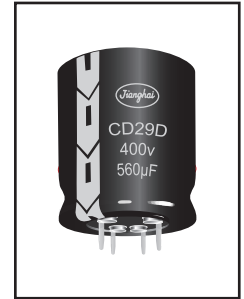
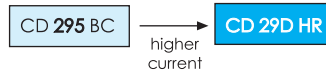


5000h at 85°C

- Small Size
- Long Useful Life
- High Ripple Current
- Industrial Power Supplies and Inverters



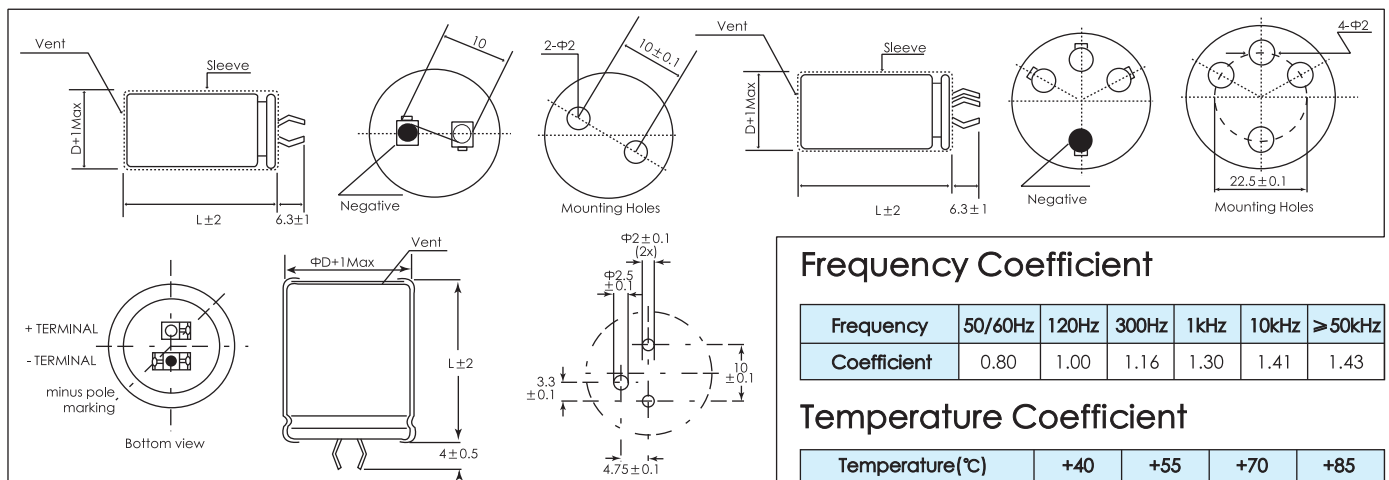
SNAP-IN/LUG

Items	Characteristics					
Operating Temperature Range (°C)	-40 ~ +85					
Voltage Range (V)	160 ~ 450					
Capacitance Range (µF)	47 ~ 2200					
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 1.5mA, whichever is smaller. C: Nominal Capacitance (µF) V: Rated Voltage (V)					
Dissipation Factor (20°C, 120Hz)	Rated Voltage (V)	160	200	250	400	450
	Tan δ (max)	0.15			0.12	
Stability at Low Temperature (Impedance Ratio at 120Hz)	Rated Voltage (V)	160 ~ 450				
	Z <sub>-40°C</sub> / Z <sub>+20°C</sub>	4				

	Useful Life		Load Life	Endurance Test	Shelf Life
Lifetime	7000h	>100000h	5000h	5000h	1000h
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 ± 20% 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 200% of specified value	Not more than 200% of specified value
Condition: Applied Voltage Applied Current Applied Temperature	U <sub>R</sub> I <sub>R</sub> 85°C	U <sub>R</sub> 1.2 x I <sub>R</sub> 40°C	U <sub>R</sub> I <sub>R</sub> 85°C	U <sub>R</sub> I <sub>R</sub> = 0 85°C	After test: U <sub>R</sub> = 0 I <sub>R</sub> = 0 >24h before measurement 85°C

## Dimensions

mm



## Frequency Coefficient

Frequency	50/60Hz	120Hz	300Hz	1kHz	10kHz	≥50kHz
Coefficient	0.80	1.00	1.16	1.30	1.41	1.43

## Temperature Coefficient

Temperature(°C)	+40	+55	+70	+85
Coefficient	1.7	1.5	1.3	1.0

# CD 29D HR SERIES



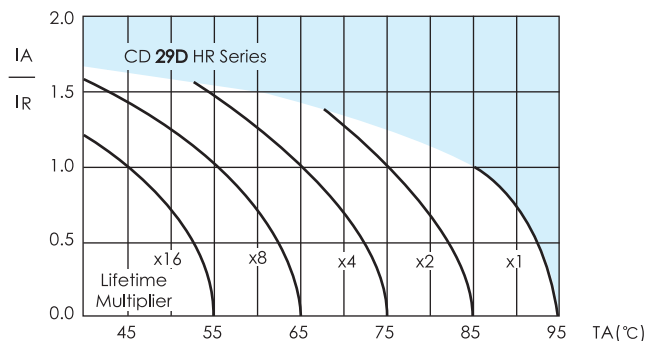
## Ratings for CD 29D HR Series

$U_R$ (Surge Voltage) Code	Rated Capacitance	Max ESR 20°C, 120Hz	Typ ESR 20°C, 120Hz	Rated Ripple Current 85°C, 120Hz	Size ΦD x L	P/N
(V)	(μF)	(mΩ)	(mΩ)	(Arms)	(mm)	-
160 (200) 2C	330	603	355	1.5	22 x 25	ECS2CHR331M□□220025
	390	510	300	1.6	25 x 25	ECS2CHR391M□□250025
	470	424	245	1.8	22 x 35	ECS2CHR471M□□220035
	560	355	215	2.1	22 x 35	ECS2CHR561M□□220035
		355	215	2.2	25 x 30	ECS2CHR561M□□250030
		355	215	2.1	30 x 25	ECS2CHR561M□□300025
	680	293	178	2.6	22 x 40	ECS2CHR681M□□220040
		293	178	2.5	25 x 35	ECS2CHR681M□□250035
	820	243	145	2.8	22 x 50	ECS2CHR821M□□220050
		243	145	2.7	25 x 40	ECS2CHR821M□□250040
		243	145	2.9	30 x 30	ECS2CHR821M□□300030
		243	145	2.8	35 x 25	ECS2CHR821M□□350025
	1000	199	115	3.3	25 x 45	ECS2CHR102M□□250045
		199	115	3.4	30 x 35	ECS2CHR102M□□300035
		199	115	3.3	35 x 30	ECS2CHR102M□□350030
	1200	166	95	3.7	25 x 50	ECS2CHR122M□□250050
		166	95	3.8	30 x 40	ECS2CHR122M□□300040
		166	95	3.6	35 x 35	ECS2CHR122M□□350035
	1500	133	75	4.4	30 x 45	ECS2CHR152M□□300045
		133	75	4.3	35 x 40	ECS2CHR152M□□350040
	1800	111	75	4.4	35 x 45	ECS2CHR182M□□350045
	2200	91	58	4.9	35 x 50	ECS2CHR222M□□350050
200 (250) 2D	220	905	375	1.2	22 x 25	ECS2DHR221M□□220025
	330	603	258	1.5	22 x 30	ECS2DHR331M□□220030
	603	258	1.6	25 x 25	ECS2DHR331M□□250025	
	390	510	221	1.8	22 x 35	ECS2DHR391M□□220035
		510	221	1.8	25 x 30	ECS2DHR391M□□250030
	470	424	175	2	22 x 40	ECS2DHR471M□□220040
		424	175	2.1	30 x 25	ECS2DHR471M□□300025
	560	355	150	2.2	22 x 45	ECS2DHR561M□□220045
		355	150	2.2	25 x 35	ECS2DHR561M□□250035
		355	150	2.3	30 x 30	ECS2DHR561M□□300030
		355	150	2.2	35 x 25	ECS2DHR561M□□350025
	680	293	128	2.6	25 x 40	ECS2DHR681M□□250040
		293	128	2.4	30 x 30	ECS2DHR681M□□300030
	820	243	105	2.7	25 x 50	ECS2DHR821M□□250050
		243	105	2.8	30 x 40	ECS2DHR821M□□300040
		243	105	2.6	35 x 30	ECS2DHR821M□□350030
	1000	199	80	3.4	30 x 40	ECS2DHR102M□□300040
		199	80	3.6	35 x 35	ECS2DHR102M□□350035
	1200	166	70	3.8	30 x 50	ECS2DHR122M□□300050
		166	70	3.7	35 x 40	ECS2DHR122M□□350040
	1500	133	55	4.2	35 x 50	ECS2DHR152M□□350050
	250 (300) 2E	150	1327	550	0.92	22 x 25
180		1106	470	0.98	22 x 25	ECS2EHR181M□□220025
220		905	370	1.25	22 x 30	ECS2EHR221M□□220030
		905	370	1.25	25 x 25	ECS2EHR221M□□250025
270		737	370	1.25	22 x 35	ECS2EHR271M□□220035
		603	250	1.64	22 x 40	ECS2EHR331M□□220040
330		603	255	1.64	25 x 30	ECS2EHR331M□□250030
		603	255	1.64	30 x 25	ECS2EHR331M□□300025
		510	250	1.9	22 x 45	ECS2EHR391M□□220045
390		510	250	1.9	25 x 35	ECS2EHR391M□□250035
		424	175	2.2	22 x 50	ECS2EHR471M□□220050
470		424	175	2.2	25 x 40	ECS2EHR471M□□250040
		424	175	2.2	30 x 30	ECS2EHR471M□□300030
		424	175	2.2	35 x 25	ECS2EHR471M□□350025
560		355	150	2.4	25 x 45	ECS2EHR561M□□250045
		355	150	2.4	30 x 35	ECS2EHR561M□□300035
680		293	123	2.8	30 x 40	ECS2EHR681M□□300040
		293	123	2.8	35 x 30	ECS2EHR681M□□350030
820		243	105	3.2	30 x 45	ECS2EHR821M□□300045
		243	105	3.2	35 x 35	ECS2EHR821M□□350035
1000		199	80	3.7	35 x 40	ECS2EHR102M□□350040
1200		166	70	4.1	35 x 45	ECS2EHR122M□□350045
1500	133	60	4.6	35 x 50	ECS2EHR152M□□350050	

$U_R$ (Surge Voltage) Code	Rated Capacitance	Max ESR 20°C, 120Hz	Typ ESR 20°C, 120Hz	Rated Ripple Current 85°C, 120Hz	Size ΦD x L	P/N
(V)	(μF)	(mΩ)	(mΩ)	(Arms)	(mm)	-
400 (450) 2G	68	2342	960	0.62	22 x 25	ECS2GHR680M□□220025
		1592	600	0.81	22 x 30	ECS2GHR101M□□220030
	100	1592	600	0.83	25 x 25	ECS2GHR101M□□250025
		1327	550	0.93	22 x 35	ECS2GHR121M□□220035
	120	1062	440	1.2	22 x 40	ECS2GHR151M□□220040
		1062	440	1.2	25 x 30	ECS2GHR151M□□250030
	150	1062	440	1.2	30 x 25	ECS2GHR151M□□300025
		885	360	1.3	22 x 45	ECS2GHR181M□□220045
	180	885	360	1.3	25 x 35	ECS2GHR181M□□250035
		885	360	1.3	30 x 30	ECS2GHR181M□□300030
		885	180	1.3	35 x 25	ECS2GHR181M□□350025
		724	300	1.5	22 x 50	ECS2GHR221M□□220050
	220	724	300	1.5	25 x 40	ECS2GHR221M□□250040
		724	300	1.5	30 x 35	ECS2GHR221M□□300035
		590	240	1.7	25 x 45	ECS2GHR271M□□250045
	270	590	240	1.7	30 x 40	ECS2GHR271M□□300040
		590	240	1.7	35 x 30	ECS2GHR271M□□350030
	330	483	200	2.1	30 x 45	ECS2GHR331M□□300045
		483	200	2.1	35 x 35	ECS2GHR331M□□350035
	390	408	170	2.3	30 x 50	ECS2GHR391M□□300050
		408	170	2.3	35 x 40	ECS2GHR391M□□350040
	470	339	140	2.7	35 x 45	ECS2GHR471M□□350045
284		110	3	35 x 50	ECS2GHR561M□□350050	
450 (500) 2W	47	3388	2800	0.52	22 x 25	ECS2WHR470M□□220025
	68	2342	1940	0.66	22 x 30	ECS2WHR680M□□220030
		2342	1940	0.66	25 x 25	ECS2WHR680M□□250025
	100	1592	1310	0.9	22 x 35	ECS2WHR101M□□220035
		1592	1310	0.9	30 x 25	ECS2WHR101M□□300025
	120	1327	910	1.1	22 x 40	ECS2WHR121M□□220040
		1327	910	1.1	25 x 35	ECS2WHR121M□□250035
	150	1062	880	1.3	22 x 50	ECS2WHR151M□□220050
		1062	880	1.3	25 x 40	ECS2WHR151M□□250040
	180	1062	880	1.3	30 x 30	ECS2WHR151M□□300030
		885	740	1.4	25 x 45	ECS2WHR181M□□250045
	220	885	740	1.4	30 x 35	ECS2WHR181M□□300035
		885	740	1.4	35 x 25	ECS2WHR181M□□350025
		724	590	1.6	25 x 50	ECS2WHR221M□□250050
	270	724	590	1.6	30 x 40	ECS2WHR221M□□300040
		724	590	1.6	35 x 30	ECS2WHR221M□□350030
	330	590	490	1.9	30 x 45	ECS2WHR271M□□300045
		590	490	1.9	35 x 35	ECS2WHR271M□□350035
	390	483	395	2.2	35 x 40	ECS2WHR331M□□350040
		408	300	2.4	35 x 45	ECS2WHR391M□□350045
	470	339	280	2.8	35 x 50	ECS2WHR471M□□350050

Customer products are available on request.

## Lifetime Diagram



IA = actual ripple current at 120Hz, IR = rated ripple current at 120Hz, 85°C  
Multiplier of Useful Life as a function of ambient temperature and ripple current load