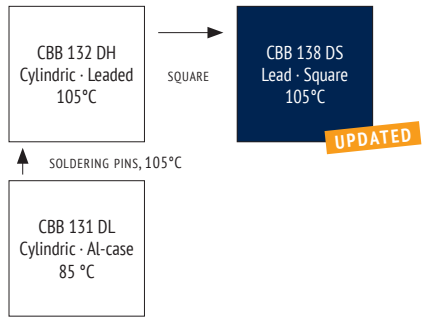
FILM CAPACITORS · **DC LINK**

CBB **138** DS SERIES

FEATURES

- **DC-Link**
- Design for DC Link Application
- Metal sprayed contacts for low ESR
- Self-healing

OVERVIEW



PRODUCT



APPLICATIONS

- Frequency inverter and intermediate circuits
- Industry high-end power supplies

CHARACTERISTICS

ITEM	CHARACTERISTICS
Climatic Category	40/105/56 (IEC 61071)
Operating Temperature	–40 ~ +105 °C ($\Theta_{hotspot}$ ⩽ 105 °C) $\Theta_{hotspot}$ = 85~105°C: See Voltage Derating Diagram
Storage Temperature	–40 ~ +105 °C
Rated Voltage U_{RDC} (70°C)	600 ~ 1 600 V_{DC}
Capacitance Range	1 ~ 150 µF
Capacitance Tolerance	±10 % (K), ±5 % (J)
Voltage between Terminals U_{TT}	1,5 * U_{RDC} (20°C, 10s)
Voltage between Terminals & Case U_{TC}	⩾ 3 000 V_{AC} (20°C, 50 Hz, 10s)
Dielectric Dissipation Factor tan δ_0	⩽ 2 * 10^{-4} (20 °C, 1 kHz)
Insulator Resistance R_i*C	⩾ 10 000 MΩ * µF (20 °C, 100 V_{DC}, 1 min)
Max. Overvoltage	Please see IEC 61071
Life Time Expectancy	⩾ 100.000h, failure rate ⩽ 50 FIT (70°C)
Reference Standard	IEC 61071:2007

ENVIRONMENTAL

The products are RoHS, WEEE and REACh compliant.

The detailed version please see seperate "Environmental Certificates" document or www.jianghai-europe.com

APPROVALS

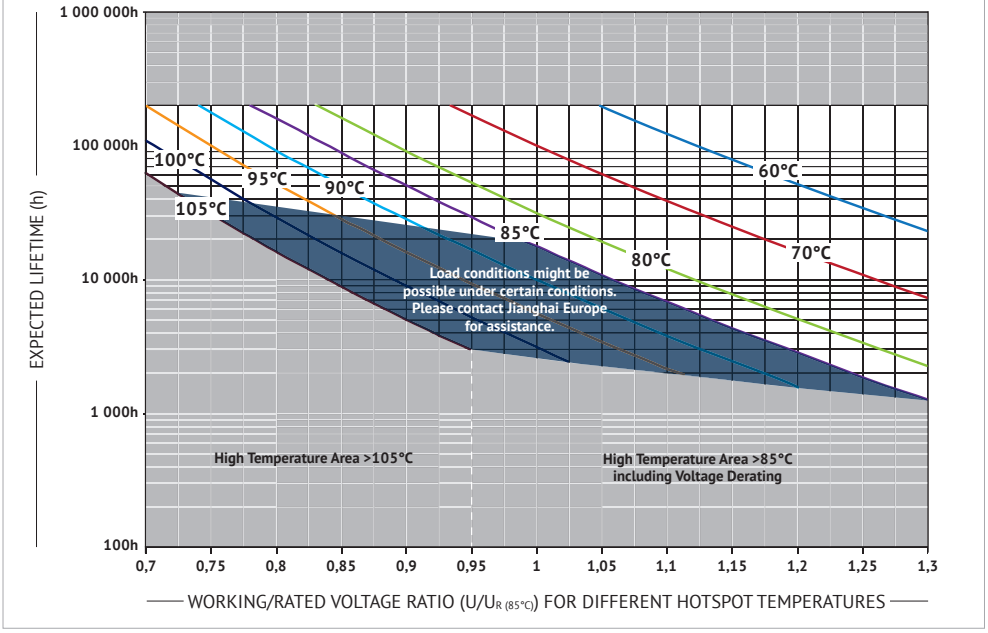
UL94-V0:

Plastic & Compound Mass

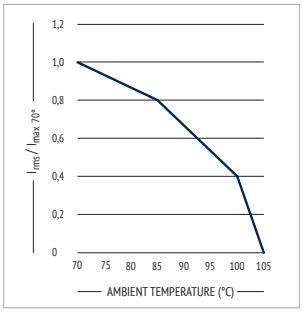
UL810:

CZDS2.E227010
(Construction)

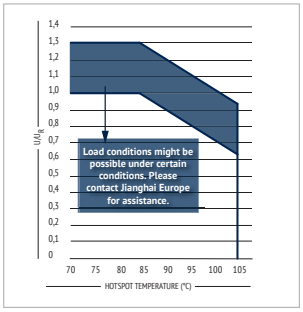
LIFETIME



CURRENT DERATING

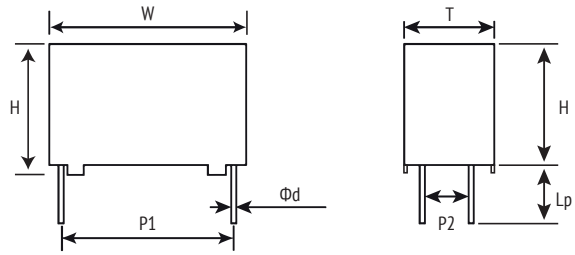


VOLTAGE DERATING

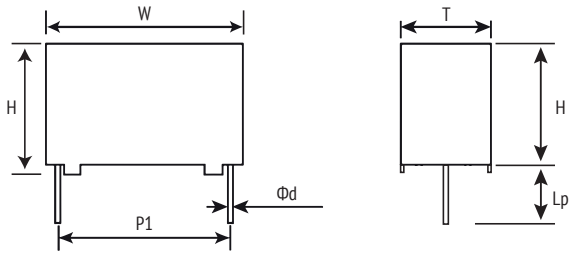


DIMENSIONS

4 PIN TYPE

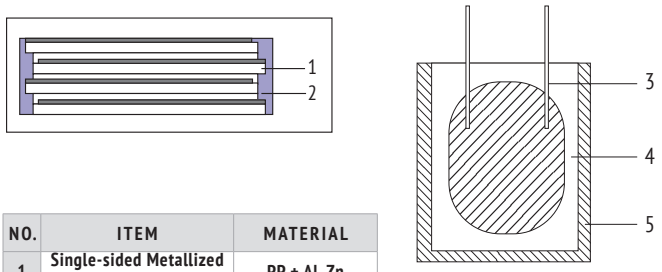


2 PIN TYPE



Lp = 5,0 ±1mm · other styles on request

INTERNAL CONSTRUCTION



NO.	ITEM	MATERIAL
1	Single-sided Metallized Film	PP + Al, Zn
2	Metal Sprayed Contact	Zn + Sn/Zn
3	Terminals	Sn-coated Cu
4	Potting Compound	Epoxy
5	Case	Flame retardant PBT

MARKING



HUMIDITY IMPROVEMENT

Capacitors in THB design are available on request.

ORDER CODE

FC	S	3B	DS	105	K	0	30	FK	9	0	C	E 3
Capacitor type	Product shape	DC rated voltage code (V)	Series code	Capacitance Code (µF)	Capacitance tolerance	Pin Style (mm)	Pin Length (mm)	Dimension Code WxHxT (mm)	Pitch P_1 (mm)	Pitch P_2 (mm)	Leadwire Diameter Ød	For internal use
Film Cap. = FC	Square = S	500 2H	CBB 138 = DS	0,68 684	±5% J	2 Pin, straight leads cut 0	Long Leads 00	32 x 18 x 9 I1	27,5 9	10,2 3	0,8 B	
		600 2S		0,82 824	±10% K	2 Pin, long leads 1	3,0 30	32 x 20 x 11 I4	37,5 C	12,7 4	1,0 C	
		700 2Q		1,0 105		4 Pin, straight leads cut 2	3,2 32	32 x 22 x 13 I7	52,5 F	20,3 9	1,2 D	
		800 2K		1,2 125			3,5 35	32 x 24,5 x 15 IJ		- 0		
		900 R2		2,0 205			5,0 50	32 x 28 x 14 IC				
		1000 3A		5,0 505			6,0 60	32 x 28 x 18 ID				
		1100 A3		10 106			13,0 A0	32 x 33 x 18 IF				
		1200 3B		20 206			15 A1	32 x 37 x 22 II				
		1500 C3					17,5 A2	42 x 42 x 28 FH				
								42 x 50 x 35 FK				
								42,5 x 18 x 24 FL				
								42,5 x 32 x 19 F5				
								42,5 x 34 x 20 WY				
								42,5 x 37 x 22 FQ				
								42,5 x 37 x 28 F1				
								42,5 x 40 x 20 F2				
								42,5 x 44 x 24 F9				
								42,5 x 45 x 30 FF				
								42,5 x 50 x 35 FK				
								57,5 x 45 x 30 HH				
								57,5 x 50 x 35 HL				
								57,5 x 55 x 45 HS				
								57,5 x 60 x 35 H6				
								57,5 x 60 x 45 H2				
								57,5 x 65 x 35 KA				
								57,5 x 65 x 45 H7				
								57,5 x 70 x 35 H8				

U_R (VDC)	C_R (µF)	I_{max} ≤85°C, 10kHz (A)	I_{max} ≤70°C 10kHz (A)	$\hat{I}$ (1) (A)	ESR_{typ} 70°C 10kHz (mΩ)	R_{th}(2) (K/W)	dV/dt 20°C (V/µs)	Ls_{typ} 25°C 1MHz (nH)	W +1/-1,5 (mm)	H +1/-1,5 (mm)	T +1/-1,5 (mm)	P_1 ±0,5 (mm)	P_2 ±0,5 (mm)	Ød ±0,05 (mm)	ORDER CODE ◊ = Tolerance Δ = Pin Style ## = Pin Length
500 (≤85°C) 2H	3	3,1	4,1	195	26,5	44	65	25	32	20	11	27,5	\	0,8	FCS2HDS305◊Δ##I490BE3
	5	3,8	5,0	325	20,2	40	65	25	32	22	13	27,5	\	0,8	FCS2HDS505◊Δ##I790BE3
	8	5,2	6,8	520	13,0	33	65	25	32	28	14	27,5	\	0,8	FCS2HDS805◊Δ##IC90BE3
600 (≤70°C)	10	7,0	9,3	650	8,6	27	65	25	32	33	18	27,5	\	0,8	FCS2HDS106◊Δ##IF90BE3
	15	9,1	11,9	975	6,1	23	65	25	32	37	22	27,5	\	0,8	FCS2HDS156◊Δ##II90BE3
		9,4	12,4	975	5,6	23	65	25	32	37	22	27,5	10,2	0,8	FCS2HDS156◊Δ##II93BE3
	20	9,3	12,2	600	6,7	20	30	30	42,5	40	20	37,5	10,2	1	FCS2HDS206◊Δ##F2C3CE3
	22	9,7	12,8	660	6,1	20	30	30	42,5	40	20	37,5	10,2	1	FCS2HDS226◊Δ##F2C3CE3
	25	9,6	12,6	750	6,3	20	30	30	42,5	40	20	37,5	10,2	1	FCS2HDS256◊Δ##F2C3CE3
	30	12,1	16,0	900	4,6	17	30	30	42,5	44	24	37,5	10,2	1	FCS2HDS306◊Δ##F9C3CE3
	35	14,1	18,5	1050	3,9	15	30	30	42,5	45	30	37,5	20,3	1,2	FCS2HDS356◊Δ##FFC9DE3
	40	15,0	19,7	1200	3,4	15	30	30	42,5	45	30	37,5	20,3	1,2	FCS2HDS406◊Δ##FFC9DE3
	50	17,7	23,3	1500	2,8	13	30	30	42,5	50	35	37,5	20,3	1,2	FCS2HDS506◊Δ##FKC9DE3
	60	14,3	18,9	900	4,7	12	15	35	57,5	45	30	52,5	20,3	1,2	FCS2HDS606◊Δ##HHF9DE3
	75	17,4	22,9	1125	3,8	10	15	35	57,5	50	35	52,5	20,3	1,2	FCS2HDS756◊Δ##HLF9DE3
	100	22,1	29,1	1500	2,9	8	15	35	57,5	55	45	52,5	20,3	1,2	FCS2HDS107◊Δ##HSF9DE3
	110	26,5	34,9	1650	2,7	6	15	35	57,5	60	45	52,5	20,3	1,2	FCS2HDS117◊Δ##H2F9DE3
	130	24,7	32,5	1950	2,7	7	15	35	57,5	60	35	52,5	20,3	1,2	FCS2HDS137◊Δ##H6F9DE3
	140	27,4	36,1	2100	2,6	6	15	35	57,5	65	35	52,5	20,3	1,2	FCS2HDS147◊Δ##KAF9DE3
	150	28,1	37,0	2250	2,4	6	15	35	57,5	70	35	52,5	20,3	1,2	FCS2HDS157◊Δ##H8F9DE3
600 (≤85°C) 2S	3	3,1	4,1	195	26,5	44	65	25	32	20	11	27,5	\	0,8	FCS2SDS305◊Δ##I490BE3
	4	3,6	4,8	260	20,1	44	65	25	32	20	11	27,5	\	0,8	FCS2SDS405◊Δ##I490BE3
	5	4,6	6,1	325	16,3	33	65	25	32	28	14	27,5	\	0,8	FCS2SDS505◊Δ##IC90BE3
700 (≤70°C)	8	5,4	7,1	520	12,1	33	65	25	32	28	14	27,5	\	0,8	FCS2SDS805◊Δ##IC90BE3
	10	7,0	9,3	650	8,6	27	65	25	32	33	18	27,5	\	0,8	FCS2SDS106◊Δ##IF90BE3
	12	7,1	9,4	780	8,4	27	65	25	32	33	18	27,5	\	0,8	FCS2SDS126◊Δ##IF90BE3
		6,1	8,1	360	12,8	24	30	30	42,5	18	24	37,5	\	1	FCS2SDS126◊Δ##FLC0CE3
	15	9,1	11,9	975	6,1	23	65	25	32	37	22	27,5	\	0,8	FCS2SDS156◊Δ##II90BE3
		6,6	8,7	975	11,0	24	65	30	42,5	18	24	37,5	\	1	FCS2SDS156◊Δ##FLC0CE3
	20	9,3	12,2	600	6,7	20	30	30	42,5	40	20	37,5	10,2	1	FCS2SDS206◊Δ##F2C3CE3
	30	11,9	15,6	900	4,6	18	30	30	42,5	37	28	37,5	10,2	1	FCS2SDS306◊Δ##F1C3CE3
	35	12,1	16,0	1050	4,6	17	30	30	42,5	44	24	37,5	10,2	1	FCS2SDS356◊Δ##F9C3CE3
	40	15,0	19,7	1200	3,4	15	30	30	42,5	45	30	37,5	20,3	1,2	FCS2SDS406◊Δ##FFC9DE3
	50	16,9	22,2	750	4,0	10	15	35	57,5	50	35	52,5	20,3	1,2	FCS2SDS506◊Δ##HLF9DE3
	60	18,4	24,2	900	3,4	10	15	35	57,5	50	35	52,5	20,3	1,2	FCS2SDS606◊Δ##HLF9DE3
	70	19,7	26,0	1050	3,0	10	15	35	57,5	50	35	52,5	20,3	1,2	FCS2SDS706◊Δ##HLF9DE3
	80	23,3	30,7	1200	2,6	8	15	35	57,5	55	45	52,5	20,3	1,2	FCS2SDS806◊Δ##HSF9DE3
	90	24,6	32,4	1350	2,4	8	15	35	57,5	55	45	52,5	20,3	1,2	FCS2SDS906◊Δ##HSF9DE3
	100	29,5	38,9	1500	2,2	6	15	35	57,5	60	45	52,5	20,3	1,2	FCS2SDS107◊Δ##H2F9DE3
	110	30,8	40,5	1650	2,0	6	15	35	57,5	60	45	52,5	20,3	1,2	FCS2SDS117◊Δ##H2F9DE3
	120	27,6	36,4	1800	2,2	7	15	35	57,5	60	35	52,5	20,3	1,2	FCS2SDS127◊Δ##H6F9DE3
	130	28,5	37,5	1950	2,0	7	15	35	57,5	65	35	52,5	20,3	1,2	FCS2SDS137◊Δ##KAF9DE3
	140	31,5	41,4	2100	1,9	6	15	35	57,5	70	35	52,5	20,3	1,2	FCS2SDS147◊Δ##H8F9DE3
		29,4	38,6	2100	1,9	7	15	35	57,5	65	45	52,5	20,3	1,2	FCS2SDS147◊Δ##H7F9DE3
700 (≤85°C) 2Q	1	2,0	2,6	65	62,3	46	65	25	32	18	9	27,5	\	0,8	FCS2QDS105◊Δ##I190BE3
	2	2,5	3,3	130	39,5	46	65	25	32	18	9	27,5	\	0,8	FCS2QDS205◊Δ##I190BE3
	3	3,1	4,1	195	26,5	44	65	25	32	20	11	27,5	\	0,8	FCS2QDS305◊Δ##I490BE3
800 (≤70°C)	3,3	4,2	5,6	215	19,5	33	65	25	32	28	14	27,5	\	0,8	FCS2QDS335◊Δ##IC90BE3
	5	4,9	6,4	325	14,7	33	65	25	32	28	14	27,5	\	0,8	FCS2QDS505◊Δ##IC90BE3
	6	5,7	7,5	390	12,4	29	65	25	32	28	18	27,5	\	0,8	FCS2QDS605◊Δ##ID90BE3
	8	6,7	8,8	520	9,6	27	65	25	32	33	18	27,5	\	0,8	FCS2QDS805◊Δ##IF90BE3
	10	7,0	9,3	650	8,6	27	65	25	32	33	18	27,5	\	0,8	FCS2QDS106◊Δ##IF90BE3
		8,0	10,5	650	7,9	23	65	25	32	37	22	27,5	\	0,8	FCS2QDS106◊Δ##II90BE3
		6,1	8,0	300	13,1	24	30	30	42,5	18	24	37,5	\	1	FCS2QDS106◊Δ##FLC0CE3
	12	8,6	11,4	780	6,7	23	65	25	32	37	22	27,5	\	0,8	FCS2QDS126◊Δ##II90BE3
		6,6	8,7	360	11,0	24	30	30	42,5	18	24	37,5	\	1	FCS2QDS126◊Δ##FLC0CE3
	15	8,5	11,2	450	8,0	20	30	30	42,5	40	20	37,5	10,2	1	FCS2QDS156◊Δ##F2C3CE3
	20	10,9	14,4	600	5,4	18	30	30	42,5	37	28	37,5	10,2	1	FCS2QDS206◊Δ##F1C3CE3
	22	11,1	14,6	660	5,6	17	30	30	42,5	44	24	37,5	10,2	1	FCS2QDS226◊Δ##F9C3CE3
	25	11,8	15,5	750	4,9	17	30	30	42,5	44	24	37,5	10,2	1	FCS2QDS256◊Δ##F9C3CE3
	30	13,8	18,1	900	4,1	15	30	30	42,5	45	30	37,5	20,3	1,2	FCS2QDS306◊Δ##FFC9DE3
	35	16,8	22,1	1050	3,2	13	30	30	42,5	50	35	37,5	20,3	1,2	FCS2QDS356◊Δ##FKC9DE3
	40	14,7	19,3	600	4,5	12	15	35	57,5	45	30	52,5	20,3	1,2	FCS2QDS406◊Δ##HHF9DE3
	45	15,5	20,4	675	4,0	12	15	35	57,5	45	30	52,5	20,3	1,2	FCS2QDS456◊Δ##HHF9DE3
	50	18,8	24,7	750	3,3	10	15	35	57,5	50	35	52,5	20,3	1,2	FCS2QDS506◊Δ##HLF9DE3
	55	18,6	24,4	825	3,4	10	15	35	57,5	50	35	52,5	20,3	1,2	FCS2QDS556◊Δ##HLF9DE3
	60	19,3	25,5	900	3,1	10	15	35	57,5	50	35	52,5	20,3	1,2	FCS2QDS606◊Δ##HLF9DE3

(1) Maximum permissible peak current, (2) Thermal resistance from hotspot to ambient (free convection)

U_R (VDC)	C_R (µF)	I_{max} ≤85°C, 10kHz (A)	I_{max} ≤70°C 10kHz (A)	$\hat{I}$ (1) (A)	ESR_{typ} 70°C 10kHz (mΩ)	R_{th}(2) (K/W)	dV/dt 20°C (V/µs)	Ls_{typ} 25°C 1MHz (nH)	W +1/-1,5 (mm)	H +1/-1,5 (mm)	T +1/-1,5 (mm)	P_1 ±0,5 (mm)	P_2 ±0,5 (mm)	Ød ±0,05 (mm)	ORDER CODE ◊ = Tolerance Δ = Pin Style ## = Pin Length
700 (≤85°C) 2Q	65	23,6	31,1	975	2,6	8	15	35	57,5	55	45	52,5	20,3	1,2	FCS2QDS656◊Δ##HSF9DE3
	70	24,4	32,1	1050	2,4	8	15	35	57,5	55	45	52,5	20,3	1,2	FCS2QDS706◊Δ##HSF9DE3
	75	23,8	31,4	1125	2,5	8	15	35	57,5	55	45	52,5	20,3	1,2	FCS2QDS756◊Δ##HSF9DE3
800 (≤70°C)	80	29,7	39,1	1200	2,2	6	15	35	57,5	60	45	52,5	20,3	1,2	FCS2QDS806◊Δ##H2F9DE3
		26,0	34,2	1200	2,4	7	15	35	57,5	60	35	52,5	20,3	1,2	FCS2QDS806◊Δ##H6F9DE3
	90	29,6	39,0	1350	2,2	6	15	35	57,5	60	45	52,5	20,3	1,2	FCS2QDS906◊Δ##H2F9DE3
		26,2	34,4	1350	2,4	7	15	35	57,5	60	35	52,5	20,3	1,2	FCS2QDS906◊Δ##H6F9DE3
	100	31,0	40,8	1500	2,0	6	15	35	57,5	60	45	52,5	20,3	1,2	FCS2QDS107◊Δ##H2F9DE3
		27,2	35,8	1500	2,2	7	15	35	57,5	65	35	52,5	20,3	1,2	FCS2QDS107◊Δ##KAF9DE3
	110	30,5	40,1	1650	2,1	6	15	35	57,5	70	35	52,5	20,3	1,2	FCS2QDS117◊Δ##H8F9DE3
	120	29,5	38,8	1800	1,9	7	15	35	57,5	65	45	52,5	20,3	1,2	FCS2QDS127◊Δ##H7F9DE3
	130	30,4	40,0	1950	1,8	7	15	35	57,5	65	45	52,5	20,3	1,2	FCS2QDS137◊Δ##H7F9DE3
800 (≤85°C) 2K	1	1,9	2,5	65	70,3	46	65	25	32	18	9	27,5	\	0,8	FCS2KDS105◊Δ##I190BE3
	2	2,7	3,6	130	35,5	44	65	25	32	20	11	27,5	\	0,8	FCS2KDS205◊Δ##I490BE3
	3	3,5	4,6	195	23,9	40	65	25	32	22	13	27,5	\	0,8	FCS2KDS305◊Δ##I790BE3
1000 (≤70°C)	3,3	4,0	5,3	215	21,9	33	65	25	32	28	14	27,5	\	0,8	FCS2KDS335◊Δ##IC90BE3
	5	4,9	6,4	325	14,7	33	65	25	32	28	14	27,5	\	0,8	FCS2KDS505◊Δ##IC90BE3
	6	5,7	7,5	390	12,4	29	65	25	32	28	18	27,5	\	0,8	FCS2KDS605◊Δ##ID90BE3
	8	6,7	8,8	520	9,6	27	65	25	32	33	18	27,5	\	0,8	FCS2KDS805◊Δ##IF90BE3
	9	7,1	9,3	585	8,6	27	65	25	32	33	18	27,5	\	0,8	FCS2KDS905◊Δ##IF90BE3
	10	8,0	10,5	650	7,9	23	65	25	32	37	22	27,5	\	0,8	FCS2KDS106◊Δ##II90BE3
		6,2	8,2	300	12,0	25	30	30	42,5	32	19	37,5	\	1	FCS2KDS106◊Δ##F5C0CE3
	15	8,5	11,2	450	8,0	20	30	30	42,5	40	20	37,5	10,2	1	FCS2KDS156◊Δ##F2C3CE3
	20	10,3	13,6	600	6,0	18	30	30	42,5	37	28	37,5	10,2	1	FCS2KDS206◊Δ##F1C3CE3
		10,6	13,9	600	6,1	17	30	30	42,5	44	24	37,5	10,2	1	FCS2KDS206◊Δ##F9C3CE3
	22	11,1	14,6	660	5,6	17	30	30	42,5	44	24	37,5	10,2	1	FCS2KDS226◊Δ##F9C3CE3
	25	12,6	16,6	750	4,8	15	30	30	42,5	45	30	37,5	20,3	1,2	FCS2KDS256◊Δ##FFC9DE3
	30	13,8	18,1	900	4,1	15	30	30	42,5	45	30	37,5	20,3	1,2	FCS2KDS306◊Δ##FFC9DE3
	35	13,8	18,1	525	5,1	12	15	35	57,5	45	30	52,5	20,3	1,2	FCS2KDS356◊Δ##HHF9DE3
	40	14,7	19,3	600	4,5	12	15	35	57,5	45	30	52,5	20,3	1,2	FCS2KDS406◊Δ##HHF9DE3
	45	15,5	20,4	675	4,0	12	15	35	57,5	45	30	52,5	20,3	1,2	FCS2KDS456◊Δ##HHF9DE3
	47	18,3	24,0	705	3,5	10	15	35	57,5	50	35	52,5	20,3	1,2	FCS2KDS476◊Δ##HLF9DE3
	50	17,8	23,4	750	3,7	10	15	35	57,5	50	35	52,5	20,3	1,2	FCS2KDS506◊Δ##HLF9DE3
	55	18,6	24,4	825	3,4	10	15	35	57,5	50	35	52,5	20,3	1,2	FCS2KDS556◊Δ##HLF9DE3
	65	23,8	31,3	975	2,9	7	15	35	57,5	60	35	52,5	20,3	1,2	FCS2KDS656◊Δ##H6F9DE3
		23,6	31,1	975	2,6	8	15	35	57,5	55	45	52,5	20,3	1,2	FCS2KDS656◊Δ##HSF9DE3
	70	23,1	30,4	1050	2,7	8	15	35	57,5	55	45	52,5	20,3	1,2	FCS2KDS706◊Δ##HSF9DE3
		24,6	32,3	1050	2,7	7	15	35	57,5	60	35	52,5	20,3	1,2	FCS2KDS706◊Δ##H6F9DE3
	75	23,8	31,4	1125	2,5	8	15	35	57,5	55	45	52,5	20,3	1,2	FCS2KDS756◊Δ##HSF9DE3
		25,3	33,2	1125	2,6	7	15	35	57,5	65	35	52,5	20,3	1,2	FCS2KDS756◊Δ##KAF9DE3
	80	28,1	37,0	1200	2,4	6	15	35	57,5	60	45	52,5	20,3	1,2	FCS2KDS806◊Δ##H2F9DE3
		27,9	36,7	1200	2,5	6	15	35	57,5	70	35	52,5	20,3	1,2	FCS2KDS806◊Δ##H8F9DE3
	90	29,6	39,0	1350	2,2	6	15	35	57,5	60	45	52,5	20,3	1,2	FCS2KDS906◊Δ##H2F9DE3
	100	28,6	37,6	1500	2,0	7	15	35	57,5	65	45	52,5	20,3	1,2	FCS2KDS107◊Δ##H7F9DE3
900 (≤85°C) R2	1	2,1	2,7	70	59,3	46	70	25	32	18	9	27,5	\	0,8	FCSR2DS105◊Δ##I190BE3
	2	3,0	3,9	140	30,0	44	70	25	32	20	11	27,5	\	0,8	FCSR2DS205◊Δ##I490BE3
	3	3,8	5,0	210	20,2	40	70	25	32	22	13	27,5	\	0,8	FCSR2DS305◊Δ##I790BE3
1100 (≤70°C)	3,3	4,2	5,6	231	18,5	35	70	25	32	24,5	15	27,5	\	0,8	FCSR2DS335◊Δ##IJ90BE3
	5	5,6	7,4	350	12,5	29	70	25	32	28	18	27,5	\	0,8	FCSR2DS505◊Δ##ID90BE3
	6	6,3	8,3	420	10,6	27	70	25	32	33	18	27,5	\	0,8	FCSR2DS605◊Δ##IF90BE3
	8	7,8	10,3	560	8,3	23	70	25	32	37	22	27,5	\	0,8	FCSR2DS805◊Δ##II90BE3
	10	8,6	11,3	700	6,8	23	70	25	32	37	22	27,5	\	0,8	FCSR2DS106◊Δ##II90BE3
		7,4	9,8	350	10,4	20	35	30	42,5	40	20	37,5	\	1	FCSR2DS106◊Δ##F2C0CE3
		7,6	9,9	350	10,1	20	35	30	42,5	40	20	37,5	10,2	1	FCSR2DS106◊Δ##F2C3CE3
	15	9,7	12,8	525	7,2	17	35	30	42,5	44	24	37,5	\	1	FCSR2DS156◊Δ##F9C0CE3
	18	10,5	13,8	630	6,1	17	35	30	42,5	44	24	37,5	\	1	FCSR2DS186◊Δ##F9C0CE3
		10,8	14,2	630	5,8	17	35	30	42,5	44	24	37,5	10,2	1	FCSR2DS186◊Δ##F9C3CE3
	20	11,7	15,4	700	5,6	15	35	30	42,5	45	30	37,5	\	1	FCSR2DS206◊Δ##FFC0CE3
		12,2	16,1	700	5,1	15	35	30	42,5	45	30	37,5	20,3	1,2	FCSR2DS206◊Δ##FFC9DE3
	25	13,6	17,9	875	4,2	15	35	30	42,5	45	30	37,5	20,3	1,2	FCSR2DS256◊Δ##FFC9DE3
	30	15,9	20,9	1050	3,5	13	35	30	42,5	50	35	37,5	20,3	1,2	FCSR2DS306◊Δ##FKC9DE3
		11,6	15,3	450	7,1	12	15	35	57,5	45	30	52,5	20,3	1,2	FCSR2DS306◊Δ##HHF9DE3
	35	13,7	18,0	525	6,2	10	15	35	57,5	50	35	52,5	20,3	1,2	FCSR2DS356◊Δ##HLF9DE3
	40	14,6	19,2	600	5,4	10	15	35	57,5	50	35	52,5	20,3	1,2	FCSR2DS406◊Δ##HLF9DE3
	50	16,2	21,3	750	4,4	10	15	35	57,5	50	35	52,5	20,3	1,2	FCSR2DS506◊Δ##HLF9DE3
	55	20,5	27,0	825	3,9	7	15	35	57,5	60	35	52,5	20,3	1,2	FCSR2DS556◊Δ##H6F9DE3
		18,9	24,9	825	4,0	8	15	35	57,5	55	45	52,5	20,3	1,2	FCSR2DS556◊Δ##HSF9DE3

(1) Maximum permissible peak current, (2) Thermal resistance from hotspot to ambient (free convection)

U_R (VDC)	C_R (µF)	I_{max} ≤85°C, 10kHz (A)	I_{max} ≤70°C 10kHz (A)	$\hat{I}$ (1) (A)	ESR_{typ} 70°C 10kHz (mΩ)	R_{th}(2) (K/W)	dV/dt 20°C (V/µs)	Ls_{typ} 25°C 1MHz (nH)	W +1/-1,5 (mm)	H +1/-1,5 (mm)	T +1/-1,5 (mm)	P_1 ±0,5 (mm)	P_2 ±0,5 (mm)	Ød ±0,05 (mm)	ORDER CODE ◊ = Tolerance Δ = Pin Style ## = Pin Length
900 (≤85°C) R2	60	20,1	26,4	900	3,6	8	15	35	57,5	55	45	52,5	20,3	1,2	FCSR2DS606◊Δ##HSF9DE3
		20,9	27,5	900	3,8	7	15	35	57,5	65	35	52,5	20,3	1,2	FCSR2DS606◊Δ##KAF9DE3
	65	23,8	31,3	975	3,4	6	15	35	57,5	70	35	52,5	20,3	1,2	FCSR2DS656◊Δ##H8F9DE3
1100 (≤70°C)	70	24,8	32,6	1050	3,1	6	15	35	57,5	60	45	52,5	20,3	1,2	FCSR2DS706◊Δ##H2F9DE3
	80	24,3	31,9	1200	2,8	7	15	35	57,5	65	45	52,5	20,3	1,2	FCSR2DS806◊Δ##H7F9DE3
1000 (≤85°C) 3A	1	2,2	2,9	75	53,3	44	75	25	32	20	11	27,5	\	0,8	FCS3ADS105◊Δ##I490BE3
	2	3,3	4,3	150	27,0	40	75	25	32	22	13	27,5	\	0,8	FCS3ADS205◊Δ##I790BE3
	3	4,2	5,5	225	18,3	36	75	25	32	24,5	15	27,5	\	0,8	FCS3ADS305◊Δ##IJ90BE3
1200 (≤70°C)	5	6,1	8,1	375	11,4	27	75	25	32	33	18	27,5	\	0,8	FCS3ADS505◊Δ##IF90BE3
	8	8,2	10,8	600	7,5	23	75	25	32	37	22	27,5	\	0,8	FCS3ADS805◊Δ##II90BE3
	10	7,8	10,3	370	9,4	20	37	30	42,5	40	20	37,5	\	1	FCS3ADS106◊Δ##F2C0CE3
		8,0	10,5	370	9,1	20	37	30	42,5	40	20	37,5	10,2	1	FCS3ADS106◊Δ##F2C3CE3
	12	9,4	12,4	444	7,7	17	37	30	42,5	44	24	37,5	10,2	1	FCS3ADS126◊Δ##F9C3CE3
	15	10,2	13,4	555	6,5	17	37	30	42,5	44	24	37,5	\	1	FCS3ADS156◊Δ##F9C0CE3
		10,5	13,8	555	6,2	17	37	30	42,5	44	24	37,5	10,2	1	FCS3ADS156◊Δ##F9C3CE3
		11,2	14,8	555	6,1	15	37	30	42,5	45	30	37,5	20,3	1,2	FCS3ADS156◊Δ##FFC9DE3
	20	12,9	17,0	740	4,6	15	37	30	42,5	45	30	37,5	20,3	1,2	FCS3ADS206◊Δ##FFC9DE3
	25	15,3	20,2	925	3,8	13	37	30	42,5	50	35	37,5	20,3	1,2	FCS3ADS256◊Δ##FKC9DE3
	30	12,2	16,1	510	6,4	12	17	35	57,5	45	30	52,5	20,3	1,2	FCS3ADS306◊Δ##HHF9DE3
	35	14,4	18,9	595	5,6	10	17	35	57,5	50	35	52,5	20,3	1,2	FCS3ADS356◊Δ##HLF9DE3
	40	15,4	20,2	680	4,9	10	17	35	57,5	50	35	52,5	20,3	1,2	FCS3ADS406◊Δ##HLF9DE3
		18,3	24,0	680	4,9	7	17	35	57,5	60	35	52,5	20,3	1,2	FCS3ADS406◊Δ##H6F9DE3
	50	19,0	25,0	850	4,0	8	17	35	57,5	55	45	52,5	20,3	1,2	FCS3ADS506◊Δ##HSF9DE3
		20,2	26,6	850	4,0	7	17	35	57,5	65	35	52,5	20,3	1,2	FCS3ADS506◊Δ##KAF9DE3
	55	22,7	29,9	935	3,7	6	17	35	57,5	70	35	52,5	20,3	1,2	FCS3ADS556◊Δ##H8F9DE3
	60	23,8	31,3	1020	3,4	6	17	35	57,5	60	45	52,5	20,3	1,2	FCS3ADS606◊Δ##H2F9DE3
		21,9	28,9	1020	3,4	7	17	35	57,5	65	45	52,5	20,3	1,2	FCS3ADS606◊Δ##H7F9DE3
1100 (≤85°C) A3	1	2,3	3,1	80	48,4	44	80	25	32	20	11	27,5	\	0,8	FCSA3DS105◊Δ##I490BE3
	1,5	3,0	3,9	120	32,5	40	80	25	32	22	13	27,5	\	0,8	FCSA3DS155◊Δ##I790BE3
	2	3,6	4,8	160	24,6	36	80	25	32	24,5	15	27,5	\	0,8	FCSA3DS205◊Δ##IJ90BE3
1300 (≤70°C)	2,2	3,9	5,2	176	22,5	33	80	25	32	28	14	27,5	\	0,8	FCSA3DS225◊Δ##IC90BE3
	3,3	5,1	6,7	264	15,2	29	80	25	32	28	18	27,5	\	0,8	FCSA3DS335◊Δ##ID90BE3
	4	5,8	7,6	320	12,8	27	80	25	32	33	18	27,5	\	0,8	FCSA3DS405◊Δ##IF90BE3
	5	6,9	9,1	400	10,5	23	80	25	32	37	22	27,5	\	0,8	FCSA3DS505◊Δ##II90BE3
	6,8	6,5	8,6	272	12,3	22	40	30	42,5	34	20	37,5	10,2	1	FCSA3DS685◊Δ##WYC3CE3
	8	7,4	9,7	320	10,6	20	40	30	42,5	40	20	37,5	\	1	FCSA3DS805◊Δ##F2C0CE3
		7,5	9,9	320	10,3	20	40	30	42,5	40	20	37,5	10,2	1	FCSA3DS805◊Δ##F2C3CE3
		7,5	9,9	320	10,3	20	40	30	42,5	37	22	37,5	10,2	1	FCSA3DS805◊Δ##FQC3CE3
	9	7,9	10,5	360	9,2	20	40	30	42,5	37	22	37,5	10,2	1	FCSA3DS905◊Δ##FQC3CE3
	10	9,2	12,1	400	8,0	17	40	30	42,5	44	24	37,5	\	1	FCSA3DS106◊Δ##F9C0CE3
		9,4	12,4	400	7,6	17	40	30	42,5	44	24	37,5	10,2	1	FCSA3DS106◊Δ##F9C3CE3
	12	11,0	14,5	480	6,3	15	40	30	42,5	45	30	37,5	20,3	1,2	FCSA3DS126◊Δ##FFC9DE3
	15	12,0	15,8	600	5,4	15	40	30	42,5	45	30	37,5	20,3	1,2	FCSA3DS156◊Δ##FFC9DE3
	18	14,0	18,4	720	4,5	13	40	30	42,5	50	35	37,5	20,3	1,2	FCSA3DS186◊Δ##FKC9DE3
	20	14,7	19,4	400	4,1	13	20	30	42,5	50	35	37,5	20,3	1,2	FCSA3DS206◊Δ##FKC9DE3
		11,0	14,5	400	7,9	12	20	35	57,5	45	30	52,5	20,3	1,2	FCSA3DS206◊Δ##HHF9DE3
	25	13,4	17,6	500	6,4	10	20	35	57,5	50	35	52,5	20,3	1,2	FCSA3DS256◊Δ##HLF9DE3
	30	14,0	18,5	600	5,9	10	20	35	57,5	50	35	52,5	20,3	1,2	FCSA3DS306◊Δ##HLF9DE3
	35	18,0	23,6	700	5,1	7	20	35	57,5	60	35	52,5	20,3	1,2	FCSA3DS356◊Δ##H6F9DE3
	40	19,1	25,1	800	4,5	7	20	35	57,5	65	35	52,5	20,3	1,2	FCSA3DS406◊Δ##KAF9DE3
		18,2	24,0	800	4,3	8	20	35	57,5	55	45	52,5	20,3	1,2	FCSA3DS406◊Δ##HSF9DE3
	45	22,1	29,0	900	4,0	6	20	35	57,5	70	35	52,5	20,3	1,2	FCSA3DS456◊Δ##H8F9DE3
	50	21,5	28,3	1000	3,6	7	20	35	57,5	65	45	52,5	20,3	1,2	FCSA3DS506◊Δ##H7F9DE3
1200 (≤85°C) 3B	1	2,4	3,2	90	44,3	44	90	25	32	20	11	27,5	\	0,8	FCS3BDS105◊Δ##I490BE3
	2	4,0	5,3	180	23,7	30	90	25	32	24,5	15	27,5	\	0,8	FCS3BDS205◊Δ##IJ90BE3
	2,2	4,4	5,8	198	20,6	29	90	25	32	28	18	27,5	\	0,8	FCS3BDS225◊Δ##ID90BE3
1400 (≤70°C)	3	5,1	6,7	270	15,3	29	90	25	32	28	18	27,5	\	0,8	FCS3BDS305◊Δ##ID90BE3
	3,3	5,5	7,3	297	14,1	27	90	25	32	33	18	27,5	\	0,8	FCS3BDS335◊Δ##IF90BE3
	5	7,2	9,5	450	9,7	23	90	25	32	37	22	27,5	\	0,8	FCS3BDS505◊Δ##II90BE3
	6	6,7	8,8	270	12,8	20	45	30	42,5	40	20	37,5	\	1	FCS3BDS605◊Δ##F2C0CE3
	7	7,3	9,7	315	10,7	20	45	30	42,5	37	22	37,5	10,2	1	FCS3BDS705◊Δ##FQC3CE3
	8	8,5	11,2	360	9,5	17	45	30	42,5	44	24	37,5	10,2	1	FCS3BDS805◊Δ##F9C3CE3
	10	9,4	12,4	450	7,6	17	45	30	42,5	44	24	37,5	10,2	1	FCS3BDS106◊Δ##F9C3CE3
		10,1	13,3	450	7,5	15	45	30	42,5	45	30	37,5	20,3	1,2	FCS3BDS106◊Δ##FFC9DE3
	15	13,2	17,3	675	5,1	13	45	30	42,5	50	35	37,5	20,3	1,2	FCS3BDS156◊Δ##FKC9DE3
	20	11,0	14,5	460	7,9	12	23	35	57,5	45	30	52,5	20,3	1,2	FCS3BDS206◊Δ##HHF9DE3

(1) Maximum permissible peak current, (2) Thermal resistance from hotspot to ambient (free convection)

U_R (VDC)	C_R (µF)	I_{max} ≤85°C, 10kHz (A)	I_{max} ≤70°C 10kHz (A)	$\hat{I}$ (1) (A)	ESR_{typ} 70°C 10kHz (mΩ)	R_{th}(2) (K/W)	dV/dt 20°C (V/µs)	Ls_{typ} 25°C 1MHz (nH)	W +1/-1,5 (mm)	H +1/-1,5 (mm)	T +1/-1,5 (mm)	P_1 ±0,5 (mm)	P_2 ±0,5 (mm)	Ød ±0,05 (mm)	ORDER CODE ◊ = Tolerance Δ = Pin Style ## = Pin Length
1200 (≤85°C) 3B	25	13,4	17,6	575	6,4	10	23	35	57,5	50	35	52,5	20,3	1,2	FCS3BDS256◊Δ##HLF9DE3
	30	16,3	21,5	690	5,4	8	23	35	57,5	55	45	52,5	20,3	1,2	FCS3BDS306◊Δ##HSF9DE3
		17,4	22,9	690	5,4	7	23	35	57,5	60	35	52,5	20,3	1,2	FCS3BDS306◊Δ##H6F9DE3
1400 (≤70°C)	35	17,6	23,1	805	4,7	8	23	35	57,5	55	45	52,5	20,3	1,2	FCS3BDS356◊Δ##HSF9DE3
		20,9	27,5	805	4,4	6	23	35	57,5	70	35	52,5	20,3	1,2	FCS3BDS356◊Δ##H8F9DE3
	40	21,5	28,3	920	4,2	6	23	35	57,5	60	45	52,5	20,3	1,2	FCS3BDS406◊Δ##H2F9DE3
	45	21,0	27,6	1035	3,8	7	23	35	57,5	65	45	52,5	20,3	1,2	FCS3BDS456◊Δ##H7F9DE3
1500 (≤85°C) C3	6,5	8,7	11,4	293	9,0	17	45	30	42	42	28	37,5	10,2	1	FCSC3DS655◊Δ##FHC3CE3
	11	12,8	16,9	330	5,4	13	30	30	42	50	35	37,5	20,3	1,2	FCSC3DS116◊Δ##FKC9DE3
	12	10,8	14,3	300	9,8	10	25	35	57,5	50	35	52,5	20,3	1,2	FCSC3DS126◊Δ##HLF9DE3
1600 (≤70°C)															

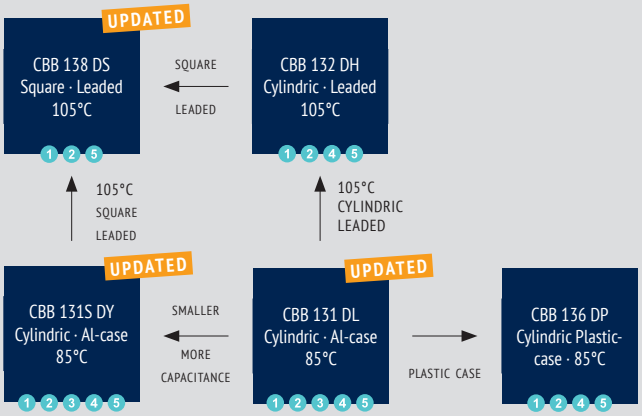
(1) Maximum permissible peak current, (2) Thermal resistance from hotspot to ambient (free convection)

DC LINK OVERVIEW

DC-LINK

APPLICATIONS:

1. High power frequency converters
2. Motion control, welding equipment, elevators
3. Electric and hybrid electric vehicles
4. Photovoltaic and wind inverters
5. Industry high-end power supplies

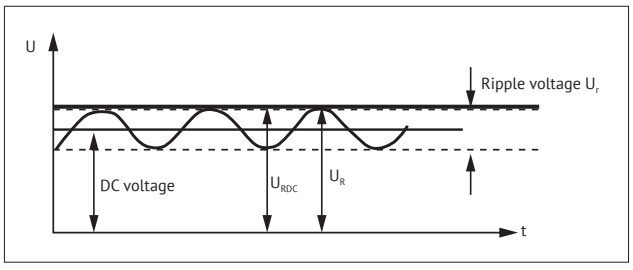


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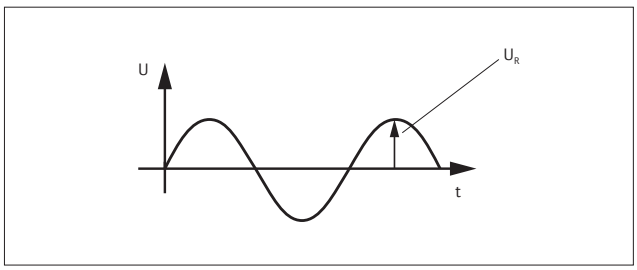
NOMINAL CAPACITANCE C_R Nominal Capacitance is defined at 20°C and 50Hz (120Hz).

RATED VOLTAGE U_R

DC Capacitors: U_{RDC} Maximum operating peak voltage of either polarity but of a non-reversing type waveform, for which the capacitor has been designed, for continuous operation. The maximum DC voltage is the sum of the DC voltage and peak AC voltage.



AC Capacitors: U_{RAC} Maximum operating peak recurrent voltage of either polarity of a reversing type waveform for which the capacitor has been designed.



OPERATING VOLTAGE The plastic film capacitor varies in the maximum applicable voltage depending on the applied voltage waveform, current waveform, frequency, ambient temperature (capacitor surface temperature), capacitance value, etc. Be sure to use capacitors within the specified values by checking the voltage waveform, current waveform, and frequency applied to them (In the application of high frequency, the permissible voltage varies with the type of the capacitor. Refer to the specification for details. See also Voltage Derating tables.).

NON-RECURRENT SURGE VOLTAGE U_S Peak voltage induced by a switching or any other disturbance of the system which is allowed for a limited number of times and for durations shorter than the basic period.

- Maximum duration: 50 ms / pulse
- Maximum number of occurrences: 1000 (during load)

MAXIMUM RATE OF VOLTAGE RISE dV/dt Maximum permissible repetitive rate of voltage rise of the operational voltage.

OPERATING CURRENT Due to the fact that the dissipation factor of the capacitor is greater than zero, heat will be generated in any application where alternating currents or pulses occur. The resulting internal temperature rise may cause a severe deterioration of the capacitor's withstanding voltage, or may lead to a breakdown (even smoke or fire may result). Therefore, the safe use of capacitor must be within the rated voltage (or category voltage) and the permissible current ranges. The rated current must be considered by dividing into pulse current (peak current) and continuous current (rms current) depending on the break down mode, and when using, should make sure the both currents are within the permissible range.

MAXIMUM CURRENT I_{MAX} Maximum Rms Current for continuous operation, see Current Derating tables.

MAXIMUM PEAK CURRENT $\hat{I}$ Maximum permissible repetitive peak current which can occur during continuous operation.

$\hat{I} = C_R * (dV/dt)$

MAXIMUM SURGE CURRENT $\hat{I}_S$

- Maximum duration: 50 ms / pulse
- Maximum number of occurrences: 1000 (during load)

SERIES RESISTANCE R_S Effective ohmic resistance of the conducting elements of the capacitor.

EQUIVALENT SERIES RESISTANCE ESR The ESR represents all ohmic resistances: $ESR = \tan\delta/(\omega C) = R_s + \tan\delta_o/(\omega C)$

DIELECTRIC DISSIPATION FACTOR $\tan\delta_0$ Constant dissipation factor of the dielectric material.

LOSS FACTOR $\tan\delta$ The dissipation factor is the ratio between the reactive and effective power.

HOTSPOT TEMPERATURE $\Theta_{HOTSPOT}$ Temperature at the hottest position inside the capacitor. $\Theta_{hotspot} = \Theta_{ambient} + P_{loss} * R_{th}$

R_{th}: thermal resistance, P_{loss}: Powerloss $P_{loss} = ESR * I_{rms}^2$,

$\Theta_{ambient}$ = ambient temperature

CHARGING AND DISCHARGING Because the charging and discharging current of capacitor is obtained by the product of voltage rise rate (dV/dt) and capacitance, low voltage charging and discharging may also cause deterioration of capacitor such as

shorting and open due to sudden charging and discharging current. When charging and discharging, pass through a resistance of 20Ω/V to 1000Ω/V or more to limit the current. When connecting multiple film capacitors in parallel in withstand voltage test or life test, connect a resistance of 20Ω/V to1000Ω/V or more in series to each capacitor. In addition, **capacitors must be discharged via a resistor before handling**. Because the capacitors do not have any discharge resistors built-in, there is a risk of residual voltages and electric energy contents that might be dangerous.

TEMPERATURE RANGE AND ALTITUDE Use film capacitors only within the specified operating temperature range. The altitude and barometic pressure have an impact on the functionality of the capacitor. Max. Altitude: 2000m above sea level.

ALTITUDE/m	CURRENT DERATING COEFFICIENT
⩽ 2 000	1,00
2 500	0,95
3 000	0,90
3 500	0,85
4 000	0,80
4 500	0,75
5 000	0,70

EXPECTED LIFETIME The expected lifetime of the capacitor depends on the applied voltage and the hot spot temperature during operation. For capacitors applied in different situations, the obtainable average service lives are different. Please refer to the life time diagrams of each series.

FAILURE RATE λ (FAILURE IN TIME FIT) 1 FIT = $1/10^{-9}$h (1 failure per 10^9 components test hours), λ=r/(nt)
r= number of failure, n= test number, t= test time

INSULATION VOLTAGE U_i Rms value of AC voltage designed for the insulation between terminals of the capacitor to case or earth. The insulation voltage is equal to the rated voltage of the capacitor, divided by , unless otherwise specified.

INSULATION RESISTANCE R_i Ration between applied DC Voltage and resulting leakage current after 1 minute of charge. It is defined in MΩ. Typically it is given as time constant R_i*C [μF] in seconds.

VOLTAGE BETWEEN TERMINALS U_{TT} Voltage between terminals.

VOLTAGE BETWEEN TERMINALS AND CASE U_{TC} Voltage between terminals and case.

BUZZING NOISE Any buzzing noise produced by a capacitor is caused by the vibration of the film due to the Coulomb force that is generated between the electrodes with opposite poles. It is of no harm to the capacitor.

DIELECTRICAL ABSORPTION Due to the dielectrical absorption voltages may occure between the terminals. Please discharge the capacitor before usage.

SURFACE OVER TEMPERATURE $\Delta\theta_{case}$ When current continuously flow through the capacitor, the temperature inside the capacitor will rise induced by dissipated heat. If the temperature exceeds the maximum allowed hot-spot temperature, it might cause a short circuit or fire. The limits described in the catalogue must not be exceeded and it's necessary to check the temperature on the capacitor's surface in operation.

FLAME RETARDATION Although flame retarding PU resin or plastic case material is used in the coating or encapsulation of plastic film capacitors, continuous exposure to high temperature ambient or fire will break the coating layer or plastic case of the capacitor, and may lead to melting and ignition of the capacitor element.

HUMID AMBIENT If used for a long time in a humid ambient, the capacitor might absorb humidity and oxidize the electrodes causing damage to the capacitor. In case of AC application, high humidity would increase the corona effect. This phenomenon causes a drop in capacitance and an increase of capacitor losses. Humidity needs to be avoided. If needed please inform Jianghai separately for technical adopted components.

STORAGE CONDITIONS 1) Capacitors must not be stored in corrosive atmospheres, particularly not when chlorides, sulfides, alkali, acids, lye, salts, organic solvents or similar substances are present. 2) It must not be stored in high temperature and/or high humidity environments. The following storage conditions must be kept (applicable only for storage in the original package): Temperature: ⩽ 35 °C; Humidity: ⩽ 80% RH, no dew allowed on the capacitor; Storage time: ⩽ 24 months

MOUNTING Other devices, which are mounted near the capacitor, should not touch the capacitor. Additional heat coming from other components near the capacitor may reduce the lifetime of the capacitor. Do never attempt to bend or twist the capacitor after mounting and avoid any mechanical stress on the terminals. Never exceed the max. permissible torques when tightening the terminal screws or the mounting bolt's cap nuts.

CAUTION & WARNINGS Do not touch the terminals of capacitors. The energy stored in capacitors may be lethal. Ensure that the operating environment of the equipment into which the capacitor has been built, is within the specified conditions. Capacitors must not be used in corrosive atmospheres, particularly not when chlorides, sulfides, alkali, acid, lye, salts, organic solvents or similar substances are present. Electrical or mechanical misapplication may be hazardous. Personal injury or property damage may result from bursting of the capacitors or from expulsion of melted material.

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