

Overview

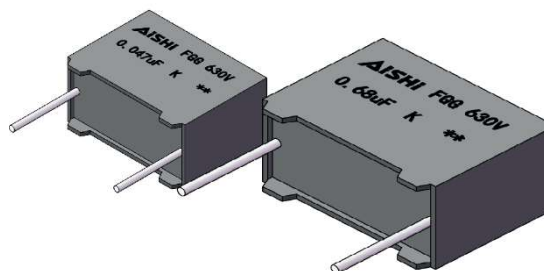
The FGG series is constructed of metallized polyester film encapsulated in plastic cases, sealed with epoxy resin.

Applications

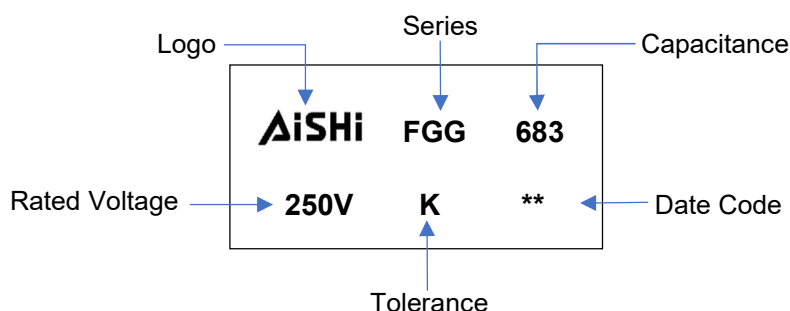
Widely used in by-passing, blocking, coupling, decoupling, pulse, logic, timing, oscillator circuits, ballasts and compact lamps

Features

- Self-healing property
- High density packaging
- Good solderability
- High moisture resistance
- High operating temperature 125°C



Marking



Manufacturing Date Code

Year	Code	Month	Code
2018	A	Jan	1
2019	B	Feb	2
2020	C	Mar	3
2021	D	Apr	4
2022	E	May	5
2023	F	Jun	6

Year	Code	Month	Code
2024	G	Jul	7
2025	H	Aug	8
2026	J	Sep	9
2027	K	Oct	A
2028	L	Nov	N
2029	M	Dec	D

Part Number System

F	GG	2G	K	105	F24	2FL	5
Capacitor Type	Series	Voltage (VDC)	Tolerance	Capacitance (pF)	Size Code	Terminal Code	Lead Length Code
F = Film	DC Film, Metallized PE Film	100=1K 250=2E 400=2G 630=2L	J = ±5% K = ±10%	First two digits = significant figures. Third digit = Number of zeros.	Refer to Size Code Table	Refer to Terminal Code Table	Refer to Lead Length Code Table

Metallized Polyester Film Capacitors

FGG Series - 100 ~ 630VDC



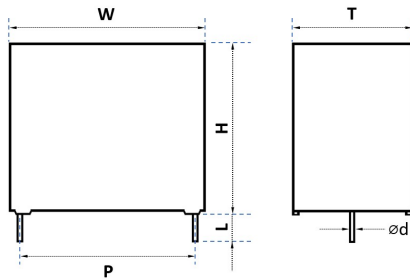
Terminal Code

Digit One (Lead/Terminal Type)	Digit Two (Lead Space)	Digit Three (Lead Ipsilateral)
2 leads for long	L	10.0mm C
2 leads for straight cut	2	12.5mm D
2 leads for forming cut	E	15.0mm E
2 leads for taping forming	T	22.5mm F
2 leads for taping straight	V	27.5mm G

Lead Length Code

Lead Length	Code
20mm min	L
35mm min	B
3.2mm	1
3.5mm	2
3.0mm	3
4.0mm	4
5.0mm	5
7.0mm	7
Taping	T
N/A	N

Dimension (mm)



Size Code Table (mm)

Size Code	Dimension						Pitch		Ød	
	W	Tolerance	H	Tolerance	T	Tolerance	P	Tolerance	2 Leads	Tolerance
C11	13.0	0.5	9.0	0.5	4.0	0.5	10.0	0.5	0.6	0.05
C13	13.0	0.5	11.0	0.5	5.0	0.5	10.0	0.5	0.6	0.05
C16	13.0	0.5	12.0	0.5	6.0	0.5	10.0	0.5	0.6	0.05
C24	13.0	0.5	13.0	0.5	7.0	0.5	10.0	0.5	0.6	0.05
E14	18.0	0.5	11.0	0.5	5.0	0.5	15.0	0.5	0.6	0.05
E17	18.0	0.5	12.0	0.5	6.0	0.5	15.0	0.5	0.6	0.05
E29	18.0	0.5	13.5	0.5	7.5	0.5	15.0	0.5	0.8	0.05
E34	18.0	0.5	14.5	0.5	8.5	0.5	15.0	0.5	0.8	0.05
E43	18.0	0.5	16.0	0.5	10.0	0.5	15.0	0.5	0.8	0.05
E47	18.0	0.5	19.0	0.5	11.0	0.5	15.0	0.5	0.8	0.05
F17	26.0	0.5	16.5	0.5	7.0	0.5	22.5	0.5	0.8	0.05
F20	26.0	0.5	17.0	0.5	8.5	0.5	22.5	0.5	0.8	0.05
F24	26.0	0.5	19.0	0.5	10.0	0.5	22.5	0.5	0.8	0.05
F26	26.0	0.5	20.0	0.5	11.0	0.5	22.5	0.5	0.8	0.05
F27	26.0	0.5	22.0	0.5	12.0	0.5	22.5	0.5	0.8	0.05
G15	32.0	0.8	18.0	0.8	9.0	0.8	27.5	0.5	0.8	0.05
G18	32.0	0.8	20.0	0.8	11.0	0.8	27.5	0.5	0.8	0.05
G21	32.0	0.8	22.0	0.8	13.0	0.8	27.5	0.5	0.8	0.05
G30	32.0	0.8	25.0	0.8	16.0	0.8	27.5	0.5	0.8	0.05
G31	32.0	0.8	28.0	0.8	16.0	0.8	27.5	0.5	0.8	0.05
G33	32.0	0.8	28.0	0.8	18.0	0.8	27.5	0.5	0.8	0.05
G34	32.0	0.8	33.0	0.8	18.0	0.8	27.5	0.5	0.8	0.05

Rating and Part Number

Vdc	Vac	Cap Value μF	Dimensions				Peak Current A	dv/dt V/us	Lead Wire mm	Part Number
			W mm	H mm	T mm	P mm				
100	50	0.1	10.0	9.0	4.0	7.5	3.5	35	0.5	FGG1KK104B112BL5
100	50	0.1	13.0	9.0	4.0	10.0	3.0	30	0.6	FGG1KK104C112CL5
100	50	0.12	10.0	9.0	4.0	7.5	4.2	35	0.5	FGG1KK124B112BL5
100	50	0.12	13.0	9.0	4.0	10.0	3.6	30	0.6	FGG1KK124C112CL5
100	50	0.15	10.0	9.0	4.0	7.5	5.3	35	0.5	FGG1KK154B112BL5
100	50	0.15	13.0	9.0	4.0	10.0	4.5	30	0.6	FGG1KK154C112CL5
100	50	0.18	10.0	9.0	4.0	7.5	6.3	35	0.5	FGG1KK184B112BL5
100	50	0.18	13.0	9.0	4.0	10.0	5.4	30	0.6	FGG1KK184C112CL5
100	50	0.22	10.0	9.0	4.0	7.5	7.7	35	0.5	FGG1KK224B112BL5
100	50	0.22	13.0	9.0	4.0	10.0	6.6	30	0.6	FGG1KK224C112CL5
100	50	0.33	10.0	9.0	4.0	7.5	11.6	35	0.5	FGG1KK334B112BL5
100	50	0.33	13.0	9.0	4.0	10.0	9.9	30	0.6	FGG1KK334C112CL5
100	50	0.47	10.0	9.0	4.0	7.5	16.5	35	0.5	FGG1KK474B112BL5
100	50	0.47	13.0	9.0	4.0	10.0	14.1	30	0.6	FGG1KK474C112CL5
100	50	0.56	10.0	11.0	5.0	7.5	19.6	35	0.5	FGG1KK564B152BL5
100	50	0.56	13.0	9.0	4.0	10.0	16.8	30	0.6	FGG1KK564C112CL5
100	50	0.68	10.0	11.0	5.0	7.5	23.8	35	0.5	FGG1KK684B152BL5
100	50	0.68	13.0	9.0	4.0	10.0	20.4	30	0.6	FGG1KK684C112CL5
100	50	0.82	10.0	12.0	6.0	7.5	28.7	35	0.5	FGG1KK824B162BL5
100	50	0.82	13.0	11.0	5.0	10.0	24.6	30	0.6	FGG1KK824C132CL5
100	50	1.0	10.0	12.0	6.0	7.5	35.0	35	0.5	FGG1KK105B162BL5
100	50	1.0	13.0	11.0	5.0	10.0	30.0	30	0.6	FGG1KK105C132CL5
100	50	1.2	13.0	12.0	6.0	10.0	36.0	30	0.6	FGG1KK125C162CL5
100	50	1.5	13.0	12.0	6.0	10.0	45.0	30	0.6	FGG1KK155C162CL5
100	50	1.8	13.0	13.0	7.0	10.0	54.0	30	0.6	FGG1KK185C242CL5
100	50	2.2	18.0	12.0	6.0	15.0	44.0	20	0.6	FGG1KK225E172EL5
100	50	3.3	18.0	13.5	7.5	15.0	66.0	20	0.8	FGG1KK335E292EL5
100	50	4.7	18.0	14.5	8.5	15.0	94.0	20	0.8	FGG1KK475E342EL5
100	50	4.7	26.0	16.5	7.0	22.5	47.0	10	0.8	FGG1KK475F172FL5
100	50	6.8	26.0	19.0	10.0	22.5	68.0	10	0.8	FGG1KK685F242FL5
100	50	8.2	26.0	20.0	11.0	22.5	82.0	10	0.8	FGG1KK825F262FL5
100	50	10	26.0	22.0	12.0	22.5	100.0	10	0.8	FGG1KK106F272FL5
100	50	10	32.0	20.0	11.0	27.5	50.0	5	0.8	FGG1KK106G182GL5
100	50	12	32.0	20.0	11.0	27.5	60.0	5	0.8	FGG1KK126G182GL5
100	50	15	32.0	22.0	13.0	27.5	75.0	5	0.8	FGG1KK156G212GL5
100	50	22	32.0	25.0	16.0	27.5	110.0	5	0.8	FGG1KK226G302GL5
100	50	30	32.0	28.0	18.0	27.5	150.0	5	0.8	FGG1KK306G332GL5
250	160	0.033	10.0	9.0	4.0	7.5	3.6	110	0.5	FGG2EK333B112BL5
250	160	0.033	13.0	9.0	4.0	10.0	2.6	80	0.6	FGG2EK333C112CL5
250	160	0.047	10.0	9.0	4.0	7.5	5.2	110	0.5	FGG2EK473B112BL5
250	160	0.047	13.0	9.0	4.0	10.0	3.8	80	0.6	FGG2EK473C112CL5
250	160	0.056	10.0	9.0	4.0	7.5	6.2	110	0.5	FGG2EK563B112BL5
250	160	0.056	13.0	9.0	4.0	10.0	4.5	80	0.6	FGG2EK563C112CL5
250	160	0.068	10.0	9.0	4.0	7.5	7.5	110	0.5	FGG2EK683B112BL5
250	160	0.068	13.0	9.0	4.0	10.0	5.4	80	0.6	FGG2EK683C112CL5
250	160	0.082	10.0	9.0	4.0	7.5	9.0	110	0.5	FGG2EK823B112BL5
250	160	0.082	13.0	9.0	4.0	10.0	6.6	80	0.6	FGG2EK823C112CL5
250	160	0.1	10.0	9.0	4.0	7.5	11.0	110	0.5	FGG2EK104B112BL5

Rating and Part Number

Vdc	Vac	Cap Value μF	Dimensions				Peak Current A	dv/dt V/us	Lead Wire mm	Part Number
			W mm	H mm	T mm	P mm				
250	160	0.1	13.0	9.0	4.0	10.0	8.0	80	0.6	FGG2EK104C112CL5
250	160	0.12	10.0	9.0	4.0	7.5	13.2	110	0.5	FGG2EK124B112BL5
250	160	0.12	13.0	9.0	4.0	10.0	9.6	80	0.6	FGG2EK124C112CL5
250	160	0.15	10.0	9.0	4.0	7.5	16.5	110	0.5	FGG2EK154B112BL5
250	160	0.15	13.0	9.0	4.0	10.0	12.0	80	0.6	FGG2EK154C112CL5
250	160	0.18	10.0	11.0	5.0	7.5	19.8	110	0.5	FGG2EK184B152BL5
250	160	0.18	13.0	11.0	5.0	10.0	14.4	80	0.6	FGG2EK184C132CL5
250	160	0.22	10.0	11.0	5.0	7.5	24.2	110	0.5	FGG2EK224B152BL5
250	160	0.22	13.0	11.0	5.0	10.0	17.6	80	0.6	FGG2EK224C132CL5
250	160	0.33	10.0	12.0	6.0	7.5	36.3	110	0.5	FGG2EK334B162BL5
250	160	0.33	13.0	11.0	5.0	10.0	26.4	80	0.6	FGG2EK334C132CL5
250	160	0.39	13.0	12.0	6.0	10.0	31.2	80	0.6	FGG2EK394C162CL5
250	160	0.47	13.0	12.0	6.0	10.0	37.6	80	0.6	FGG2EK474C162CL5
250	160	0.47	18.0	11.0	5.0	15.0	21.2	45	0.6	FGG2EK474E142EL5
250	160	0.68	18.0	12.0	6.0	15.0	30.6	45	0.6	FGG2EK684E172EL5
250	160	1.0	18.0	13.5	7.5	15.0	45.0	45	0.8	FGG2EK105E292EL5
250	160	1.2	18.0	13.5	7.5	15.0	54.0	45	0.8	FGG2EK125E292EL5
250	160	1.5	18.0	14.5	8.5	15.0	67.5	45	0.8	FGG2EK155E342EL5
250	160	1.5	26.0	16.5	7.0	22.5	30.0	20	0.8	FGG2EK155F172FL5
250	160	1.8	26.0	16.5	7.0	22.5	36.0	20	0.8	FGG2EK185F172FL5
250	160	2.2	26.0	17.0	8.5	22.5	44.0	20	0.8	FGG2EK225F202FL5
250	160	3.3	26.0	20.0	11.0	22.5	66.0	20	0.8	FGG2EK335F262FL5
250	160	3.3	32.0	18.0	9.0	27.5	49.5	15	0.8	FGG2EK335G152GL5
250	160	4.7	32.0	20.0	11.0	27.5	70.5	15	0.8	FGG2EK475G182GL5
250	160	6.8	32.0	22.0	13.0	27.5	102.0	15	0.8	FGG2EK685G212GL5
250	160	10	32.0	25.0	16.0	27.5	150.0	15	0.8	FGG2EK106G302GL5
400	220	0.01	10.0	9.0	4.0	7.5	1.8	180	0.5	FGG2GK103B112BL5
400	220	0.01	13.0	9.0	4.0	10.0	1.5	150	0.6	FGG2GK103C112CL5
400	220	0.015	10.0	9.0	4.0	7.5	2.7	180	0.5	FGG2GK153B112BL5
400	220	0.015	13.0	9.0	4.0	10.0	2.3	150	0.6	FGG2GK153C112CL5
400	220	0.022	10.0	9.0	4.0	7.5	4.0	180	0.5	FGG2GK223B112BL5
400	220	0.022	13.0	9.0	4.0	10.0	3.3	150	0.6	FGG2GK223C112CL5
400	220	0.033	10.0	9.0	4.0	7.5	5.9	180	0.5	FGG2GK333B112BL5
400	220	0.033	13.0	9.0	4.0	10.0	5.0	150	0.6	FGG2GK333C112CL5
400	220	0.047	10.0	9.0	4.0	7.5	8.5	180	0.5	FGG2GK473B112BL5
400	220	0.047	13.0	9.0	4.0	10.0	7.1	150	0.6	FGG2GK473C112CL5
400	220	0.056	10.0	11.0	5.0	7.5	10.1	180	0.5	FGG2GK563B152BL5
400	220	0.056	13.0	9.0	4.0	10.0	8.4	150	0.6	FGG2GK563C112CL5
400	220	0.068	10.0	11.0	5.0	7.5	12.2	180	0.5	FGG2GK683B152BL5
400	220	0.068	13.0	11.0	5.0	10.0	10.2	150	0.6	FGG2GK683C132CL5
400	220	0.082	10.0	12.0	6.0	7.5	14.8	180	0.5	FGG2GK823B162BL5
400	220	0.082	13.0	11.0	5.0	10.0	12.3	150	0.6	FGG2GK823C132CL5
400	220	0.1	10.0	12.0	6.0	7.5	18.0	180	0.5	FGG2GK104B162BL5
400	220	0.1	13.0	11.0	5.0	10.0	15.0	150	0.6	FGG2GK104C132CL5
400	220	0.12	13.0	12.0	6.0	10.0	18.0	150	0.6	FGG2GK124C162CL5
400	220	0.15	13.0	12.0	6.0	10.0	22.5	150	0.6	FGG2GK154C162CL5
400	220	0.15	18.0	11.0	5.0	15.0	9.8	65	0.6	FGG2GK154E142EL5
400	220	0.18	18.0	12.0	6.0	15.0	11.7	65	0.6	FGG2GK184E172EL5

Rating and Part Number

Vdc	Vac	Cap Value μF	Dimensions				Peak Current A	dv/dt V/us	Lead Wire mm	Part Number
			W mm	H mm	T mm	P mm				
400	220	0.22	18.0	12.0	6.0	15.0	14.3	65	0.6	FGG2GK224E172EL5
400	220	0.33	18.0	13.5	7.5	15.0	21.5	65	0.8	FGG2GK334E292EL5
400	220	0.47	18.0	14.5	8.5	15.0	30.6	65	0.8	FGG2GK474E342EL5
400	220	0.56	18.0	16.0	10.0	15.0	36.4	65	0.8	FGG2GK564E432EL5
400	220	0.68	18.0	19.0	11.0	15.0	44.2	65	0.8	FGG2GK684E472EL5
400	220	0.68	26.0	16.5	7.0	22.5	20.4	30	0.8	FGG2GK684F172FL5
400	220	0.82	26.0	17.0	8.5	22.5	24.6	30	0.8	FGG2GK824F202FL5
400	220	1.0	26.0	19.0	10.0	22.5	30.0	30	0.8	FGG2GK105F242FL5
400	220	1.5	26.0	22.0	12.0	22.5	45.0	30	0.8	FGG2GK155F272FL5
400	220	1.5	32.0	20.0	11.0	27.5	37.5	25	0.8	FGG2GK155G182GL5
400	220	1.8	32.0	20.0	11.0	27.5	45.0	25	0.8	FGG2GK155G182GL5
400	220	2.2	32.0	22.0	13.0	27.5	55.0	25	0.8	FGG2GK225G212GL5
400	220	3.3	32.0	25.0	16.0	27.5	82.5	25	0.8	FGG2GK335G302GL5
400	220	4.7	32.0	28.0	16.0	27.5	117.5	25	0.8	FGG2GK475G312GL5
400	220	6.8	32.0	33.0	18.0	27.5	170.0	25	0.8	FGG2GK685G342GL5
630	250	0.001	10.0	9.0	4.0	7.5	0.3	250	0.5	FGG2LK102B112BL5
630	250	0.001	13.0	9.0	4.0	10.0	0.2	200	0.6	FGG2LK102C112CL5
630	250	0.0015	10.0	9.0	4.0	7.5	0.4	250	0.5	FGG2LK152B112BL5
630	250	0.0015	13.0	9.0	4.0	10.0	0.3	200	0.6	FGG2LK152C112CL5
630	250	0.0022	10.0	9.0	4.0	7.5	0.6	250	0.5	FGG2LK222B112BL5
630	250	0.0022	13.0	9.0	4.0	10.0	0.4	200	0.6	FGG2LK222C112CL5
630	250	0.0033	10.0	9.0	4.0	7.5	0.8	250	0.5	FGG2LK332B112BL5
630	250	0.0033	13.0	9.0	4.0	10.0	0.7	200	0.6	FGG2LK332C112CL5
630	250	0.0047	10.0	9.0	4.0	7.5	1.2	250	0.5	FGG2LK472B112BL5
630	250	0.0047	13.0	9.0	4.0	10.0	0.9	200	0.6	FGG2LK472C112CL5
630	250	0.0068	10.0	9.0	4.0	7.5	1.7	250	0.5	FGG2LK682B112BL5
630	250	0.0068	13.0	9.0	4.0	10.0	1.4	200	0.6	FGG2LK682C112CL5
630	250	0.0082	10.0	9.0	4.0	7.5	2.1	250	0.5	FGG2LK822B112BL5
630	250	0.0082	13.0	9.0	4.0	10.0	1.6	200	0.6	FGG2LK822C112CL5
630	250	0.01	10.0	9.0	4.0	7.5	2.5	250	0.5	FGG2LK103B112BL5
630	250	0.01	13.0	9.0	4.0	10.0	2.0	200	0.6	FGG2LK103C112CL5
630	250	0.015	10.0	9.0	4.0	7.5	3.8	250	0.5	FGG2LK153B112BL5
630	250	0.015	13.0	9.0	4.0	10.0	3.0	200	0.6	FGG2LK153C112CL5
630	250	0.022	10.0	11.0	5.0	7.5	5.5	250	0.5	FGG2LK223B152BL5
630	250	0.022	13.0	9.0	4.0	10.0	4.4	200	0.6	FGG2LK223C112CL5
630	250	0.033	10.0	12.0	6.0	7.5	8.3	250	0.5	FGG2LK333B162BL5
630	250	0.033	13.0	11.0	5.0	10.0	6.6	200	0.6	FGG2LK333C132CL5
630	250	0.039	10.0	12.0	6.0	7.5	9.8	250	0.5	FGG2LK393B162BL5
630	250	0.039	13.0	11.0	5.0	10.0	7.8	200	0.6	FGG2LK393C132CL5
630	250	0.047	10.0	12.0	6.0	7.5	11.8	250	0.5	FGG2LK473B162BL5
630	250	0.047	13.0	11.0	5.0	10.0	9.4	200	0.6	FGG2LK473C132CL5
630	250	0.068	13.0	12.0	6.0	10.0	13.6	200	0.6	FGG2LK683C162CL5
630	250	0.082	18.0	11.0	5.0	15.0	7.4	90	0.6	FGG2LK823E142EL5
630	250	0.1	18.0	12.0	6.0	15.0	9.0	90	0.6	FGG2LK104E172EL5
630	250	0.15	18.0	13.5	7.5	15.0	13.5	90	0.8	FGG2LK154E292EL5
630	250	0.18	18.0	14.5	8.5	15.0	16.2	90	0.8	FGG2LK184E342EL5
630	250	0.22	18.0	16.0	10.0	15.0	19.8	90	0.8	FGG2LK224E432EL5
630	250	0.33	18.0	19.0	11.0	15.0	29.7	90	0.8	FGG2LK334E472EL5


Rating and Part Number

Vdc	Vac	Cap Value μF	Dimensions				Peak Current A	dv/dt V/us	Lead Wire mm	Part Number
			W mm	H mm	T mm	P mm				
630	250	0.47	26.0	17.0	8.5	22.5	16.5	35	0.8	FGG2LK474F202FL5
630	250	0.56	26.0	19.0	10.0	22.5	19.6	35	0.8	FGG2LK564F242FL5
630	250	0.68	26.0	22.0	12.0	22.5	23.8	35	0.8	FGG2LK684F272FL5
630	250	0.82	32.0	20.0	11.0	27.5	28.7	35	0.8	FGG2LK824G182FL5
630	250	1.0	32.0	22.0	13.0	27.5	35.0	35	0.8	FGG2LK105G212FL5

General Technical Data

Applications	Blocking, Coupling\Decoupling, Bypassing
Dielectric	Polyester Metallized Film
Reference Standard	IEC 60384-2
Climatic Category	40/125/56 IEC 60068-1
Operating Temperature Range	-40°C ~ +125°C (85°C ~125°C, decreasing factor 1.25% per °C for Rated Voltage)
Protection	Solvent resistant plastic case UL94 V-0 Thermosetting resin sealing UL 94 V-0 compliant
Installation	Any position
Packaging	Packed in cardboard boxes with protection for the terminals
Storage Conditions	Storage time: ≤24months from the date marked on the label package Average relative humidity per year ≤70% RH≤85% for 30 days randomly distributed throughout the year Dew is absent Temperature: -40°C ~ +85°C
Storage Life	Product that passed less than 2 years from production, No need reconfirmation
RoHS Compliance	Compliant with the restricted substance requirement of Directive 2011/65/EU
Flame Retardant Grade	Flame retardant performance accords with horizontal combustion grade HB and vertical combustion grade V-0.

Construction

Metallized Film	PET & Al
Metal Sprayed	Sn/Zn Alloy
Connection Electrode	Copper-clad Steel Wire
Plastic Case	Plastic Case (UL94V-0)
Filling	Epoxy Resin (UL94V-0)
Film Construction	Mono Structure 

Electrical Characteristics

Voltage Range	100Vdc ~ 630Vdc
Capacitance Range	0.001uF ~ 30uF
Capacitance Tolerance	±5% or ±10% at +25°C
Capacitance	Measuring Frequency at 1kHz Measuring Voltage: 1±0.2V
Standard Atmospheric Conditions for Static Test	<p>Ambient temperature 15°C to 35°C (If there is any doubt on the results, the measurements shall be made at +20 +/- 5°C)</p> <p>Relative humidity 45% to 75% (If there is any doubt on the results, the measurements shall be made at 60% to 70 %.)</p> <p>Air pressure 86 kPa to 106 kPa.</p>
Voltage Between Terminals U _{TT}	1.5 x V _R VDC for 10 seconds (between terminations) @ +25°C ±5°C
Voltage Between Terminals and Case U _{TC}	2000VAC, 60s (at+25+/-2°C)
Dielectric Dissipation Factor Tgδ 0	≤5×10 ⁻³
Dissipation factor	0.010 (25°C, 1KHz)
Insulation Resistance	R between leads, for C ≤ 0.33 μF at 100 V; 1 min > 30 000 MΩ RC between leads, for C > 0.33 μF at 100 V; 1 min > 10 000 MΩ*μF
Self-Inductance	<1nH per mm of lead spacing
Hot-Spot	≤85°C
Life Expectancy	100,000 hours (UR, Θhotspot=85°C)
Failure Rate	100 Fit
Max. Altitude	2000 m
Overvoltage	Maximum duration within one day
Apply 110% of rated voltage	30% of on-load duration
Apply 115% of rated voltage	30 mins
Apply 120% of rated voltage	5 mins
Apply 130% of rated voltage	1 min

Environmental Test

Solderability	<p>Test Conditions: Soldering temperature: +245 +/- 5°C Immersion duration: 2 +/- 0.5 seconds</p> <p>Performance: More than 95% of circumferential surface of lead wire shall be covered with new solder.</p>
Soldering Heat Resistance	<p>Test Conditions: Flow Soldering: Preheat temperature 100°C ~120°C Preheat Duration: 100 seconds maximum Soldering Temperature: +260 +/-5°C Immersion Duration: ≤ 10 seconds Immersion Depth: 1.5 +/- 0.5 mm from roots. Iron Soldering: Soldering Temperature: +400°C Immersion Duration: ≤ 3 seconds After test, allow it stay alone for 1.5 +/- 0.5 hours at standard temperature and humidity before making measurements.</p> <p>Performance: Capacitance Change Rate ($\Delta C/C$): ≤±2% DF change ($\Delta tg\delta$): ≤15*10⁻³ at 1 KHz Insulation Resistance: ≥50% of initial limit</p>
Humidity Resistance	<p>Test Conditions: Testing method per IEC 68-2-3 Ca Test Temperature: +40 +/-2°C Test Humidity: 90% to 95% R.H. Test Duration: 1344 +24/-0 hours (56days)</p> <p>Performance: Capacitance Change Rate ($\Delta C/C$): ≤±5% DF change ($\Delta tg\delta$): ≤15*10⁻³ at 1 KHz Insulation Resistance: ≥50% of initial limit</p>
Cold Resistance	<p>Test Conditions: Test Temperature: -40 +/-2°C Test Duration: 2 +1/-0 hours</p> <p>Performance: Capacitance Change Rate ($\Delta C/C$): ±5% DF change ($\Delta tg\delta$): ≤15*10⁻³ at 1 KHz Insulation Resistance: ≥50% of initial limit</p>
Dry Heat Resistance	<p>Test Conditions: Test Temperature: +105 +/- 2°C Test Duration: 16 +1/-0 hours</p> <p>Performance: Capacitance Change Rate ($\Delta C/C$): ±5% DF change ($\Delta tg\delta$): ≤15*10⁻³ at 1 KHz Insulation Resistance: ≥50% of initial limit</p>
Rapid Temperature Change	<p>Test Conditions: Testing method per IEC 68-2-14 Na Test Temperature Cycle: Total 5 cycles High Temperature: +105 +/-5°C Low Temperature: -40 +/-5°C 30 min +/- 10% for each temperature</p> <p>Performance: Capacitance Change Rate ($\Delta C/C$): ≤±5% DF change ($\Delta tg\delta$): ≤15*10⁻³ at 1 KHz Insulation Resistance: ≥50% of initial limit</p>

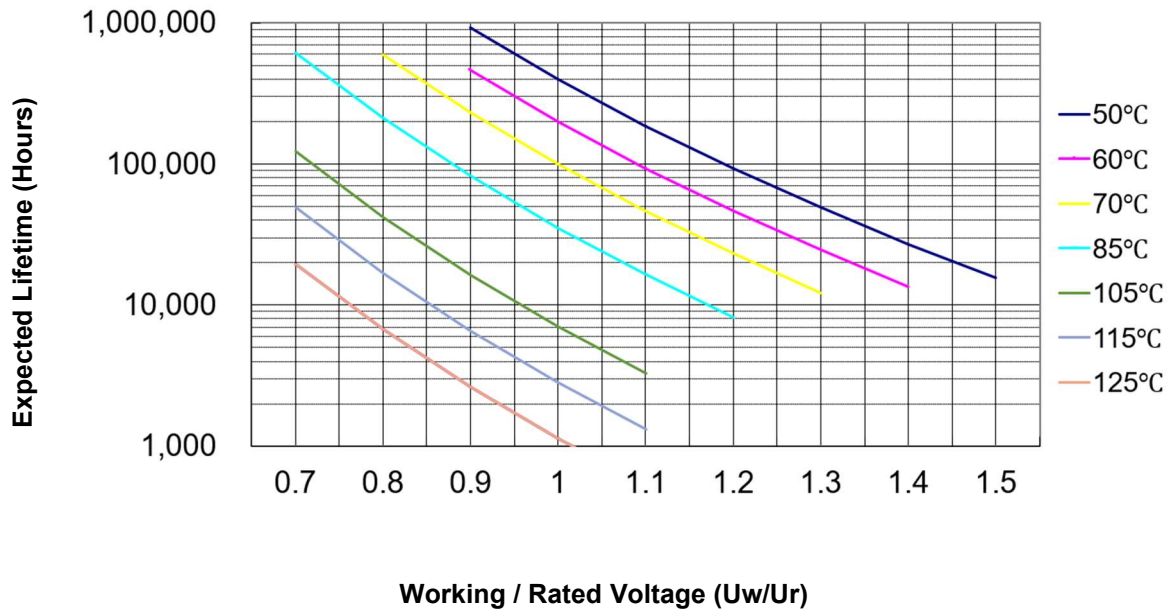
Environmental Test

Bump	<p>Test Conditions: 1000 times, Acceleration: 390m/s² Pulse duration: 6ms</p> <p>Performance: Capacitance Change Rate ($\Delta C/C$): $\leq \pm 3\%$ DF change ($\Delta tg\delta$): $\leq 15 \cdot 10^{-3}$ at 1 KHz Insulation Resistance: $\geq 50\%$ of initial limit</p>
Temperature Cycle	<p>Test Conditions: Test Temperature Cycle: Total 5 cycles Each cycle includes:</p> <ol style="list-style-type: none"> 1. +20 +/-2°C for 3 minutes 2. -40 +0/-3°C for 30 minutes 3. +20 +/-2°C for 3 minutes 4. +105 +3/-0°C for 30 minutes 5. +20 +/-2°C for 3 minutes <p>Performance: Capacitance Change Rate ($\Delta C/C$): $\leq \pm 5\%$ DF change ($\Delta tg\delta$): $\leq 15 \cdot 10^{-3}$ at 1 KHz Insulation Resistance: $\geq 50\%$ of initial limit</p>
Damp Heat Loading	<p>Test Conditions: Test Temperature: +40 +/-2°C Test Humidity: 90% to 95% R.H. Test Duration: 1000+24/-0 hours Loading Voltage: rated voltage</p> <p>Performance: Capacitance Change Rate ($\Delta C/C$): $\leq \pm 10\%$ DF change ($\Delta tg\delta$): $\leq 15 \cdot 10^{-3}$ at 1 KHz Insulation Resistance: $\geq 50\%$ of initial limit</p>
High Temperature Loading	<p>Test Conditions: Testing method per IEC 61071 Test Temperature: +85 +/-2°C Apply 125% of rated voltage for 1,000 +24/-0 hours Duration: 1000 hours</p> <p>Performance: Capacitance Change Rate ($\Delta C/C$): $\leq \pm 10\%$ DF change ($\Delta tg\delta$): $\leq 15 \cdot 10^{-3}$ at 1 KHz Insulation Resistance: $\geq 50\%$ of initial limit</p>

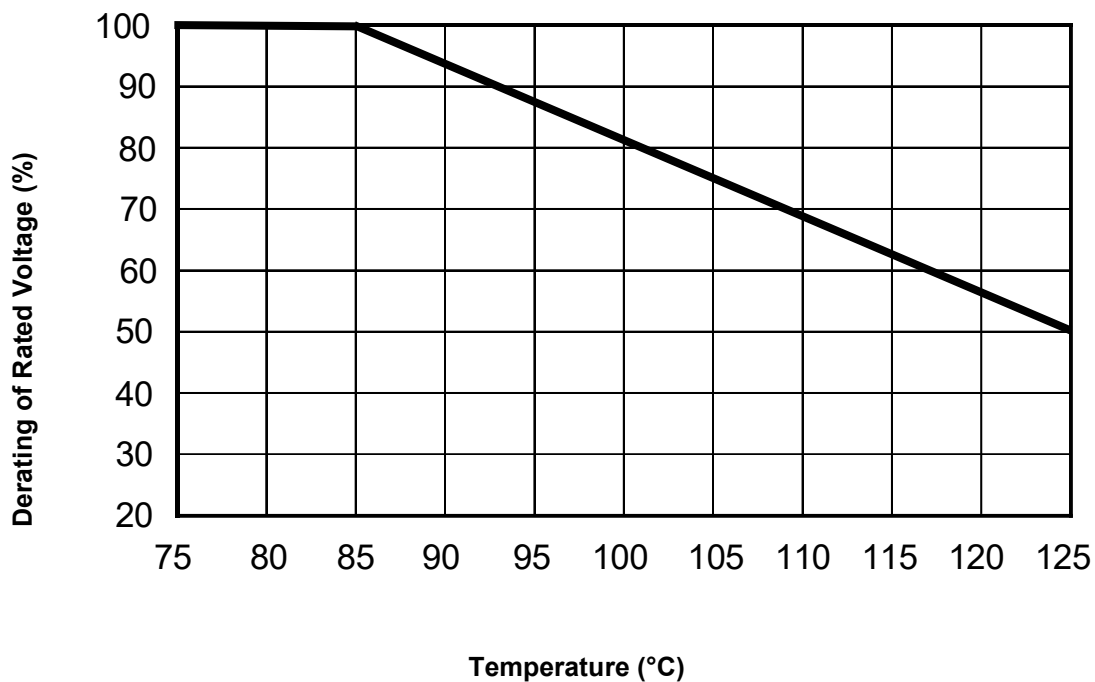
Mechanical Test

Resistance to solvent	<p>Test Conditions: Re: IEC 60068-2-45 test XA method 1 Solvent: propanol (isopropyl alcohol) Temperature: 23±5°C Immersion time: 5 ±0.5 minutes Drying time: 5 minutes Mechanical treatment: 10 rubbing (with cotton-wool)</p> <p>Performance: Capacitance Change Rate ($\Delta C/C$): $\leq \pm 1\%$ DF change($\Delta \text{tg}\delta$): $\leq 15 \times 10^{-3}$ at 1 KHz</p>
Terminal Strength	<p>Tensile: Testing method per IEC 68-2-21. Apply 1.0 kg for 10 +/- 1 second to the terminal in the axial direction and acting in a direction away from the body. Shall be no abnormality.</p> <p>Bending: Apply 0.5 kg for 2 cycles. 90° once, return to its initial position for 2-3 seconds, and then to the opposite direction once. Shall be no abnormality.</p>
Vibration	<p>Test Conditions: Testing method per IEC 60068-2-6 Fc Frequency Change: 10--55--10 Hz Vibration Distance: 1.5 mm Test Direction: X, Y, Z Test Duration: 2 +1/- 0 hours each direction</p> <p>Performance: Connection Strength: Shall be no open nor short-circuiting The connection shall be stable Appearance: Shall be no mechanical damage Insulation Resistance: $\geq 50\%$ of initial limit</p>

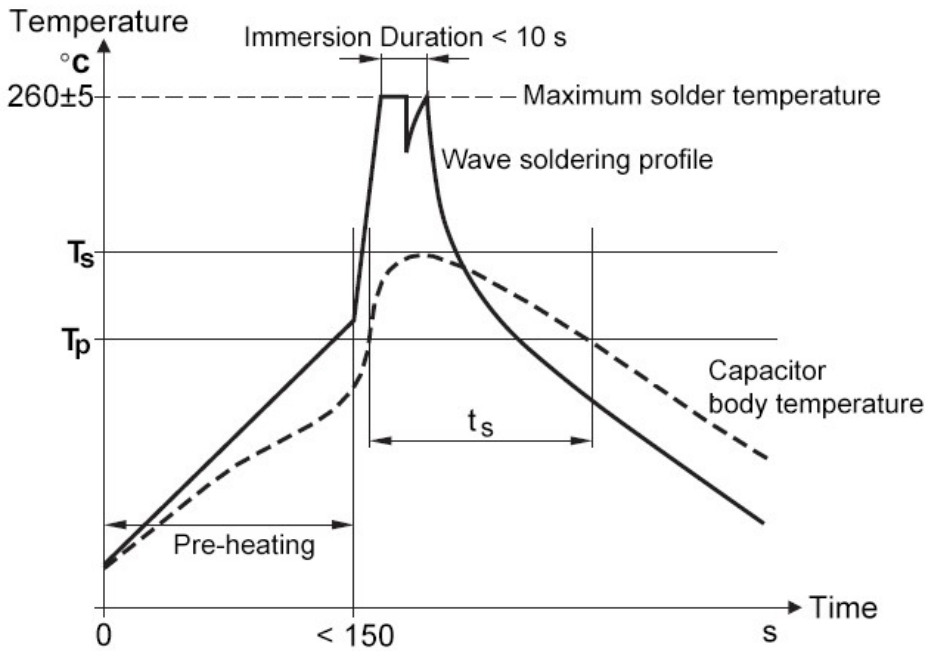
Expected Life Curve



Derating of Rated Voltage Vs Temperature



Wave Soldering Recommendations

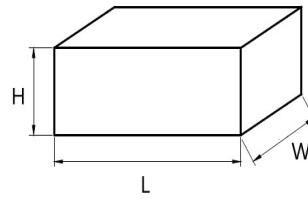


Ts: Capacitor body maximum temperature at wave soldering
 Tp: Capacitor body maximum temperature at pre-heating

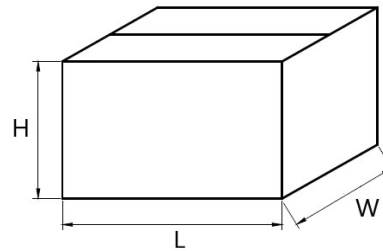
Polypropylene Capacitors	Polyester Capacitors
During pre-heating: $T_p \leq 110^\circ\text{C}$ During soldering: $T_s \leq 120^\circ\text{C}$, $t_s \leq 60$	During pre-heating: $T_p \leq 130^\circ\text{C}$ During soldering: $T_s \leq 160^\circ\text{C}$, $t_s \leq 60\text{s}$

Packaging Information

Inner Box Specifications (Dimensions)			
Box #	L ±3mm	W±3mm	H ±3mm
# 1	331	331	25
# 2	331	331	35
# 3	331	331	50
# 4	331	331	80
# 5	350	170	35
# 6	350	170	50
# 7	350	170	80



Outer Box Specifications (Dimensions)			
Box #	L ±5mm	W±5mm	H ±5mm
# 1	350	340	265
# 2	370	360	350



Packaging Quantity

P	Code	W	H	T	Long Leads	Short Leads
10	C11	13	9	4	1200	1771
	C13	13	11	5	1200	1426
	C16	13	12	6	1200	1173
	C24	13	13	7	1200	1012
15	E14	18	11	5	800	1054
	E17	18	12	6	800	867
	E29	18	13.5	7.5	800	697
	E34	18	14.5	8.5	600	612
	E43	18	16	10	600	527
	E47	18	19	11	600	476
22.5	F17	26	16.5	7	600	528
	F20	26	17	8.5	600	432
	F24	26	19	10	400	372
	F26	26	20	11	400	336
	F27	26	22	12	400	300
27.5	G15	32	18	9	200	306
	G18	32	20	11	200	252
	G21	32	22	13	200	207
	G30	32	25	16	100	171
	G31	32	28	16	100	171
	G33	32	28	18	100	153
	G34	32	33	18	100	153

Cautions and Warnings

- Don't exceed the upper category temperature.
- For longtime storage, maximum relative humidity 80%, no dew allowed on the capacitor.
- Do not use or store capacitor in corrosive atmosphere, in the dusty environment's regular maintenance and cleaning especially of the terminals is required to avoid conductive path between terminal / or terminal and ground.
- Don't apply any mechanical stress to the capacitor terminals, and avoid any compressive, tensile or flexural stress.
- Don't move the capacitor after fixed to the PC board, and don't pick up the PC board by the fixed capacitor.
- Don't place the capacitor on a PC board whose holes pitch differs from the specified space.
- Avoid overload of the capacitors
- Do not have unlimited service life expectancy, the max service life expectancy may vary depending on the application the capacitor is used in.

Disclaimer

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