



HVR *NEW - In Progress*

- MKP • box with radial terminals • high DC voltage
- high frequency • high pulse applications



Main applications

High DC voltage, voltage multipliers, medical equipment, high frequency power supply

Dielectric

Polypropylene (not impregnated)

Electrodes

vacuum deposited metal layers

Coating

Solvent resistant plastic case with resin sealing (UL 94 V-0). Flame retardant execution

Construction

Extended metallized film with internal series connection (refer to General Technical Information)

Terminals

Tinned copper wire (lead free)

Reference standard

IEC 60384/16, IEC 60068, RoHS and REACH compliant

Climatic category

40/085/56 (IEC 60068/1)

Operating temperature range (case)

-40...+85°C (+100°C observing voltage and current de-rating)

Nominal Capacitance (Cn) µF

10nF to 75nF. Refer to article table

Capacitance tolerance (at 1kHz)

±10% (code=K). Other tolerances upon request

Capacitance temperature coefficient

Refer to General Technical Information

Long term stability (at 1kHz)

Capacitance variation ≤ ±1% after a period of 2 years at standard environmental conditions

Rated voltage (Ur) (Vdc) at 85°C

4000, 8000, 12500 Vdc

Permissible AC voltage at 60Hz (Vac)

1000 Vac

Category voltage (Uc)

Uc=Ur at +85°C

Temperature derated voltage

For T > +85°C, Ur must be decreased 1,25% for every °C exceeding +85°C

Self inductance

≤ 1nH/mm of capacitor pitch

Maximum pulse rise time V/µs

Refer to article table. The pulse characteristic Ko depends on the voltage waveform. In any case the value given in the article table must not be exceeded

Dissipation factor (DF), max.

tgδ x 10⁻⁴, measured at 25 ±5°C

Freq.	All Cn
1kHz	6
10kHz	12

Insulation resistance (R_{INS})

Measured between terminals, at 25±°C, after 1 minute of electrification at 500Vdc
≥ 100 GΩ for all Cn

Test voltage between terminals (Ut)

1,5xUr (DC) applied for 2s, at 25±5°C (1 minute for type test)

Test voltage between terminals and case

3kV 50Hz, for 60 seconds at 25±5°C

Damp heat test (steady state)

List of admitted high humidity and temperature tests (please refer to paragraph C10 of the GTI)

Test ID	Reference	Permissible
a	Damp heat test (steady state) not biased - IEC60068	YES
b	Damp heat test (steady state) biased - AEC Q-200 cockpit	NO
c	Robustness under high humidity, Grade II - IEC 60384-17:2019	NO
d	High robustness under high humidity, Grade III - IEC 60384-17:2019	NO
e	Damp heat test (steady state) biased - 70/70/1000	NO
f	Humidity load test, Test Cy, Severity II - IEC 60068-2-67	NO
g	Humidity load test, Test Cy, Severity III - IEC 60068-2-67 and 85/85/1000 Level 1 - AEC Q-200	NO

Performance:

Capacitance change ≤ ±5%

DF change ≤ 2 x initial limit at 10kHz

R_{INS} ≥ 50% of initial limit value

Endurance test

Test conditions:

Temperature= +85±2°C

Test duration≥ 1000h

Voltage applied=1,25xUr(DC)

Performance:

Capacitance change ≤ ±5%

DF change ≤ 2 x initial limit at 10kHz

R_{INS} ≥ 50% of initial limit value

Resistance to soldering heat test

Test conditions:

Solder bath temperature= +260±5°C

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

Performance:

Capacitance change ≤ ±1%

DF change ≤ 2 x initial limit at 10kHz

R_{INS} ≥ 50% of initial limit value

Reliability (MIL HDB 217)

Application conditions:

Applied voltage= 0,5 x Ur(DC)

Temperature= +40±2°C

Failure rate: (1FIT=1x10⁻⁹ failures/components x hours)

≤ 3FIT

Failure criteria (DIN44122):

Capacitance change > ±10%

DF change > 2 x initial value

R_{INS} < 0,005 x initial limit value

Short or open circuit

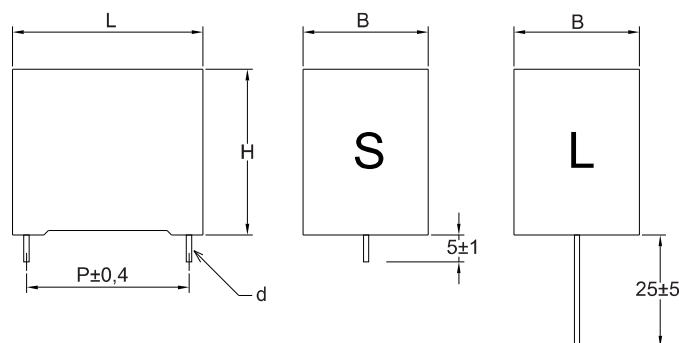


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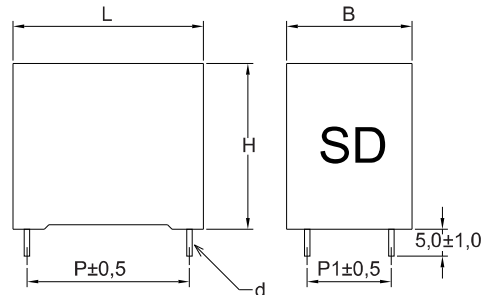
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2 terminals execution



4 terminals execution



HVR article table

(different values available upon request)

Voltage at +85°C		Cn	Dimensions (mm)						du/dt	K ₀	ICEL CODE ⁽¹⁾
U _r (Vdc)	U _{rms} (Vac) ₍₂₎	μF	B	H	L	P	P1	d	V/μs	V ² /μs	-
4000	1000	0,012	11	20	32	27,5	-	0,8	4000	32000000	HVR2402120KH#
4000	1000	0,015	11	20	32	27,5	-	0,8	4000	32000000	HVR2402150KH#
4000	1000	0,02	13	22	32	27,5	-	0,8	4000	32000000	HVR2402200KH#
4000	1000	0,025	15	24,5	32	27,5	-	0,8	4000	32000000	HVR2402250KH#
4000	1000	0,03	15	24,5	32	27,5	-	1	4000	32000000	HVR2402300KH#
4000	1000	0,04	18	33	32	27,5	-	1	4000	32000000	HVR2402400KH#
4000	1000	0,05	18	33	32	27,5	-	1	4000	32000000	HVR2402500KH#
4000	1000	0,06	22	37	32	27,5	-	1	4000	32000000	HVR2402600KH#
4000	1000	0,075	22	37	32	27,5	-	1	4000	32000000	HVR2402750KH#
8000	1000	0,01	17	28	42,5	37,5	-	1	5750	92000000	HVR2802100KJ#
8000	1000	0,015	17	28	42,5	37,5	-	1	5750	92000000	HVR2802150KJ#
8000	1000	0,02	22	30	42,5	37,5	-	1,2	5750	92000000	HVR2802200KJ#
8000	1000	0,025	22	33,5	42,5	37,5	-	1,2	5750	92000000	HVR2802250KJ#
8000	1000	0,03	20	40	41,5	37,5	-	1,2	5750	92000000	HVR2802300KJ#
8000	1000	0,04	24	44	41,5	37,5	-	1,2	5750	92000000	HVR2802400KJ#
8000	1000	0,05	30	45	42,5	37,5	-	1,2	5750	92000000	HVR2802500KJ#
8000	1000	0,06	35	50	42	37,5	-	1,2	5750	92000000	HVR2802600KJ#
8000	1000	0,06	35	50	42	37,5	20,3	1,2	5750	92000000	HVR2802600KJSD
12500	1000	0,01	30	45	57,5	52,5	-	1,2	9500	237500000	HVR3122100KR#
12500	1000	0,01	30	45	57,5	52,5	20,3	1,2	9500	237500000	HVR3122100KRSD
12500	1000	0,015	30	45	57,5	52,5	-	1,2	9500	237500000	HVR3122150KR#
12500	1000	0,015	30	45	57,5	52,5	20,3	1,2	9500	237500000	HVR3122150KRSD
12500	1000	0,02	30	45	57,5	52,5	-	1,2	9500	237500000	HVR3122200KR#
12500	1000	0,02	30	45	57,5	52,5	20,3	1,2	9500	237500000	HVR3122200KRSD
12500	1000	0,025	35	50	57,5	52,5	-	1,2	9500	237500000	HVR3122250KR#
12500	1000	0,025	35	50	57,5	52,5	20,3	1,2	9500	237500000	HVR3122250KRSD
12500	1000	0,03	38	57,5	57,5	52,5	20,3	1,2	9500	237500000	HVR3122300KRSD
12500	1000	0,035	38	57,5	57,5	52,5	20,3	1,2	9500	237500000	HVR3122350KRSD

⁽¹⁾ Standard tolerance ±10% (code=K). Other tolerances upon request, to be evaluated. Change the # symbol with S for 5mm lead length and with L for 30 mm lead length

⁽²⁾ Not suitable for across the line application



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Permissible AC voltage versus frequency (sinusoidal waveform) for $\Delta T = +10^\circ\text{C}$

