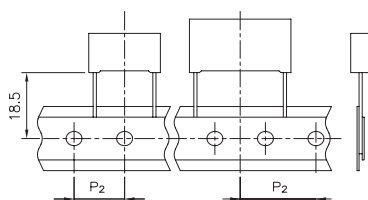
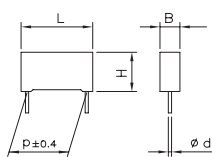


Fig.1

Fig. 2



Ød ±0.05	p = 22.5+27.5	p = 37.5
	0.8	1.0

All dimensions are in mm.

METALLIZED POLYPROPYLENE FILM CAPACITOR

D.C. AND PULSE APPLICATIONS

Typical applications: Automotive and Industrial applications Capacitor for DC-DC converter, inverter and supply High Capacitance per volume

PRODUCT CODE: JSP

Pitch (mm)	Box thickness (B) (mm)	Maximum dimensions (mm)		
		B max	H max	L max
22.5	All	B +0.2	H +0.1	L +0.3
27.5	All	B +0.2	H +0.1	L +0.3
37.5	All	B +0.3	H +0.1	L +0.3

PRODUCT CODE SYSTEM

The part number, comprising 14 digits, is formed as follows:

1	2	3	4	5	6	7	8	9	10	11	12	13	14
J	S	P										-	

- Digit 1 to 3 Series code.
- Digit 4 d.c. rated voltage
I = 250Vdc; M = 400Vdc; P=630Vdc.
- Digit 5 Pitch: N=22.5mm; R=27.5mm; W=37.5mm.
- Digit 6 to 9 Digits 7-8-9 indicate the first three digits of Capacitance value and the 6th digit indicates the number of zeros that must be added to obtain the rated Capacitance in pF.
- Digit 10 to 11 Mechanical version and/or packaging (table 1).
- Digit 12 Identifies the dimension and electrical characteristics.
- Digit 13 Internal use.
- Digit 14 Capacitance Tolerance:
J=±5%; K=±10%; M=±20%.

GENERAL TECHNICAL DATA

- Dielectric:** polypropylene film.
- Plates:** aluminium layer deposited by evaporation under vacuum.
- Winding:** non-inductive type.
- Construction:** Stacked technology.
- Leads:** tinned wire.
- Protection:** plastic case,thermosetting resin filled.
Box material is solvent resistant and flame retardant according to UL94 V-0.
- Marking:** Manufacturer's logo, series (JSP), capacitance, tolerance, D.C. rated voltage, manufacturing date code.

Climatic category: 55/105/56 IEC 60068-1.

Operating temperature range: -55°C up to +125°C.

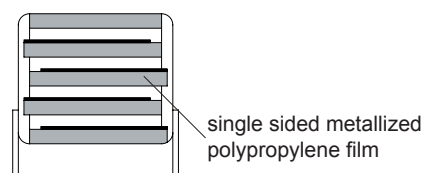
Related documents: IEC 60384-2.

Table 1

Standard packaging style	Lead length (mm)	Taping style			Ordering code (Digit 10 to 11)
		P ₂ (mm)	Fig. (No.)	Pitch (mm)	
AMMO-PACK		19.05	2	22.5	DQ
REEL Ø 500mm		19.05	2	22.5/27.5	CK
Loose, short leads	4 ⁺²				AA
Loose, long leads	25 ^{-1/+2}				50
	30 ^{-0/+5}				40

Note: Ammo-pack is the preferred packaging for taped version.

Winding scheme



Rated Cap.	250Vdc / 160Vac Std dimensions				Max dv/dt (V/ μ s)	Max K ₀ (V ² / μ s)	Part Number
	B	H	L	p			
2.2 μ F	7.0	16.0	26.5	22.5	125	63 E3	JSP IN4220--A--
2.7 μ F	7.0	16.0	26.5	22.5	125	63 E3	JSP IN4270--A--
3.3 μ F	8.5	17.0	26.5	22.5	125	63 E3	JSP IN4330--A--
3.9 μ F	8.5	17.0	26.5	22.5	125	63 E3	JSP IN4390--A--
4.7 μ F	11.0	20.0	26.5	22.5	125	63 E3	JSP IN4470--A--
5.6 μ F	11.0	20.0	26.5	22.5	125	63 E3	JSP IN4560--A--
6.8 μ F	13.0	22.0	26.5	22.5	125	63 E3	JSP IN4680--A--
8.2 μ F	13.0	22.0	26.5	22.5	125	63 E3	JSP IN4820--A--
3.3 μ F	9.0	17.0	32.0	27.5	100	50 E3	JSP IR4330--A--
3.9 μ F	9.0	17.0	32.0	27.5	100	50 E3	JSP IR4390--A--
4.7 μ F	9.0	17.0	32.0	27.5	100	50 E3	JSP IR4470--A--
5.6 μ F	11.0	20.0	32.0	27.5	100	50 E3	JSP IR4560--A--
6.8 μ F	11.0	20.0	32.0	27.5	100	50 E3	JSP IR4680--A--
8.2 μ F	13.0	22.0	32.0	27.5	100	50 E3	JSP IR4820--A--
10 μ F	13.0	22.0	32.0	27.5	100	50 E3	JSP IR5100--A--
12 μ F	18.0	33.0	32.0	27.5	100	50 E3	JSP IR5120--A--
15 μ F	18.0	33.0	32.0	27.5	100	50 E3	JSP IR5150--A--
18 μ F	18.0	33.0	32.0	27.5	100	50 E3	JSP IR5180--A--
22 μ F	18.0	33.0	32.0	27.5	100	50 E3	JSP IR5220--A--
27 μ F	22.0	37.0	32.0	27.5	100	50 E3	JSP IR5270--A--
6.8 μ F	11.0	22.0	41.5	37.5	40	20 E3	JSPIW4680--A--
8.2 μ F	11.0	22.0	41.5	37.5	40	20 E3	JSPIW4820--A--
10 μ F	11.0	22.0	41.5	37.5	40	20 E3	JSPIW5100--A--
12 μ F	13.0	24.0	41.5	37.5	40	20 E3	JSPIW5120--A--
15 μ F	13.0	24.0	41.5	37.5	40	20 E3	JSPIW5150--A--
18 μ F	16.0	28.5	41.5	37.5	40	20 E3	JSPIW5180--A--
22 μ F	16.0	28.5	41.5	37.5	40	20 E3	JSPIW5220--A--
27 μ F	19.0	32.0	41.5	37.5	40	20 E3	JSPIW5270--A--
33 μ F	19.0	32.0	41.5	37.5	40	20 E3	JSPIW5330--A--
39 μ F	20.0	40.0	41.5	37.5	40	20 E3	JSPIW5390--A--
47 μ F	24.0	44.0	41.5	37.5	40	20 E3	JSPIW5470--A--
56 μ F	30.0	45.0	41.5	37.5	40	20 E3	JSPIW5560--A--

Mechanical version and packaging (Table1)

Internal use

Tolerance: J ($\pm 5\%$); K ($\pm 10\%$); M ($\pm 20\%$)

Rated Cap.	400Vdc / 200Vac Std dimensions				Max dv/dt (V/ μ s)	Max K ₀ (V ² / μ s)	Part Number
	B	H	L	p			
1.5 μ F	7.0	16.0	26.5	22.5	180	144 E3	JSP MN4150--A--
1.8 μ F	7.0	16.0	26.5	22.5	180	144 E3	JSP MN4180--A--
2.2 μ F	7.0	16.0	26.5	22.5	180	144 E3	JSP MN4220--A--
2.7 μ F	8.5	17.0	26.5	22.5	180	144 E3	JSP MN4270--A--
3.3 μ F	11.0	20.0	26.5	22.5	180	144 E3	JSP MN4330--A--
4.7 μ F	11.0	20.0	26.5	22.5	180	144 E3	JSP MN4470--A--
5.6 μ F	13.0	22.0	26.5	22.5	180	144 E3	JSP MN4560--A--
6.8 μ F	13.0	22.0	26.5	22.5	180	144 E3	JSP MN4680--A--
2.2 μ F	9.0	17.0	32.0	27.5	130	104 E3	JSP MR4220--A--
2.7 μ F	9.0	17.0	32.0	27.5	130	104 E3	JSP MR4270--A--
3.3 μ F	9.0	17.0	32.0	27.5	130	104 E3	JSP MR4330--A--
3.9 μ F	9.0	17.0	32.0	27.5	130	104 E3	JSP MR4390--A--
4.7 μ F	11.0	20.0	32.0	27.5	130	104 E3	JSP MR4470--A--
5.6 μ F	11.0	20.0	32.0	27.5	130	104 E3	JSP MR4560--A--
6.8 μ F	13.0	22.0	32.0	27.5	130	104 E3	JSP MR4680--A--
8.2 μ F	13.0	22.0	32.0	27.5	130	104 E3	JSP MR4820--A--
10 μ F	18.0	33.0	32.0	27.5	130	104 E3	JSP MR5100--A--
12 μ F	18.0	33.0	32.0	27.5	130	104 E3	JSP MR5120--A--
15 μ F	18.0	33.0	32.0	27.5	130	104 E3	JSP MR5150--A--
18 μ F	18.0	33.0	32.0	27.5	130	104 E3	JSP MR5180--A--
22 μ F	22.0	37.0	32.0	27.5	130	104 E3	JSP MR5220--A--
5.6 μ F	11.0	22.0	41.5	37.5	70	56 E3	JSPMW4560--A--
6.8 μ F	11.0	22.0	41.5	37.5	70	56 E3	JSPMW4680--A--
8.2 μ F	11.0	22.0	41.5	37.5	70	56 E3	JSPMW4820--A--
10 μ F	13.0	24.0	41.5	37.5	70	56 E3	JSPMW5100--A--
12 μ F	13.0	24.0	41.5	37.5	70	56 E3	JSPMW5120--A--
15 μ F	16.0	28.5	41.5	37.5	70	56 E3	JSPMW5150--A--
18 μ F	16.0	28.5	41.5	37.5	70	56 E3	JSPMW5180--A--
22 μ F	19.0	32.0	41.5	37.5	70	56 E3	JSPMW5220--A--
27 μ F	19.0	32.0	41.5	37.5	70	56 E3	JSPMW5270--A--
33 μ F	20.0	40.0	41.5	37.5	70	56 E3	JSPMW5330--A--

Mechanical version and packaging (Table1)

Internal use

Tolerance: J ($\pm 5\%$); K ($\pm 10\%$); M ($\pm 20\%$)

Rated Cap.	630Vdc / 220Vac Std dimensions				Max dv/dt (V/ μ s)	Max K ₀ (V ² / μ s)	Part Number
	B	H	L	p			
1.0 μ F	7.0	16.0	26.5	22.5	250	315 E3	JSP PN4100--A--
1.2 μ F	7.0	16.0	26.5	22.5	250	315 E3	JSP PN4120--A--
1.5 μ F	8.5	17.0	26.5	22.5	250	315 E3	JSP PN4150--A--
1.8 μ F	11.0	20.0	26.5	22.5	250	315 E3	JSP PN4180--A--
2.2 μ F	11.0	20.0	26.5	22.5	250	315 E3	JSP PN4220--A--
2.7 μ F	13.0	22.5	26.5	22.5	250	315 E3	JSP PN4270--A--
3.3 μ F	13.0	22.5	26.5	22.5	250	315 E3	JSP PN4330--A--
1.5 μ F	9.0	17.0	32.0	27.5	180	227 E3	JSP PR4150--A--
1.8 μ F	9.0	17.0	32.0	27.5	180	227 E3	JSP PR4180--A--
2.2 μ F	9.0	17.0	32.0	27.5	180	227 E3	JSP PR4220--A--
2.7 μ F	11.0	20.0	32.0	27.5	180	227 E3	JSP PR4270--A--
3.3 μ F	11.0	20.0	32.0	27.5	180	227 E3	JSP PR4330--A--
3.9 μ F	13.0	22.0	32.0	27.5	180	227 E3	JSP PR4390--A--
4.7 μ F	13.0	22.0	32.0	27.5	180	227 E3	JSP PR4470--A--
5.6 μ F	18.0	33.0	32.0	27.5	180	227 E3	JSP PR4560--A--
6.8 μ F	18.0	33.0	32.0	27.5	180	227 E3	JSP PR4680--A--
8.2 μ F	18.0	33.0	32.0	27.5	180	227 E3	JSP PR4820--A--
10 μ F	18.0	33.0	32.0	27.5	180	227 E3	JSP PR5100--A--
12 μ F	22.0	37.0	32.0	27.5	180	227 E3	JSP PR5120--A--
3.3 μ F	11.0	22.0	41.5	37.5	90	113 E3	JSP PW4330--A--
3.9 μ F	11.0	22.0	41.5	37.5	90	113 E3	JSP PW4390--A--
4.7 μ F	11.0	22.0	41.5	37.5	90	113 E3	JSP PW4470--A--
5.6 μ F	13.0	24.0	41.5	37.5	90	113 E3	JSP PW4560--A--
6.8 μ F	13.0	24.0	41.5	37.5	90	113 E3	JSP PW4680--A--
8.2 μ F	16.0	28.5	41.5	37.5	90	113 E3	JSP PW4820--A--
10 μ F	16.0	28.5	41.5	37.5	90	113 E3	JSP PW5100--A--
12 μ F	19.0	32.0	41.5	37.5	90	113 E3	JSP PW5120--A--
15 μ F	19.0	32.0	41.5	37.5	90	113 E3	JSP PW5150--A--
18 μ F	20.0	40.0	41.5	37.5	90	113 E3	JSP PW5180--A--
22 μ F	24.0	44.0	41.5	37.5	90	113 E3	JSP PW5220--A--

Mechanical version and packaging (Table1) _____
 Internal use _____
 Tolerance: J ($\pm 5\%$); K ($\pm 10\%$); M ($\pm 20\%$) _____

METALLIZED POLYPROPYLENE FILM CAPACITOR

D.C. AND PULSE APPLICATIONS

PRODUCT CODE: JSP

ELECTRICAL CHARACTERISTICS

Rated voltage (V_R): 250Vdc - 400Vdc - 630Vdc.

Rated temperature: +85°C.

Temperature derated voltage:

for temperatures between +85°C and the upper operating temperature a decreasing factor of 1.25% per degree °C on the rated V_R (d.c. and a.c.) has to be applied.

Capacitance range: 1.0μF to 56μF.

Capacitance values: E12 series (IEC 60063 Norm).

Capacitance tolerance (measured at 1kHz):
±5% (J); ±10% (K); ±20% (M).

Total self-inductance (L): (lead length ~ 2 mm)

Pitch (mm)	22.5	27.5	37.5
L(nH)	18	18	22

Dissipation factor (DF):

$\text{tg}\delta \times 10^{-4}$ at +25°C ±5°C

kHz	$1\mu\text{F} \leq C \leq 10\mu\text{F}$	$C > 10\mu\text{F}$
1	≤10	≤15
10	≤30	≤100

Insulation Resistance:

Test conditions

Temperature: +25°C ±5°C

Voltage charge time: 1 min

Voltage charge: 100Vdc

Performance

≥30000 s (150000 s)*

*Typical value.

Test voltage between terminations:

$1.6 \times V_R$ for 2s at +25°C ±5°C

TEST METHOD AND PERFORMANCE

Damp heat, steady state:

Test conditions 1

Temperature: +40°C ±2°C

Relative humidity(RH): 93% ±2°C

Test duration: 56 days

Performance

Capacitance change $|\Delta C/C|$: ≤ 2%

DF change ($\Delta \text{tg}\delta$): ≤ 10×10^{-4} at 1kHz

Insulation resistance: ≥ 50% of initial limit

Endurance:

Test conditions 1st

Temperature: 105°C ±2°C

Test duration: 2000 h

Voltage applied: $1.25 \times V_R$

Test conditions 2nd

Temperature: +125°C ±2°C

Test duration: 1000 h

Voltage applied: $1.25 \times V_R$

Performance

Capacitance change $|\Delta C/C|$: ≤ 3%

DF change ($\Delta \text{tg}\delta$): ≤ 10×10^{-4} at 1kHz

Insulation resistance: ≥ 50% of initial limit

Resistance to soldering heat:

Test conditions

Solder bath temperature: +260°C ±5°C

Dipping time (with heat screen): 10s ± 1s

Performance

Capacitance change $|\Delta C/C|$: ≤ 1%

DF change ($\Delta \text{tg}\delta$): ≤ 10×10^{-4} at 10kHz for $C \leq 1\mu\text{F}$

≤ 10×10^{-4} at 1kHz for $C > 1\mu\text{F}$

Insulation resistance: ≥ initial limit

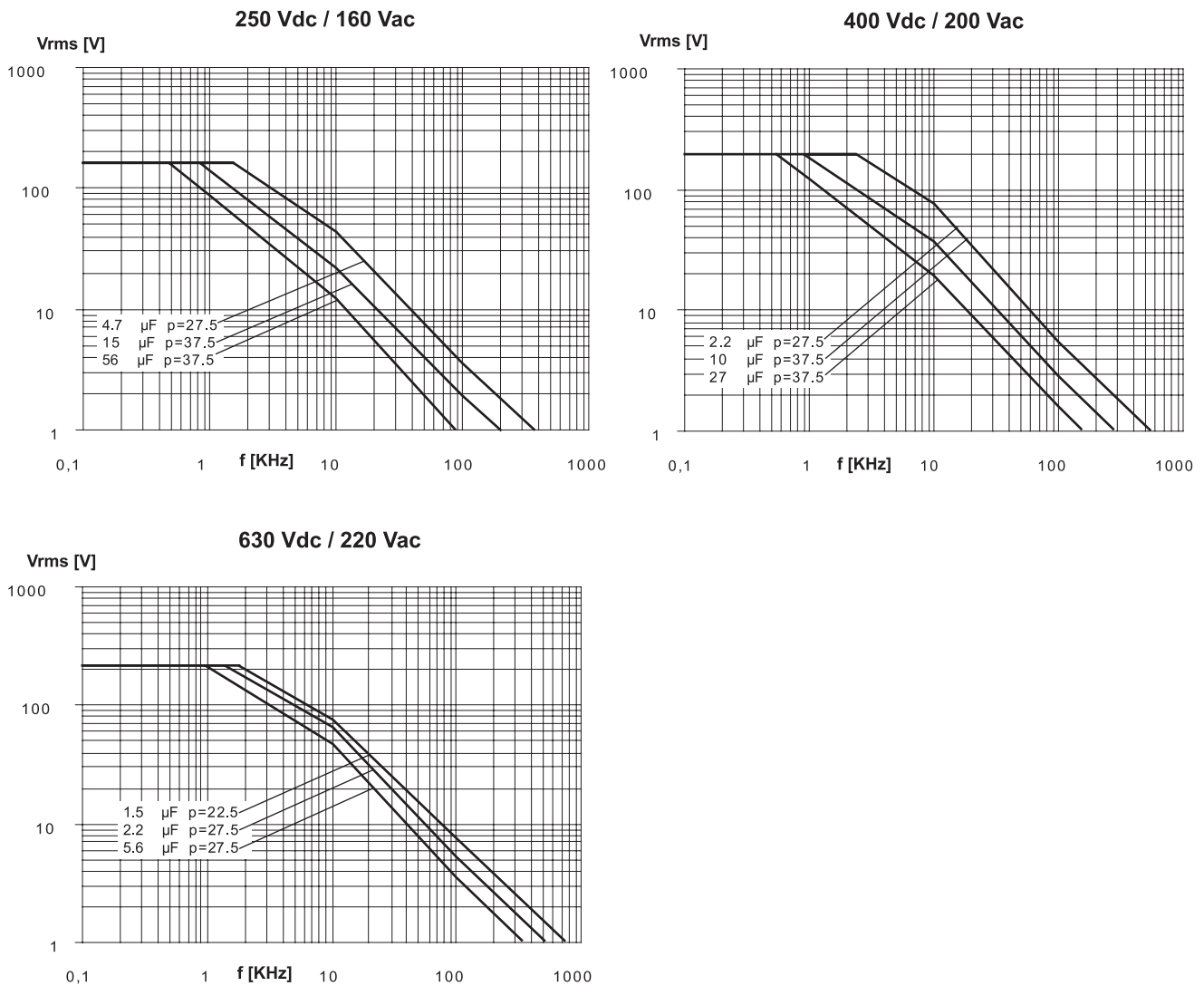
Long term stability (after two years):

Storage: standard environmental conditions (see page 12 of DC film capacity catalogue).

Performance

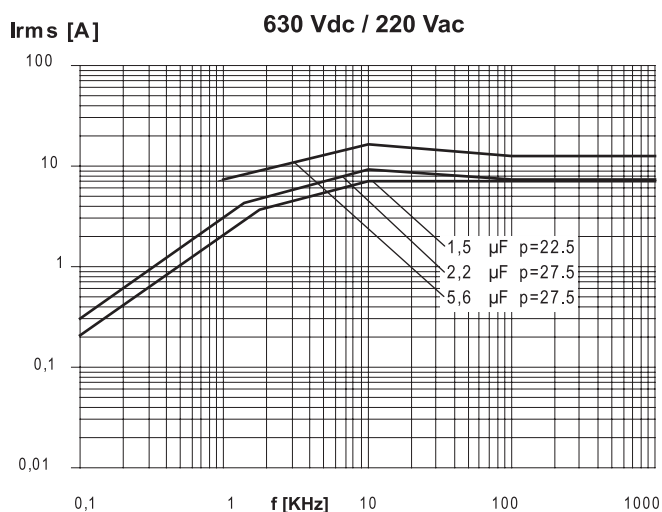
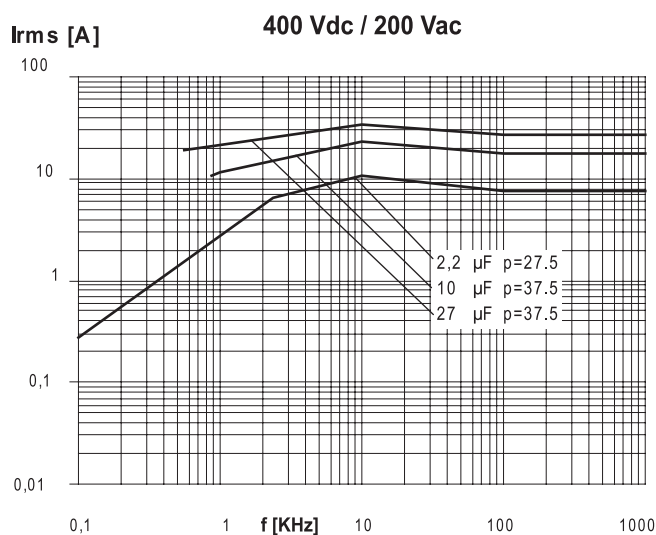
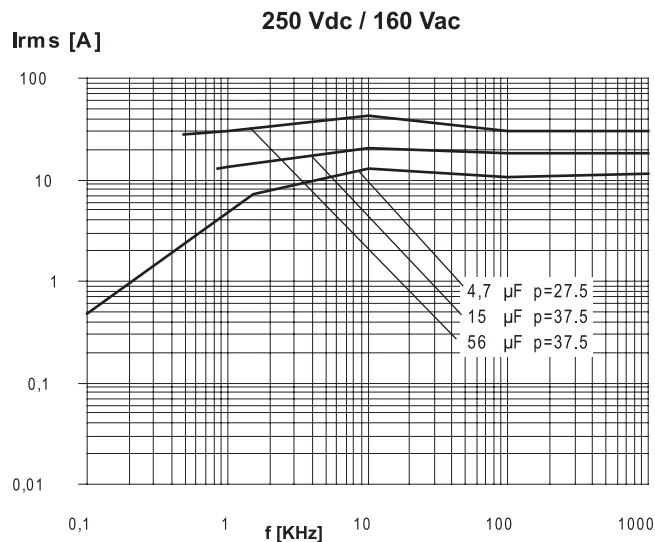
Capacitance change $|\Delta C/C|$: ≤ 1%

MAX. VOLTAGE (Vr.m.s.) VERSUS FREQUENCY (sinusoidal wave-form / $T_h = 80^\circ\text{C}$)



Note: *Th= max. ambient temperature surrounding the capacitor or hottest contact point (i.e. tracks), whichever is higher, in the worst operation conditions in $^\circ\text{C}$

MAX. CURRENT (I_{r.m.s.}) VERSUS FREQUENCY (sinusoidal wave-form / T_h = 80°C)



Note: *T_h= max. ambient temperature surrounding the capacitor or hottest contact point (i.e. tracks), whichever is higher, in the worst operation conditions in °C