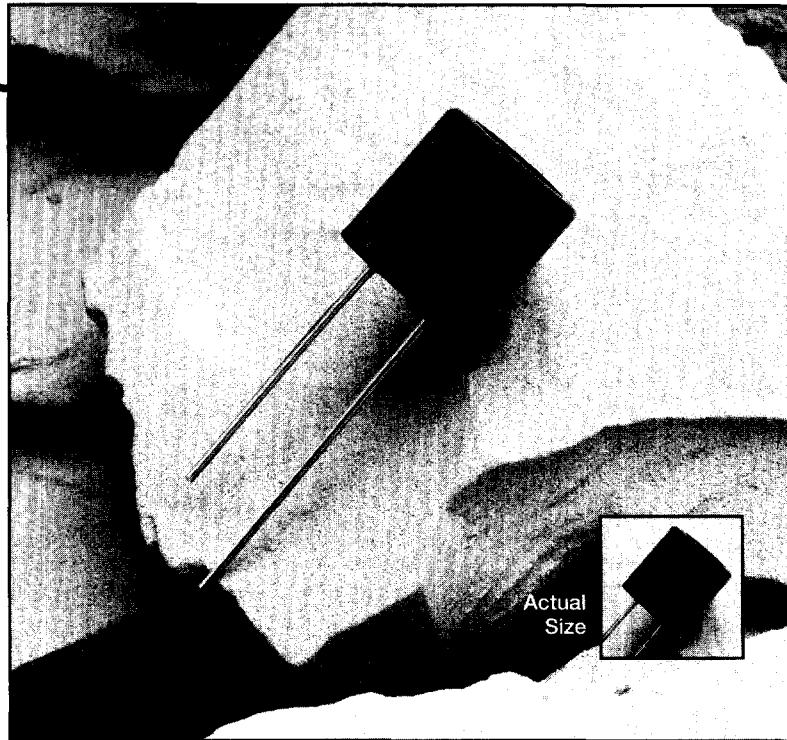


# FP OS-CON Series



- OS-CON
- Solvent Proof
- Low Impedance
- High CV
- +105°C Maximum Temperature



FP  
OS-CON - 105°C

The FP series is a new OS-CON series with higher capacitance values per case size than the FA series. The higher capacitance values allow for a very low impedance, making these parts ideal for use in low profile DC-DC converters and also for stereo and video recorder applications. Other applications for these capacitors include filter circuits of switching power supplies.

The FP series capacitors were developed to withstand HCFC cleaning agents for five minutes by ultrasonic, vapor or immersion. This solvent proof design allows all circuit board components to be cleaned together at the same time. Refer to the Mini-Glossary for recommended cleaning conditions and guidelines.

## Summary of Specifications

- Radial lead terminals.
- Capacitance range: 22 to 820 $\mu$ F.
- Voltage range: 4 to 20VDC.
- Operating temperature range: -55°C to +105°C.
- Leakage current: After 2 minutes with rated voltage applied at +20°C, see ratings tables for leakage current values.
- Standard capacitance tolerance:  $\pm 20\%$
- Nominal case size (D  $\times$  L): 6.3  $\times$  5mm to 10  $\times$  10.5mm.
- Rated lifetime: 1,000 hours at +105°C.

# FP Series

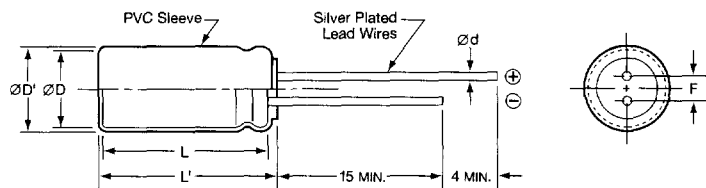
## FP Specifications

Item	Characteristics								
Operating Temperature Range	-55 to +105°C								
Rated Voltage Range	4 to 20VDC								
Capacitance Range	22 to 820 $\mu$ F								
Capacitance Tolerance	$\pm$ 20% (M) at +20°C, 120Hz								
Leakage Current	After 2 minutes with rated voltage applied at +20°C, see Ratings Tables for specified values.								
Temperature Characteristics	At 100kHz, impedance (Z) ratio between the -55°C or +105°C value and +20°C value shall not exceed the values given below. <table border="1" style="margin: 10px auto;"> <tr> <td>Rated Voltage (V)</td> <td>4-20</td> </tr> <tr> <td>Z (-55°C)/Z (+20°C)</td> <td>1.00-1.25</td> </tr> <tr> <td>Z (+105°C)/Z (+20°C)</td> <td>0.75-1.00</td> </tr> </table>	Rated Voltage (V)	4-20	Z (-55°C)/Z (+20°C)	1.00-1.25	Z (+105°C)/Z (+20°C)	0.75-1.00		
Rated Voltage (V)	4-20								
Z (-55°C)/Z (+20°C)	1.00-1.25								
Z (+105°C)/Z (+20°C)	0.75-1.00								
Ripple Current Multipliers <i>Refer to Section 4 of the Mini-Glossary for explanation of Ripple Current Multipliers.</i>	Ambient Temperature (°C) <table border="1" style="margin: 10px auto;"> <tr> <td><math>\leq</math>+45°C</td> <td>+85°C</td> <td>+95°C</td> <td>+105°C</td> </tr> <tr> <td>1.0</td> <td>0.7</td> <td>0.4</td> <td>0.25</td> </tr> </table>	$\leq$ +45°C	+85°C	+95°C	+105°C	1.0	0.7	0.4	0.25
$\leq$ +45°C	+85°C	+95°C	+105°C						
1.0	0.7	0.4	0.25						
Load Life	The following specifications shall be satisfied when the capacitors are restored to +20°C after subjecting them to the DC rated voltage for 1,000 hours at +105°C. The sum of DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors. Capacitance change: $\leq \pm 20\%$ of initial measured value Tan $\delta$ (DF) : $\leq 150\%$ of initial specified value Leakage current : $\leq$ initial specified value								
Moisture Resistance	The following specifications shall be satisfied when the capacitors are restored to +20°C after exposing them for 1,000 hours at +60°C, 90-95RH without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes at +105°C. Capacitance change: $\leq \pm 20\%$ of initial measured value Tan $\delta$ (DF) : $\leq 200\%$ of initial specified value Leakage current : $\leq$ initial specified value								

## Diagram of Dimensions

### VB/Radial Lead

Unit: mm



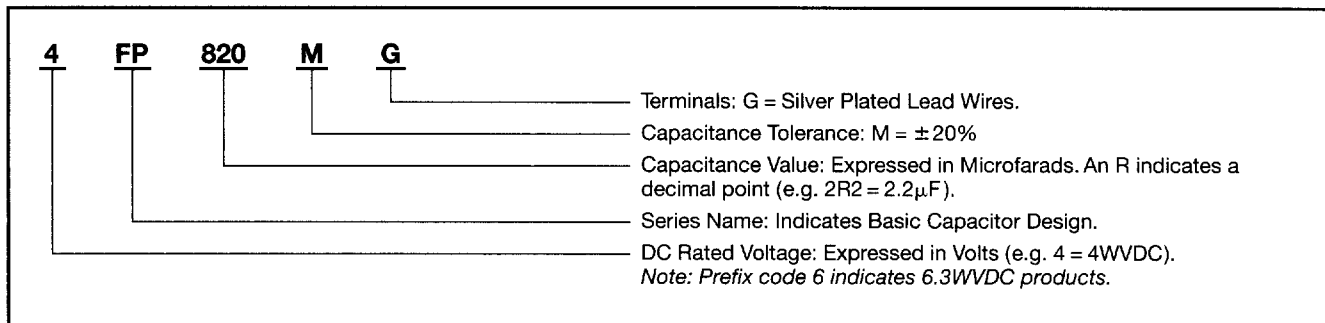
For optional lead configurations and tape and ammo packaging, refer to the beginning of the Miniature section.

$\phi D$	$\phi D' \text{ max}$	$L' \text{ max}$	$\phi d$	$F \pm 0.5$
6.3	$\phi D + 0.5$	$L + 1.0$	0.6	2.5
8	$\phi D + 0.5$	$L + 1.0$	0.6	3.5
10	$\phi D + 0.5$	$L + 1.0$	0.6	5.0

FP OS-CON - 105°C

# FP Series

**Part Numbering System for FP Series** When ordering, always specify complete catalog number for FP Series.



## Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance ( $\mu$ F)	Catalog Part Number	Nominal Case Size* D x L (mm)	Maximum Leakage Current ( $\mu$ A) at +20°C	Maximum ESR (m $\Omega$ ) at +20°C 100k-300kHz	Maximum Ripple Current (mA rms) at +45°C, 100kHz
<b>4 Volts</b> 5 Volts Surge	100	4FP100MG	6.3 x 5	40.0	40	1,850
	150	4FP150MG	6.3 x 6.8	60.0	35	1,930
	220	4FP220MG	8 x 5	88.0	28	2,510
	330	4FP330MG	10 x 5	132.0	24	3,230
	560	4FP560MG	8 x 10.5	224.0	14	4,080
	820	4FP820MG	10 x 10.5	328.0	12	5,040
<b>6.3 Volts</b> 8 Volts Surge	68	6FP68MG	6.3 x 5	42.8	40	1,850
	100	6FP100MG	6.3 x 6.8	63.0	35	1,930
	120	6FP120MG	6.3 x 6.8	75.6	35	1,930
	150	6FP150MG	8 x 5	94.5	30	2,420
	220	6FP220MGA	6.3 x 9.8	138.6	20	3,160
	220	6FP220MG	10 x 5	138.6	28	3,100
	390	6FP390MG	8 x 10.5	245.7	16	3,810
680	6FP680MG	10 x 10.5	428.4	13	4,840	
<b>10 Volts</b> 13 Volts Surge	56	10FP56MG	6.3 x 5	56.0	45	1,710
	68	10FP68MG	6.3 x 6.8	68.0	40	1,850
	82	10FP82MG	6.3 x 6.8	75.2	40	1,850
	100	10FP100MG	8 x 5	100.0	32	2,350
	150	10FP150MG	10 x 5	150.0	30	2,990
	270	10FP270MG	8 x 10.5	270.0	18	3,600
	470	10FP470MG	10 x 10.5	470.0	15	4,510
<b>16 Volts</b> 20 Volts Surge	33	16FP33MG	6.3 x 5	52.8	50	1,580
	47	16FP47MG	6.3 x 6.8	75.2	45	1,710
	68	16FP68MG	8 x 5	108.8	34	2,280
	100	16FP100MGA	6.3 x 9.8	160.0	25	2,820
	100	16FP100MG	10 x 5	160.0	32	2,890
	180	16FP180MG	8 x 10.5	288.0	20	3,410
	270	16FP270MG	10 x 10.5	432.0	18	4,400
<b>20 Volts</b> 25 Volts Surge	22	20FP22MG	6.3 x 5	44.0	50	1,580
	33	20FP33MG	6.3 x 6.8	66.0	45	1,710
	47	20FP47MG	8 x 5	94.0	36	2,210
	68	20FP68MG	10 x 5	136.0	34	2,800
	120	20FP120MG	8 x 10.5	200.0	24	3,110
	180	20FP180MG	10 x 10.5	360.0	20	4,280

\*The case sizes in table are with no sleeve, refer to diagram for case sizes with sleeve.

**FP**  
 OS-CON-105°C