

Metallized Polypropylene Capacitors for AC / Impulsional Applications

Type KPS ... dv

Applications

- Protection and commutation
- Electronic Power
- Impulsional fields needing intensive du/dt
- High Current
- Switching power supplies
- Tuned Circuits

Main Characteristics

- Dry-film technology
- Nominal Voltage: 800 VDC to 1300 VDC
- Climatic category: 40/085/56
- Low ESR, ESL



Design

- Metallized Polypropylene film and foil
- Wrapped in plastic sleeve
- Terminals threaded inserts M6 or M8
- Epoxy resin end-seal (UL-V0)

1.0 Rated Values and Operational Data

2.0 Capacitance Range

DC	Nominal Voltage U_N [V]	$\leq 70^\circ\text{C}$	800	1000	1300
	Peak Repetitive Voltage U_{cr} [\hat{V}]	$\leq 70^\circ\text{C}$	1200	1600	2000
	Allowable Surges U_s [\hat{V}]	$\leq 70^\circ\text{C}$ 10s/day	1500	2000	2500
	Test Voltage U_T	10s / 23°C	1700	2200	2700
AC	Nominal Voltage U_N	$\leq 70^\circ\text{C}$	400	450	500
	Maximum transitory Voltage U_{max}	70°C	480	540	600

$C_n \Rightarrow$	470 nF	500 nF	1.0 μF	4.0 μF	6.0 μF
800 VDC					
1000 VDC					
1300 VDC					

3.0 Characteristics

			Min	Typ.	Max
Tangent delta dielectric	$\text{tg } \delta_o$	1kHz-100kHz		2×10^{-4}	
Insulation Resistance	R_i [mOhms]	500 V, 1min, 23°C , $C \leq 0.33 \mu\text{F}$	1.0×10^5		
Time Constant $C > 0.33 \text{ nF}$	$R_i C$ [s]	500 V, 1 min, 23°C	33000		
Temperature Coefficient	α_c	ppm / $^\circ\text{C}$		-200 ± 125	
Long term stability	$\Delta C / C$ [%]	23°C , 50% HR			± 0.5

Leclanché Capacitors for Critical Applications and Extreme Environments.

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4.0 Usage Limits

4.1 Limits of standard current

The upper limit of the standard current is determined by the following:

$$I_{rms} = \sqrt{\frac{1}{T} \int_0^T i^2(t) dt} \text{ et } I_{rms} \leq I_{eff \max}(f)$$

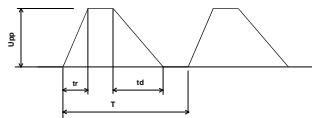
With $I_{eff \max}(f) = I_{eff \max}(10\text{kHz}) \times \left(1 + \frac{f-10}{50}\right)$ for $10 \text{ kHz} < f \leq 30 \text{ kHz}$

and $I_{eff \max}(f) = 1.4 \times I_{eff \max}(10\text{kHz})$ for $f > 30\text{kHz}$

Conditions: $I_{eff \max} \leq 60 \text{ A}_{eff}$ (vis M6)

$\leq 100 \text{ A}_{eff}$ (vis M8), $U(f) \leq U_N(50\text{Hz})$, internal heat $\Delta\theta \leq 15 \text{ }^\circ\text{C}$, $T_{amb} \leq 60^\circ\text{C}$

4.2 Impulse Usage



where t_r , t_d indicate, respectively, the charge and discharge times, and T indicates the cycle time

with $\left(\frac{du}{dt}\right)_N$ defining U_N and $T_{amb} \leq 70^\circ\text{C}$ (see data sheets)

Peak current is limited to $\hat{I}_{cr} [A] = C_N [\mu F] \times \left(\frac{du}{dt}\right)_N$

and

the maximum rise in voltage variation $\left(\frac{du}{dt}\right)_{max} = \frac{U_N}{U_{pp}} \times \left(\frac{du}{dt}\right)_N$

Maximum recurrence of frequency is determined by:

$f_p \text{ max [p.p.s]} = \frac{1}{T} = \frac{I_{eff \max}^2(f)}{I_{1cr}^2 \times t_r + I_{2cr}^2 \times t_s}$ avec $\hat{I}_{cr1} [A] = C_N [\mu F] \times \frac{U_{pp}}{t_r}$

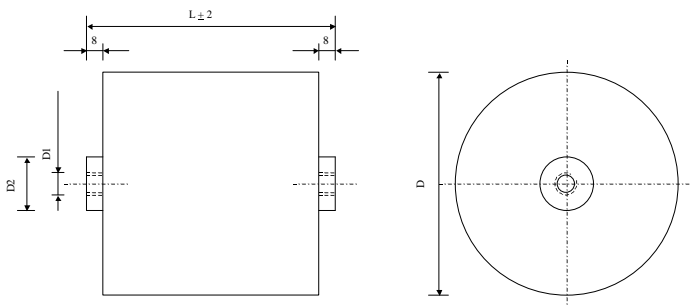
and

$\hat{I}_{cr2} [A] = C_N [\mu F] \times \frac{U_{pp}}{t_d}$

given that $\frac{U_{pp}}{t_r}; \frac{U_{pp}}{t_d} \leq \left(\frac{du}{dt}\right)_{max}$

5.0 Dimensions, shape:

Axial capacitors, with threaded inserts (screws upon request).



D max.	D1	D2	Max. Torque
≤ 60 mm	M6 x 8	15 mm	4.5 Nm
> 60 mm	M8 x 8	20 mm	10 Nm

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KPS ... dv 800 VDC

B3aF2	Type	Cn	Dimensions		dU / dt max	\hat{I} s	Rs	Irms
Pos.		[μ F]	D [mm]	L [mm]	[V / μ s]	[A]	[m Ω]	[A]
1	KPS 80-1.0 dv K	1.0	39	64	350	350	1.0	21
2	KPS 80-2.0 dv K	2.0	55	64	350	700	0.6	36
3	KPS 80-3.0 dv K	3.0	67	64	350	1'050	0.5	50
4	KPS 80-4.0 dv K	4.0	78	64	350	1'400	0.5	64
5	KPS 80-6.0 dv K	6.0	95	64	350	2'100	0.4	91

KPS ... dv/dav 1000 VDC.

B3aF2	Type	Cn	Dimension		dU / dt max	\hat{I} s	Rs	Irms
Pos.		[μ F]	D [mm]	L [mm]	[V / μ s]	[A]	(m Ω)	[A]
1	KPS 100-050 dv K	0.5	43	51.5	650	325	0.7	14
2	KPS 100-1.0 dv K	1.0	47	64	450	450	0.8	23
3	KPS 100-1.0 dav K	1.0	59	51.5	650	650	0.5	25
4	KPS 100-1.5 dv K	1.5	57	64	450	675	0.6	32
5	KPS 100-2.0 dv K	2.0	64	64	450	900	0.6	40
6	KPS 100-2.0 dav K	2.0	54	76.5	320	640	0.8	37
5	KPS 100-3.0 dv K	3.0	79	64	450	1'350	0.5	56
6	KPS 100-3.0 dav K	3.0	66	76.5	320	960	0.6	52
7	KPS 100-4.0 dv K	4.0	91	64	450	1'800	0.4	72
8	KPS 100-4.0 dav K	4.0	77	76.5	320	1'280	0.5	65

**Other
Values
Available
On Request.**

KPS ... dv/dav 1300 VDC

B3aF2	Type	Cn	Dimension		dU / dt max	\hat{I} s	Rs	Irms
Pos.		[μ F]	D [mm]	L [mm]	[V / μ s]	[A]	(m Ω)	[A]
1	KPS 130-047 dv K	0.470	39	64	500	235	1.2	14
2	KPS 130-050 dv K	0.500	40	64	500	250	1.1	15
3	KPS 130-1.0 dv K	1.0	56	64	500	500	0.7	24
4	KPS 130-1.0 dav K	1.0	47	76.5	400	400	1.1	25
4	KPS 130-1.5 dv K	1.5	58	76.5	400	600	0.8	35
5	KPS 130-2.0 dv K	2.0	67	76.5	400	800	0.7	44
6	KPS 130-3.0 dv K	3.0	81	76.5	400	1'200	0.6	61
7	KPS 130-4.0 dv K	4.0	94	76.5	400	1'600	0.5	78

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