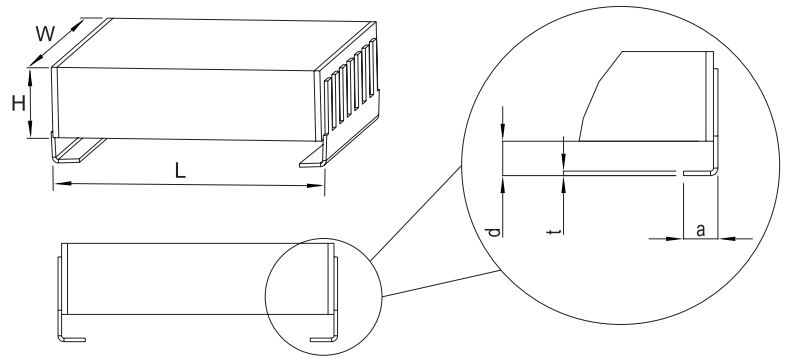
JSN
MKT Series

METALLIZED POLYESTER FILM CAPACITOR

PRODUCT CODE: **JSN**

Market Applications

JSN series (Jumbo Stacked Naked) film capacitor has been designed especially for Automotive Power Electronics applications that require high reliability long life and severe working conditions (high operating temperature and very stressable mechanical and vibration requirements).
Some of the applications for both the 14V and 42V Powernet are the following:
Integrated Starter Alternator, Camless, Common rail, Electric Power steering, climate control, DC/DC and AC/ DC converters.
JSN series could be used for the power electronics in electric/hybrid and fuel cell cars.
Moreover JSN series is suitable to be used for low power DC/DC and AC/DC converters for Telecom and Industrial applications like radio link, telecom central office, small welding machines ecc.



d (±1.0)	2.0mm
a (±1.0)	2.0mm
t (±0.1)	0.2mm

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	N											

Digit 1 to 3	Series code.
Digit 4	d.c. rated voltage E = 100V; G = 160V; I = 250V
Digit 5	Size code (see table 1):
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 optain the rated Capacitance in pF.
Digit 10	Capacitance Tolerance: K=±10%; M=±20%;
Digit 11	Dielectric: B=PET H.T.
Digit 12	Version (see table1): 6 and 8 = see drawing A to P = special
Digit 13	Packaging M=bulk; L=taped (tray)
Digit 14	Internal use

MOUNTING & SOLDERING

- JSN series is to be mounted with reflow process (see thermal profile) or gluing.

CAUTION

Hand assembly
In case of hand assembly with soldering iron the following reccomandation must be taken :

- Maximum temperature on the soldering iron: 250°C for (max time 5s)

Avoid contact between the soldering iron and the body of the capacitor
If PC Boards are assembled by hand, care must be taken to avoid mechanical damage. We recommend:
- using tweeezers, the components should be gripped across the two terminals
- the usage of a pen under vacuum on the capacitor is recommended

Table 1

Terminals Code digit 12	Size code (Digit 5)		
	60.80 (K)	60.115 (J)	60.160 (L)
$W_{terminal}$ = 20,0 mm	**6**	**6**	*
$W_{terminal}$ = 30,0 mm			*
$W_{terminal}$ = 40,0 mm			**8**

*also available upon special request.

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Rated Cap.	Size code	100Vdc / 63Vac					Part number
		W Max	H Max	L Max	Max dv/dt (V/µs)	Max K_0 (V^2/µs)	
10 µF	60.80	21.5	7.0	17.0	27.0	5.4 E3	JSNEK5100-B6--
15 µF	60.115	30.0	8.0	17.0	27.0	5.4 E3	JSNEJ5150-B6--
22 µF	60.80	21.5	14.0	17.0	27.0	5.4 E3	JSNEK5220-B6--
33 µF	60.115	30.0	15.0	17.0	27.0	5.4 E3	JSNEJ5330-B6--
47 µF	60.160	42.9	15.0	17.0	27.0	5.4 E3	JSNEL5470-B8--
68 µF	60.160	42.9	21.0	17.0	27.0	5.4 E3	JSNEL5680-B8--

Tolerance: K (±10%); M (±20%)
Packaging
Internal use

Rated Cap.	Size code	160Vdc / 90Vac					Part number
		W Max	H Max	L Max	Max dv/dt (V/µs)	Max K_0 (V^2/µs)	
10 µF	60.80	21.5	15.0	17.0	35.0	11.2 E3	JSNGK5100-B6--
15 µF	60.115	30.0	15.0	17.0	35.0	11.2 E3	JSNGJ5150-B6--
22 µF	60.115	30.0	23.0	17.0	35.0	11.2 E3	JSNGJ5220-B6--
33 µF	60.160	42.9	23.0	17.0	35.0	11.2 E3	JSNGL5330-B8--

Tolerance: K (±10%); M (±20%)
Packaging
Internal use

Rated Cap.	Size code	250Vdc / 160Vac					Part number
		W Max	H Max	L Max	Max dv/dt (V/µs)	Max K_0 (V^2/µs)	
10 µF	60.115	30.0	20.0	17.0	40.0	20.0 E3	JSNIJ5100-B6--
15 µF	60.160	42.9	20.0	17.0	40.0	20.0 E3	JSNIL5150-B8--

Tolerance: K (±10%); M (±20%)
Packaging
Internal use

Customized versions (voltage,size,capacitance) available on request

All dimensions are in mm

METALLIZED POLYESTER FILM CAPACITOR

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GENERAL TECHNICAL DATA

Dielectric: Metallized polyester film (PET H.T.).

Construction: Stacked Naked capacitor with special terminals.

Terminals: Copper tinned lead frame. Customized terminals aravailable upon request.

Marking: Manufacturer's logo, capacitance, D.C. rated voltage.

Operating temperature range -55°C up to 125°C

Climatic category: 55/125/56 IEC 60068-1

Storage conditions: Temperature range: 0°C up to +40°C
Humidity: 60% R.H. max.

ELECTRICAL CHARACTERISTICS

Rated voltage (V_R): 100Vdc, 160Vdc, 250Vdc,

Category Voltage (V_c): V_C=V_R up to 105°C.
For temperatures between +105 and +125°C a decreasing factor of 1.25% per degree °C has to be applied.

Rated temperature(T_R): +105°C.

Capacitance range: 10µF to 68µF.

Capacitance values: E6 series (IEC 60063 Norm).

Capacitance tolerance (measured at 1kHz):
±10% (K); ±20% (M)
(Other tolerances are available upon request)

Dissipation Factor (tgδ): ≤ 0.01 at 1kHz – T=25°C±5°C

Insulation Resistance:

Test conditions

Temperature	+25°C±5°C
Voltage charge time:	1 min
Voltage charge:	100Vdc

Performance

≥ 250s for V_R = 100Vdc
≥ 400s for V_R = 160Vdc
≥ 800s for V_R = 250Vdc

Test voltage between terminations:
1.4x V_R applied for 2s at +25°C±5

TEST METHOD AND PERFORMANCE

Damp heat, steady state:

Test conditions

Temperature:	+40°C±2°C
Relative humidity (RH):	93% ±2%
Test duration:	56 days

Performance

Capacitance change |ΔC/C|:	≤ 7%
DF change (Δtgδ):	≥ 50x10^{-4} at 1kHz
Insulation resistance:	≥ 50% of limit value

Endurance:

Test conditions

Temperature:	125°C ±2°C
Test duration:	2000 h
Voltage applied:	1.25xV_C

Performance

Capacitance change |ΔC/C|:	≤ 5%
DF change (Δtgδ):	≤ 50x10^{-4} at 1kHz
Insulation resistance:	≥ 50% of limit value

Rapid change of temperature:

Test conditions

Temperature:	1h at -55°C; 1h at +125°C
Number of cycles:	1000

Performance

Capacitance change |ΔC/C|:	≤ 3%
DF change (Δtgδ):	≤ 50x10^{-4} at 1kHz
Insulation resistance:	≥ limit value

No mechanical damage.

Long term stability (after two years**):**

Storage: standard environmental conditions.

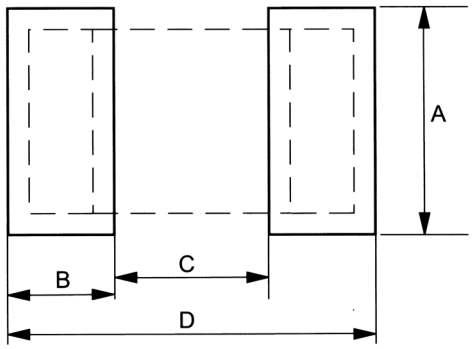
Performance

Capacitance change |ΔC/C|: ≤ 3%

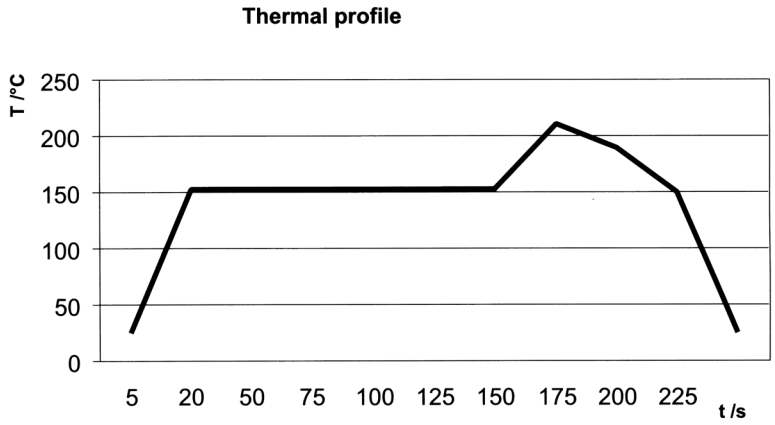
Reliability (reference MIL HDB 217)**:**

Failure rate:	≤ 1 FIT (40°C – 0.5x V_R)
Failure criteria:	Typical open circuit
Capacitance change:	|ΔC/C|>10%
DF change:	(Δtgδ.>2xinitial limit)
Insulation resistance:	> 0.005 x initial value

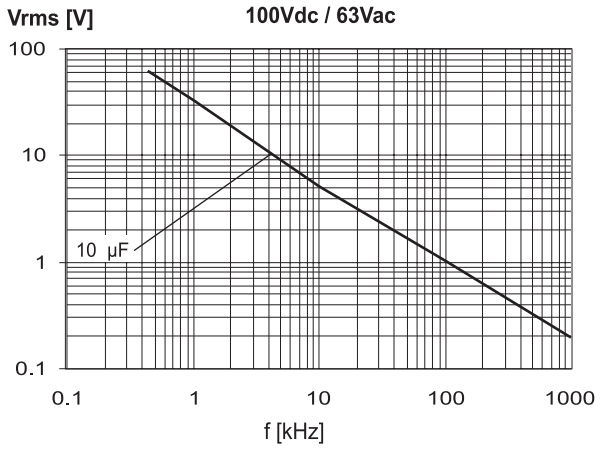
Size code	A	B	C	D
60.80	21.9	5.0	10.2	20.4
60.115	30.4	5.0	10.2	20.4
60.160	43.3	5.0	10.2	20.4

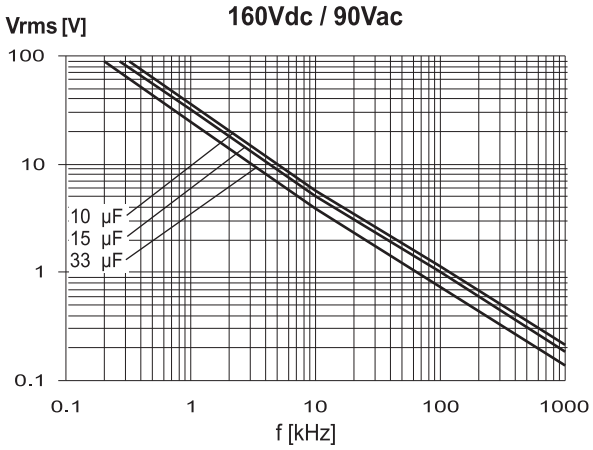


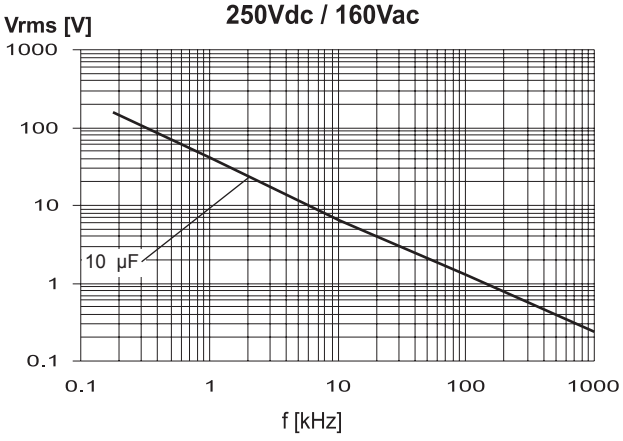
Typical Thermal profile for reflow process:



MAX. VOLTAGE (Vr.m.s.) VERSUS FREQUENCY (sinusoidal wave-form / $T_h \leq 40°C$)







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

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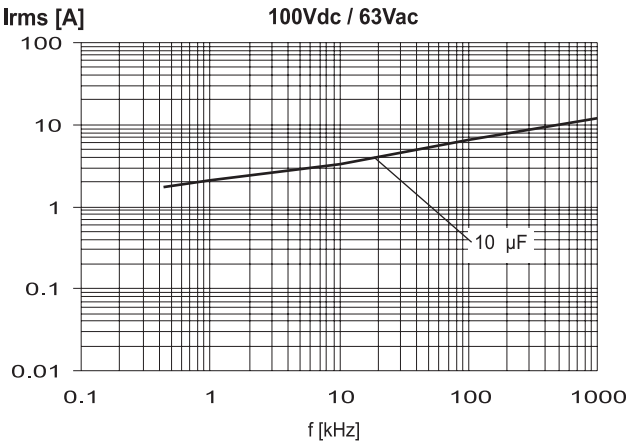
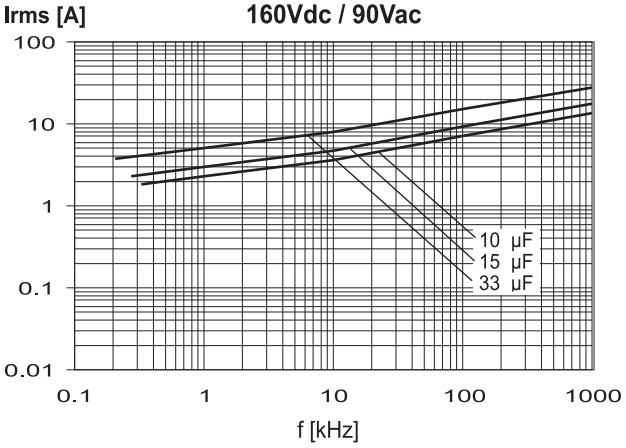
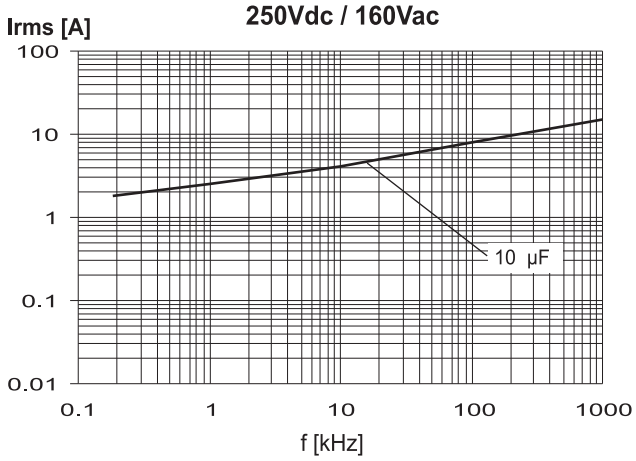
MAX. CURRENT (Ir.m.s.) VERSUS FREQUENCY (sinusoidal wave-form / $T_h \leq 40°C$)







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