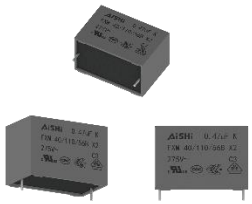
Metallized Polypropylene Film EMI Suppression Capacitors
FXM Series - Class X2 250\275VAC (Miniature)

Overview
The FXM series is constructed of metallized polypropylene film encapsulated with self-extinguishing resin in a box of material meeting the requirement of UL94V-0.

Applications
Interference suppression, across-the-line capacitor, EMI filter and spark-killer in class X2 applications. Only suitable for use in charger and adapter. Not for AC filtering, capacitive divider and connection in series with the main.

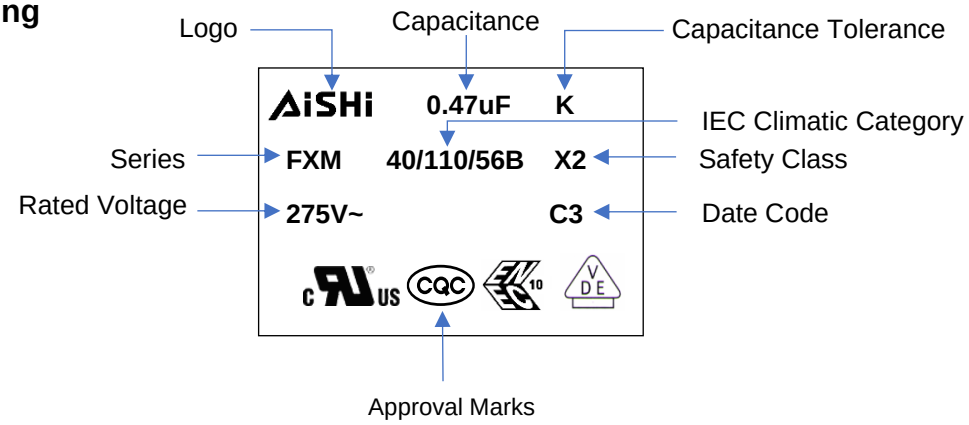
Features
- High temperature (110°C)
- Self-healing property
- Over voltage stress withstanding
- Flame-retardant plastic case and resin



Approvals

Marking	Standard	File Number
	UL 60384-14 CAN/CSA-E60384-14	E500538
	IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016	40051583
	IEC 60384-14 GB/T6346.14-2015	CQC20001245437

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	XM	27	K	474	E21	2EL	5
Capacitor Type	Series	Voltage (VAC)	Tolerance	Capacitance (pF)	Size Code	Terminal Code	Lead Length Code
F = Film	Class X2, Metallized PP Film	250 275	K = ±10% M = ±20%	First two digits = significant figures. Third digit = Number of zeros.	Refer to Size Code Table	Refer to Terminal Code Table	Refer to Lead Length Table

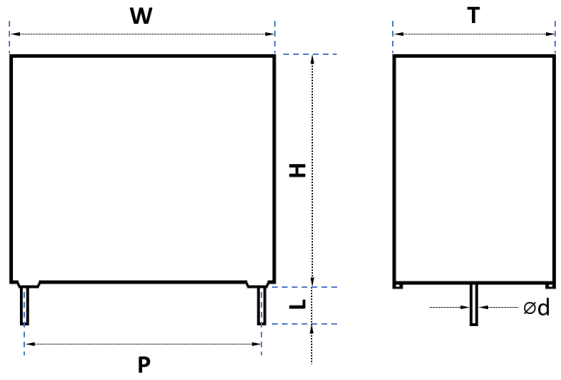
Terminal Code

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	T				
2 leads for Taping Straight	V				
2 leads for 90° bent cut	Y				

Lead Length Code

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

Dimension (mm)



2 pins

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
C25	13.0	0.5	14.0	0.5	7.0	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
C28	13.0	0.5	17.0	0.5	8.0	0.5	10.0	0.5	0.6	0.05
C29	13.0	0.5	19.0	0.5	8.0	0.5	10.0	0.5	0.6	0.05
D10	15.0	0.5	11.5	0.5	6.0	0.5	12.5	0.5	0.6	0.05
D11	15.0	0.5	12.5	0.5	6.5	0.5	12.5	0.5	0.6	0.05
D14	15.0	0.5	13.5	0.5	7.0	0.5	12.5	0.5	0.6	0.05
D16	15.0	0.5	14.0	0.5	8.5	0.5	12.5	0.5	0.6	0.05
D19	15.0	0.5	15.5	0.5	10.0	0.5	12.5	0.5	0.6	0.05
D20	15.0	0.5	16.0	0.5	10.0	0.5	12.5	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
E18	18.0	0.5	13.5	0.5	6.0	0.5	15.0	0.5	0.6	0.05
E21	18.0	0.5	13.0	0.5	7.0	0.5	15.0	0.5	0.8	0.05
E31	18.0	0.5	14.0	0.5	8.0	0.5	15.0	0.5	0.8	0.05
E33	18.0	0.5	16.0	0.5	8.0	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
E45	18.0	0.5	18.0	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

Rating and Part Number

Vac	Vdc	Cap Value	Dimensions				Peak Current	Surge Current	dv/dt	Lead Wire	Part Number
			W	H	T	P					
		µF	mm	mm	mm	mm	A	A	V/us	mm	
275	560	0.1	13.0	11.0	5.0	10.0	50	150	500	0.6	FXM27K104C132CL5
275	560	0.12	13.0	11.0	5.0	10.0	60	180	500	0.6	FXM27K124C132CL5
275	560	0.15	13.0	11.0	5.0	10.0	75	225	500	0.6	FXM27K154C132CL5
275	560	0.18	13.0	12.0	6.0	10.0	90	270	500	0.6	FXM27K184C162CL5
275	560	0.2	13.0	12.0	6.0	10.0	100	300	500	0.6	FXM27K204C162CL5
275	560	0.22	13.0	13.0	7.0	10.0	110	330	500	0.6	FXM27K224C242CL5
275	560	0.27	13.0	14.0	7.0	10.0	135	405	500	0.6	FXM27K274C252CL5
275	560	0.33	13.0	16.0	8.0	10.0	165	495	500	0.6	FXM27K334C272CL5
275	560	0.39	13.0	17.0	8.0	10.0	195	585	500	0.6	FXM27K394C282CL5
275	560	0.47	13.0	19.0	8.0	10.0	235	705	500	0.6	FXM27K474C292CL5
275	560	0.22	15.0	11.5	6.0	12.5	110	330	500	0.6	FXM27K224D102DL5
275	560	0.27	15.0	11.5	6.0	12.5	135	405	500	0.6	FXM27K274D102DL5
275	560	0.33	15.0	12.5	6.5	12.5	165	495	500	0.6	FXM27K334D112DL5
275	560	0.39	15.0	13.5	7.0	12.5	195	585	500	0.6	FXM27K394D142DL5
275	560	0.47	15.0	14.0	8.5	12.5	235	705	500	0.6	FXM27K474D162DL5
275	560	0.56	15.0	15.5	10.0	12.5	280	840	500	0.6	FXM27K564D192DL5
275	560	0.68	15.0	16.0	10.0	12.5	340	1020	500	0.6	FXM27K684D202DL5
275	560	0.1	18.0	11.0	5.0	15.0	40	120	400	0.6	FXM27K104E142EL5
275	560	0.12	18.0	11.0	5.0	15.0	48	144	400	0.6	FXM27K124E142EL5
275	560	0.15	18.0	11.0	5.0	15.0	60	180	400	0.6	FXM27K154E142EL5
275	560	0.18	18.0	11.0	5.0	15.0	72	216	400	0.6	FXM27K184E142EL5
275	560	0.2	18.0	11.0	5.0	15.0	80	240	400	0.6	FXM27K204E142EL5
275	560	0.22	18.0	11.0	5.0	15.0	88	264	400	0.6	FXM27K224E142EL5
275	560	0.27	18.0	11.0	5.0	15.0	108	324	400	0.6	FXM27K274E142EL5
275	560	0.3	18.0	12.0	6.0	15.0	120	360	400	0.6	FXM27K304E172EL5
275	560	0.33	18.0	12.0	6.0	15.0	132	396	400	0.6	FXM27K334E172EL5
275	560	0.39	18.0	13.5	6.0	15.0	156	468	400	0.6	FXM27K394E182EL5
275	560	0.47	18.0	13.0	7.0	15.0	188	564	400	0.8	FXM27K474E212EL5
275	560	0.56	18.0	14.0	8.0	15.0	224	672	400	0.8	FXM27K564E312EL5
275	560	0.68	18.0	16.0	8.0	15.0	272	816	400	0.8	FXM27K684E332EL5
275	560	0.82	18.0	16.0	10.0	15.0	328	984	400	0.8	FXM27K824E432EL5
275	560	1.0	18.0	18.0	10.0	15.0	400	1200	400	0.8	FXM27K105E452EL5
275	560	1.2	18.0	19.0	11.0	15.0	480	1440	400	0.8	FXM27K125E472EL5

General Technical Data

Application	Interference suppression \ Across-the-line (Class X2) Only suitable for use in charger, adapter and LED lighting.
Dielectric	Metallized Polypropylene Film
Reference Standard	IEC 60384-14; UL 60384-14; GB/T 6346.14-2015
Climatic Category	40/110/56 IEC60068-1
Passive Flammability Class	B
Operating Temperature Range	-40°C ~ +110°C (85°C ~110°C, decreasing factor 1.25% per °C for Urms)
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
RoHS Compliant	Compliant with the restricted substance requirements of Directive 2011/65/EU
Flame Retardant Grade	Flame retardant performance accords with horizontal combustion grade HB and vertical combustion grade V-0.

Construction

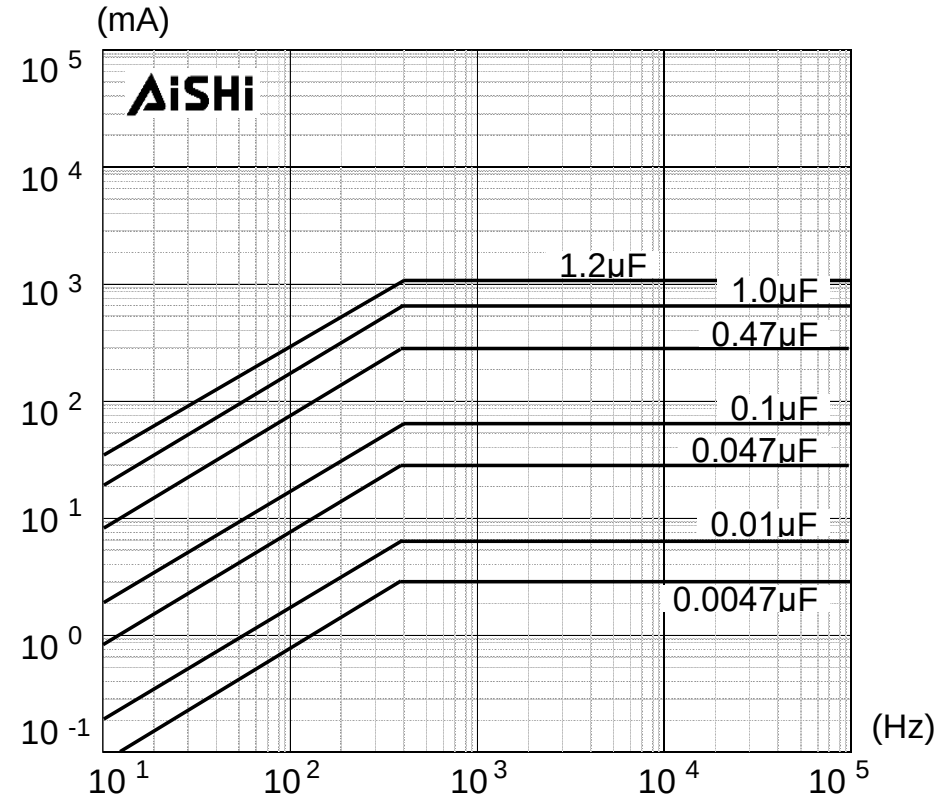
Metallized Film	OPP & Al/Zn
Metal Sprayed	Sn/Zn Alloy
Connection Electrode	Copper clad steel wire or Tinned copper wires
Plastic Case	Plastic Case (UL94V-0)
Filling	Epoxy Resin (UL94V-0)
Film Construction	Mono Structure 

Electrical Characteristics

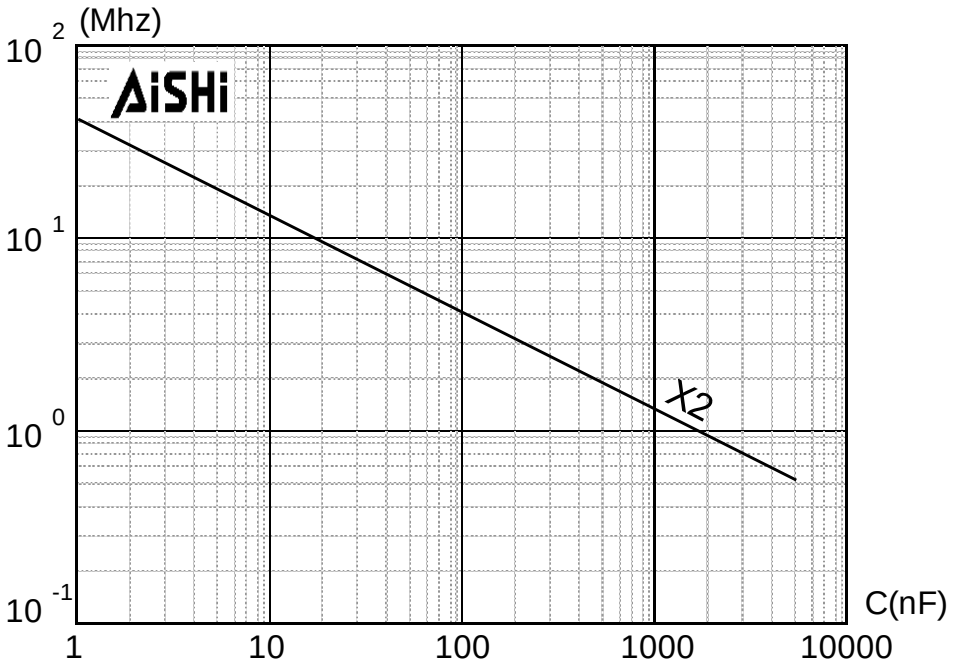
Voltage Range	250Vac ~ 275Vac
Capacitance Range	0.1μF to 1.2μF
Capacitance Tolerance	±10% or ±20% at +25°C
Capacitance	Measuring Frequency at 1kHZ Measuring Voltage:1±0.2V
Standard Atmospheric Conditions for Static Test	**Ambient temperature** 15°C to 35°C (If there is any doubt on the results, the measurements shall be made at +20 +/- 5°C) **Relative humidity** 45% to 75% (If there is any doubt on the results, the measurements shall be made at 60% to 70 %.) **Air pressure** 86 kPa to 106 kPa.
Voltage Between Terminals U_{TT}	DC Voltage: 1312VDC for 60 seconds or 1500VDC for 2 seconds, charge current must be 1A max. Withstanding (DC) voltage (cut off current 10mA), rise time 100V/S. AC Voltage: 1000VAC for 60 seconds
Voltage Between Terminals and Case U_{TC}	2150VAC, 60s (at+20+/-2°C)
Dielectric Dissipation Factor Tgδ 0	≤2×10^{-4}
Dissipation Factor	0.0010 (20°C，1KHz)
Insulation Resistance	R between leads, for C ≤ 0.33 μF at 100 V; 1 min > 15 000 MΩ RC between leads, for C > 0.33 μF at 100 V; 1 min > 5000 MΩ*μF
Hot-Spot	≤70°C
Life Expectancy	100 000hours（UR，Θhotspot=70°C）
Failure Rate	100 Fit
Max. Altitude	2000 m

Characteristics Curve

Maximum Current (I_{rms}) Vs Frequency

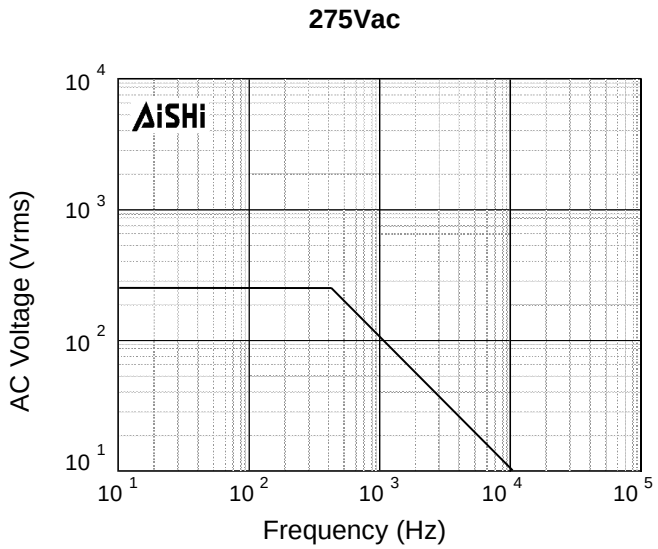


Resonant VS Capacitance

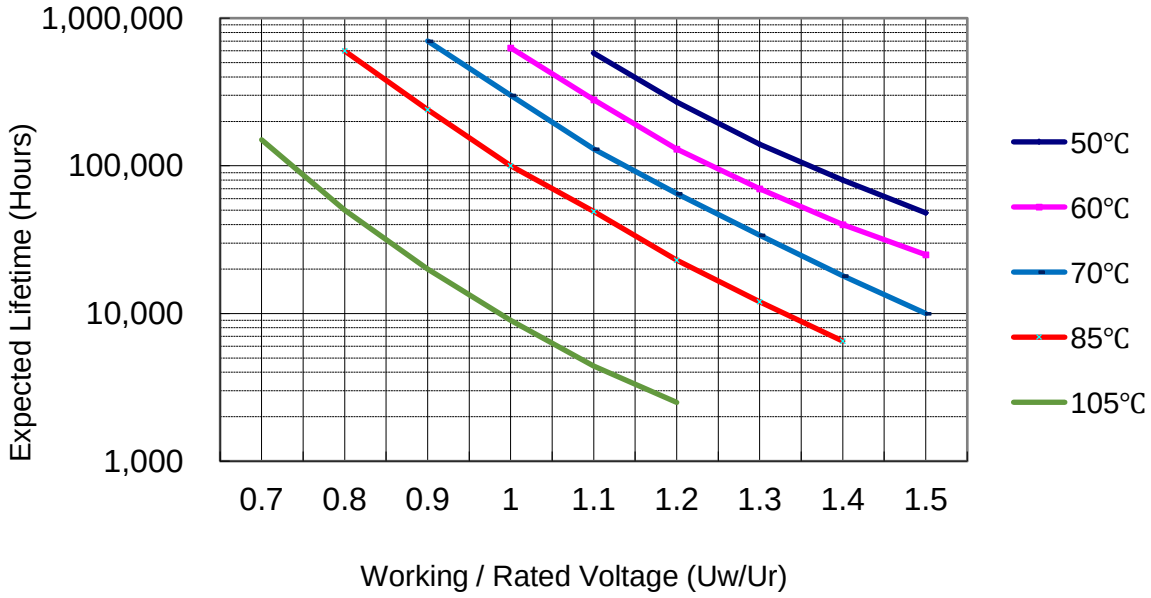


Characteristics Curve

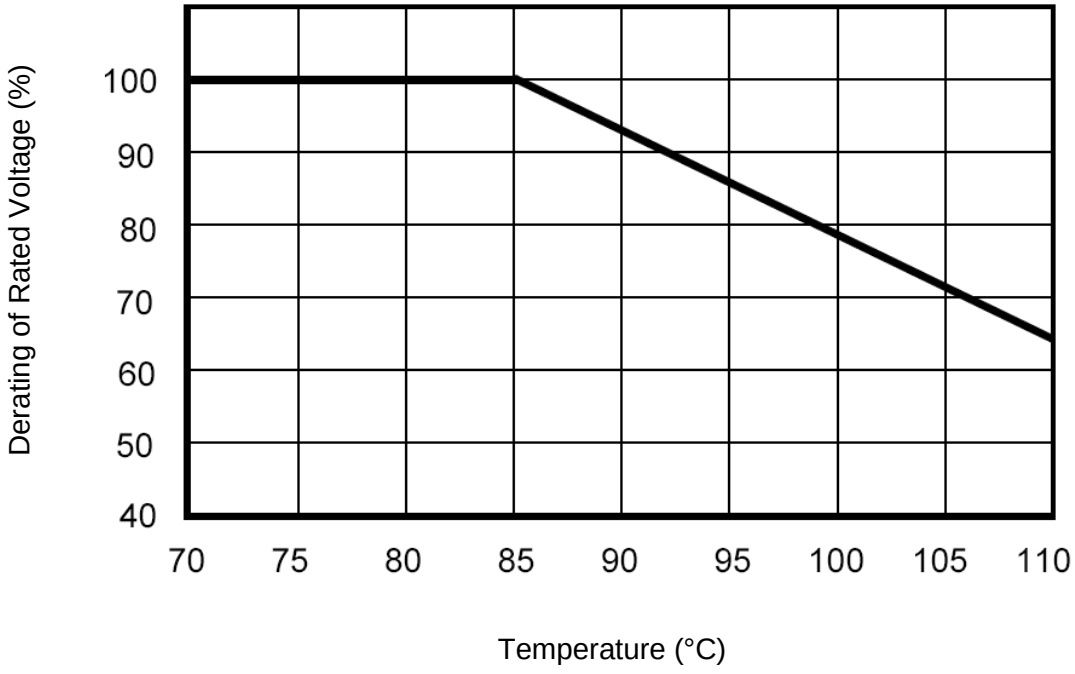
Maximum Voltage (V_{rms}) Versus Frequency



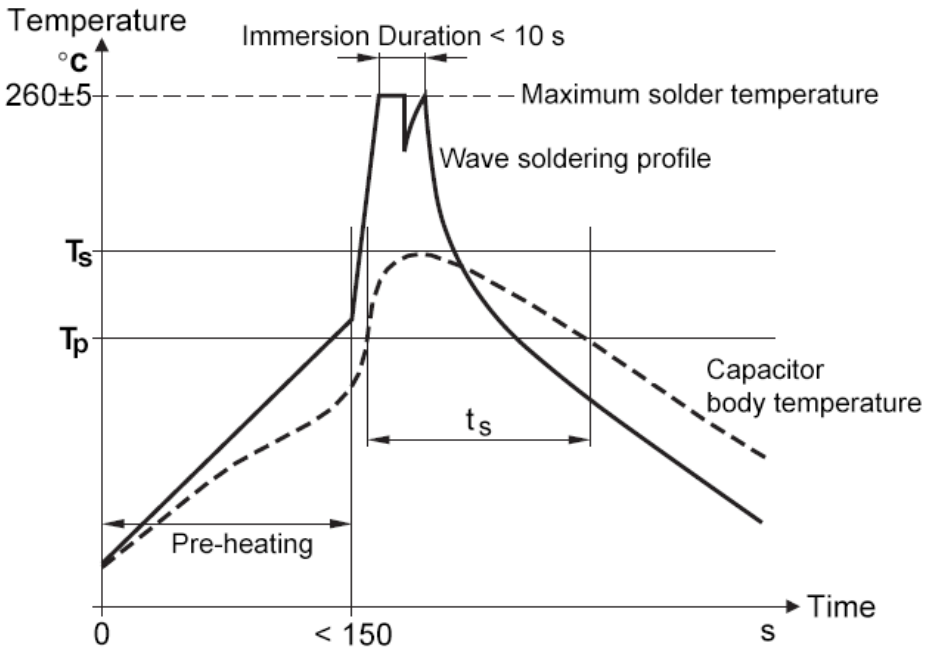
Expected Life Curve



Derating of Rated Voltage Vs Temperature



Wave Soldering Recommendations

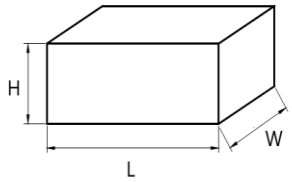


Ts: Capacitor body maximum temperature at wave soldering
Tp: Capacitor body maximum temperature at pre-heating

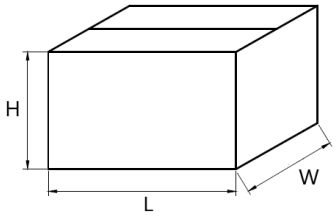
Polypropylene Capacitors	Polyester Capacitors
During pre-heating: Tp≤110°C During soldering: Ts ≤120°C, ts≤60	During pre-heating: Tp≤130°C During soldering: Ts≤160°C, ts≤60s

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



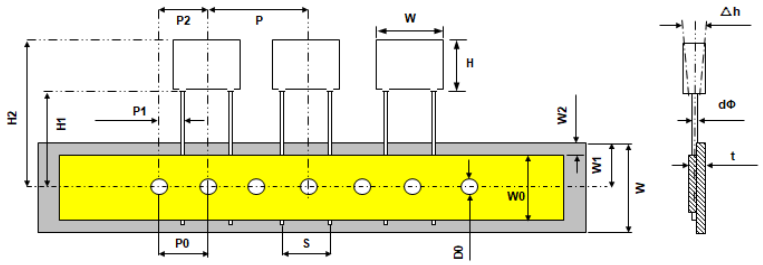
Packaging Quantity

P	Code	W	H	T	Long Leads	Short Leads	Ammo
10	C13	13	11	5	744	1426	744
	C16	13	12	6	612	1173	612
	C24	13	13	7	528	1012	528
	C25	13	14	7	528	1012	528
	C27	13	16	8	456	874	456
	C28	13	17	8	456	874	456
	C29	13	19	8	456	874	456
12.5	D10	15	11.5	6	612	1020	612
	D11	15	12.5	6.5	564	940	564
	D14	15	13.5	7	528	880	528
	D16	15	14	8.5	432	720	432
	D19	15	15.5	10	372	620	372
	D20	15	16	10	372	620	372
15	E14	18	11	5	744	1054	744
	E17	18	12	6	612	867	612
	E18	18	13.5	6	612	867	612
	E21	18	13	7	528	748	528
	E31	18	14	8	456	646	456
	E33	18	16	8	456	646	456
	E43	18	16	10	372	527	372
	E45	18	18	10	372	527	372
	E47	18	19	11	336	476	336

Lead Taping Information

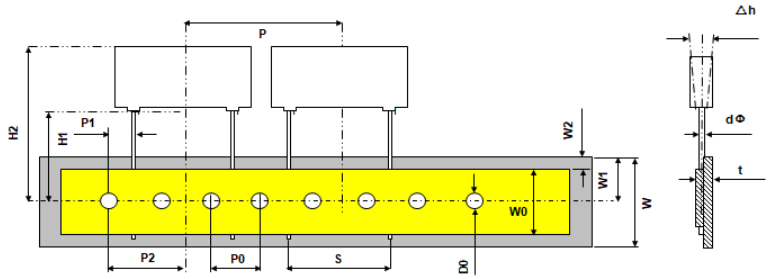
Taping Style: Straight leads

Lead spacing: 10 - 15mm



Quantity: 10pcs / line

Lead spacing: 22.5mm



Quantity: 6pcs / line

Taping Specification

Description	Symbol	Dimension (mm)				Tolerance
Lead Spacing	S	**10.0**	**12.5**	**15.0**	**22.5**	+0.8/-0.2
Taping Pitch	P	25.4	25.4	25.4	38.0	±1.0
Feed Hole Pitch	P0	12.7	12.7	12.7	12.7	±0.2
Centering of Lead Wire	P1	7.7	6.5	5.2	7.80	±0.7
Centering of Body	P2	12.7	12.7	12.7	19.1	±1.3
Carrier Tape Width	W	18.0	18.0	18.0	18.0	±0.5
Hold Down Tape Width	W0	9.5	9.5	9.5	9.5	minimum
Hole Position	W1	9.0	9.0	9.0	9.0	±0.5
Hold Down Tape Position	W2	3.0	3.0	3.0	3.0	maximum
Feed Hole Diameter	D0	4.0	4.0	4.0	4.0	±0.2
Height of Component From Tape Center	H1	20.0	20.0	20.0	20.0	±0.5
Top Edge of Component	H2	39.0	39.0	39.0	44.0	maximum
Lead Wire Diameter	d	0.6	0.8	0.8	0.8	±0.1
Component Alignment	△h	0.0	0.0	0.0	0.0	±2.0
Tape Thickness	t	0.7	0.7	0.7	0.7	±0.2

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 bord by the fixed capacitor.
- Don't place the capacitor on a PC board whose holes pacse 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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