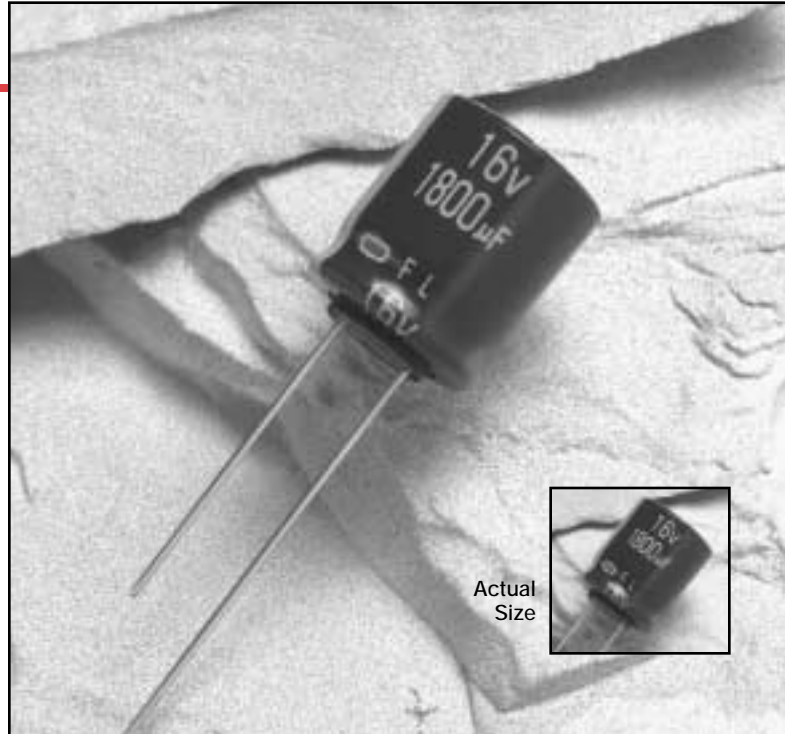


- Miniature
- Very Long Life
- Low Impedance
- Large Capacitance
- Solvent Proof
- +105°C Maximum Temperature



The new FL series capacitors are small size, low impedance capacitors that are designed for a very long useful lifetime. With an improved, more stable electrolyte, the FL series has an extended rated lifetime up to 10,000 hours at 105°C with the full rated ripple current applied, depending on the case size. These capacitors also have higher CV values than standard low impedance capacitors, which allows for downsizing of switching power supplies. The FL series is ideal for switching power supplies, DC-DC converters or any other application requiring high reliability.

The FL series capacitors were developed to withstand HCFC cleaning agents for five minutes by ultrasonic, vapor or immersion. Refer to the Mini-Glossary for recommended cleaning conditions.

## Summary of Specifications

- Radial lead terminals.
- Capacitance range: 1.8 to 22,000µF.
- Voltage range: 6.3 to 50VDC.
- Operating temperature range: -40°C to +105°C.
- Leakage current: 0.03CV or 3µA, whichever is greater, after 2 minutes at +20°C.
- Standard capacitance tolerance: ±20%
- Nominal case size (D×L): 3×5mm to 18×40mm.
- Rated lifetime: 2,000 to 10,000 hours at +105°C with the rated ripple current applied, depending on case size.

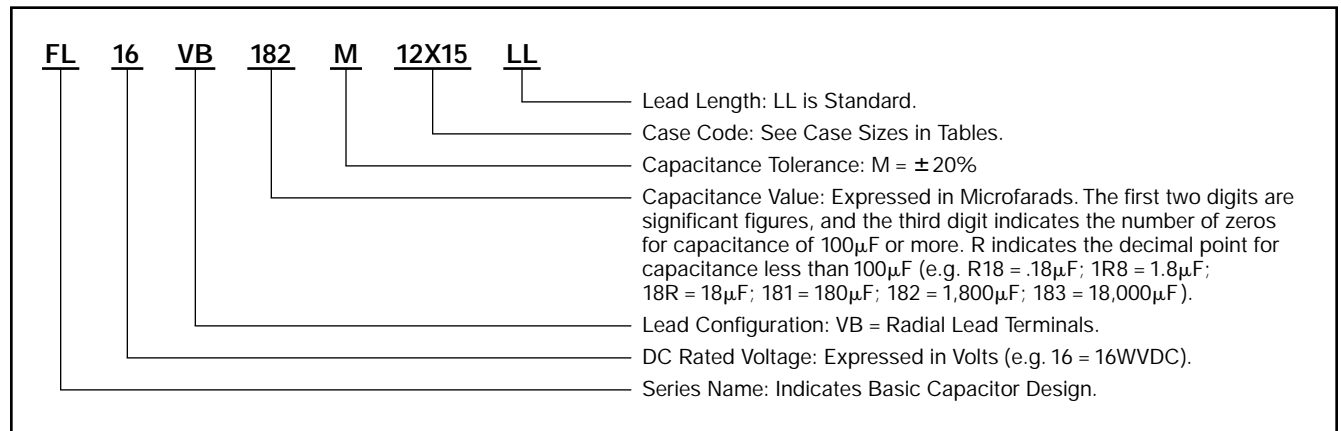
# FL Series

## FL Specifications

Item	Characteristics														
Operating Temperature Range	- 40 to +105°C														
Rated Voltage Range	6.3 to 50VDC														
Capacitance Range	1.8 to 22,000μF														
Capacitance Tolerance	± 20% (M) at +20°C, 120Hz														
Leakage Current	I = 0.03CV or 3μA, whichever is greater, after 2 minutes at +20°C. Where I = Leakage current (μA), C = Nominal capacitance (μF) and V = Rated voltage (V)														
Dissipation Factor (Tan δ)	At +20°C, 120Hz <table border="1" style="margin-left: 20px;"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>Tan δ (DF)</td> <td>0.50</td> <td>0.40</td> <td>0.35</td> <td>0.30</td> <td>0.25</td> <td>0.25</td> </tr> </table> When nominal capacitance exceeds 1,000μF, add 0.02 to the values above for each 1,000μF increase.	Rated Voltage (V)	6.3	10	16	25	35	50	Tan δ (DF)	0.50	0.40	0.35	0.30	0.25	0.25
Rated Voltage (V)	6.3	10	16	25	35	50									
Tan δ (DF)	0.50	0.40	0.35	0.30	0.25	0.25									
Impedance at 100kHz	At 100kHz, maximum impedance at +20°C is specified in the Ratings Tables.														
Load Life	The following specifications shall be satisfied when the capacitors are restored to +20°C after subjecting them to the DC rated voltage with the rated maximum ripple current at +105°C for the specified lifetime hours given in the Ratings Tables. The sum of DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors. Capacitance change: ≤ ± 30% of initial measured value Tan δ (DF) : ≤ 300% of initial specified value Leakage current : ≤ initial specified value														
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to +20°C after exposing them for 1,000 hours at +105°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change: ≤ ± 20% of initial measured value Tan δ (DF) : ≤ 200% of initial specified value Leakage current : ≤ initial specified value														
Others	Satisfies characteristic W of JIS C5141														

## Part Numbering System for FL Series

When ordering, always specify complete catalog number for FL Series.



# FL Series

## Diagram of Dimensions

**VB/Radial Lead** Unit: mm

\*Gas escape end seal for Ø4 - Ø18.  
External end configuration shown above for Ø4 - Ø18 is an example. Actual end configuration depends on case size.

ØD	ØD' max.	L' max.	Ød	F
3, 3.5	ØD+0.5	L+1.0	0.4	1.0±0.3
4	ØD+0.5	L+1.0 (≤7L) L+1.5 (≥9L)	0.45	1.5±0.5
5	ØD+0.5		0.45 (≤7L) 0.5 (≥9L)	2.0±0.5
6.3	ØD+0.5	L+1.5 (≤7L) L+2.0 (≥9L)	0.45 (≤7L) 0.6 (≥9L)	2.5±0.5
8	ØD+0.5		0.45 (≤7L) 0.6 (≥9L)	2.5±0.5 (5L) 3.5±0.5 (≥7L)
10, 12.5	ØD+0.5	L+1.5 (≤15L)	0.6	5.0±0.5
16, 18	ØD+0.5	L+2.0 (≥20L)	0.8	7.5±0.5

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

## Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Maximum Impedance (Ω) at +20°C, 100kHz	Maximum Ripple Current (mA rms) at +105°C, 100kHz	Lifetime Rating (Hours) at +105°C
6.3 Volts 8 Volts Surge	18	FL6.3VB18RM3X5LL	3×5	20	15	2,000
	33	FL6.3VB33RM3X7LL	3×7	12	24	3,000
	27	FL6.3VB27RM3X5LL	3.5×5	15	20	2,000
	47	FL6.3VB47RM3X7LL	3.5×7	9.2	30	3,000
	39	FL6.3VB39RM4X5LL	4×5	5.4	37	3,000
	82	FL6.3VB82RM4X7LL	4×7	3.0	55	3,000
	82	FL6.3VB82RM4X9LL	4×9	2.6	57	4,000
	120	FL6.3VB121M4X11LL	4×11.5	2.2	83	5,000
	82	FL6.3VB82RM5X5LL	5×5	3.1	57	3,000
	150	FL6.3VB151M5X7LL	5×7	1.6	88	3,000
	150	FL6.3VB151M5X9LL	5×9	1.4	107	4,000
	220	FL6.3VB221M5X11LL	5×11.5	1.5	115	5,000
	270	FL6.3VB271M5X15LL	5×15	1.2	149	6,000
	220	FL6.3VB221M6X5LL	6.3×5	1.7	82	3,000
	330	FL6.3VB331M6X7LL	6.3×7	0.86	142	3,000
	330	FL6.3VB331M6X9LL	6.3×9	0.72	166	4,000
	470	FL6.3VB471M6X11LL	6.3×11.5	0.72	190	5,000
	560	FL6.3VB561M6X15LL	6.3×15	0.53	245	6,000
	270	FL6.3VB271M8X5LL	8×5	1.5	110	3,000
	470	FL6.3VB471M8X7LL	8×7	0.56	205	3,000
	470	FL6.3VB471M8X9LL	8×9	0.45	253	4,000
	1,000	FL6.3VB102M8X12LL	8×12	0.41	287	6,000
	1,200	FL6.3VB122M8X15LL	8×15	0.30	365	6,000
1,500	FL6.3VB152M8X20LL	8×20	0.23	417	6,000	
1,200	FL6.3VB122M10X12LL	10×12.5	0.26	426	6,000	
1,800	FL6.3VB182M10X16LL	10×16	0.18	565	6,000	
2,700	FL6.3VB272M10X20LL	10×20	0.13	721	6,000	

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

# FL Series

## Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Maximum Impedance (Ω) at +20°C, 100kHz	Maximum Ripple Current (mA rms) at +105°C, 100kHz	Lifetime Rating (Hours) at +105°C
<b>6.3 Volts</b> 8 Volts Surge	3,300	FL6.3VB332M10X25LL	10×25	0.10	894	6,000
	3,900	FL6.3VB392M10X30LL	10×30	0.085	1,040	6,000
	2,700	FL6.3VB272M12X12LL	12.5×12.5	0.21	530	6,000
	3,300	FL6.3VB332M12X15LL	12.5×15	0.16	645	6,000
	4,700	FL6.3VB472M12X20LL	12.5×20	0.088	971	10,000
	5,600	FL6.3VB562M12X25LL	12.5×25	0.072	1,170	10,000
	6,800	FL6.3VB682M12X30LL	12.5×30	0.056	1,430	10,000
	8,200	FL6.3VB822M12X35LL	12.5×35	0.046	1,630	10,000
	10,000	FL6.3VB103M12X40LL	12.5×40	0.044	1,730	10,000
	3,900	FL6.3VB392M16X15LL	16×15	0.11	882	6,000
	6,800	FL6.3VB682M16X20LL	16×20	0.059	1,320	10,000
	10,000	FL6.3VB103M16X25LL	16×25	0.043	1,670	10,000
	12,000	FL6.3VB123M16X31LL	16×31.5	0.034	2,020	10,000
	15,000	FL6.3VB153M16X35LL	16×35.5	0.03	2,200	10,000
	18,000	FL6.3VB183M16X40LL	16×40	0.027	2,400	10,000
	4,700	FL6.3VB472M18X15LL	18×15	0.091	1,040	6,000
	8,200	FL6.3VB822M18X20LL	18×20	0.052	1,490	10,000
	12,000	FL6.3VB123M18X25LL	18×25	0.039	1,810	10,000
	15,000	FL6.3VB153M18X31LL	18×31.5	0.034	2,090	10,000
	18,000	FL6.3VB183M18X35LL	18×35.5	0.027	2,320	10,000
	22,000	FL6.3VB223M18X40LL	18×40	0.025	2,560	10,000
	<b>10 Volts</b> 13 Volts Surge	12	FL10VB12RM3X5LL	3×5	20	15
22		FL10VB22RM3X7LL	3×7	12	24	3,000
22		FL10VB22RM3X5LL	3.5×5	15	20	2,000
33		FL10VB33RM3X7LL	3.5×7	9.2	30	3,000
33		FL10VB33RM4X5LL	4×5	5.4	37	3,000
56		FL10VB56RM4X7LL	4×7	3.0	55	3,000
56		FL10VB56RM4X9LL	4×9	2.6	57	4,000
100		FL10VB101M4X11LL	4×11.5	2.2	83	5,000
68		FL10VB68RM5X5LL	5×5	3.1	57	3,000
100		FL10VB101M5X7LL	5×7	1.6	88	3,000
100		FL10VB101M5X9LL	5×9	1.4	107	4,000
180		FL10VB181M5X11LL	5×11.5	1.5	115	5,000
220		FL10VB221M5X15LL	5×15	1.2	149	6,000
120		FL10VB121M6X5LL	6.3×5	1.7	82	3,000
220		FL10VB221M6X7LL	6.3×7	0.86	142	3,000
220		FL10VB221M6X9LL	6.3×9	0.72	166	4,000
390		FL10VB391M6X11LL	6.3×11.5	0.72	190	5,000
470		FL10VB471M6X15LL	6.3×15	0.53	245	6,000
220		FL10VB221M8X5LL	8×5	1.5	110	3,000
330		FL10VB331M8X7LL	8×7	0.56	205	3,000
470		FL10VB471M8X9LL	8×9	0.45	253	4,000
680		FL10VB681M8X12LL	8×12	0.41	287	6,000
1,000		FL10VB102M8X15LL	8×15	0.30	365	6,000
1,200		FL10VB122M8X20LL	8×20	0.23	417	6,000
1,000		FL10VB102M10X12LL	10×12.5	0.26	426	6,000
1,500		FL10VB152M10X16LL	10×16	0.18	565	6,000
2,200		FL10VB222M10X20LL	10×20	0.13	721	6,000
2,700		FL10VB272M10X25LL	10×25	0.10	894	6,000
3,900		FL10VB392M10X30LL	10×30	0.085	1,040	6,000
1,800		FL10VB182M12X12LL	12.5×12.5	0.21	530	6,000
2,200		FL10VB222M12X15LL	12.5×15	0.16	645	6,000
3,300		FL10VB332M12X20LL	12.5×20	0.088	971	10,000
4,700		FL10VB472M12X25LL	12.5×25	0.072	1,170	10,000
5,600		FL10VB562M12X30LL	12.5×30	0.056	1,430	10,000
6,800		FL10VB682M12X35LL	12.5×35	0.046	1,630	10,000
8,200		FL10VB822M12X40LL	12.5×40	0.044	1,730	10,000
2,700		FL10VB272M16X15LL	16×15	0.11	882	6,000
4,700		FL10VB472M16X20LL	16×20	0.059	1,320	10,000

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

# FL Series

## Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Maximum Impedance (Ω) at +20°C, 100kHz	Maximum Ripple Current (mA rms) at +105°C, 100kHz	Lifetime Rating (Hours) at +105°C
----------------------	------------------	---------------------	-----------------------------	--	---	-----------------------------------

<b>10 Volts 13 Volts Surge</b>	6,800	FL10VB682M16X25LL	16×25	0.043	1,670	10,000
	8,200	FL10VB822M16X31LL	16×31.5	0.034	2,020	10,000
	10,000	FL10VB103M16X35LL	16×35.5	0.03	2,200	10,000
	12,000	FL10VB123M16X40LL	16×40	0.027	2,400	10,000
	3,900	FL10VB392M18X15LL	18×15	0.091	1,040	6,000
	6,800	FL10VB682M18X20LL	18×20	0.052	1,490	10,000
	10,000	FL10VB103M18X25LL	18×25	0.039	1,810	10,000
	12,000	FL10VB123M18X31LL	18×31.5	0.034	2,090	10,000
	15,000	FL10VB153M18X35LL	18×35.5	0.027	2,320	10,000
18,000	FL10VB183M18X40LL	18×40	0.025	2,560	10,000	

<b>16 Volts 20 Volts Surge</b>	10	FL16VB10RM3X5LL	3×5	20	15	2,000
	15	FL16VB15RM3X7LL	3×7	12	24	3,000
	15	FL16VB15RM3X5LL	3.5×5	15	20	2,000
	22	FL16VB22RM3X7LL	3.5×7	9.2	30	3,000
	22	FL16VB22RM4X5LL	4×5	5.4	37	3,000
	47	FL16VB47RM4X7LL	4×7	3.0	55	3,000
	47	FL16VB47RM4X9LL	4×9	2.6	57	4,000
	68	FL16VB68RM4X11LL	4×11.5	2.2	83	5,000
	47	FL16VB47RM5X5LL	5×5	3.1	57	3,000
	100	FL16VB101M5X7LL	5×7	1.6	88	3,000
	100	FL16VB101M5X9LL	5×9	1.4	107	4,000
	120	FL16VB121M5X11LL	5×11.5	1.5	115	5,000
	180	FL16VB181M5X15LL	5×15	1.2	149	6,000
	100	FL16VB101M6X5LL	6.3×5	1.7	82	3,000
	220	FL16VB221M6X7LL	6.3×7	0.86	142	3,000
	220	FL16VB221M6X9LL	6.3×9	0.72	166	4,000
	270	FL16VB271M6X11LL	6.3×11.5	0.72	190	5,000
	390	FL16VB391M6X15LL	6.3×15	0.53	245	6,000
	150	FL16VB151M8X5LL	8×5	1.5	110	3,000
	330	FL16VB331M8X7LL	8×7	0.56	205	3,000
	330	FL16VB331M8X9LL	8×9	0.45	253	4,000
	470	FL16VB471M8X12LL	8×12	0.41	287	6,000
	680	FL16VB681M8X15LL	8×15	0.30	365	6,000
	820	FL16VB821M8X20LL	8×20	0.23	417	6,000
	680	FL16VB681M10X12LL	10×12.5	0.26	426	6,000
	1,000	FL16VB102M10X16LL	10×16	0.18	565	6,000
	1,500	FL16VB152M10X20LL	10×20	0.13	721	6,000
	1,800	FL16VB182M10X25LL	10×25	0.10	894	6,000
	2,200	FL16VB222M10X30LL	10×30	0.085	1,040	6,000
	1,500	FL16VB152M12X12LL	12.5×12.5	0.21	530	6,000
	1,800	FL16VB182M12X15LL	12.5×15	0.16	645	6,000
	2,200	FL16VB222M12X20LL	12.5×20	0.088	971	10,000
	3,300	FL16VB332M12X25LL	12.5×25	0.072	1,170	10,000
	3,900	FL16VB392M12X30LL	12.5×30	0.056	1,430	10,000
	4,700	FL16VB472M12X35LL	12.5×35	0.046	1,630	10,000
	5,600	FL16VB562M12X40LL	12.5×40	0.044	1,730	10,000
	2,200	FL16VB222M16X15LL	16×15	0.11	882	6,000
	3,900	FL16VB392M16X20LL	16×20	0.059	1,320	10,000
	5,600	FL16VB562M16X25LL	16×25	0.043	1,670	10,000
	6,800	FL16VB682M16X31LL	16×31.5	0.034	2,020	10,000
	8,200	FL16VB822M16X35LL	16×35.5	0.03	2,200	10,000
	10,000	FL16VB103M16X40LL	16×40	0.027	2,400	10,000
2,700	FL16VB272M18X15LL	18×15	0.091	1,040	6,000	
4,700	FL16VB472M18X20LL	18×20	0.052	1,490	10,000	
6,800	FL16VB682M18X25LL	18×25	0.039	1,810	10,000	
8,200	FL16VB822M18X31LL	18×31.5	0.034	2,090	10,000	
10,000	FL16VB103M18X35LL	18×35.5	0.027	2,320	10,000	
12,000	FL16VB123M18X40LL	18×40	0.025	2,560	10,000	

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

# FL Series

## Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Maximum Impedance (Ω) at +20°C, 100kHz	Maximum Ripple Current (mA rms) at +105°C, 100kHz	Lifetime Rating (Hours) at +105°C
----------------------	------------------	---------------------	-----------------------------	--	---	-----------------------------------

<b>25 Volts 32 Volts Surge</b>	5.6	FL25VB5R6M3X5LL	3×5	20	15	2,000
	6.8	FL25VB6R8M3X7LL	3×7	12	24	3,000
	8.2	FL25VB8R2M3X5LL	3.5×5	15	20	2,000
	10	FL25VB10RM3X7LL	3.5×7	9.2	30	3,000
	12	FL25VB12RM4X5LL	4×5	5.4	37	3,000
	22	FL25VB22RM4X7LL	4×7	3.0	55	3,000
	22	FL25VB22RM4X9LL	4×9	2.6	57	4,000
	39	FL25VB39RM4X11LL	4×11.5	2.2	83	5,000
	22	FL25VB22RM5X5LL	5×5	3.1	57	3,000
	47	FL25VB47RM5X7LL	5×7	1.6	88	3,000
	47	FL25VB47RM5X9LL	5×9	1.4	107	4,000
	68	FL25VB68RM5X11LL	5×11.5	1.5	115	5,000
	100	FL25VB101M5X15LL	5×15	1.2	149	6,000
	47	FL25VB47RM6X5LL	6.3×5	1.7	82	3,000
	100	FL25VB101M6X7LL	6.3×7	0.86	142	3,000
	100	FL25VB101M6X9LL	6.3×9	0.72	166	4,000
	120	FL25VB121M6X11LL	6.3×11.5	0.72	190	5,000
	180	FL25VB181M6X15LL	6.3×15	0.53	245	6,000
	68	FL25VB68RM8X5LL	8×5	1.5	110	3,000
	150	FL25VB151M8X7LL	8×7	0.56	205	3,000
	150	FL25VB151M8X9LL	8×9	0.45	253	4,000
	270	FL25VB271M8X12LL	8×12	0.41	287	6,000
	390	FL25VB391M8X15LL	8×15	0.30	365	6,000
	470	FL25VB471M8X20LL	8×20	0.23	417	6,000
	470	FL25VB471M10X12LL	10×12.5	0.26	426	6,000
	680	FL25VB681M10X16LL	10×16	0.18	565	6,000
	1,000	FL25VB102M10X20LL	10×20	0.13	721	6,000
	1,200	FL25VB122M10X25LL	10×25	0.10	894	6,000
	1,500	FL25VB152M10X30LL	10×30	0.085	1,040	6,000
	820	FL25VB821M12X12LL	12.5×12.5	0.21	530	6,000
	1,200	FL25VB122M12X15LL	12.5×15	0.16	645	6,000
	1,500	FL25VB152M12X20LL	12.5×20	0.088	971	10,000
	2,200	FL25VB222M12X25LL	12.5×25	0.072	1,170	10,000
	2,700	FL25VB272M12X30LL	12.5×30	0.056	1,430	10,000
	3,300	FL25VB332M12X35LL	12.5×35	0.046	1,630	10,000
	3,900	FL25VB392M12X40LL	12.5×40	0.044	1,730	10,000
1,200	FL25VB122M16X15LL	16×15	0.11	882	6,000	
1,200	FL25VB122M16X20LL	16×20	0.059	1,320	10,000	
3,300	FL25VB332M16X25LL	16×25	0.043	1,670	10,000	
3,900	FL25VB392M16X31LL	16×31.5	0.034	2,020	10,000	
4,700	FL25VB472M16X35LL	16×35.5	0.03	2,200	10,000	
5,600	FL25VB562M16X40LL	16×40	0.027	2,400	10,000	
1,800	FL25VB182M18X15LL	18×15	0.091	1,040	6,000	
3,300	FL25VB332M18X20LL	18×20	0.052	1,490	10,000	
4,700	FL25VB472M18X25LL	18×25	0.039	1,810	10,000	
5,600	FL25VB562M18X31LL	18×31.5	0.034	2,090	10,000	
6,800	FL25VB682M18X35LL	18×35.5	0.027	2,320	10,000	
8,200	FL25VB822M18X40LL	18×40	0.025	2,560	10,000	

<b>35 Volts 44 Volts Surge</b>	3.3	FL35VB3R3M3X5LL	3×5	20	15	2,000
	4.7	FL35VB4R7M3X7LL	3×7	12	24	3,000
	4.7	FL35VB4R7M3X5LL	3.5×5	15	20	2,000
	6.8	FL35VB6R8M3X7LL	3.5×7	9.2	30	3,000
	6.8	FL35VB6R8M4X5LL	4×5	5.4	37	3,000
	15	FL35VB15RM4X7LL	4×7	3.0	55	3,000
	15	FL35VB15RM4X9LL	4×9	2.6	57	4,000
	22	FL35VB22RM4X11LL	4×11.5	2.2	83	5,000
	12	FL35VB12RM5X5LL	5×5	3.1	57	3,000
	33	FL35VB33RM5X7LL	5×7	1.6	88	3,000
	33	FL35VB33RM5X9LL	5×9	1.4	107	4,000

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

# FL Series

## Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Maximum Impedance (Ω) at +20°C, 100kHz	Maximum Ripple Current (mA rms) at +105°C, 100kHz	Lifetime Rating (Hours) at +105°C
----------------------	------------------	---------------------	-----------------------------	--	---	-----------------------------------

35 Volts 44 Volts Surge	47	FL35VB47RM5X11LL	5×11.5	1.5	115	5,000
	56	FL35VB56RM5X15LL	5×15	1.2	149	6,000
	33	FL35VB33RM6X5LL	6.3×5	1.7	82	3,000
	68	FL35VB68RM6X7LL	6.3×7	0.86	142	3,000
	68	FL35VB68RM6X9LL	6.3×9	0.72	166	4,000
	100	FL35VB101M6X11LL	6.3×11.5	0.72	190	5,000
	120	FL35VB121M6X15LL	6.3×15	0.53	245	6,000
	39	FL35VB39RM8X5LL	8×5	1.5	110	3,000
	100	FL35VB101M8X7LL	8×7	0.56	205	3,000
	100	FL35VB101M8X9LL	8×9	0.45	253	4,000
	180	FL35VB181M8X12LL	8×12	0.41	287	6,000
	220	FL35VB221M8X15LL	8×15	0.30	365	6,000
	330	FL35VB331M8X20LL	8×20	0.23	417	6,000
	330	FL35VB331M10X12LL	10×12.5	0.26	426	6,000
	470	FL35VB471M10X16LL	10×16	0.18	565	6,000
	680	FL35VB681M10X20LL	10×20	0.13	721	6,000
	820	FL35VB821M10X25LL	10×25	0.10	894	6,000
	1,000	FL35VB102M10X30LL	10×30	0.085	1,040	6,000
	560	FL35VB561M12X12LL	12.5×12.5	0.21	530	6,000
	680	FL35VB681M12X15LL	12.5×15	0.16	645	6,000
	1,000	FL35VB102M12X20LL	12.5×20	0.088	971	10,000
	1,500	FL35VB152M12X25LL	12.5×25	0.072	1,170	10,000
	1,800	FL35VB182M12X30LL	12.5×30	0.056	1,430	10,000
	2,200	FL35VB222M12X35LL	12.5×35	0.046	1,630	10,000
	2,700	FL35VB272M12X40LL	12.5×40	0.044	1,730	10,000
	820	FL35VB821M16X15LL	16×15	0.11	882	6,000
	1,500	FL35VB152M16X20LL	16×20	0.059	1,320	10,000
	2,200	FL35VB222M16X25LL	16×25	0.043	1,670	10,000
	2,700	FL35VB272M16X31LL	16×31.5	0.034	2,020	10,000
	3,300	FL35VB332M16X35LL	16×35.5	0.03	2,200	10,000
	3,900	FL35VB392M16X40LL	16×40	0.027	2,400	10,000
	1,200	FL35VB122M18X15LL	18×15	0.091	1,040	6,000
	2,200	FL35VB222M18X20LL	18×20	0.052	1,490	10,000
3,300	FL35VB332M18X25LL	18×25	0.039	1,810	10,000	
3,900	FL35VB392M18X31LL	18×31.5	0.034	2,090	10,000	
4,700	FL35VB472M18X35LL	18×35.5	0.027	2,320	10,000	
5,600	FL35VB562M18X40LL	18×40	0.025	2,560	10,000	

50 Volts 63 Volts Surge	1.8	FL50VB1R8M3X5LL	3×5	34	12	2,000
	3.3	FL50VB3R3M3X7LL	3×7	20	20	3,000
	2.7	FL50VB2R7M3X5LL	3.5×5	25	16	2,000
	4.7	FL50VB4R7M3X7LL	3.5×7	15	24	3,000
	3.9	FL50VB3R9M4X5LL	4×5	9.1	30	3,000
	10	FL50VB10RM4X7LL	4×7	5.0	44	3,000
	10	FL50VB10RM4X9LL	4×9	4.4	46	4,000
	12	FL50VB12RM4X11LL	4×11.5	3.7	67	5,000
	8.2	FL50VB8R2M5X5LL	5×5	5.2	46	3,000
	18	FL50VB18RM5X7LL	5×7	2.7	72	3,000
	18	FL50VB18RM5X9LL	5×9	2.4	86	4,000
	27	FL50VB27RM5X11LL	5×11.5	2.6	87	5,000
	33	FL50VB33RM5X15LL	5×15	2.0	115	6,000
	15	FL50VB15RM6X5LL	6.3×5	2.9	67	3,000
	47	FL50VB47RM6X7LL	6.3×7	1.4	115	3,000
	47	FL50VB47RM6X9LL	6.3×9	1.2	135	4,000
	47	FL50VB47RM6X11LL	6.3×11.5	1.2	147	5,000
	68	FL50VB68RM6X15LL	6.3×15	0.89	189	6,000
	22	FL50VB22RM8X5LL	8×5	2.5	89	3,000
	56	FL50VB56RM8X7LL	8×7	0.94	166	3,000
	56	FL50VB56RM8X9LL	8×9	0.76	205	4,000
	100	FL50VB101M8X12LL	8×12	0.68	223	6,000

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

FL  
MINIATURE - 105°C

# FL Series

## Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance (μF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Maximum Impedance (Ω) at +20°C, 100kHz	Maximum Ripple Current (mA rms) at +105°C, 100kHz	Lifetime Rating (Hours) at +105°C
50 Volts 63 Volts Surge	120	FL50VB121M8X15LL	8×15	0.51	280	6,000
	180	FL50VB181M8X20LL	8×20	0.38	371	6,000
	180	FL50VB181M10X12LL	10×12.5	0.44	328	6,000
	270	FL50VB271M10X16LL	10×16	0.30	438	6,000
	390	FL50VB391M10X20LL	10×20	0.21	567	6,000
	470	FL50VB471M10X25LL	10×25	0.17	686	6,000
	560	FL50VB561M10X30LL	10×30	0.14	813	6,000
	330	FL50VB331M12X12LL	12.5×12.5	0.34	417	6,000
	470	FL50VB471M12X15LL	12.5×15	0.26	506	6,000
	560	FL50VB561M12X20LL	12.5×20	0.15	744	10,000
	820	FL50VB821M12X25LL	12.5×25	0.12	904	10,000
	1,000	FL50VB102M12X30LL	12.5×30	0.09	1,130	10,000
	1,200	FL50VB122M12X35LL	12.5×35	0.072	1,300	10,000
	1,500	FL50VB152M12X40LL	12.5×40	0.061	1,480	10,000
	470	FL50VB471M16X15LL	16×15	0.17	709	6,000
	820	FL50VB821M16X20LL	16×20	0.094	1,040	10,000
	1,200	FL50VB122M16X25LL	16×25	0.068	1,330	10,000
	1,500	FL50VB152M16X31LL	16×31.5	0.052	1,640	10,000
	1,800	FL50VB182M16X35LL	16×35.5	0.046	1,780	10,000
	2,200	FL50VB222M16X40LL	16×40	0.042	1,920	10,000
	680	FL50VB681M18X15LL	18×15	0.15	810	6,000
	1,200	FL50VB122M18X20LL	18×20	0.083	1,180	10,000
	1,800	FL50VB182M18X25LL	18×25	0.072	1,330	10,000
2,200	FL50VB222M18X31LL	18×31.5	0.053	1,670	10,000	
2,700	FL50VB272M18X35LL	18×35.5	0.042	1,940	10,000	
3,300	FL50VB332M18X40LL	18×40	0.038	2,070	10,000	

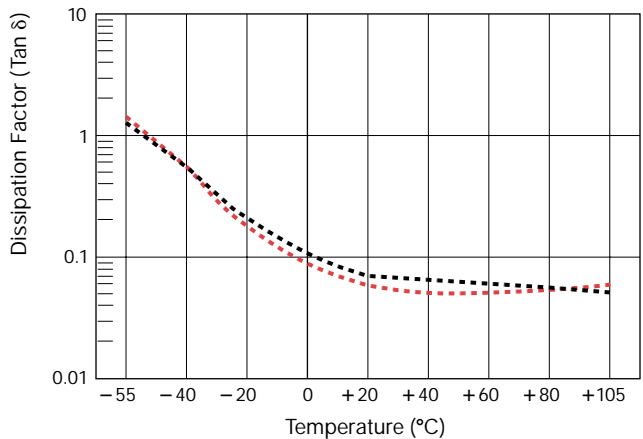
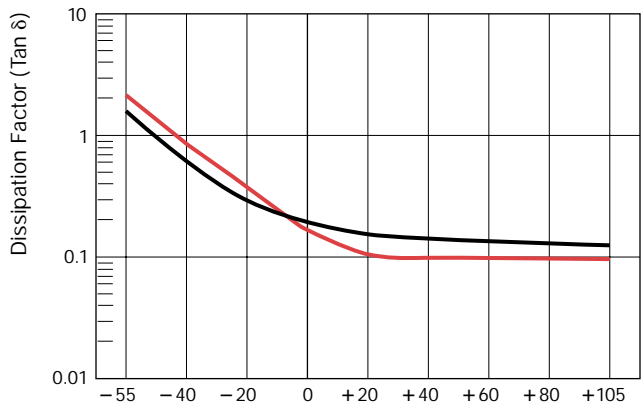
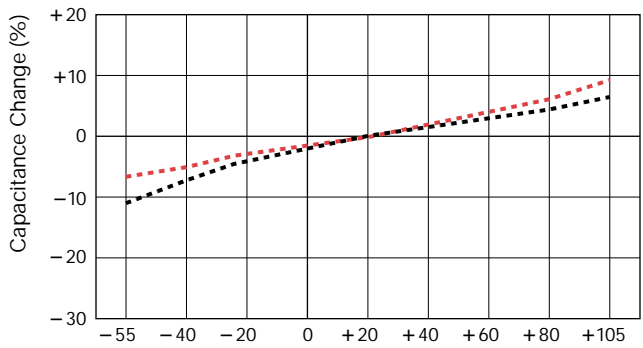
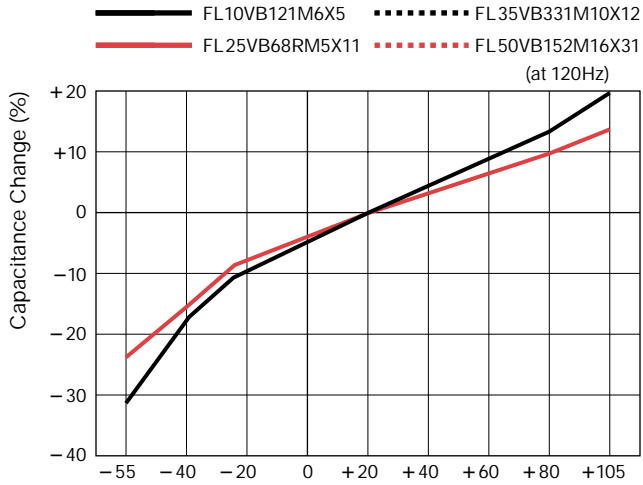
\* The case sizes in table are with no sleeve, refer to diagram for case sizes with sleeve.

FL  
MINIATURE - 105°C

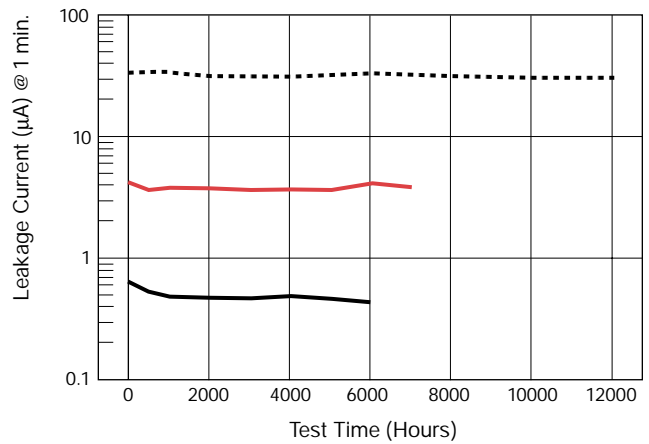
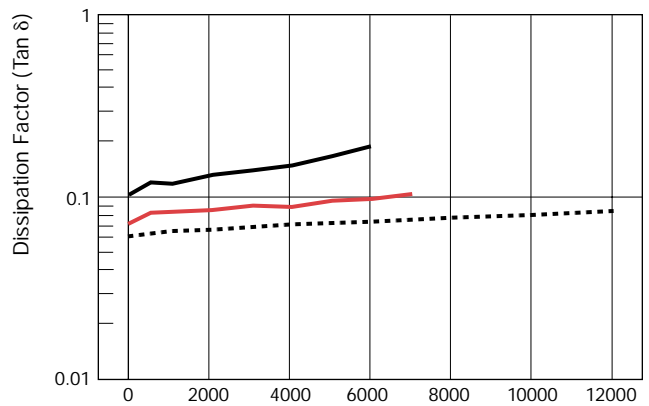
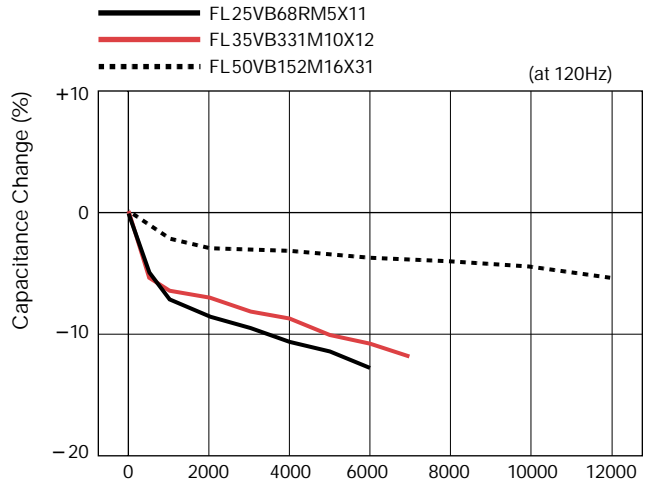


# FL Series

## Temperature Characteristics



## 105°C Load Life With Ripple Current



FL  
MINIATURE - 105°C