

# DC FILTERING

FM\* RoHS Compliant



FM is non-inductively wound with metallized or double side metallized (for voltage greater than 630V) polypropylene film as dielectric, encapsulated in plastic case and sealed with thermosetting resin. They are ideal for high frequency and high pulse-rise-time circuit, and find wide application in high voltage power supplies, snubber and electronic lighting ballasts

## APPLICATIONS

- High reliability at high current stress
- Self-healing properties
- Flame retardant plastic case and epoxy resin
- Low losses, high dv/dt capability
- High moisture resistance
- High stability of capacitance and long life

## WORKING TEMPERATURE

Operating Temperature Range: -40°C to +105°C

## LIFETIME EXPECTANCY

One unique feature of this technology (as opposed to aluminum electrolytics) is how the capacitor reacts at the end of its lifetime.

Unlike aluminum electrolytic film capacitors do not have a catastrophic failure mode. Film capacitors simply experience a parametric loss of capacitance of about 2% from initial value, with no risk of short circuit.

The capacitor continues to be functional even after this 2% decrease.

## PACKAGING MATERIAL

- Self-extinguishing plastic case (V<sub>0</sub> = in accordance with UL 94) filled thermosetting resin.
- Self-extinguishing thermosetting resin (V<sub>0</sub> = in accordance with UL 94; I3F2 = in accordance with NF F 16-101).

## STANDARDS

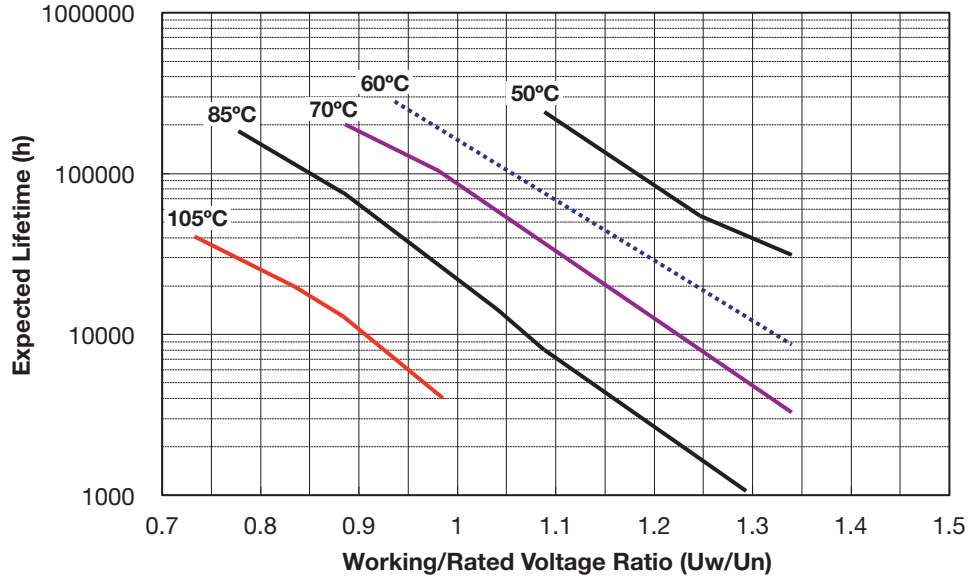
- IEC 61071-1, IEC 61071-2: Power electronic capacitors
- IEC 60384-16: Fixed metallized polypropylene film dielectric DC capacitors
- IEC 60384-16-1: Fixed metallized polypropylene film dielectric DC capacitors Assessment level E
- IEC 60384-17: Fixed metallized polypropylene film dielectric AC and pulse capacitors
- IEC 60384-17-1: Fixed metallized polypropylene film dielectric AC and pulse capacitors Assessment level E

## HOW TO ORDER

<b>FM</b>	<b>A</b>	<b>6</b>	<b>V</b>	<b>0335</b>	<b>K</b>	<b>02</b>	<b>L</b>
Series	Case	Dielectric	Voltage	Capacitance EIA Code	Tolerances	Lead Type	Lead Length
A	K	6 = Polypropylene	D = 250V	0103 = 0.01µF	J = ±5%	02 = 2 Leads	L = 22mm
B	L		I = 400V		K = ±10%		2 = 3.5 mm
C	M		J = 550V		M = ±20%		
D	N		Q = 600V				
E	P		E = 630V				
F	Q		A = 700V				
G	R		B = 800V				
H	S		C = 900V				
J			K = 1000V				
			L = 1100V				
			P = 1200V				
			U = 1250V				
			M = 1600V				
			N = 2000V				

### LIFETIME EXPECTANCY VS HOT SPOT TEMPERATURE AND VOLTAGE

Expected Lifetime Curves (FM Series)



### DIMENSIONS

Case Ref	W (mm)	H (mm)	T (mm)	P (mm)	d (mm)
A	13	11	5	10	0.6
B	13	12	6	10	0.6
C	18	11	5	15	0.8
D	18	12	6	15	0.8
E	18	13.5	6	15	0.8
F	18	13.5	7.5	15	0.8
G	18	14.5	8	15z	0.8
H	18	14.5	8.5	15	0.8
J	18	16	10	15	0.8
K	18	18	10	15	0.8
L	18	19	11	15	0.8
M	26	13.5	6	22.5	0.8
N	26	16.5	7	22.5	0.8
P	26	17	8.5	22.5	0.8
Q	26	19	10	22.5	0.8
R	26	20	11	22.5	0.8
S	26	23	13	22.5	0.8

### GENERAL DESCRIPTION

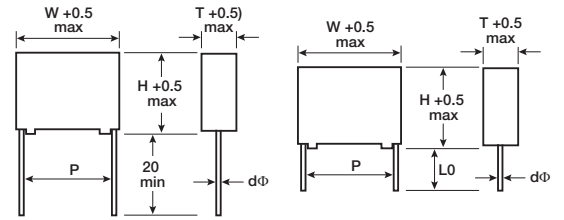


Fig. 1

Fig. 2

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## ELECTRICAL CHARACTERISTICS

Items	Characteristics
Climatic category	40/105/56 (IEC 60068)
Test voltage between terminals @ 25°C	1.5 x V <sub>n,dc</sub>
Capacitance range C <sub>n</sub>	0.01µF to 0.47µF
Capacitance Tolerances:	±5%, ±10%
Rated DC Voltage:	250V to 2000V
Dielectric:	Polypropylene
Insulation Resistance:	> 30,000 MΩ (C ≤ 0.33µF), > 10,000 MΩ*µF/C after 1 minute

## RATINGS AND PART NUMBER REFERENCE – POLYPROPYLENE DIELECTRIC

Cap (µF) ±5%	Rated Voltage (V)	Part Number	Case Code	W ±0.50 (mm)	H ±0.50 (mm)	T ±0.50 (mm)	P ±1.00 (mm)	d ±0.50 (mm)	V/µs (Volt/sec)	I Peak (A)	I rms (A)	Packaging Method (Fig 1)		Packaging Method (Fig 2)	
												Qty	Box Dimension (mm)	Qty	Box Dimension (mm)
<b>V<sub>ndc</sub> = 250V Voltage Code: D</b>															
0.010	250	FMA6D0103 * 02L	A	13.0	11.0	5.0	10.0	0.6	76.0	0.8	1.0	1200	180*170*120	850	360*170*35
0.015	250	FMA6D0153 * 02L	A	13.0	11.0	5.0	10.0	0.6	76.0	1.1	1.2	1200	180*170*120	850	360*170*35
0.022	250	FMA6D0223 * 02L	A	13.0	11.0	5.0	10.0	0.6	76.0	1.7	1.5	1200	180*170*120	850	360*170*35
0.033	250	FMA6D0333 * 02L	A	13.0	11.0	5.0	10.0	0.6	76.0	2.5	1.8	1200	180*170*120	850	360*170*35
0.047	250	FMB6D0473 * 02L	B	13.0	12.0	6.0	10.0	0.6	76.0	3.6	2.1	1000	180*170*120	700	360*170*35
0.068	250	FMB6D0683 * 02L	B	13.0	12.0	6.0	10.0	0.6	76.0	5.2	2.3	1000	180*170*120	700	360*170*35
0.100	250	FMB6D0104 * 02L	B	13.0	12.0	6.0	10.0	0.6	76.0	7.6	2.4	1000	180*170*120	700	360*170*35
0.100	250	FMC6D0104 * 02L	C	18.0	11.0	5.0	15.0	0.6	45.0	4.5	2.4	1000	180*170*120	600	360*170*35
0.150	250	FMD6D0154 * 02L	D	18.0	12.0	6.0	15.0	0.8	45.0	6.8	2.8	800	180*170*120	500	360*170*35
0.220	250	FMF6D0224 * 02L	F	18.0	13.5	7.5	15.0	0.8	45.0	9.9	3.3	600	180*170*120	410	360*170*35
0.330	250	FMF6D0334 * 02L	F	18.0	13.5	7.5	15.0	0.8	45.0	14.9	3.7	600	180*170*120	410	360*170*35
0.470	250	FMG6D0474 * 02L	H	18.0	14.5	8.5	15.0	0.8	45.0	21.2	4.2	500	180*170*120	350	360*170*35
<b>V<sub>ndc</sub> = 630V Voltage Code: E</b>															
0.010	630	FMA6E0103 * 02L	A	13.0	11.0	5.0	10	0.6	3000	30.0	2.2	1200	180*170*120	850	360*170*35
0.012	630	FMA6E0123 * 02L	A	13.0	11.0	5.0	10	0.6	3000	36.0	2.5	1200	180*170*120	850	360*170*35
0.015	630	FMA6E0153 * 02L	A	13.0	11.0	5.0	10	0.6	3000	45.0	2.8	1200	180*170*120	850	360*170*35
0.018	630	FMA6E0183 * 02L	A	13.0	11.0	5.0	10	0.6	3000	54.0	3.0	1200	180*170*120	850	360*170*35
0.010	630	FMC6E0103 * 02L	C	18.0	11.0	5.0	15	0.8	2500	25.0	2.2	1000	180*170*120	600	360*170*35
0.012	630	FMC6E0123 * 02L	C	18.0	11.0	5.0	15	0.8	2500	30.0	2.5	1000	180*170*120	600	360*170*35
0.015	630	FMC6E0153 * 02L	C	18.0	11.0	5.0	15	0.8	2500	37.5	3.3	1000	180*170*120	600	360*170*35
0.018	630	FMC6E0183 * 02L	C	18.0	11.0	5.0	15	0.8	2500	45.0	3.4	1000	180*170*120	600	360*170*35
0.022	630	FMC6E0223 * 02L	C	18.0	11.0	5.0	15	0.8	2500	55.5	3.7	1000	180*170*120	600	360*170*35
0.027	630	FMD6E0273 * 02L	D	18.0	12.0	6.0	15	0.8	2500	67.5	4.0	800	180*170*120	500	360*170*35
0.030	630	FMD6E0303 * 02L	D	18.0	12.0	6.0	15	0.8	2500	75.0	4.3	800	180*170*120	500	360*170*35
0.033	630	FMD6E0333 * 02L	D	18.0	12.0	6.0	15	0.8	2500	82.5	4.5	800	180*170*120	500	360*170*35
0.039	630	FMF6E0393 * 02L	F	18.0	13.5	7.5	15	0.8	2500	97.5	4.8	600	180*170*120	410	360*170*35
0.047	630	FMF6E0473 * 02L	F	18.0	13.5	7.5	15	0.8	2500	117.5	5.3	600	180*170*120	410	360*170*35
0.051	630	FMF6E0513 * 02L	F	18.0	13.5	7.5	15	0.8	2500	127.5	5.8	600	180*170*120	410	360*170*35
0.056	630	FMF6E0563 * 02L	F	18.0	13.5	7.5	15	0.8	2500	140.0	6.3	600	180*170*120	410	360*170*35
0.068	630	FMG6E0683 * 02L	G	18.0	14.5	8.0	15	0.8	2500	170.0	6.7	500	180*170*120	380	360*170*35
0.082	630	FMH6E0823 * 02L	H	18.0	14.5	8.5	15	0.8	2500	205.0	7.2	500	180*170*120	350	360*170*35
0.100	630	FMJ6E0104 * 02L	J	18.0	16.0	10.0	15	0.8	2500	250.0	7.5	400	180*170*120	300	360*170*35
0.120	630	FML6E0124 * 02L	L	18.0	19.0	11.0	15	0.8	2500	300.0	8.0	300	180*170*120	270	360*170*35

\* Insert K for 10% capacitance tolerance (standard); J (+5%) and M (+20%) tolerances available on request.

Values outside this standard range may be available – please contact KYOCERA AVX for any special requirements.

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Cap ( $\mu$ F) $\pm 5\%$	Rated Voltage (V)	Part Number	Case Code	W $\pm 0.50$ (mm)	H $\pm 0.50$ (mm)	T $\pm 0.50$ (mm)	P $\pm 1.00$ (mm)	d $\pm 0.50$ (mm)	V/ $\mu$ s (Volt/sec)	I Peak (A)	I rms (A)	Packaging Method (Fig 1)		Packaging Method (Fig 2)	
												Qty	Box Dimension (mm)	Qty	Box Dimension (mm)
<b>Vndc = 1000V Voltage Code: K</b>															
0.010	1000	FMA6K0103 * 02L	A	13.0	11.0	5.0	10	0.6	4500	45.0	2.6	1200	180*170*120	850	360*170*35
0.012	1000	FMA6K0123 * 02L	A	13.0	11.0	5.0	10	0.6	4500	54.0	2.9	1200	180*170*120	850	360*170*35
0.015	1000	FMA6K0153 * 02L	A	13.0	11.0	5.0	10	0.6	4500	67.5	3.2	1200	180*170*120	850	360*170*35
0.018	1000	FMA6K0183 * 02L	A	13.0	11.0	5.0	10	0.6	4500	81.0	3.4	1200	180*170*120	850	360*170*35
0.010	1000	FMC6K0103 * 02L	C	18.0	11.0	5.0	15	0.8	3200	32.0	2.4	1000	180*170*120	600	360*170*35
0.012	1000	FMC6K0123 * 02L	C	18.0	11.0	5.0	15	0.8	3200	38.4	2.7	1000	180*170*120	600	360*170*35
0.015	1000	FMC6K0153 * 02L	C	18.0	11.0	5.0	15	0.8	3200	48.0	3.0	1000	180*170*120	600	360*170*35
0.018	1000	FMC6K0183 * 02L	C	18.0	11.0	5.0	15	0.8	3200	57.6	3.2	1000	180*170*120	600	360*170*35
0.022	1000	FMC6K0223 * 02L	C	18.0	11.0	5.0	15	0.8	3200	70.4	3.6	1000	180*170*120	600	360*170*35
0.027	1000	FMD6K0273 * 02L	D	18.0	12.0	6.0	15	0.8	3200	86.4	3.9	800	180*170*120	500	360*170*35
0.030	1000	FMD6K0303 * 02L	D	18.0	12.0	6.0	15	0.8	3200	96.0	4.5	800	180*170*120	500	360*170*35
0.033	1000	FMD6K0333 * 02L	D	18.0	12.0	6.0	15	0.8	3200	105.6	5.1	800	180*170*120	500	360*170*35
0.039	1000	FMF6K0393 * 02L	F	18.0	13.5	7.5	15	0.8	3200	124.8	5.6	600	180*170*120	410	360*170*35
0.047	1000	FMF6K0473 * 02L	F	18.0	13.5	7.5	15	0.8	3200	150.4	6.0	600	180*170*120	410	360*170*35
0.051	1000	FMF6K0513 * 02L	F	18.0	13.5	7.5	15	0.8	3200	163.2	6.4	600	180*170*120	410	360*170*35
0.056	1000	FMF6K0563 * 02L	F	18.0	13.5	7.5	15	0.8	3200	179.2	6.7	600	180*170*120	410	360*170*35
0.068	1000	FMG6K0683 * 02L	G	18.0	14.5	8.0	15	0.8	3200	217.6	7.1	500	180*170*120	380	360*170*35
0.082	1000	FMH6K0823 * 02L	H	18.0	14.5	8.5	15	0.8	3200	262.4	7.4	500	180*170*120	350	360*170*35
0.100	1000	FMJ6K0104 * 02L	J	18.0	16.0	10.0	15	0.8	3200	320.0	7.8	400	180*170*120	300	360*170*35
0.120	1000	FML6K0124 * 02L	L	18.0	19.0	11.0	15	0.8	3200	384.0	8.5	300	180*170*120	270	360*170*35
<b>Vndc = 1250V Voltage Code: U</b>															
0.01	1250	FMA6U0103 * 02L	A	13.0	11.0	5.0	10.0	0.6	4600	46.0	2.8	1200	180*170*120	850	360*170*35
0.012	1250	FMA6U0123 * 02L	A	13.0	11.0	5.0	10.0	0.6	4600	55.2	3.1	1200	180*170*120	850	360*170*35
0.015	1250	FMA6U0153 * 02L	A	13.0	11.0	5.0	10.0	0.6	4600	69.0	3.3	1200	180*170*120	850	360*170*35
0.018	1250	FMA6U0183 * 02L	A	13.0	11.0	5.0	10.0	0.6	4600	82.8	2.6	1200	180*170*120	850	360*170*35
0.01	1250	FMC6U0103 * 02L	C	18.0	11.0	5.0	15.0	0.8	3300	33.0	2.8	1000	180*170*120	600	360*170*35
0.012	1250	FMC6U0123 * 02L	C	18.0	11.0	5.0	15.0	0.8	3300	39.6	3.0	1000	180*170*120	600	360*170*35
0.015	1250	FMC6U0153 * 02L	C	18.0	11.0	5.0	15.0	0.8	3300	49.5	3.2	1000	180*170*120	600	360*170*35
0.018	1250	FMC6U0183 * 02L	C	18.0	11.0	5.0	15.0	0.8	3300	59.4	3.6	1000	180*170*120	600	360*170*35
0.022	1250	FMD6U0223 * 02L	D	18.0	12.0	6.0	15.0	0.8	3300	72.6	4.0	800	180*170*120	500	360*170*35
0.027	1250	FME6U0273 * 02L	E	18.0	13.5	6.0	15.0	0.8	3300	89.1	4.5	600	180*170*120	500	360*170*35
0.030	1250	FMF6U0303 * 02L	F	18.0	13.5	7.5	15.0	0.8	3300	99.0	4.9	600	180*170*120	410	360*170*35
0.033	1250	FMF6U0333 * 02L	F	18.0	13.5	7.5	15.0	0.8	3300	108.9	5.4	600	180*170*120	410	360*170*35
0.039	1250	FMG6U0393 * 02L	G	18.0	14.5	8.0	15.0	0.8	3300	128.7	5.8	500	180*170*120	380	360*170*35
0.047	1250	FMG6U0473 * 02L	G	18.0	14.5	8.0	15.0	0.8	3300	155.1	6.3	500	180*170*120	380	360*170*35
0.051	1250	FMH6U0513 * 02L	H	18.0	14.5	8.5	15.0	0.8	3300	168.3	6.7	500	180*170*120	350	360*170*35
0.056	1250	FMH6U0563 * 02L	H	18.0	14.5	8.5	15.0	0.8	3300	184.8	7.0	500	180*170*120	350	360*170*35
0.068	1250	FMJ6U0683 * 02L	J	18.0	16.0	10.0	15.0	0.8	3300	224.4	7.4	400	180*170*120	300	360*170*35
0.082	1250	FMK6U0823 * 02L	K	18.0	18.0	10.0	15.0	0.8	3300	270.6	7.8	300	180*170*120	300	360*170*35
0.100	1250	FML6U0104 * 02L	L	18.0	19.0	11.0	15.0	0.8	3300	330.0	8.0	300	180*170*120	270	360*170*35

\* Insert K for 10% capacitance tolerance (standard); J (+5%) and M (+20%) tolerances available on request.

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												Qty	Box Dimension (mm)	Qty	Box Dimension (mm)
<b>Vndc = 1600V Voltage Code: M</b>															
0.01	1600	FMD6M0103 * 02L	D	18.0	12.0	6.0	15.0	0.8	5800	58.0	2.5	800	180*170*120	500	360*170*35
0.012	1600	FMF6M0123 * 02L	F	18.0	13.5	7.5	15.0	0.8	5800	69.6	2.9	600	180*170*120	410	360*170*35
0.015	1600	FMF6M0153 * 02L	F	18.0	13.5	7.5	15.0	0.8	5800	87.0	3.4	600	180*170*120	410	360*170*35
0.018	1600	FMH6M0183 * 02L	H	18.0	14.5	8.5	15.0	0.8	5800	104.4	3.8	500	180*170*120	350	360*170*35
0.022	1600	FMH6M0223 * 02L	H	18.0	14.5	8.5	15.0	0.8	5800	127.6	4.3	500	180*170*120	350	360*170*35
0.027	1600	FMJ6M0273 * 02L	J	18.0	16.0	10.0	15.0	0.8	5800	156.6	4.7	400	180*170*120	300	360*170*35
0.033	1600	FML6M0333 * 02L	L	18.0	19.0	11.0	15.0	0.8	5800	191.4	5.4	300	180*170*120	270	360*170*35
0.033	1600	FMN6M0333 * 02L	N	26.0	16.5	7.0	22.5	0.8	3000	99.0	5.8	400	180*170*120	290	360*170*35
0.039	1600	FMP6M0393 * 02L	P	26.0	17.0	8.5	22.5	0.8	3000	117.0	6.2	300	180*170*120	240	360*170*35
0.047	1600	FMP6M0473 * 02L	P	26.0	17.0	8.5	22.5	0.8	3000	141.0	6.5	300	180*170*120	240	360*170*35
0.056	1600	FMQ6M0563 * 02L	Q	26.0	19.0	10.0	22.5	0.8	3000	168.0	7.0	250	180*170*120	200	360*170*35
0.068	1600	FMR6M0683 * 02L	R	26.0	10.0	11.0	22.5	0.8	3000	204.0	7.6	200	180*170*120	180	360*170*35
0.082	1600	FMR6M0823 * 02L	R	26.0	20.0	11.0	22.5	0.8	3000	246.0	8.1	200	180*170*120	180	360*170*35
0.100	1600	FMS6M0104 * 02L	S	26.0	23.0	13.0	22.5	0.8	3000	300.0	8.7	100	180*170*120	150	360*170*35
<b>Vndc = 2000V Voltage Code: N</b>															
0.010	2000	FMF6N0103 * 02L	F	18.0	13.5	7.5	15.0	0.8	9000	90.0	3.0	600	180*170*120	410	360*170*35
0.012	2000	FMH6N0123 * 02L	H	18.0	14.5	8.5	15.0	0.8	9000	108.0	3.2	500	180*170*120	350	360*170*35
0.015	2000	FMJ6N0153 * 02L	J	18.0	16.0	10.0	15.0	0.8	9000	135.0	3.5	400	180*170*120	300	360*170*35
0.010	2000	FMM6N0103 * 02L	M	26.0	13.5	6.0	22.5	0.8	3500	35.0	2.8	400	180*170*120	350	360*170*35
0.012	2000	FMM6N0123 * 02L	M	26.0	13.5	6.0	22.5	0.8	3500	42.0	3.0	400	180*170*120	350	360*170*35
0.015	2000	FMN6N0153 * 02L	N	26.0	16.5	7.0	22.5	0.8	3500	52.5	3.3	400	180*170*120	290	360*170*35
0.018	2000	FMN6N0183 * 02L	N	26.0	16.5	7.0	22.5	0.8	3500	63.0	3.8	400	180*170*120	290	360*170*35
0.022	2000	FMP6N0223 * 02L	P	26.0	17.0	8.5	22.5	0.8	3500	77.0	4.3	300	180*170*120	240	360*170*35
0.027	2000	FMQ6N0273 * 02L	Q	26.0	19.0	10.0	22.5	0.8	3500	94.5	4.9	250	180*170*120	200	360*170*35
0.033	2000	FMQ6N0333 * 02L	Q	26.0	19.0	10.0	22.5	0.8	3500	115.5	5.7	250	180*170*120	200	360*170*35
0.039	2000	FMR6N0393 * 02L	R	26.0	20.0	11.0	22.5	0.8	3500	136.5	6.5	200	180*170*120	180	360*170*35
0.047	2000	FMS6N0473 * 02L	S	26.0	23.0	13.0	22.5	0.8	3500	164.5	7.0	100	180*170*120	150	360*170*35
0.056	2000	FMS6N0563 * 02L	S	26.0	23.0	13.0	22.5	0.8	3500	196.0	8.2	100	180*170*120	150	360*170*35

\* Insert K for 10% capacitance tolerance (standard); J (+5%) and M (+20%) tolerances available on request.

Values outside this standard range may be available – please contact KYOCERA AVX for any special requirements.

KYOCERA AVX reserves the right to supply capacitors to a tighter capacitance tolerance or higher voltage rating, in the same case size.