

# Metallized Polypropylene Film Capacitors

## FGA Series - 450 ~ 630VDC (PFC Applications)



### Overview

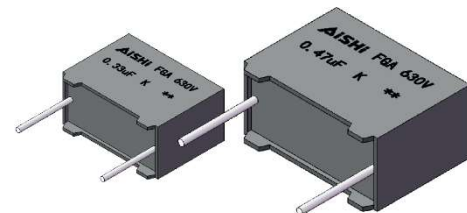
The FGA series is constructed of metallized polypropylene film encapsulated in plastic cases, sealed with epoxy resin.

### Applications

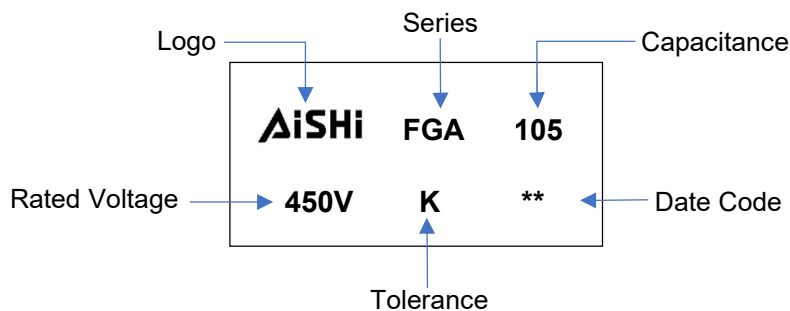
Widely used in power supplies, power factor correction, ballasts and compact lamps and inverter.

### Features

- High ripple current
- Self-healing property
- Low losses
- High contact reliability



### 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	GA	2W	K	105	E43	2EL	5
Capacitor Type	Series	Voltage (VDC)	Tolerance	Capacitance (pF)	Size Code	Terminal Code	Lead Length Code
F = Film	DC Film, Metallized PP Film	450=2W 550=2J 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

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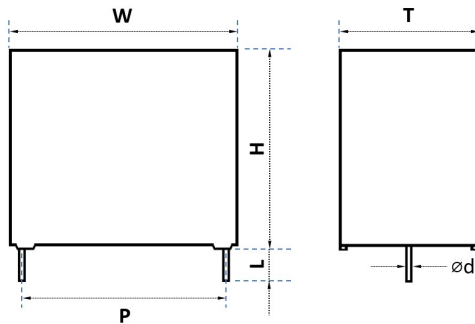
### Terminal Code

Digit One (Lead/Terminal Type)		Digit Two (Lead Space)		Digit Three (Lead Ipsilateral)	
2 leads for long	L	10.0mm	C	N/A	L
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				

### Lead Length Code

Lead Length	
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
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
C26	13.0	0.5	14.0	0.5	8.0	0.5	10.0	0.5	0.6	0.05
C27	13.0	0.5	16.0	0.5	8.0	0.5	10.0	0.5	0.6	0.05
C33	13.0	0.5	19.0	0.5	10.0	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
E19	18.0	0.5	17.5	0.5	6.0	0.5	15.0	0.5	0.6	0.05
E26	18.0	0.5	18.0	0.5	7.0	0.5	15.0	0.5	0.8	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
E36	18.0	0.5	12.5	0.5	9.0	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
E57	18.0	0.5	12.0	0.5	13.0	0.5	15.0	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
F29	26.0	0.5	23.0	0.5	13.0	0.5	22.5	0.5	0.8	0.05

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## FGA Series - 450 ~ 630VDC (PFC Applications)



### 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				
450	220	0.1	13.0	11.0	5.0	10.0	25.0	250	0.6	FGA2WK104C132CL5
450	220	0.15	13.0	11.0	5.0	10.0	37.5	250	0.6	FGA2WK154C132CL5
450	220	0.22	13.0	11.0	5.0	10.0	55.0	250	0.6	FGA2WK224C132CL5
450	220	0.33	13.0	12.0	6.0	10.0	82.5	250	0.6	FGA2WK334C162CL5
450	220	0.39	13.0	13.0	7.0	10.0	97.5	250	0.6	FGA2WK394C242CL5
450	220	0.47	13.0	13.0	7.0	10.0	117.5	250	0.6	FGA2WK474C242CL5
450	220	0.56	13.0	14.0	8.0	10.0	140.0	250	0.6	FGA2WK564C262CL5
450	220	0.68	13.0	16.0	8.0	10.0	170.0	250	0.6	FGA2WK684C272CL5
450	220	0.82	13.0	19.0	10.0	10.0	205.0	250	0.6	FGA2WK824C332CL5
450	220	1.0	13.0	19.0	10.0	10.0	250.0	250	0.6	FGA2WK105C332CL5
450	220	0.1	18.0	11.0	5.0	15.0	16.0	160	0.6	FGA2WK104E142EL5
450	220	0.15	18.0	11.0	5.0	15.0	24.0	160	0.6	FGA2WK154E142EL5
450	220	0.22	18.0	12.0	6.0	15.0	35.2	160	0.6	FGA2WK224E172EL5
450	220	0.33	18.0	17.5	6.0	15.0	52.8	160	0.6	FGA2WK334E192EL5
450	220	0.47	18.0	13.5	7.5	15.0	75.2	160	0.8	FGA2WK474E292EL5
450	220	0.47	18.0	17.5	6.0	15.0	75.2	160	0.6	FGA2WK474E192EL5
450	220	0.47	18.0	12.5	9.0	15.0	75.2	160	0.8	FGA2WK474E362EL5
450	220	0.68	18.0	17.5	6.0	15.0	108.8	160	0.6	FGA2WK684E192EL5
450	220	0.68	18.0	14.5	8.5	15.0	108.8	160	0.8	FGA2WK684E342EL5
450	220	0.68	18.0	12.0	13.0	15.0	108.8	160	0.8	FGA2WK684E572EL5
450	220	0.82	18.0	14.5	8.5	15.0	131.2	160	0.8	FGA2WK824E342EL5
450	220	0.82	18.0	12.0	13.0	15.0	131.2	160	0.8	FGA2WK824E572EL5
450	220	1.0	18.0	16.0	10.0	15.0	160.0	160	0.8	FGA2WK105E432EL5
450	220	1.5	18.0	19.0	11.0	15.0	240.0	160	0.8	FGA2WK155E472EL5
450	220	2.2	26.0	19.0	10.0	22.5	220.0	100	0.6	FGA2WK225F242FL5
450	220	3.3	26.0	23.0	13.0	22.5	330.0	100	0.8	FGA2WK335F292FL5
550	250	0.1	13.0	11.0	5.0	10.0	30.0	300	0.6	FGA2JK104C132CL5
550	250	0.15	13.0	12.0	6.0	10.0	45.0	300	0.6	FGA2JK154C162CL5
550	250	0.22	13.0	13.0	7.0	10.0	66.0	300	0.6	FGA2JK224C242CL5
550	250	0.33	13.0	14.0	8.0	10.0	99.0	300	0.6	FGA2JK334C262CL5
550	250	0.47	13.0	16.0	8.0	10.0	141.0	300	0.6	FGA2JK474C272CL5
550	250	0.10	18.0	11.0	5.0	15.0	20.0	200	0.6	FGA2JK104E142EL5
550	250	0.15	18.0	11.0	5.0	15.0	30.0	200	0.6	FGA2JK154E142EL5
550	250	0.22	18.0	12.0	6.0	15.0	44.0	200	0.6	FGA2JK224E172EL5
550	250	0.33	18.0	17.5	6.0	15.0	66.0	200	0.6	FGA2JK334E192EL5
550	250	0.33	18.0	13.5	7.5	15.0	66.0	200	0.8	FGA2JK334E292EL5
550	250	0.33	18.0	12.5	9.0	15.0	66.0	200	0.8	FGA2JK334E362EL5
550	250	0.47	18.0	14.5	8.5	15.0	94.0	200	0.8	FGA2JK474E342EL5
550	250	0.47	18.0	18.0	7.0	15.0	94.0	200	0.8	FGA2JK474E262EL5
550	250	0.47	18.0	12.0	13.0	15.0	94.0	200	0.8	FGA2JK474E572EL5
550	250	0.68	18.0	16.0	10.0	15.0	136.0	200	0.8	FGA2JK684E432EL5
550	250	0.82	18.0	19.0	11.0	15.0	164.0	200	0.8	FGA2JK824E472EL5
550	250	1.0	18.0	19.0	11.0	15.0	200.0	200	0.8	FGA2JK105E472EL5
550	250	1.5	26.0	20.0	11.0	22.5	180.0	120	0.8	FGA2JK155F262FL5
550	250	2.2	26.0	23.0	13.0	22.5	264.0	120	0.8	FGA2JK225F292FL5
630	275	0.01	13.0	11.0	5.0	10.0	4.0	400	0.6	FGA2LK103C132CL5
630	275	0.015	13.0	11.0	5.0	10.0	6.0	400	0.6	FGA2LK153C132CL5
630	275	0.022	13.0	11.0	5.0	10.0	8.8	400	0.6	FGA2LK223C132CL5


**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	275	0.033	13.0	11.0	5.0	10.0	13.2	400	0.6	FGA2LK333C132CL5
630	275	0.047	13.0	11.0	5.0	10.0	18.8	400	0.6	FGA2LK473C132CL5
630	275	0.068	13.0	12.0	6.0	10.0	27.2	400	0.6	FGA2LK683C162CL5
630	275	0.082	13.0	12.0	6.0	10.0	32.8	400	0.6	FGA2LK823C162CL5
630	275	0.100	13.0	12.0	6.0	10.0	40.0	400	0.6	FGA2LK104C162CL5
630	275	0.047	18.0	11.0	5.0	15.0	11.8	250	0.6	FGA2LK473E142EL5
630	275	0.056	18.0	11.0	5.0	15.0	14.0	250	0.6	FGA2LK563E142EL5
630	275	0.068	18.0	11.0	5.0	15.0	17.0	250	0.6	FGA2LK683E142EL5
630	275	0.082	18.0	11.0	5.0	15.0	20.5	250	0.6	FGA2LK823E142EL5
630	275	0.10	18.0	11.0	5.0	15.0	25.0	250	0.6	FGA2LK104E142EL5
630	275	0.15	18.0	12.0	6.0	15.0	37.5	250	0.6	FGA2LK154E172EL5
630	275	0.22	18.0	17.5	6.0	15.0	55.0	250	0.6	FGA2LK224E192EL5
630	275	0.22	18.0	13.5	7.5	15.0	55.0	250	0.8	FGA2LK224E292EL5
630	275	0.22	18.0	12.5	9.0	15.0	55.0	250	0.8	FGA2LK224E362EL5
630	275	0.33	18.0	18.0	7.0	15.0	82.5	250	0.8	FGA2LK334E262EL5
630	275	0.33	18.0	14.5	8.5	15.0	82.5	250	0.8	FGA2LK334E342EL5
630	275	0.33	18.0	12.5	9.0	15.0	82.5	250	0.8	FGA2LK334E362EL5
630	275	0.47	18.0	18.0	7.0	15.0	117.5	250	0.8	FGA2LK474E262EL5
630	275	0.47	18.0	16.0	10.0	15.0	117.5	250	0.8	FGA2LK474E432EL5
630	275	0.47	18.0	12.0	13.0	15.0	117.5	250	0.8	FGA2LK474E572EL5
630	275	0.68	18.0	19.0	11.0	15.0	170.0	250	0.8	FGA2LK684E472EL5
630	275	0.82	26.0	19.0	10.0	22.5	131.2	160	0.8	FGA2LK824F242FL5
630	275	1.0	26.0	20.0	11.0	22.5	160.0	160	0.8	FGA2LK105F262FL5

**General Technical Data**

Applications	PFC Applications
Dielectric	Polypropylene Metallized Film
Reference Standard	IEC 60384-16
Climatic Category	40/105/56 IEC 60068-1
Operating Temperature Range	-40°C ~ +105°C (85°C ~105°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.

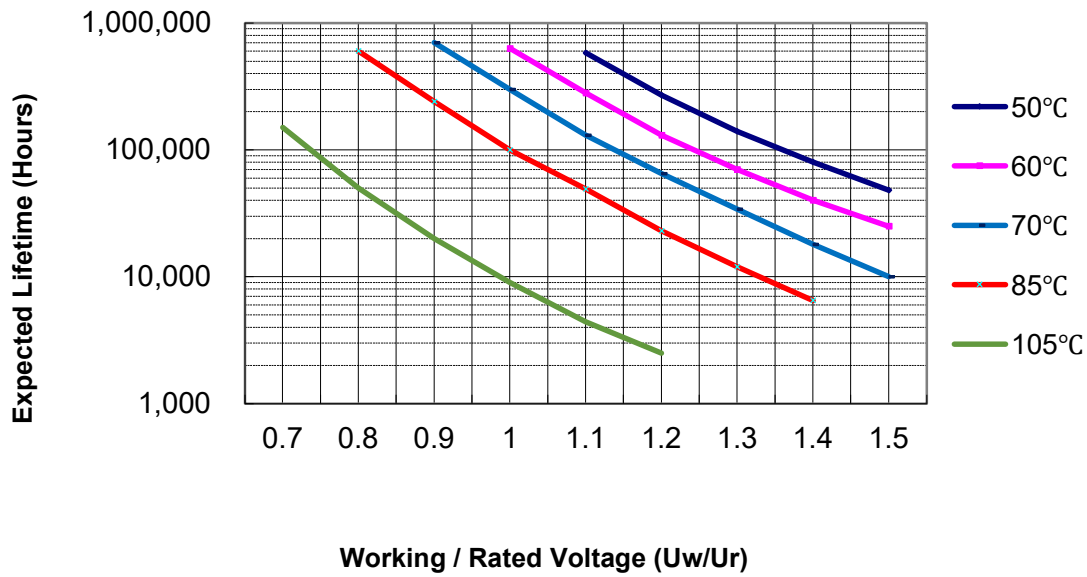
**Construction**

Metallized Film	OPP & Al/Zn
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 

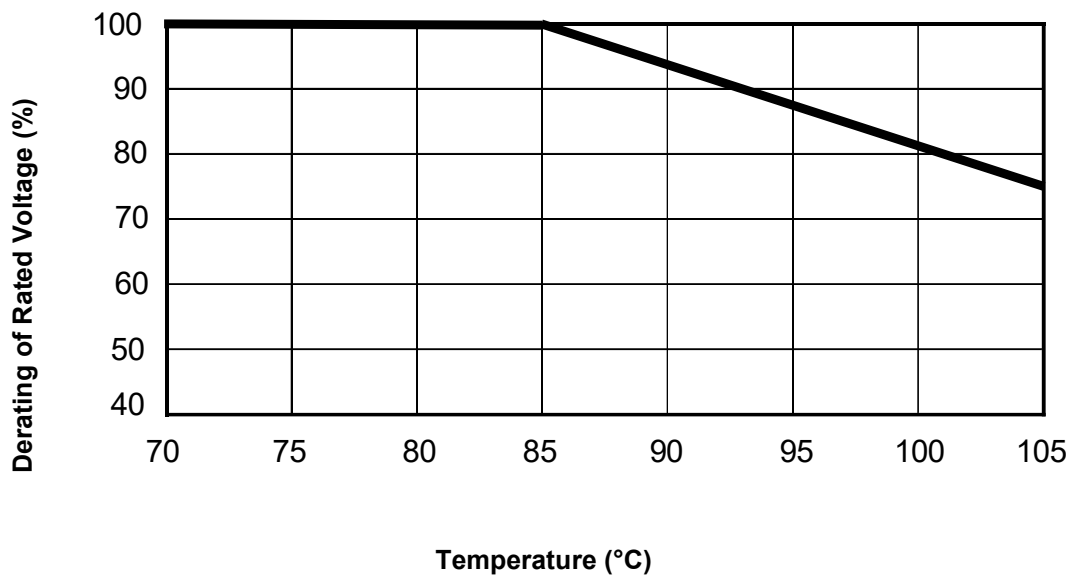
**Electrical Characteristics**

Voltage Range	450Vdc ~ 630Vdc
Capacitance Range	0.01uF ~ 3.3uF
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><b>Ambient temperature</b> 15°C to 35°C (If there is any doubt on the results, the measurements shall be made at +20 +/- 5°C)</p> <p><b>Relative humidity</b> 45% to 75% (If there is any doubt on the results, the measurements shall be made at 60% to 70 %.)</p> <p><b>Air pressure</b> 86 kPa to 106 kPa.</p>
Voltage Between Terminals U <sub>TT</sub>	1.5 x V <sub>R</sub> VDC for 10 seconds (between terminations) @ +25°C ±5°C
Voltage Between Terminals and Case U <sub>TC</sub>	2000VAC, 60 seconds (at+25+/-2°C)
Dielectric Dissipation Factor Tgδ <sub>0</sub>	≤2×10 <sup>-4</sup>
Dissipation factor	0.0010 (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
<b>Overvoltage</b>	<b>Maximum duration within one day</b>
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

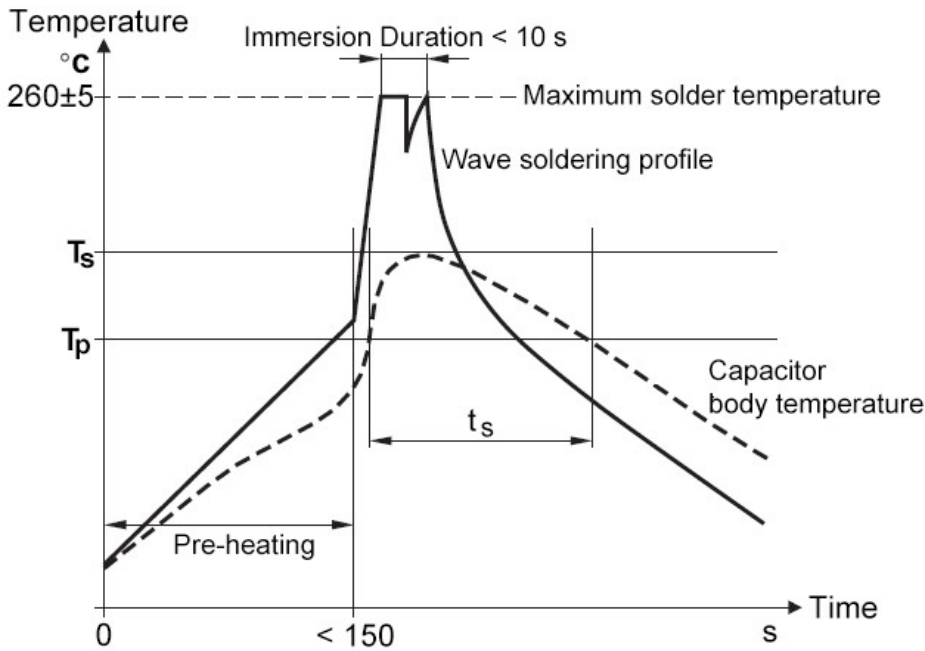
**Expected Life Curve**



**Derating of Rated Voltage Vs Temperature**



**Wave Soldering Recommendations**



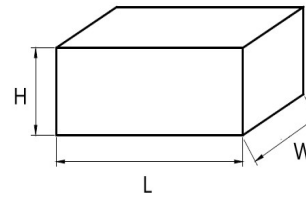
Ts: Capacitor body maximum temperature at wave soldering  
 Tp: Capacitor body maximum temperature at pre-heating

Polypropylene Capacitors	Polyester Capacitors
During pre-heating: Tp ≤ 110°C During soldering: Ts ≤ 120°C, ts ≤ 60	During pre-heating: Tp ≤ 130°C During soldering: Ts ≤ 160°C, ts ≤ 60s

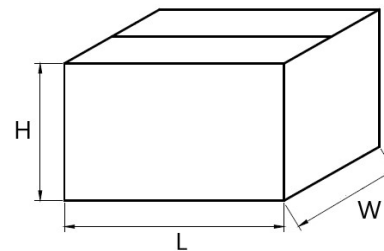


**Packaging Information**

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	C13	13	11	5	1200	1426
	C16	13	12	6	1200	1173
	C24	13	13	7	1200	1012
	C26	13	14	8	1200	874
	C27	13	16	8	1200	874
	C33	13	19	10	1200	713
15	E14	18	11	5	800	1054
	E17	18	12	6	800	867
	E19	18	17.5	6	800	867
	E26	18	18	7	800	748
	E29	18	13.5	7.5	800	697
	E34	18	14.5	8.5	600	612
	E36	18	12.5	9	600	578
	E43	18	16	10	600	527
	E47	18	19	11	600	476
	E57	18	12	13	600	391
22.5	F24	26	19	10	400	372
	F26	26	20	11	400	336
	F29	26	23	13	400	276

### 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

All product, product specifications and data in this datasheet are subject to change without notice to improve reliability, function or design or otherwise. The customer is responsible for checking and verifying the extent to which the Information contained in this publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without guarantee, warranty, or responsibility of any kind, expressed or implied.

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