



HEV

HYBRID ELECTRIC VEHICLES

CAPACITOR PRODUCT GUIDE



HEV / EV CAPACITORS

GENERAL DESCRIPTION



CHARACTERISTICS

- Voltage: 410VDC to 900Vdc (standard) / 300VDC to 1400Vdc (custom)
- Capacitance Value: 300 μ F - 900 μ F (standard) / 100 μ F - 1.5mF (custom)
- Working Temperature: -40°C to 105°C hot spot temperature; up to 115°C hot spot for low duration

HOW TO ORDER

FHC	1	6	I	2637	--
Series	Case Size	Dielectric	Voltage	Capacitance	Mounting
FHC: HEV/EV DC-LINK	1 = 170mm x 50mm Single Terminal 2 = 237mm x 72mm Three Terminal	6 = PP (polypropylene)	I = 410/450 Vdc J = 700 Vdc C = 900 Vdc	EIA Code	-- = front facing mounting brackets JH = side facing mounting brackets

DC FILTERING

The series uses a dry-wound (non-oil-filled) segmented metallized polypropylene, which features the controlled self-healing process, specially treated to have a very high dielectric strength in operating conditions up to 115°C. For more information on how segmented metallized films and controlled self-healing works see a complete presentation.

PACKAGING

FHC Series capacitors are enclosed in an unpainted, rectangular, resin filled plastic case. Aluminium cases are available upon request.

CONSTRUCTION

The internal construction of the FHC Series is based on several elementary wound bobbins soldered by reinforced solder point on specific bus bar offering, the benefits of which include: flexibility in internal design, current capability and repartition, reduction of thermal expansion constraints, high winding productivity, modularity in three dimensions.

APPLICATIONS IN ELECTRIC VEHICLES (EV)

The FHC series capacitors are specifically designed to prevent ripple currents from reaching back to the power source, and to smooth out DC bus voltage variations. Capacitors are also used to protect semiconductors - originally thyristors, but now IGBTs.

LIFETIME EXPECTANCY

One unique feature of the segmented metallized technology is how the capacitor acts at the end of its lifetime. Unlike electrolytic capacitors, which are a short circuit failure mode, film capacitors only experience a parametric loss of capacitance with no catastrophic failure mode. The capacitor gradually loses capacitance over its lifetime and eventually becomes an open circuit.

Lifetime, therefore, as it is defined here, is a function of several elements:

- Decrease in capacitance limit 2-5% or to meet customer needs
- Average Applied Voltage (expressed as a ratio vs nominal rated voltage)
- Average hot spot temperature
- By changing any of these parameters we can change the defined "lifetime" of the capacitor. The capacitor will continue to function even beyond the pre-established limit for capacitance decrease.

STANDARDS

IEC 61071-1, IEC 61071-2: Power electronic capacitors
AECQ 200: with specific deviation for power capacitors

The FHC1 & FHC2 range capacitor have been specially design to be use in conjunction with Hybrid & Electric vehicles IGBT modules.

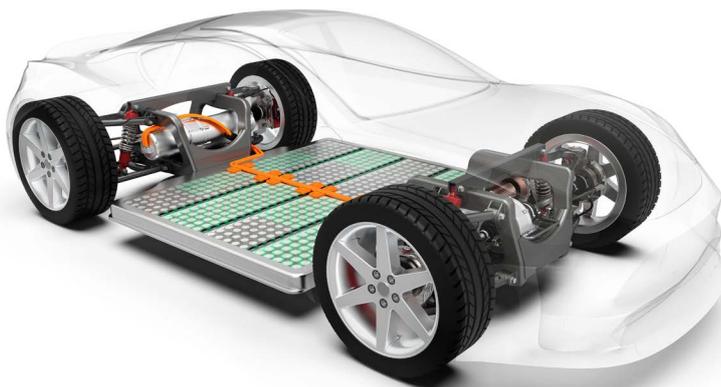
FHC1



RATINGS AND PART NUMBERS

Part Number	Capacitance (μF)	UN (Vdc)	Imax (A)	L Parasitic Inductance nH (**)	Rs (mΩ)	Rth Hot Spot/ Bottom (°C/W)	Tanδ 100Hz	Dimension LxWxH (mm)	Lifetime Expectancy Curve
FHC16I0307Kxx	300	450	120	18	0.69	4.4	5 x 10 ⁻⁴	140 x 72 x 50	A
FHC16I0517Kxx	510	410	150	18	0.51	3.7	5 x 10 ⁻⁴	140 x 72 x 50	B
FHC16J0267Kxx	260	700	80	18	1.57	4	5 x 10 ⁻⁴	140 x 72 x 50	C
FHC16C0147Kxx	140	900	70	18	2.09	4	5 x 10 ⁻⁴	140 x 72 x 50	D

FHC2



RATINGS AND PART NUMBERS

Part Number	Capacitance (μF)	UN (Vdc)	Imax (A)	L Parasitic Inductance nH (**)	Rs (mΩ)	Rth Hot Spot/ Bottom (°C/W)	Tanδ 100Hz	Dimension LxWxH (mm)	Lifetime Expectancy Curve
FHC26I0507Kxx	500	450	170	15	0.45	2.6	5 x 10 ⁻⁴	237 X 72 X 50	A
FHC26I0707Kxx	700	450	190	15	0.38	2.4	5 x 10 ⁻⁴	237 X 72 X 50	A
FHC26I0907Kxx	900	410	190	15	0.33	2.1	5 x 10 ⁻⁴	237 X 72 X 50	B
FHC26J0507Kxx	500	700	160	15	0.87	2.1	5 x 10 ⁻⁴	237 X 72 X 50	C
FHC26C0267Kxx	260	900	140	18	1.17	2.1	5 x 10 ⁻⁴	237 X 72 X 50	D

(*) Imax Max hot spot 105°C

(**) Measurement at 1MHz

Nb: Upon request FHC are available equipped with thermocouple for thermal measurement

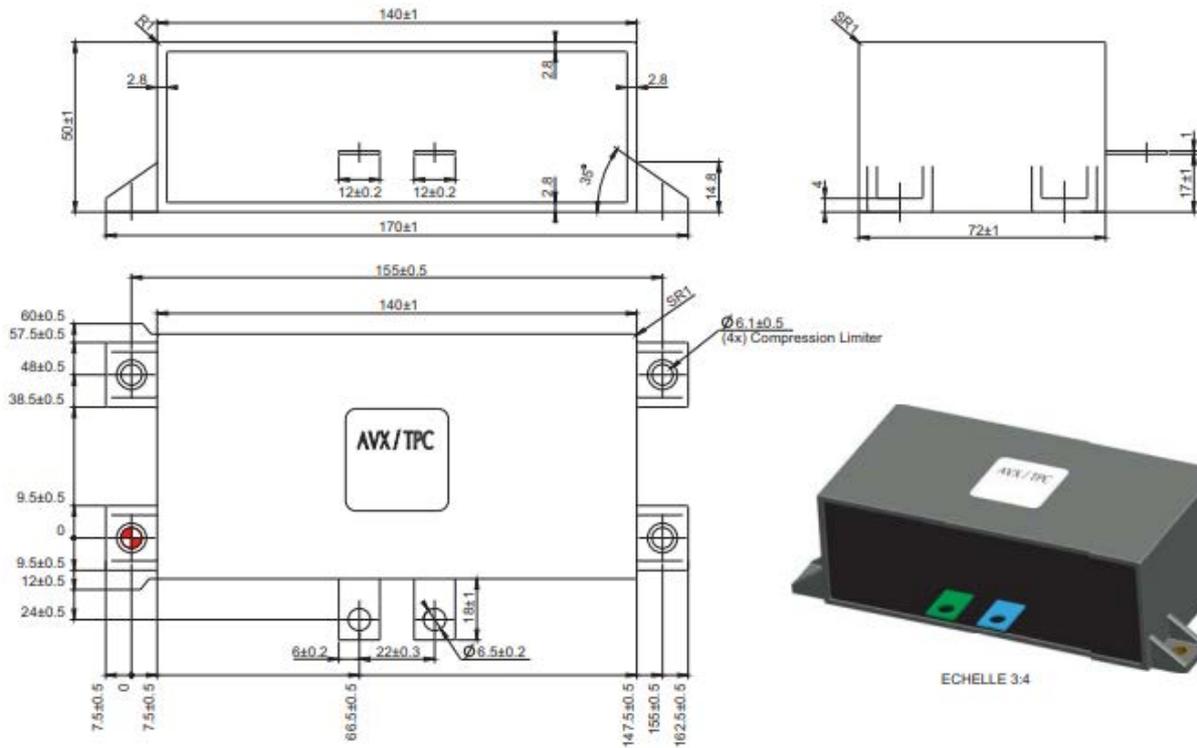
Other value or bus bar design please contact your local KYOCERA AVX representative

HEV / EV CAPACITORS

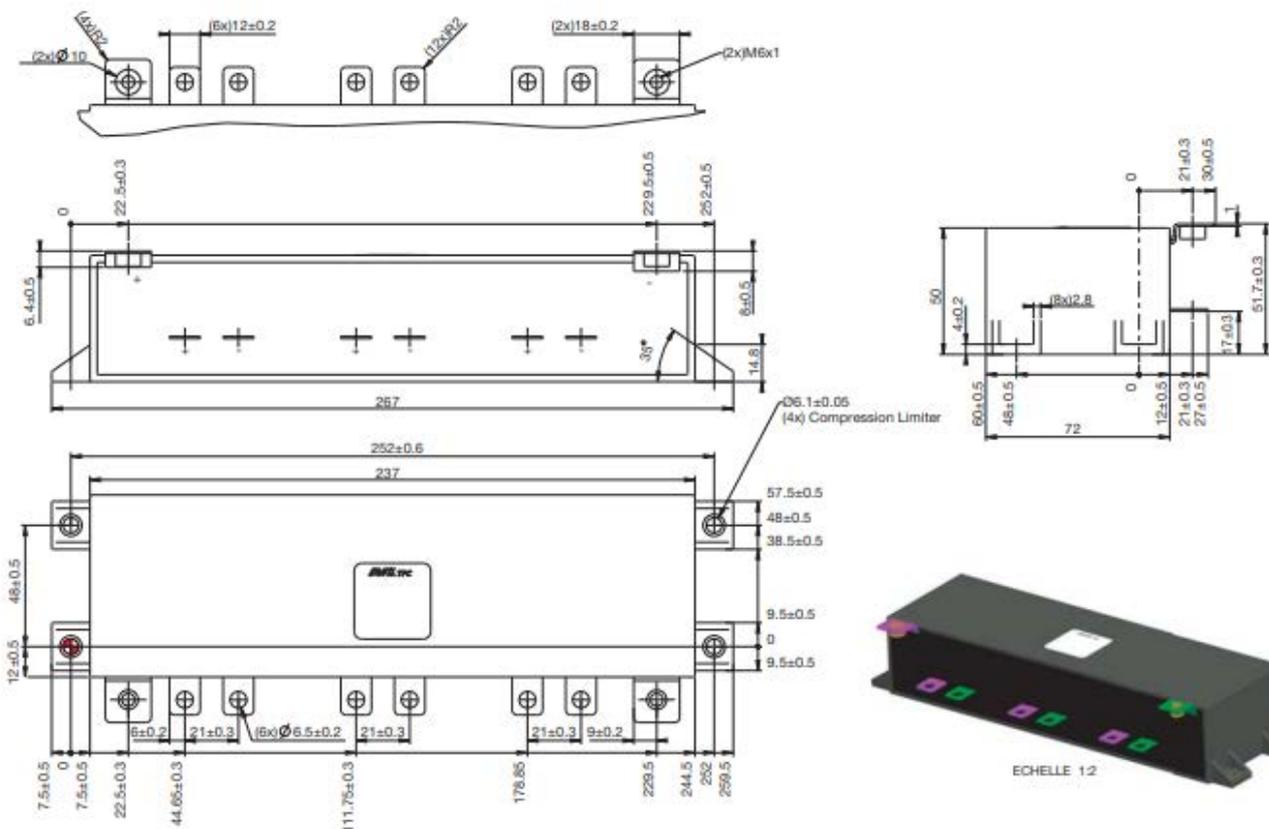
PRODUCT SELECTION GUIDE



FHC16XXXXXKJH



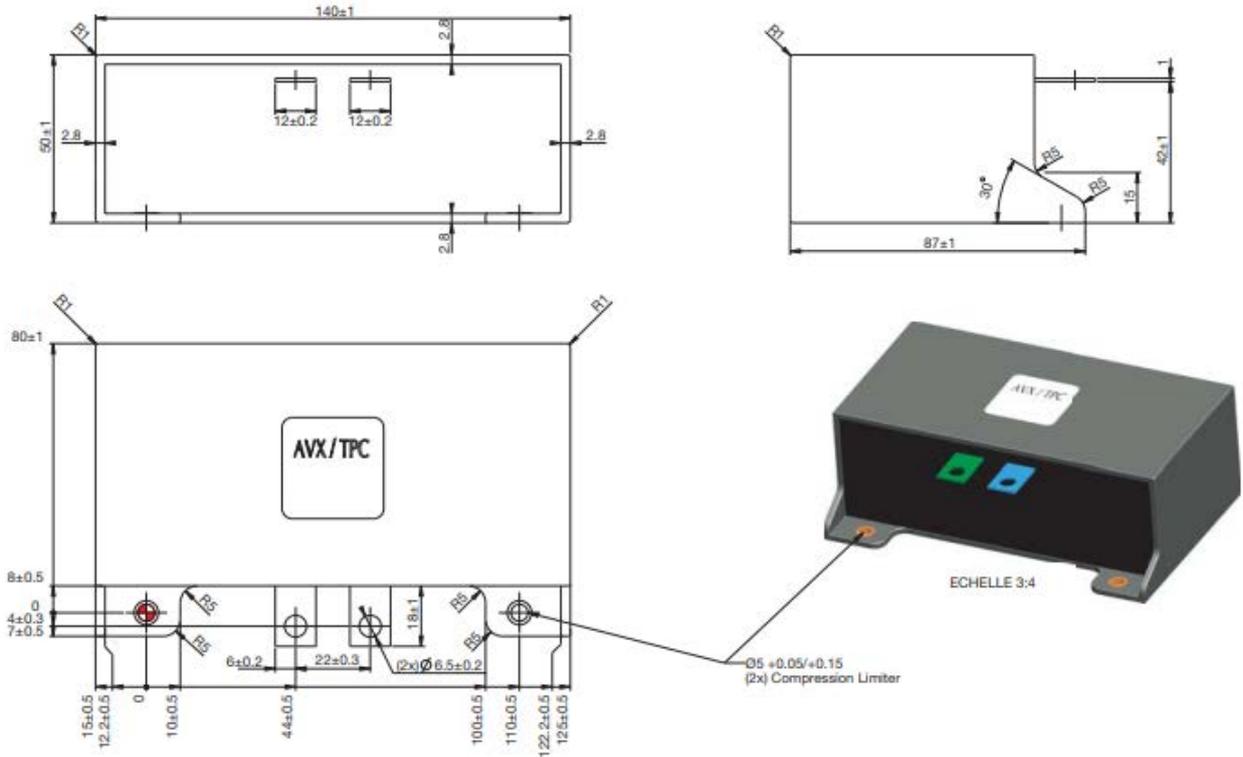
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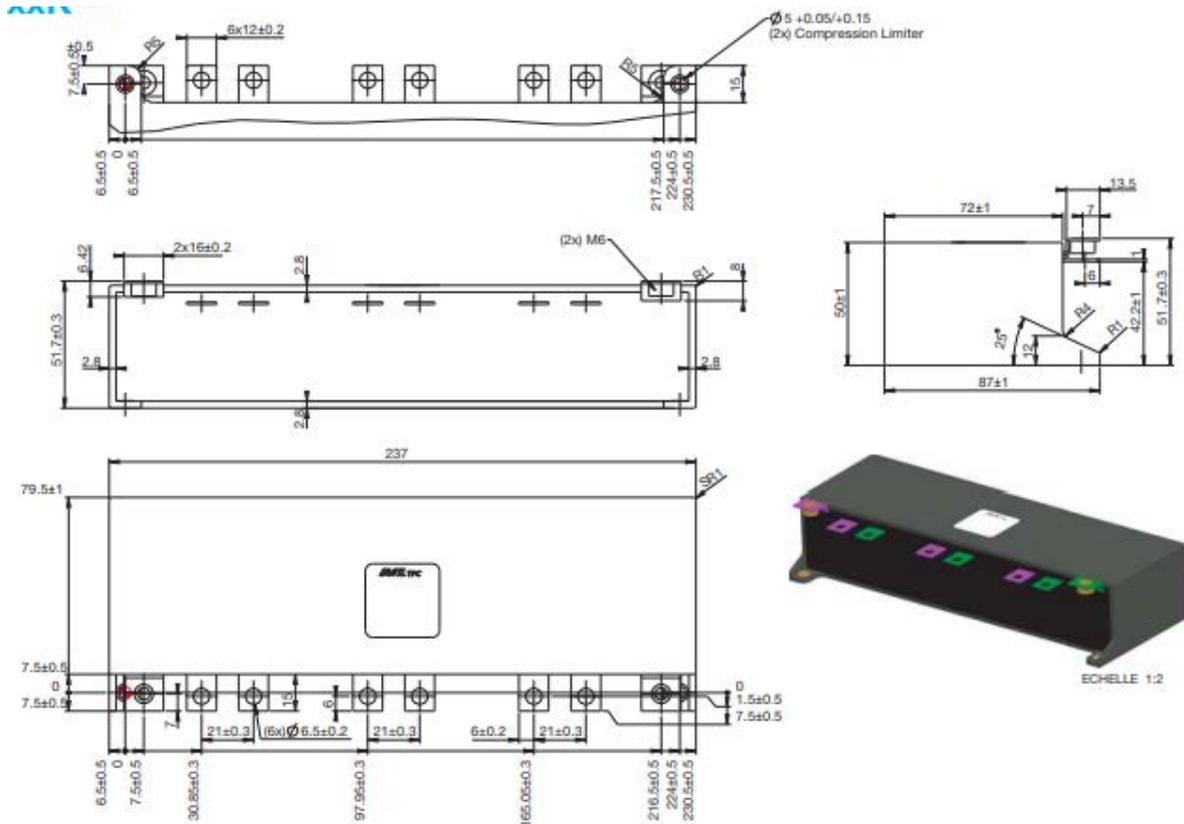
HEV / EV CAPACITORS PRODUCT SELECTION GUIDE



FHC16XXXXXK--



FHC26XXXXXK--





ABOUT KYOCERA AVX

KYOCERA AVX is a worldwide leading supplier of passive electronic components, connectors, passive and active antennas, sensors and control units. KYOCERA AVX offers a wide range of components manufactured to the highest quality and reliability standards.

Our products include ceramic, solid electrolytic and film capacitors, pulse supercapacitors, varistors, thermistors, filters, inductors, diodes, antennas, connectors, sensors and control units. Our worldwide manufacturing capability includes facilities located in seventeen countries on four continents, allowing us to continue meeting customer needs on a global basis.

KYOCERA AVX is committed to supporting the needs of its customers for applications today and in the future. Together with continuous quality improvement process, KYOCERA AVX components provide reliable solutions for consumer application needs.

As a technology leader, KYOCERA AVX will continue to add to its product portfolio on a regular basis. Details of new devices being offered and their specifications will be shown on the KYOCERA AVX website: WWW.KYOCERA-AVX.COM.

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