GENERAL INFORMATION

TYPICAL PROPERTIES AND APPLICATIONS.

POLYESTER FILM
Typical Properties:

- High dielectric constant.
- Very good ratio box and dip size capacitance.
- Very wide operating temperature range.
- Good stability.
- Excellent self-healing properties.

Typical Applications:

- Blocking and coupling.
- Decoupling.
- Timing.
- Low filtering.
- By-passing.
- Market sector with professional characteristics.

POLYPROPYLENE FILM
Typical Properties:

- Very low dielectric absorption.
- Good behaviour in frequency.
- Very high insulation resistance.
- Very good stability.
- Excellent self-healing properties.

Typical Applications:

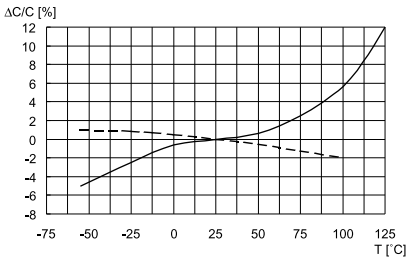
- Pulse applications.
- High current.
- AC Applications.
- SMPS & TV Set.
- Lighting.
- DC-LINK and filtering high Q.
- Timing with high stabililty.
- Industrial.

DIELECTRIC ABSORPTION(DA)
Typical Value 1KHz:

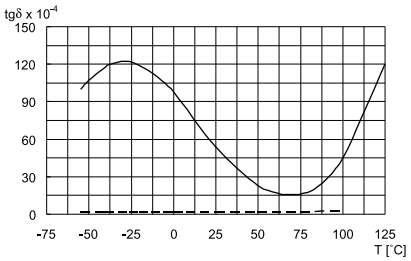
- Polyester: 0.5
- Polypropylene: 0.05

TYPICAL GRAPHS:

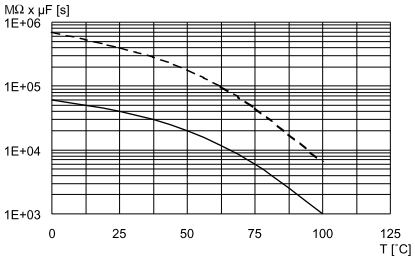
——— Polyester - - - - - - - - Polypropylene



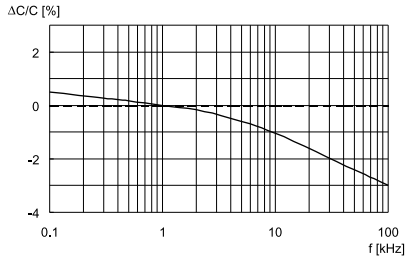
Capacitance change vs. temperature at 1kHz



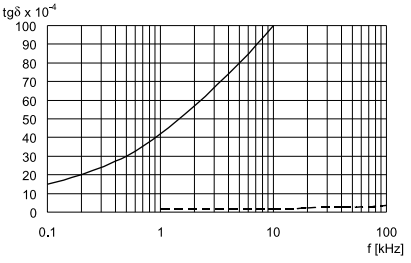
Dissipation factor vs. temperature at 1kHz



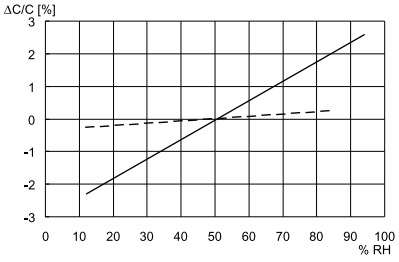
Time constant vs. temperature



Capacitance change vs. frequency (Room temperature)



Dissipation factor vs. frequency (Room temperature)



Capacitance change vs. relative humidity (RH)

Product

MES series / Metalized Polyester Film Capacitors, Plastic box type

PRODUCT CODE SYSTEM

The part number is for MES as follows:

MES		C						
1	2	3	4	5	6	7	8	9	10

Digit 1 Series name.

Digit 2 D.C. rated voltage
D = 63V; E = 100V; I = 250V; M = 400V.

Digit 3 Pitch: (mm)
C = 5.0

Digit 4 to 7 Digits 5-6-7 indicate the first three digits of capacitance value and 4th digit indicates the number of zeros that must be added to obtain the rated capacitance in pF.

Digit 8 Mechanical version
T = Tapping.

Digit 9 Capacitance tolerance:
J = ±5%; K = ±10%

Digit 10 Internal use for production control code.(1.2.3...A,B,C,D,E,F…etc)

GENERAL TECHNICAL DATA

Dielectric: Polyester film

Plates: Aluminum layer deposited by evaporation under vacuum.

Winding: Non-inductive type

Leads: Tinned wire

Protection: Plastic case, epoxy filled. Box material is solvent resistant and flame retardant according to UL94V-0

Marking: Capacitance, tolerance, DC rated voltage

Related standard: IEC 60384-2

Specification of MES_Series

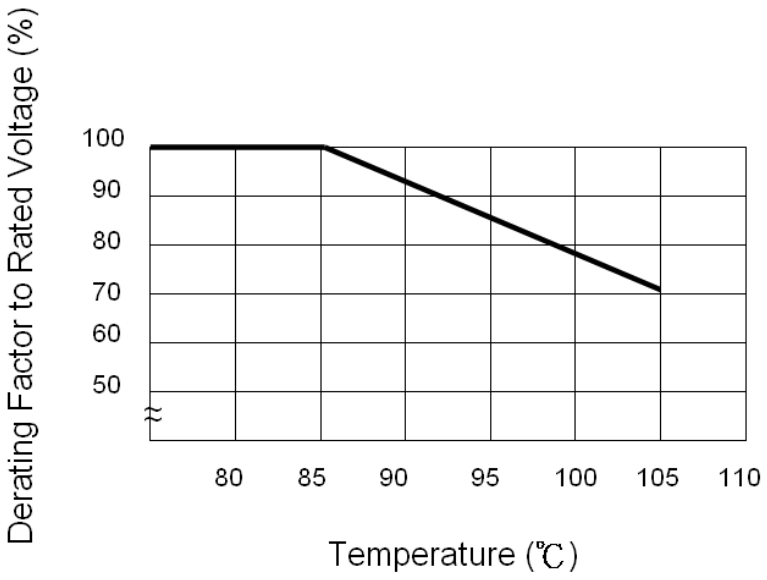
Electrical characteristics

Rated voltage (Vr)	63Vdc / 100Vdc / 250Vdc / 400Vdc
Capacitance Range	63Vdc. 0.001～2.2uf 100Vdc. 0.001～1.0uf 250Vdc. 0.001～0.15uf 400V dc. 0.001～0.068uf
Rated temperature	-55℃ ~ +105℃.
Capacitance tolerance Temperature: +25℃ Frequency: 1KHz.	±5%, ±10%, ±20%,
D.F value Temperature: +25℃	C＞1μF, D.F≦0.01 at 1Khz C≦1μF, D.F≦0.01 at 1Khz and D.F≦0.015 at 10Khz
Insulation Resistance 50Vdc for Vr < 100Vdc, 100Vdc for Vr≧100Vdc, Temperature: +25℃. Duration: 1 minute.	For Vr＞100Vdc, ≧ 30000 MΩ for C≦0.33μF. ≧ 1000 S for C＞0.33μF For Vr≦100Vdc, ≧ 15000 MΩ for C≦0.33μF. ≧ 5000 S for C＞0.33μF. ≧ 1000 S for C＞1.0μF.
Dielectric strength	1.6 x Vr applied for 2 sec at +25℃

Temperature derated voltage:

* For temperature between +85℃ and +105℃ decreasing factor of 1.25% at per each 1℃. on the rated voltage Vr (dc & ac). has to applied.

1. When using capacitors at temperatures higher than the normally specified maximum temperature, it is necessary to reduce the working voltage as shown in the figures below.



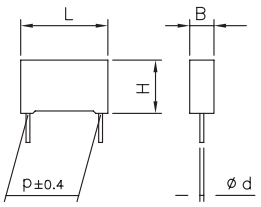
Specification of MES_Series

Test Item and performance

Test item	Test condition	Performance
Damp heat, steady state	Temperature: +40℃ Humidity: 93% Duration:	|△C/C| ≦ 5% D.F increase ≦ 0.005 at 1Khz I.R ≦ 50% of initial value
Dry heat test	Temperature: +85℃ Duration: 16Hrs Removal from chamber for test less 4hrs for temperature recovery	|△C/C| ≦ 5% C＞1μF, D.F change≦0.005 at 1Khz C≦1μF, D.F change≦0.008 at 10Khz I.R ≦ 50% of initial value
Cold test	Temperature: -40℃ Duration: 2Hrs Removal from chamber for test less 4hrs for temperature recovery	|△C/C| ≦ 5% C＞1μF, D.F change≦0.005 at 1Khz C≦1μF, D.F change≦0.008 at 10Khz I.R ≦ 50% of initial value
Solder ability	Soldering temperature: 230±5℃. Duration: 2±0.5 seconds Dipping/removing speed: 25mm/ sec	Leads shall be covered with solder more than 95%.
Soldering heat resistance	Soldering temperature: 260±5℃. Duration: 10 ± 1 seconds	|△C/C| ≦ 3% C＞1μF, D.F change≦0.005 at 1Khz C≦1μF, D.F change≦0.008 at 10Khz I.R ≦ 50% of initial value
Terminal strength	There shall be no visible damage.	Tension Ual: Pull ϕ d = 0.5 mm, 5.0N; ϕ d = 0.6 mm, 10.0N; Bend Ub; The pull of the bend: ϕ d = 0.5 mm, 2.5N; ϕ d = 0.6 mm, 5.0N The Terminals shall be bend 2 times in each direction.
Load life test (Endurance)	Temperature: +85℃ Test voltage: 1.25x Vr Duration: 500Hrs Removal from chamber for test less 4hrs for temperature recovery	|△C/C| ≦ 5% C＞1μF, D.F change≦0.005 at 1Khz C≦1μF, D.F change≦0.008 at 10Khz I.R ≦ 50% of initial value
Long term stability	Temperature: -40℃ ~ +85℃ Humidity≦70% for yearly average Duration≦12 months	|△C/C| ≦ 3%

Specification of MES Series

Dimension

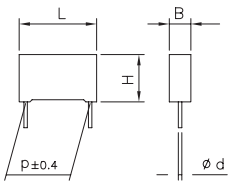


P/N	Cap(μF)	63Vdc / 40Vac (Stacked)					Packing	
		L	H	T	P	d	AMMO/D	AMMO/F
MESDC1100__	0.001	7.2	6.5	2.5	5	0.5	3500	2500
MESDC1120___	0.0012	7.2	6.5	2.5	5	0.5	3500	2500
MESDC1150___	0.0015	7.2	6.5	2.5	5	0.5	3500	2500
MESDC1180___	0.0018	7.2	6.5	2.5	5	0.5	3500	2500
MESDC1220___	0.0022	7.2	6.5	2.5	5	0.5	3500	2500
MESDC1270___	0.0027	7.2	6.5	2.5	5	0.5	3500	2500
MESDC1330___	0.0033	7.2	6.5	2.5	5	0.5	3500	2500
MESDC1390___	0.0039	7.2	6.5	2.5	5	0.5	3500	2500
MESDC1470___	0.0047	7.2	6.5	2.5	5	0.5	3500	2500
MESDC1560___	0.0056	7.2	6.5	2.5	5	0.5	3500	2500
MESDC1680___	0.0068	7.2	6.5	2.5	5	0.5	3500	2500
MESDC1820___	0.0082	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2100___	0.01	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2120___	0.012	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2150___	0.015	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2180___	0.018	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2220___	0.022	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2270___	0.027	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2330___	0.033	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2390___	0.039	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2470___	0.047	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2560___	0.056	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2680___	0.068	7.2	6.5	2.5	5	0.5	3500	2500
MESDC2820___	0.082	7.2	6.5	2.5	5	0.5	3500	2500
MESDC3100___	0.1	7.2	6.5	2.5	5	0.5	3500	2500
MESDC3120___	0.12	7.2	6.5	2.5	5	0.5	3500	2500
MESDC3150__D	0.15	7.2	7.5	3.5	5	0.5	2500	
MESDC3180__D	0.18	7.2	7.5	3.5	5	0.5	2500	
MESDC3220__D	0.22	7.2	7.5	3.5	5	0.5	2500	
MESDC3330___	0.33	7.2	7.5	3.5	5	0.5	2500	1700
MESDC3470___	0.47	7.2	7.5	3.5	5	0.5	2500	1700
MESDC3680__F	0.68	7.2	9.5	4.5	5	0.6		1400
MESDC4100__F	1	7.2	10	5	5	0.6		1200
MESDC4220__F	2.2	7.2	11	6	5	0.6		1000
P/N	Cap(μF)	63Vdc / 40Vac(Wound)					Packing	
		L	H	T	P	d	AMMO/D	AMMO/F
MESDC3270___	0.27	7.2	9.5	4.5	5	0.6	1900	
MESDC3330___	0.33	7.2	9.5	4.5	5	0.6	1900	
MESDC3390___	0.39	7.2	9.5	4.5	5	0.6	1900	
MESDC3470___	0.47	7.2	9.5	4.5	5	0.6	1900	
MESDC3560___	0.56	7.2	10	5	5	0.6	1400	
MESDC3680___	0.68	7.2	11	6	5	0.6	1400	
MESDC3820___	0.82	7.2	11	6	7.2	0.6	1400	
MESDC4100___	1	7.2	11	6	7.2	0.6	1400	

Specification of MES Series

Dimension

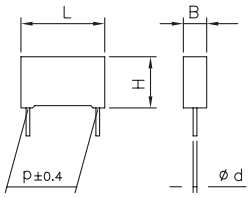
P/N	Cap(μF)	100Vdc / 63Vac (Stacked)					Packing	
		L	H	T	P	d	**AMMO/D**	**AMMO/F**
MESEC1100___	0.001	7.2	6.5	2.5	5	0.5	3500	2500
MESEC1120___	0.0012	7.2	6.5	2.5	5	0.5	3500	2500
MESEC1150___	0.0015	7.2	6.5	2.5	5	0.5	3500	2500
MESEC1180___	0.0018	7.2	6.5	2.5	5	0.5	3500	2500
MESEC1220___	0.0022	7.2	6.5	2.5	5	0.5	3500	2500
MESEC1270___	0.0027	7.2	6.5	2.5	5	0.5	3500	2500
MESEC1330___	0.0033	7.2	6.5	2.5	5	0.5	3500	2500
MESEC1390___	0.0039	7.2	6.5	2.5	5	0.5	3500	2500
MESEC1470___	0.0047	7.2	6.5	2.5	5	0.5	3500	2500
MESEC1560___	0.0056	7.2	6.5	2.5	5	0.5	3500	2500
MESEC1680___	0.0068	7.2	6.5	2.5	5	0.5	3500	2500
MESEC1820___	0.0082	7.2	6.5	2.5	5	0.5	3500	2500
MESEC2100___	0.01	7.2	6.5	2.5	5	0.5	3500	2500
MESEC2120___	0.012	7.2	6.5	2.5	5	0.5	3500	2500
MESEC2150___	0.015	7.2	6.5	2.5	5	0.5	3500	2500
MESEC2220___	0.022	7.2	6.5	2.5	5	0.5	3500	2500
MESEC2270___	0.027	7.2	6.5	2.5	5	0.5	3500	2500
MESEC2330___	0.033	7.2	6.5	2.5	5	0.5	3500	2500
MESEC2390___	0.039	7.2	6.5	2.5	5	0.5	3500	2500
MESEC2470___	0.047	7.2	6.5	2.5	5	0.5	3500	2500
MESEC2560___	0.056	7.2	6.5	2.5	5	0.5	3500	2500
MESEC2680___	0.068	7.2	6.5	2.5	5	0.5	3500	2500
MESEC2820___	0.082	7.2	6.5	2.5	5	0.5	3500	2500
MESEC3100___	0.1	7.2	6.5	2.5	5	0.5	3500	2500
MESEC3120___	0.12	7.2	6.5	2.5	5	0.5	3500	2500
MESEC3150___	0.15	7.2	7.5	3.5	5	0.5	2500	1700
MESEC3180___	0.18	7.2	7.5	3.5	5	0.5	2500	1700
MESEC3220___	0.22	7.2	7.5	3.5	5	0.5	2500	1700
P/N	Cap(μF)	100Vdc / 63Vac (Wound)					Packing	
		L	H	T	P	d	**AMMO/D**	**AMMO/F**
MESEC3270___	0.27	7.2	9.5	4.5	5	0.6	1900	
MESEC3330___	0.33	7.2	9.5	4.5	5	0.6	1900	
MESEC3390___	0.39	7.2	9.5	4.5	5	0.6	1900	
MESEC3470___	0.47	7.2	9.5	4.5	5	0.6	1900	
MESEC3560___	0.56	7.2	10	5	5	0.6	1400	
MESEC3680___	0.68	7.2	11	6	5	0.6	1400	
MESEC3820___	0.82	7.2	11	6	5	0.6	1400	
MESEC4100___	1	7.2	11	6	5	0.6	1400	



Specification of MES Series

Dimension

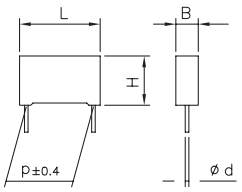
P/N	Cap(μF)	250Vdc / 140Vac (Stacked)					Packing	
		L	H	T	P	d	AMMO/D	AMMO/F
MESIC1100___	0.001	7.2	6.5	2.5	5	0.5	3500	2500
MESIC1120___	0.0012	7.2	6.5	2.5	5	0.5	3500	2500
MESIC1150___	0.0015	7.2	6.5	2.5	5	0.5	3500	2500
MESIC1180___	0.0018	7.2	6.5	2.5	5	0.5	3500	2500
MESIC1220___	0.0022	7.2	6.5	2.5	5	0.5	3500	2500
MESIC1270___	0.0027	7.2	6.5	2.5	5	0.5	3500	2500
MESIC1330___	0.0033	7.2	6.5	2.5	5	0.5	3500	2500
MESIC1390___	0.0039	7.2	6.5	2.5	5	0.5	3500	2500
MESIC1470___	0.0047	7.2	6.5	2.5	5	0.5	3500	2500
MESIC1560___	0.0056	7.2	6.5	2.5	5	0.5	3500	2500
MESIC1680___	0.0068	7.2	6.5	2.5	5	0.5	3500	2500
MESIC1820___	0.0082	7.2	6.5	2.5	5	0.5	3500	2500
MESIC2100___	0.01	7.2	6.5	2.5	5	0.5	3500	2500
MESIC2150___	0.015	7.2	6.5	2.5	5	0.5	3500	2500
MESIC2220___	0.022	7.2	6.5	2.5	5	0.5	3500	2500
MESIC2330__F	0.033	7.2	6.5	2.5	5	0.5		2500
P/N	Cap(μF)	250Vdc / 140Vac (Wound)					Packing	
		L	H	T	P	d	AMMO/D	AMMO/F
MESIC2100___	0.01	7.2	6.5	2.5	5	0.5	3500	2500
MESIC2120___	0.012	7.2	6.5	2.5	5	0.5	3500	2500
MESIC2150___	0.015	7.2	6.5	2.5	5	0.5	3500	2500
MESIC2180___	0.018	7.2	6.5	2.5	5	0.5	3500	2500
MESIC2220___	0.022	7.2	7.5	3.5	5	0.5	2500	1700
MESIC2270___	0.027	7.2	7.5	3.5	5	0.5	2500	1700
MESIC2330___	0.033	7.2	7.5	3.5	5	0.5	2500	1700
MESIC2390___	0.039	7.2	9.5	4.5	5	0.6	1900	1400
MESIC2470___	0.047	7.2	9.5	4.5	5	0.6	1900	1400
MESIC2560___	0.056	7.2	9.5	4.5	5	0.6	1900	1400
MESIC2680___	0.068	7.2	9.5	4.5	5	0.6	1900	1400
MESIC2820___	0.082	7.2	10	5	5	0.6	1700	1200
MESIC3100___	0.1	7.2	11	6	5	0.6	1400	1200
MESIC3120___	0.12	7.2	11	6	5	0.6	1400	1200
MESIC3150___	0.15	7.2	11	6	5	0.6	1400	1200



Specification of MES Series

Dimension

P/N	Cap(μF)	400Vdc / 160Vac (Stacked)					Packing	
		L	H	T	P	d	AMMO/D	AMMO/F
MESMC1100__F	0.001	7.2	6.5	2.5	5	0.5		2500
MESMC1120__F	0.0012	7.2	6.5	2.5	5	0.5		2500
MESMC1150__F	0.0015	7.2	6.5	2.5	5	0.5		2500
MESMC1220__F	0.0022	7.2	6.5	2.5	5	0.5		2500
MESMC1270__F	0.0027	7.2	6.5	2.5	5	0.5		2500
MESMC1330__F	0.0033	7.2	6.5	2.5	5	0.5		2500
MESMC1390__F	0.0039	7.2	6.5	2.5	5	0.5		2500
MESMC1470__F	0.0047	7.2	6.5	2.5	5	0.5		2500
MESMC1560__F	0.0056	7.2	6.5	2.5	5	0.5		2500
MESMC1100__D	0.001	7.2	7.5	3.5	5	0.5	2500	
MESMC1120__D	0.0012	7.2	7.5	3.5	5	0.5	2500	
MESMC1150__D	0.0015	7.2	7.5	3.5	5	0.5	2500	
MESMC1220__D	0.0022	7.2	7.5	3.5	5	0.5	2500	
MESMC1270__D	0.0027	7.2	7.5	3.5	5	0.5	2500	
MESMC1330__D	0.0033	7.2	7.5	3.5	5	0.5	2500	
MESMC1390__D	0.0039	7.2	7.5	3.5	5	0.5	2500	
MESMC1470__D	0.0047	7.2	7.5	3.5	5	0.5	2500	
MESMC1560__D	0.0056	7.2	7.5	3.5	5	0.5	2500	
MESMC1680___	0.0068	7.2	7.5	3.5	5	0.5	2500	1700
MESMC1820___	0.0082	7.2	7.5	3.5	5	0.5	2500	1700
MESMC2100___	0.01	7.2	7.5	3.5	5	0.5	2500	1700
MESMC2120___	0.012	7.2	7.5	3.5	5	0.5	2500	1700
MESMC2150___	0.015	7.2	7.5	3.5	5	0.5	2500	1700
MESMC2180___	0.018	7.2	7.5	3.5	5	0.5	2500	1700
MESMC2220___	0.022	7.2	7.5	3.5	5	0.5	2500	1700
MESMC2220__D	0.022	7.2	9.5	4.5	5	0.6	1900	
MESMC2270___	0.027	7.2	7.5	3.5	5	0.5	2500	1700
MESMC2270__D	0.027	7.2	9.5	4.5	5	0.6	1900	
MESMC2330___	0.033	7.2	7.5	3.5	5	0.5	2500	1700
MESMC2330__D	0.033	7.2	9.5	4.5	5	0.6	1900	
MESMC2390___	0.039	7.2	11	6	5	0.6	1400	
P/N	Cap(μF)	400Vdc / 160Vac (Wound)					Packing	
		L	H	T	P	d	AMMO/D	AMMO/F
MESMC2470__D	0.047	7.2	11	6	5	0.6	1400	
MESMC2560__D	0.056	7.2	11	6	5	0.6	1400	
MESMC2680__D	0.068	7.2	11	6	5	0.6	1400	



Specification of MEID Series

Soldering suggestions

1. Max soldering temperature:

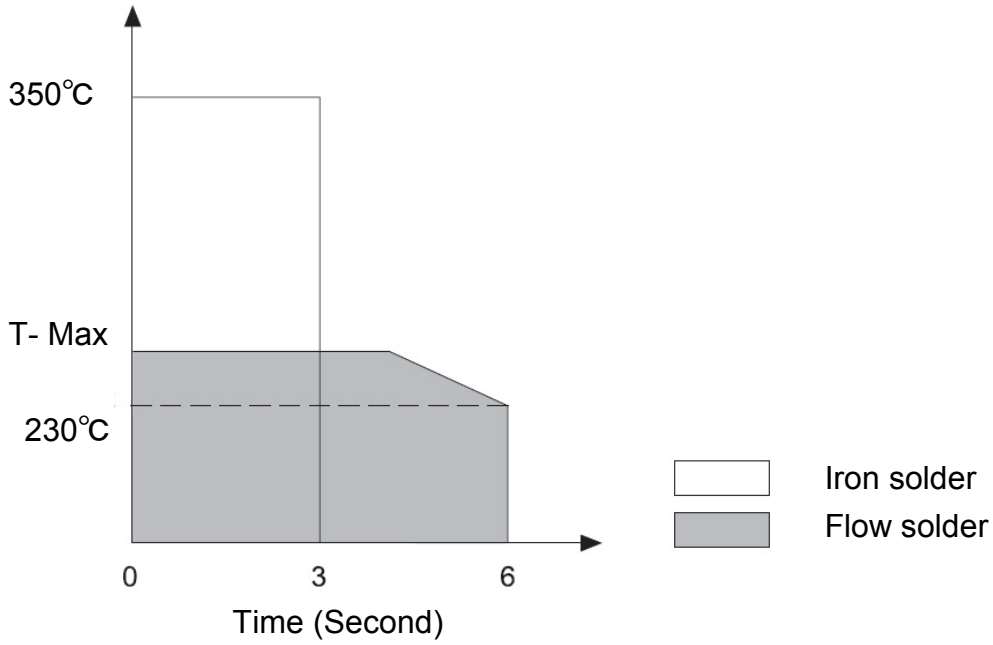
Max temperature (T-Max) for MKT (Pitch ≧ 7.5mm): 265±5℃ for 4 seconds.

Max temperature (T-Max) for MKT (Pitch 5mm): 260℃ for 4 seconds.

Max temperature (T-Max) for MKP: 260℃ for 4 seconds.

Temperature

Pre-Heating	Temperature	Time
	110℃	1 Min
	100℃	1 Min for KP & MKP≦P:7.5mm



2. Additional condition:

If two time soldering are needed, please apply a recovery time until the temperature on the surface of capacitor is below 50℃.

Avoid applying the reflow soldering with both leaded parts and SMD parts.

Storage suggestions:

In order to keep the electrical characteristic of capacitor in line with the specification, please store the capacitors in the following condition:

Storage duration: ≦ 12 months from the date which showed on the label.

Temperature: -40℃ to 80℃.

Humidity: ≦ 70%.

Specification of MES_ Series

Marking:

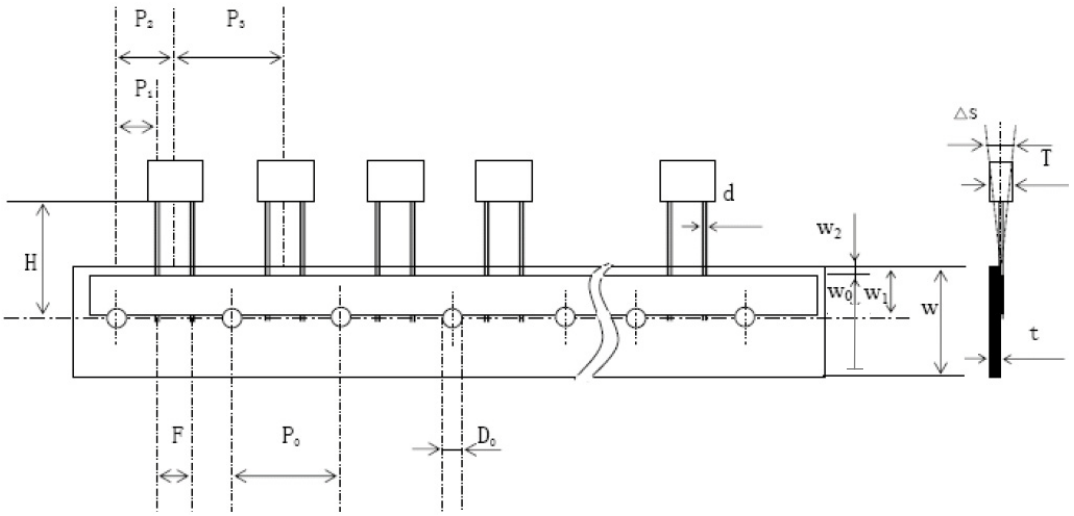
The marking on each capacitor should contain Capacitance, Tolerance and Rated voltage.

Packing:

For Bulk type, small inner cardboard box / PVC bag with desiccants and label packed in one standard export carton.

Taping dimensions :

Normal :



	Straight lead type
P	12.7±1.0
PO	12.7±0.3
P1	3.85±0.7
P2	6.35±1.3
ϕ d	See individual dimensions
F	$5.0^{+0.6}_{-0.2}$
Δs	0±2.0
W	$18^{+1.0}_{-0.5}$
W0	5.0Min
W1	9.0±0.5
W2	3.0Max
D0	4.0±0.2
t	0.7±0.2
H	18.5±0.5