Wound MFP pulse capacitors with highest possible contact reliability

Construction

- Dielectric: polypropylene
- Film metallized on one side and metal foils internally connected in series
- Plastic case (UL 94 V-0)
- Epoxy resin sealing

Features

- Very high pulse strength
- Highest possible contact reliability
- Self-healing properties
- High current

Typical applications

- Pulse circuits with steep voltage rise rates
- High-frequency ac loads
- Snubbering of power semiconductors

Terminals

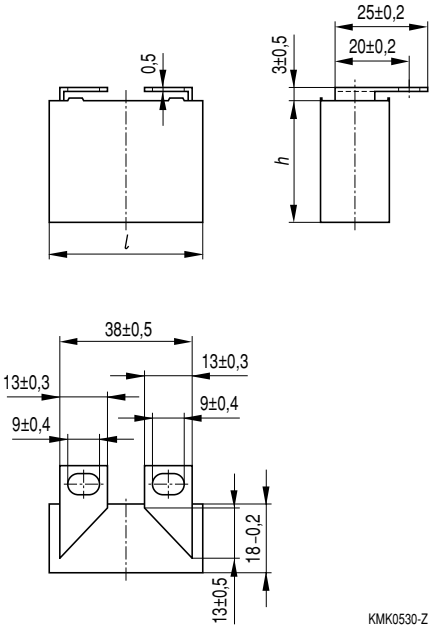
- Strap terminals, Cu, tinned

Marking

Manufacturer's logo,
lot number
style (MFP),
rated capacitance (coded),
capacitance tolerance (code letter),
rated dc voltage,
date of manufacture (coded)

Delivery mode

Bulk (untaped)



Dimensions in mm

Ordering codes and packing units, lead spacing 37,5 mm

V_R (V_{rms} f < 60 kHz)	C_R	Maximum dimensions $b \times h \times l$ (mm)	Ordering code[1)]	Packing units (pcs) Untaped
1000 Vdc (400 Vac)	0,47 µF	20,0 × 39,5 × 41,5	B32686-S474-+502	24
1250 Vdc (450 Vac)	0,22 µF	18,0 × 32,5 × 41,5	B32686-S7224-+501	32
	0,33 µF	20,0 × 39,5 × 41,5	B32686-S7334-+504	24
1600 Vdc (450 Vac)	0,10 µF	18,0 × 32,5 × 41,5	B32686-S1104-+503	32
	0,15 µF	20,0 × 39,5 × 41,5	B32686-S1154-+501	24
2000 Vdc (500 Vac)	6,8 nF	18,0 × 32,5 × 41,5	B32686-S2682-+500	32
	0,10 µF	20,0 × 39,5 × 41,5	B32686-S2104-+501	24

Capacitance tolerance: ±20 % ≙ M, ±10 % ≙ K, ±5 % ≙ J, ±5 %

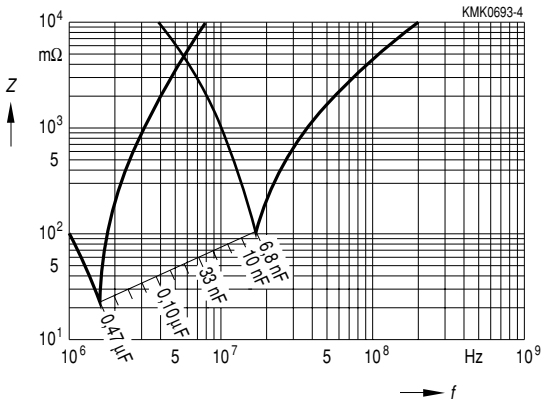
Technical data

Climatic category in accordance with IEC 60068-1	55/100/56
Lower category temperature T_{min} Upper category temperature T_{max}	– 55 °C + 100 °C
Damp heat test	56 days/40 °C/93 % relative humidity
Limit values after damp heat test	Capacitance change $\lvert\Delta C/C\rvert$ ≤ 2 % Dissipation factor change $\Delta \tan \delta$ ≤ 1,0 · 10^{-3} (at 10 kHz) Insulation resistance R_{is} ≥ 50 % of minimum or time constant $\tau = C_R \cdot R_{is}$ as-delivered values
Reliability:	
Reference conditions Failure rate	0,5 · V_R; 40 °C 1 · 10^{-9}/h = 1 fit For a conversion table for other operating conditions and temperatures, refer to chapter “Quality assurance”, page 327.
Service life	200 000 h
Failure criteria: Total failure Failure due to variation of parameters	 Short circuit or open circuit Capacitance change $\lvert\Delta C/C\rvert$ > 10 % Dissipation factor tan δ 4 · upper limit values Insulation resistance R_{is} < 1500 MΩ ($C_R \le 0{,}33\,\mu F$) or time constant $\tau = C_R \cdot R_{is}$ < 500 s ($C_R > 0{,}33\,\mu F$)
DC test voltage	2,0 · V_R, 2 s
Category voltage V_C Operation with dc voltage or ac voltage V_{rms} up to 1 kHz	$T \le$ 85 °C: $V_C = 1{,}0 \cdot V_R$ or 1,0 · V_{rms}
Dissipation factor tan δ (in 10^{-3}) at 20 °C (upper limit values)	

	$C_R \le 0{,}1\,\mu F$	$C_R > 0{,}1\,\mu F$
at 1 kHz	–	0,4
10 kHz	0,4	0,5
100 kHz	1,0	–

Insulation resistance R_{is} or time constant $\tau = C_R \cdot R_{is}$ at 20 °C, rel. humidity ≤ 65 % (minimum as-delivered values)	$C_R \le 0{,}33\,\mu F$	$C_R > 0{,}33\,\mu F$
	100 GΩ	30 000 s

Impedance Z versus frequency f (typical values)



Pulse handling capability

Maximum permissible voltage change per unit of time for non-sinusoidal voltages (pulse, sawtooth)

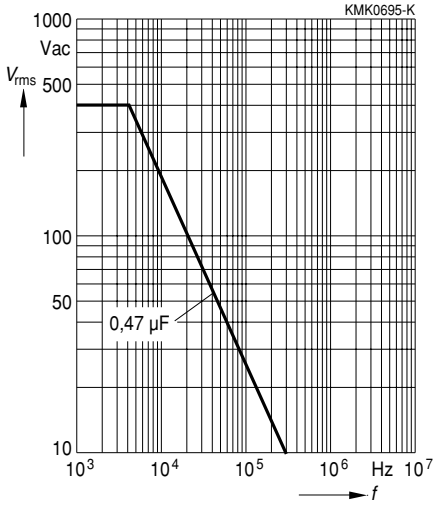
V_R	Max. rate of voltage rise V_{pp}/τ in V/µs (for $V_{pp} = V_R$)
1000 Vdc	2000
1250 Vdc	2800
1600 Vdc	3500
2000 Vdc	4500

For $V_{pp} < V_R$, the permissible voltage rise rate value V_{pp}/τ may be multiplied by the factor V_R/V_{pp}. Also refer to the calculation example in chapter “General technical information”, page 302.

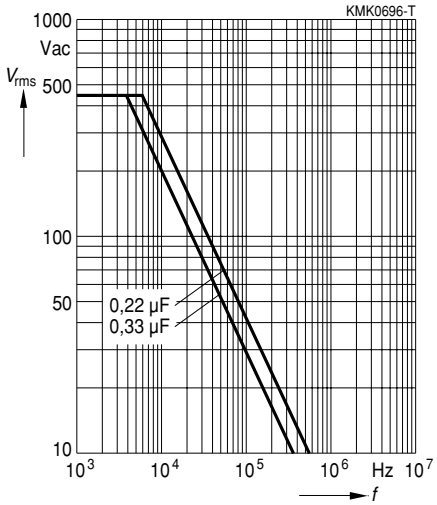
V_R	Pulse characteristic k_0 in $V^2/\mu s$ (for $V_{pp} \leq V_R$)
1000 Vdc	4 000 000
1250 Vdc	7 000 000
1600 Vdc	11 000 000
2000 Vdc	18 000 000

Permissible ac voltage V_{rms} versus frequency f

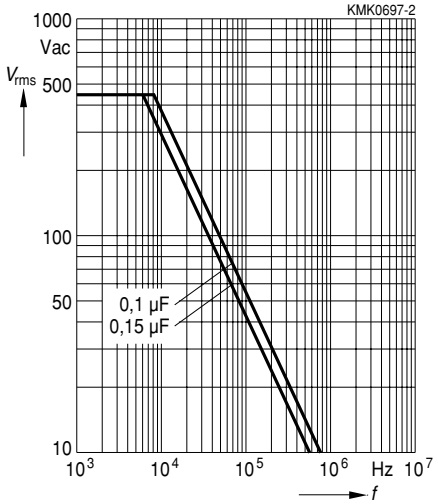
1000 Vdc/ 400 Vac



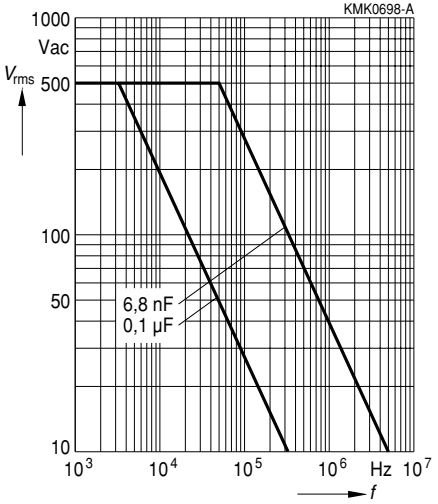
1250 Vdc/ 450 Vac



1600 Vdc/ 450 Vac



2000 Vdc/ 500 Vac



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