hz)	50/60	120	300	1K	>10k
Coefficient	0.70	1.00	1.10	1.30	1.40

Ambient Temp (°C)	40	60	70	85
Coefficient	2.70	2.00	1.70	1.00

The useful life can be prolonged by operating capacitor at loads below the rated values (e.g. lower operating voltage, Rms ripple current or ambient temperature) and by appropriate cooling measures.
 It is advisable not to apply a ripple current exceeding the rated ripple current without any cooling measures as this will shorten capacitor's life.

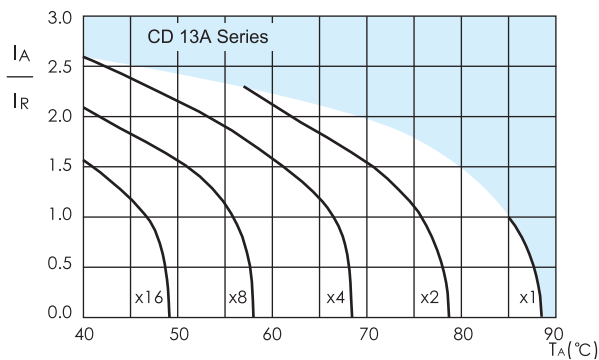
Ratings for CD 13A Series

U _r (Surge Voltage) Code	Rated Capacitance	Case Size ΦD×L	Rated Ripple Current 40°C, 120Hz	Rated Ripple Current 85°C, 120Hz I _r	Typ. ESR 20°C, 120Hz	Max. Z 20°C, 10KHz	Typ. ESL	P/N
(V)	(μF)	(mm)	(Arms)	(Arms)	(mΩ)	(mm)	(nH)	-
350 (400) 2V	13000	77×155	20.7	7.67	25	26	26	ECG2VHA133ME155□□
	17000	90×157	25.4	9.41	19	20	26	ECG2VHA173MF157□□
	18000	77×195	26.8	9.93	18	20	26	ECG2VHA183ME195□□
	22000	77×235	32.1	11.9	17	18	26	ECG2VHA223ME235□□
	24000	101×175	33.8	12.5	16	18	36	ECG2VHA243MG175□□
	25000	90×196	33.6	12.4	15	16	26	ECG2VHA253MF196□□
	31000	90×236	40.4	15.0	12	13	26	ECG2VHA313MF236□□
	31000	101×195	38.1	14.1	12	13	36	ECG2VHA313MG195□□
400 (450) 2G	39000	101×237	46.2	17.1	10	12	36	ECG2VHA393MG237□□
	11000	77×155	19.2	7.11	31	32	26	ECG2GHA113ME155□□
	14000	77×195	23.9	8.85	24	25	26	ECG2GHA143ME195□□
	16000	77×235	28.0	10.4	21	22	26	ECG2GHA163ME235□□
	16000	90×157	24.8	9.19	21	22	26	ECG2GHA163MF157□□
	20000	90×196	30.3	11.2	20	21	26	ECG2GHA203MF196□□
	22000	101×175	30.8	11.4	18	19	36	ECG2GHA223MG175□□
	25000	90×236	36.6	13.6	16	18	26	ECG2GHA253MF236□□
450 (500) 2W	25000	101×195	34.5	12.8	16	18	36	ECG2GHA253MG195□□
	32000	101×237	41.8	15.5	12	13	36	ECG2GHA323MG237□□
	9500	77×155	17.9	6.63	36	37	26	ECG2WHA902ME155□□
	12000	77×195	22.1	8.19	28	29	26	ECG2WHA123ME195□□
	13000	90×157	21.0	7.78	26	27	26	ECG2WHA133MF157□□
	15000	77×235	27.3	10.1	24	27	26	ECG2WHA153ME235□□
	17000	90×196	27.9	10.3	21	22	26	ECG2WHA173MF196□□
	18000	101×175	27.9	10.3	20	21	36	ECG2WHA183MG175□□
500 (550) 2H	22000	90×236	34.3	12.7	18	19	26	ECG2WHA223MF236□□
	22000	101×195	32.2	11.9	18	19	36	ECG2WHA223MG195□□
	27000	101×237	38.4	14.2	15	17	36	ECG2WHA273MG237□□
	5600	77×155	13.7	5.07	60	62	26	ECG2HHA562ME155□□
	8200	77×195	18.2	6.74	41	43	26	ECG2HHA822ME195□□
	8200	90×157	17.7	6.56	41	43	26	ECG2HHA822MF157□□
	9500	77×235	21.7	8.04	36	37	26	ECG2HHA952ME235□□
	11000	90×196	22.4	8.30	32	33	26	ECG2HHA113MF196□□
500 (550) 2H	12000	101×175	22.7	8.41	30	33	36	ECG2HHA123MG175□□
	14000	90×236	27.4	10.1	29	30	26	ECG2HHA143MF236□□
	14000	101×195	25.6	9.26	29	30	36	ECG2HHA143MG195□□
	16000	101×237	29.6	11.0	26	26	36	ECG2HHA163MG237□□

Mounting code(" B" for bolt mounting, "Y/I/N" for bracket mounting)
Terminal options(A,B,C see "Dimensions" for details.)

Customer products are available on request.

Lifetime Diagram



I_A = Actual ripple current at 120Hz;
I_r = Rated ripple current at 120Hz, 85°C;
T_A = Ambient temperature