

# FEEDTHROUGH CAPACITORS AND FILTERS FOR DEFENCE, PROFESSIONAL AND TELECOMMS APPLICATIONS



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FM 00699

**MPE Limited**  
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## DESCRIPTION

A range of ac mains feedthrough capacitors designed to meet the very stringent safety requirements of EN132400 class Y2 including the 5000V pulse test. Suitable for all high performance applications requiring high reliability coupled with good high frequency performance such as mains power supplies for servers, base stations, and switches.



## FEATURES

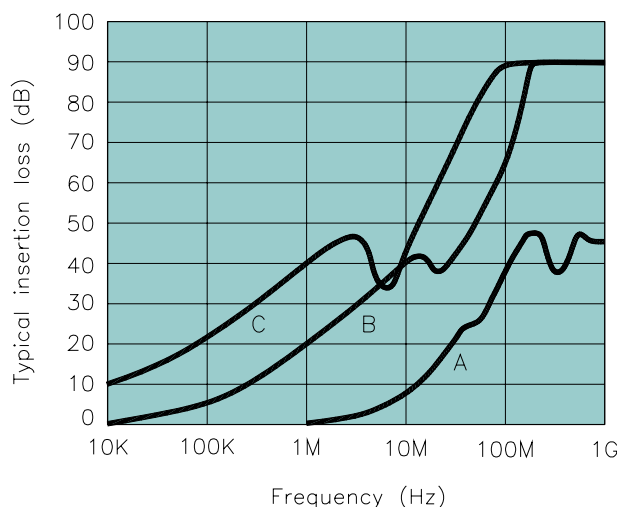
- 250V ac rating
- 10A - 300A current ratings
- Class Y2 capacitors
- 5000V pulse withstand
- Designed in accordance with EN60950
- RoHS compliant

## RATINGS AND CHARACTERISTICS

Rated Voltage	250V ac 50/60 Hz
Test Voltage	5000V dc 2 seconds
Capacitor Class (EN132400)	Y2
Pulse Test (EN132400)	5000V peak
Insulation Resistance (within 1 minute)	For C < 0.33 $\mu$ F, R > 15000M $\Omega$ For C > 0.33 $\mu$ F, RC > 5000s (M $\Omega$ . $\mu$ F)
Ambient Temperature Range	-40°C to +60°C (+40°C for 250A & 300A units)
Category Temperature Range	-40°C to +85°C
Climatic Category	40/85/21
MTBF	Typically >10million hours
Insulating materials flammability rating	UL94 V-0

## INSERTION LOSS

Graphical examples of performance from range (see overleaf for tabulated performance of full range)



- A = 2.2nF FC34140
- B = 100nF FC34153
- C = 1000nF FC34161

# AC FEEDTHROUGH CAPACITORS – CLASS Y2



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## PRODUCT RANGE

Part Number	Current Rating $I_R$ (A) @60°C*	Capacitance Value (nF ±20%)	Maximum Leakage Current (mA)	Typical Insertion Loss (dB) in 50 Ω system with/without load							
				10 kHz	30 kHz	100 kHz	300 kHz	1 MHz	10 MHz	100 MHz	1 GHz
FC34140	10	2.2	0.21	-	-	-	-	-	8	38	45
FC34141	10	4.7	0.44	-	-	-	-	-	14	43	60
FC34142	16	4.7	0.44	-	-	-	-	-	14	43	60
FC34143	16	10	0.94	-	-	-	-	3	21	45	70
FC34144	16	47	4.4	-	-	2	6	15	34	50	90
FC34145	16	100	9.4	-	2	5	11	20	40	65	90
FC34146	20	4.7	0.44	-	-	-	-	-	14	43	60
FC34147	32	4.7	0.44	-	-	-	-	-	14	43	60
FC34148	32	10	0.94	-	-	-	-	3	21	45	70
FC34149	32	33	3.1	-	-	-	4	12	30	48	90
FC34150	32	47	4.4	-	-	2	6	15	34	50	90
FC34151	32	100	9.4	-	2	5	11	20	40	65	90
FC34162	63	10	0.94	-	-	-	-	3	21	45	70
FC34152	63	47	4.4	-	-	2	6	15	34	50	90
FC34153	63	100	9.4	-	2	5	11	20	40	65	90
FC34154	100	47	4.4	-	-	2	6	15	34	50	90
FC34155	100	100	9.4	-	2	5	11	20	40	65	90
FC34156	100	220	21	-	4	11	18	27	45	85	90
FC34157	100	470	44	6	9	16	22	33	33	90	90
FC34158	200	100	9.4	-	2	5	11	20	40	65	90
FC34159	200	220	21	-	4	11	18	27	45	85	90
FC34160	200	470	44	6	9	16	22	33	33	90	90
FC34161	200	1000	94	10	15	22	30	40	42	90	90
FC34260	250	100	9.4	-	2	5	11	20	40	65	90
FC34261	250	220	21	-	4	11	18	27	45	85	90
FC34262	250	470	44	6	9	16	22	33	33	90	90
FC34221	250	1000	94	10	15	22	30	40	42	90	90
FC34263	300	100	9.4	-	2	5	11	20	40	65	90
FC34264	300	220	21	-	4	11	18	27	45	85	90
FC34265	300	470	44	6	9	16	22	33	33	90	90
FC34220	300	1000	94	10	15	22	30	40	42	90	90

\* 40°C for 250A and 300A capacitors

Current derating between 60°C and 85°C:  $I_{\theta} = I_R \sqrt{(85-\theta)/25}$

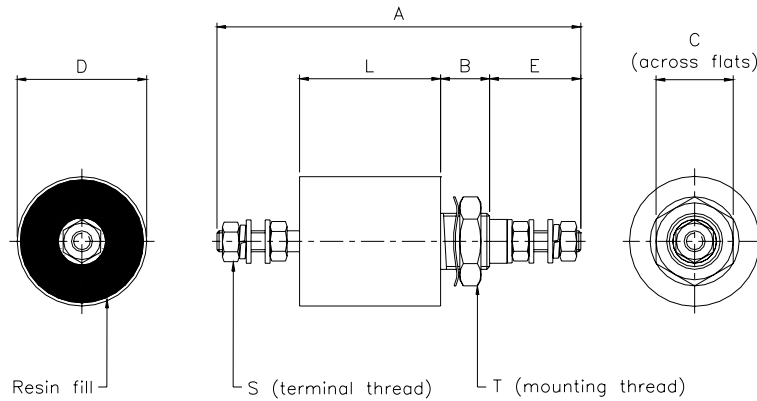
except for 250A and 300A capacitors, current derating between 40°C and 85°C:  $I_{\theta} = I_R \sqrt{(85-\theta)/45}$

# AC FEEDTHROUGH CAPACITORS – CLASS Y2



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## DIMENSIONS AND MECHANICAL DETAILS



Part Number	Dimensions (mm)										Weight (g)
	D ± 0.5	L ± 1	A ± 1	B ± 1	C	E ± 2	T	Torque on T (N-m)	S	Torque on S (N-m)	
FC34140	15	18	57	10	13	16	M10 x 1	3	M3	0.5	22
FC34141	15	18	57	10	13	16	M10 x 1	3	M3	0.5	22
FC34142	20	18	63	12	17	18	M12 x 1	4	M4	1.2	36
FC34143	20	18	63	12	17	18	M12 x 1	4	M4	1.2	36
FC34144	20	30	75	12	17	18	M12 x 1	4	M4	1.2	60
FC34145	25	30	77	14	22	18	M16 x 1	7	M4	1.2	75
FC34146	20	18	63	12	17	18	M12 x 1	4	M4	1.2	36
FC34147	20	18	63	12	17	18	M12 x 1	4	M4	1.2	36
FC34148	20	18	63	12	17	18	M12 x 1	4	M4	1.2	36
FC34149	20	30	75	12	17	18	M12 x 1	4	M4	1.2	60
FC34150	20	30	75	12	17	18	M12 x 1	4	M4	1.2	60
FC34151	25	30	77	14	22	18	M16 x 1	7	M4	1.2	75
FC34162	25	30	96	14	22	26	M16 x 1	7	M6	2.5	85
FC34152	25	30	96	14	22	26	M16 x 1	7	M6	2.5	85
FC34153	25	30	96	14	22	26	M16 x 1	7	M6	2.5	85
FC34154	32	33	113	16	27	32	M20 x 1	10	M8	5	160
FC34155	32	33	113	16	27	32	M20 x 1	10	M8	5	160
FC34156	38	33	116	19	27	32	M24 x 1	14	M8	5	200
FC34157	38	50	133	19	27	32	M24 x 1	14	M8	5	260
FC34158	38	33	130	19	27	40	M24 x 1	14	M10	8	200
FC34159	38	33	130	19	27	40	M24 x 1	14	M10	8	200
FC34160	54	50	147	19	40	40	M27 x 1.5	16	M10	8	560
FC34161	54	50	147	19	40	40	M27 x 1.5	16	M10	8	560
FC34260	54	42	148	19	40	46	M32 x 1.5	24	M12	11	600
FC34261	54	42	148	19	40	46	M32 x 1.5	24	M12	11	600
FC34262	54	54	160	19	40	46	M32 x 1.5	24	M12	11	650
FC34221	54	54	160	19	40	46	M32 x 1.5	24	M12	11	650
FC34263	54	42	148	19	40	46	M32 x 1.5	24	M16	20	750
FC34264	54	42	148	19	40	46	M32 x 1.5	24	M16	20	750
FC34265	54	54	160	19	40	46	M32 x 1.5	24	M16	20	850
FC34220	54	54	160	19	40	46	M32 x 1.5	24	M16	20	850

## DESCRIPTION

A range of dc feedthrough capacitors designed to meet the very stringent safety requirements of EN132400 class Y4 including the 2500V pulse test. Suitable for all high performance applications requiring high reliability coupled with good high frequency performance such as servers, base stations, and switches.



## FEATURES

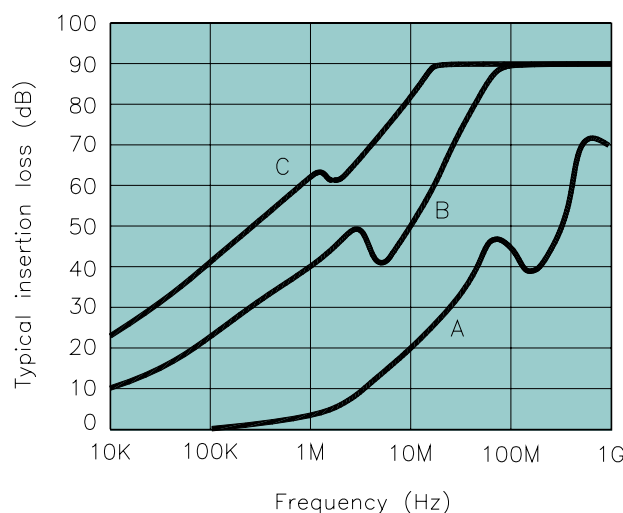
- 130V dc/ac rating
- 10A - 300A current ratings
- Class Y4 capacitors
- 2500V pulse withstand
- Designed in accordance with EN60950
- RoHS compliant

## RATINGS AND CHARACTERISTICS

Rated Voltage	130V dc (also 130V ac 50/60 Hz)
Test Voltage	2500V dc 2 seconds
Capacitor Class (EN132400)	Y4
Pulse Test (EN132400)	2500V peak
Insulation Resistance (within 1 minute)	For C < 0.33µF, R > 15000MΩ For C > 0.33µF, RC > 5000s (MΩ.µF)
Ambient Temperature Range	-40°C to +60°C (+40°C for 250A & 300A units)
Category Temperature Range	-40°C to +85°C
Climatic Category	40/85/21
MTBF	Typically >10million hours
Insulating materials flammability rating	UL94 V-0

## INSERTION LOSS

Graphical examples of performance from range (see overleaf for tabulated performance of full range)



- A = 10nF FC34170  
 B = 1000nF FC34186  
 C = 8000nF FC34272

## PRODUCT RANGE

Part Number	Current Rating $I_R$ (A) @60°C*	Capacitance Value (nF ±20%)	Typical Insertion Loss (dB) in 50 Ω system with/without load							
			10 kHz	30 kHz	100 kHz	300 kHz	1 MHz	10 MHz	100 MHz	1 GHz
FC34170	10	10	-	-	-	-	3	21	45	70
FC34171	16	10	-	-	-	-	3	21	45	70
FC34172	16	47	-	-	2	6	15	34	50	90
FC34173	16	100	-	2	5	11	20	40	65	90
FC34174	16	470	6	9	15	22	33	33	90	90
FC34175	32	10	-	-	-	-	3	21	45	70
FC34176	32	47	-	-	2	6	15	34	50	90
FC34177	32	100	-	2	5	11	20	40	65	90
FC34178	32	470	6	9	15	22	33	33	90	90
FC34179	63	10	-	-	-	-	3	21	45	70
FC34180	63	47	-	-	2	6	15	34	50	90
FC34181	63	100	-	2	5	11	20	40	65	90
FC34182	63	470	6	9	15	22	33	33	90	90
FC34183	100	47	-	-	2	6	15	34	50	90
FC34184	100	100	-	2	5	11	20	40	65	90
FC34185	100	470	6	9	15	22	33	33	90	90
FC34186	100	1000	10	15	24	32	42	50	90	90
FC34187	200	100	-	2	5	11	20	40	65	90
FC34188	200	470	6	9	15	22	33	33	90	90
FC34189	200	1000	10	15	24	32	42	50	90	90
FC34190	200	4700	18	26	36	45	52	70	90	90
FC34270	250	1000	10	15	24	32	42	50	90	90
FC34271	250	3300	13	21	31	42	50	58	90	90
FC34272	250	8000	22	31	41	52	62	82	90	90
FC34273	300	1000	10	15	24	32	42	50	90	90
FC34274	300	3300	13	21	31	42	50	58	90	90
FC34275	300	8000	22	31	41	52	62	82	90	90

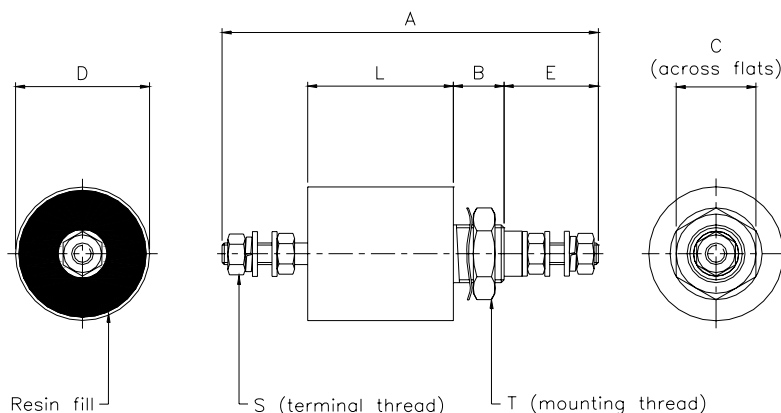
\* 40°C for 250A and 300A capacitors

Current derating between 60°C and 85°C:

$$\text{For temperature, } \theta \quad I_{\theta} = I_R \sqrt{(85 - \theta) / 25}$$

except for 250A and 300A capacitors, current derating between 40°C and 85°C:  $I_{\theta} = I_R \sqrt{(85 - \theta) / 45}$

## DIMENSIONS AND MECHANICAL DETAILS



Part Number	Dimensions (mm)										Weight (g)
	D ± 0.5	L ± 1	A ± 1	B ± 1	C	E ± 2	T	Torque on T (N-m)	S	Torque on S (N-m)	
FC34170	15	18	57	10	13	16	M10 x 1	3	M3	0.5	22
FC34171	20	18	63	12	17	18	M12 x 1	4	M4	1.2	36
FC34172	20	30	75	12	17	18	M12 x 1	4	M4	1.2	60
FC34173	20	30	75	12	17	18	M12 x 1	4	M4	1.2	60
FC34174	32	33	82	16	27	18	M20 x 1	10	M4	1.2	140
FC34175	20	18	63	12	17	18	M12 x 1	4	M4	1.2	36
FC34176	20	30	75	12	17	18	M12 x 1	4	M4	1.2	60
FC34177	20	30	75	12	17	18	M12 x 1	4	M4	1.2	60
FC34178	32	33	82	16	27	18	M20 x 1	10	M4	1.2	140
FC34179	25	30	96	14	22	26	M16 x 1	7	M6	2.5	85
FC34180	25	30	96	14	22	26	M16 x 1	7	M6	2.5	85
FC34181	25	30	96	14	22	26	M16 x 1	7	M6	2.5	85
FC34182	32	33	101	16	27	26	M20 x 1	10	M6	2.5	150
FC34183	32	33	113	16	27	32	M20 x 1	10	M8	5	160
FC34184	32	33	113	16	27	32	M20 x 1	10	M8	5	160
FC34185	32	33	113	16	27	32	M20 x 1	10	M8	5	160
FC34186	38	50	133	19	27	32	M24 x 1	14	M8	5	260
FC34187	32	33	130	19	27	40	M24 x 1	14	M10	8	180
FC34188	32	33	130	19	27	40	M24 x 1	14	M10	8	180
FC34189	38	50	147	19	27	40	M24 x 1	14	M10	8	280
FC34190	54	68	165	19	40	40	M27 x 1.5	16	M10	8	680
FC34270	54	42	148	19	40	46	M32 x 1.5	24	M12	11	600
FC34271	54	54	160	19	40	46	M32 x 1.5	24	M12	11	650
FC34272	54	72	178	19	40	46	M32 x 1.5	24	M12	11	850
FC34273	54	42	148	19	40	46	M32 x 1.5	24	M16	20	750
FC34274	54	54	160	19	40	46	M32 x 1.5	24	M16	20	850
FC34275	54	72	178	19	40	46	M32 x 1.5	24	M16	20	900

## DESCRIPTION

A range of ac mains feedthrough filters designed to meet the very stringent safety requirements of EN133200. Capacitors comply with class Y2 rating including the 5000V pulse test. Suitable for all high performance applications requiring high reliability coupled with good high frequency performance such as mains power supplies for servers, base stations, and switches.



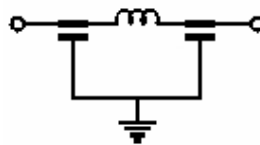
## FEATURES

- 250V ac rating
- 10A - 300A current ratings
- Incorporate class Y2 capacitors
- 5000V pulse withstand
- Designed in accordance with EN60950
- RoHS compliant

## RATINGS AND CHARACTERISTICS

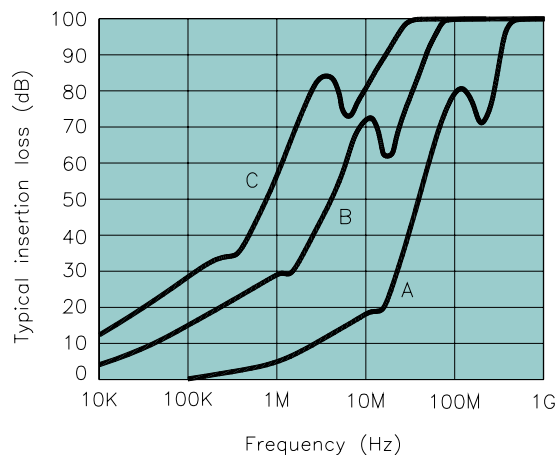
Rated Voltage	250V ac 50/60 Hz
Test Voltage	5000V dc 2 seconds
Capacitor Class (EN132400)	Y2
Pulse Test (EN132400)	5000V peak
Insulation Resistance (within 1 minute)	For C < 0.33 $\mu$ F, R > 15000M $\Omega$ For C > 0.33 $\mu$ F, RC > 5000s (M $\Omega$ . $\mu$ F)
Ambient Temperature Range	-40°C to +60°C (+50°C for 200A units) (+40°C for 250A & 300A units)
Category Temperature Range	-40°C to +85°C
Climatic Category	40/85/21
MTBF	Typically >5 million hours
Insulating materials flammability rating	UL94 V-0

## CIRCUIT



## INSERTION LOSS

Graphical examples of performance from range (see overleaf for tabulated performance of full range)



A = FF34200

B = FF34209

C = FF34229

## PRODUCT RANGE

Part Number	Current Rating $I_R$ (A) @60°C*	Capacitance (nF ±20%)	Inductance (nH)	Maximum Leakage Current (mA)	DC Resistance (mΩ)	Typical Insertion Loss (dB) in 50 Ω system with/without load							
						10 kHz	30 kHz	100 kHz	300 kHz	1 MHz	10 MHz	100 MHz	1 GHz
<b>Standard Performance Range</b>													
FF34200	10	2 x 4.7	70	0.9	6	-	-	-	-	4	18	80	100
FF34201	16	2 x 10	70	1.9	4	-	-	2	4	10	22	65	100
FF34202	32	2 x 10	70	1.9	4	-	-	2	4	10	22	65	100
FF34203	63	2 x 47	80	8.9	3	-	-	6	11	21	50	85	100
FF34204	100	2 x 100	90	19	2	-	2	10	18	27	60	100	100
FF34205	200	2 x 100	120	19	1	-	2	10	18	27	60	100	100
FF34222	250	2 x 100	160	19	<1	-	2	10	18	27	60	100	100
FF34226	300	2 x 100	160	19	<1	-	2	10	18	27	60	100	100
<b>High Performance Range</b>													
FF34206	10	2 x 10	140	1.9	7	-	-	2	3	10	28	65	100
FF34207	16	2 x 22	170	4.2	4	-	-	3	7	15	40	72	100
FF34208	32	2 x 22	170	4.2	4	-	-	3	7	15	40	72	100
FF34209	63	2 x 150	180	29	3	3	8	15	21	28	72	100	100
FF34210	100	2 x 470	240	89	2	7	14	22	30	40	80	100	100
FF34211	200	2 x 470	330	89	1	7	15	24	31	44	80	100	100
FF34224	250	2 x 470	330	89	<1	7	15	24	31	44	80	100	100
FF34228	300	2 x 470	330	89	<1	7	15	24	31	44	80	100	100
<b>Extended Performance Range</b>													
FF34212	10	2 x 47	210	8.9	9	-	-	5	12	21	60	90	100
FF34213	16	2 x 100	250	19	6	2	4	10	17	24	75	90	100
FF34214	32	2 x 100	250	19	6	2	4	10	17	24	75	90	100
FF34215	63	2 x 470	330	89	3	8	15	24	32	40	65	100	100
FF34216	100	2 x 1000	330	188	2	12	20	29	33	56	80	100	100
FF34217	200	2 x 1000	330	188	1	12	20	29	33	56	80	100	100
FF34225	250	2 x 1000	330	188	<1	12	20	29	33	56	80	100	100
FF34229	300	2 x 1000	330	188	<1	12	20	29	33	56	80	100	100

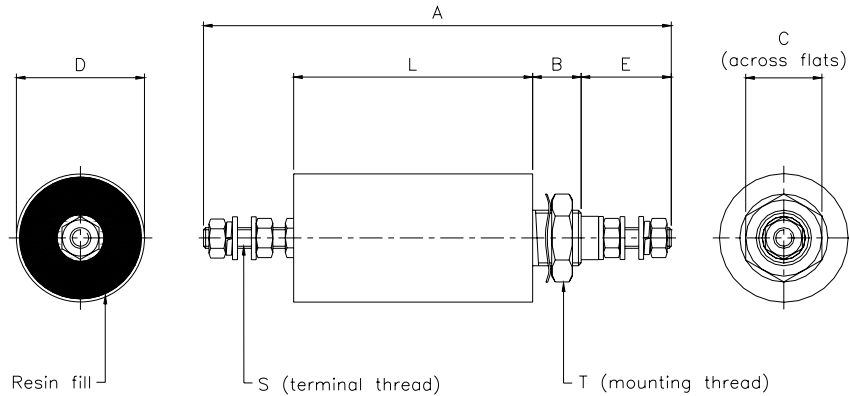
\* 50°C for 200A filters, 40°C for 250A and 300A filters

Current derating between 60°C and 85°C:

$$\text{For temperature, } \theta \quad I_{\theta} = I_R \sqrt{(85 - \theta)/25}$$

except for 200A filters between 50°C and 85°C  $I_{\theta} = I_R \sqrt{(85 - \theta)/35}$  and for 250A and 300A filters between 40°C and 85°C  $I_{\theta} = I_R \sqrt{(85 - \theta)/45}$

## DIMENSIONS AND MECHANICAL DETAILS



Part Number	Dimensions (mm)										Weight (g)
	D ± 0.5	L ± 1	A ± 2	B ± 1	C	E ± 2	T	Torque on T (N-m)	S	Torque on S (N-m)	
FF34200	20	57	98	12	17	16	M12 x 1	4	M3	0.5	80
FF34201	20	61	106	12	17	18	M12 x 1	4	M4	1.2	90
FF34202	20	61	106	12	17	18	M12 x 1	4	M4	1.2	90
FF34203	25	94	160	14	22	26	M16 x 1	7	M6	2.5	200
FF34204	32	104	184	16	27	32	M20 x 1	10	M8	5	290
FF34205	38	112	209	19	27	40	M24 x 1	14	M10	8	460
FF34222	54	93	200	19	40	46	M32 x 1.5	24	M12	11	1020
FF34226	54	93	200	19	40	46	M32 x 1.5	24	M16	20	1250
FF34206	20	66	107	12	17	16	M12 x 1	4	M3	0.5	90
FF34207	25	69	116	14	22	18	M16 x 1	7	M4	1.2	140
FF34208	25	69	116	14	22	18	M16 x 1	7	M4	1.2	140
FF34209	32	105	173	16	27	26	M20 x 1	10	M6	2.5	280
FF34210	38	145	228	19	27	32	M24 x 1	14	M8	5	600
FF34211	54	146	243	19	40	40	M27 x 1.5	16	M10	8	1350
FF34224	54	160	267	19	40	46	M32 x 1.5	24	M12	11	1480
FF34228	54	160	267	19	40	46	M32 x 1.5	24	M16	20	1750
FF34212	20	99	140	12	17	16	M12 x 1	4	M3	0.5	130
FF34213	25	101	148	14	22	18	M16 x 1	7	M4	1.2	200
FF34214	25	101	148	14	22	18	M16 x 1	7	M4	1.2	200
FF34215	54	118	189	19	40	26	M27 x 1.5	16	M6	2.5	1050
FF34216	54	144	227	19	40	32	M27 x 1.5	16	M8	5	1300
FF34217	54	146	243	19	40	40	M27 x 1.5	16	M10	8	1350
FF34225	54	160	267	19	40	46	M32 x 1.5	24	M12	11	1450
FF34229	54	160	267	19	40	46	M32 x 1.5	24	M16	20	1820

## DESCRIPTION

A range of dc feedthrough filters designed to meet the very stringent safety requirements of EN133200. Capacitors comply with class Y4 rating including the 2500V pulse test. Suitable for all high performance applications requiring high reliability coupled with good high frequency performance such as servers, base stations, and switches.



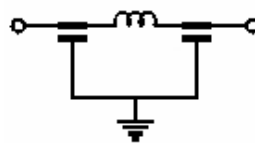
## FEATURES

- 130V dc/ac rating
- 10A - 300A current ratings
- Incorporate class Y4 capacitors
- 2500V pulse withstand
- Designed in accordance with EN60950
- RoHS compliant

## RATINGS AND CHARACTERISTICS

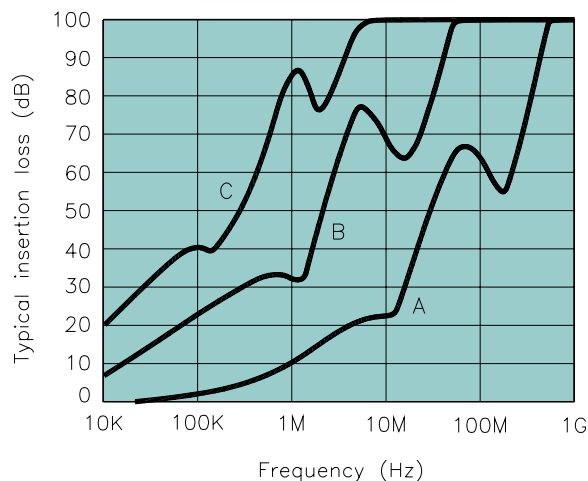
Rated Voltage	130V dc (also 130V ac 50/60Hz)
Test Voltage	2500V dc 2 seconds
Capacitor Class (EN132400)	Y4
Pulse Test (EN132400)	2500V peak
Insulation Resistance (within 1 minute)	For C < 0.33 $\mu$ F, R > 15000M $\Omega$ For C > 0.33 $\mu$ F, RC > 5000s (M $\Omega$ . $\mu$ F)
Ambient Temperature Range	-40°C to +60°C (+50°C for 200A units)
Category Temperature Range	-40°C to +85°C
Climatic Category	40/85/21
MTBF	Typically >5 million hours
Insulating materials flammability rating	UL94 V-0

## CIRCUIT



## INSERTION LOSS

Graphical examples of performance from range (see overleaf for tabulated performance of full range)



A = FF34230

B = FF34235

C = FF34241

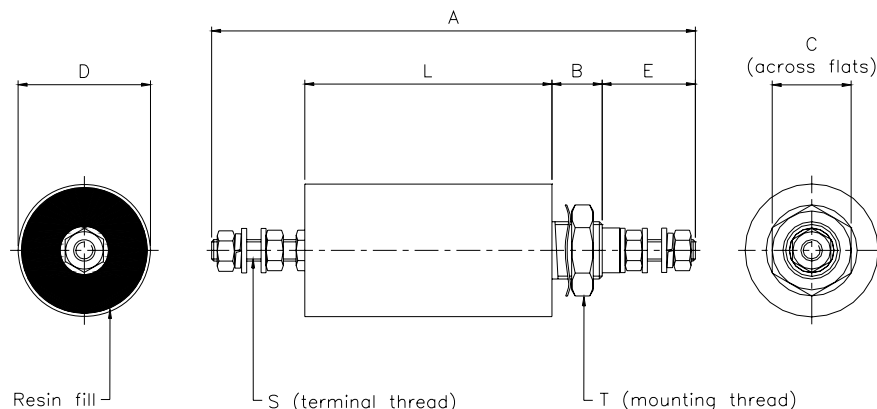
## PRODUCT RANGE

Part Number	Current Rating $I_R$ (A) @60°C*	Capacitance (nF ±20%)	Inductance (nH)	DC Resistance (mΩ)	Typical Insertion Loss (dB) in 50 Ω system with/without load								
					10 kHz	30 kHz	100 kHz	300 kHz	1 MHz	10 MHz	100 MHz	1 GHz	
<b>Standard Performance Range</b>													
FF34230	10	2 x 10	70	6	-	-	2	4	10	23	65	100	
FF34231	16	2 x 10	70	4	-	-	2	4	10	23	65	100	
FF34232	32	2 x 10	70	4	-	-	2	4	10	23	65	100	
FF34233	63	2 x 100	80	3	2	4	10	18	27	62	95	100	
FF34234	100	2 x 470	90	2	7	14	23	30	32	70	100	100	
FF34235	200	2 x 470	120	1	7	14	23	30	32	70	100	100	
<b>High Performance Range</b>													
FF34236	10	2 x 100	140	8	2	4	10	18	27	67	95	100	
FF34237	16	2 x 100	140	5	2	4	10	18	27	67	95	100	
FF34238	32	2 x 100	140	5	2	4	10	18	27	67	95	100	
FF34239	63	2 x 470	180	3	7	14	23	31	35	75	100	100	
FF34240	100	2 x 1000	240	2	14	21	30	34	53	75	100	100	
FF34241	200	2 x 4700	330	2	20	32	40	52	85	100	100	100	

\* 50°C for 200A filters

Current derating between 60°C and 85°C: For temperature,  $\theta$   $I_\theta = I_R \sqrt{(85-\theta)/25}$   
 except for 200A filters between 50°C and 85°C  $I_\theta = I_R \sqrt{(85-\theta)/35}$

## DIMENSIONS AND MECHANICAL DETAILS



Part Number	Dimensions (mm)										Weight (g)
	D ± 0.5	L ± 1	A ± 2	B ± 1	C	E ± 2	T	Torque on T (N-m)	S	Torque on S (N-m)	
FF34230	20	49	90	12	17	16	M12x1	4	M3	0.5	65
FF34231	20	53	98	12	17	18	M12x1	4	M4	1.2	70
FF34232	20	53	98	12	17	18	M12x1	4	M4	1.2	70
FF34233	25	94	160	14	22	26	M16x1	7	M6	2.5	190
FF34234	32	104	184	16	27	32	M20x1	10	M8	5	290
FF34235	38	112	209	19	27	40	M24x1	14	M10	8	460
FF34236	20	89	130	12	17	16	M12x1	4	M3	0.5	120
FF34237	20	94	139	12	17	18	M12x1	4	M4	1.2	130
FF34238	20	94	139	12	17	18	M12x1	4	M4	1.2	130
FF34239	32	105	173	16	27	26	M20x1	10	M6	2.5	280
FF34240	38	145	228	19	27	32	M24x1	14	M8	5	600
FF34241	54	182	279	19	40	40	M27x1.5	16	M10	8	1500

## DESCRIPTION

A range of dc feedthrough capacitors designed for use on standard telecoms voltages of 24VDC and -48Vdc, and featuring a high test voltage for safety and reliability. Suitable for all high performance applications requiring high reliability coupled with good high frequency performance such as servers, base stations, and switches.



## FEATURES

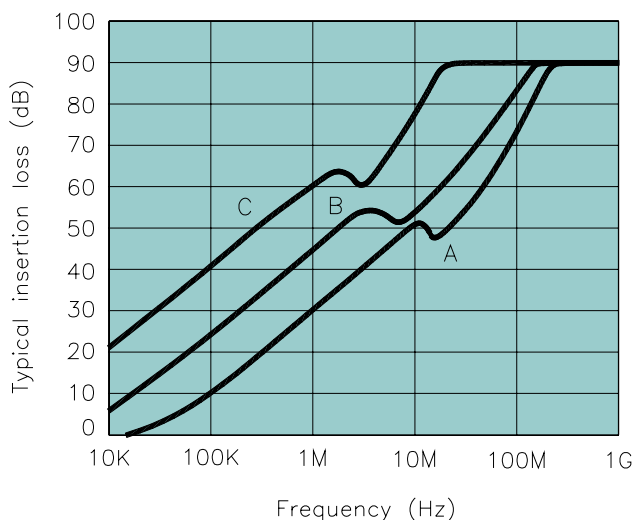
- Suitable for all dc telecoms voltages up to 100V dc
- Proof test voltage of 1100Vdc
- 10A – 200A current ratings
- High capacitance per unit volume
- Designed in accordance with EN60950
- Rapid custom design service for special cases, mounting requirements, cable terminations, and multiple lines
- Other capacitance values and current ratings readily available if required
- Filter versions also available
- Low cost variants available for very high volume applications
- RoHS compliant

## RATINGS AND CHARACTERISTICS

Rated voltage	100V dc
Test voltage	1100V dc 2 seconds
Insulation resistance	>500MΩ
Ambient temperature range	-40°C to +60°C
Category temperature range	-40°C to +85°C
Climatic category	40/85/21
MTBF	> 10million hours
Insulating materials flammability rating	UL94 V-0

## INSERTION LOSS

Graphical examples of performance from range (see overleaf for tabulated performance of full range)



A = 0.18µF FC34420

B = 1µF FC34422

C = 7.5µF FC34425

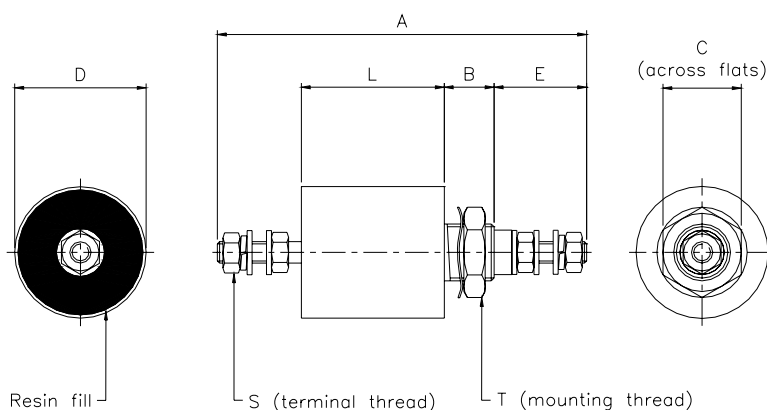
## PRODUCT RANGE

Part Number	Current Rating $I_R$ (A) @60°C	Capacitance Value ( $\mu\text{F} \pm 20\%$ )	Typical Insertion Loss (dB) in 50 $\Omega$ system with/without load							
			10 kHz	30 kHz	100 kHz	300 kHz	1 MHz	10 MHz	100 MHz	1 GHz
FC34420	10	0.18	-	3	10	20	30	50	74	90
FC34421	16	0.47	3	10	20	30	40	50	80	90
FC34422	32	1	5	14	24	34	44	52	84	90
FC34423	63	1.8	8	17	27	37	47	55	87	90
FC34424	100	4.7	18	28	38	48	58	74	90	90
FC34425	200	7.5	21	31	41	51	60	79	90	90

Current derating between 60°C and 85°C:

$$\text{For temperature, } \theta \quad I_{\theta} = I_R \sqrt{(85 - \theta) / 25}$$

## DIMENSIONS AND MECHANICAL DETAILS



Part Number	Dimensions (mm)								Torque on T (N-m)	S	Torque on S (N-m)	Weight (g)
	D $\pm 0.5$	L $\pm 1$	A $\pm 1$	B $\pm 1$	C	E $\pm 2$	T					
FC34420	15	18	57	10	13	16	M10 x 1	3	M3	0.5	22	
FC34421	20	18	63	12	17	18	M12 x 1	4	M4	1.2	36	
FC34422	20	30	75	12	17	18	M12 x 1	4	M4	1.2	60	
FC34423	25	30	96	14	22	26	M16 x 1	7	M6	2.5	85	
FC34424	38	33	116	19	27	32	M24 x 1	14	M8	5	200	
FC34425	38	50	147	19	27	40	M24 x 1	14	M10	8	280	

## INSTALLATION GUIDELINES

Feedthrough capacitors and filters are designed for through-bulkhead mounting for offering high frequency filtering in line to ground applications. They should be mounted through a metal bulkhead or chassis.

The bulkhead mounting surface should be clean and unpainted to offer a low impedance path from the capacitor or filter to the equipment chassis. Poor earth bonding will limit the available performance of the product and could compromise safety.

Conductive paint finishes should be avoided as they do not usually provide adequate conductivity.

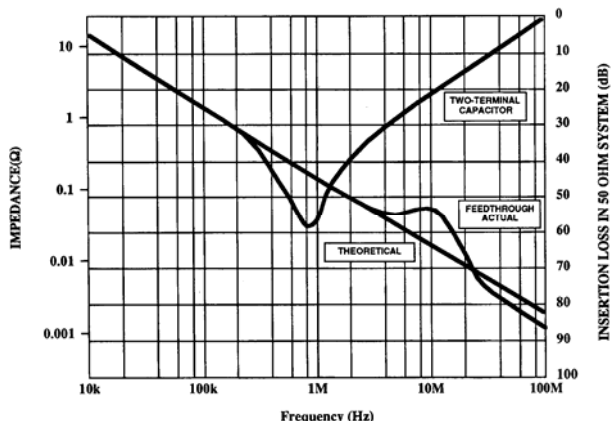
2 spanners should be used when making electrical connections to the terminals, and maximum tightening torque figures quoted should be observed.

## CONSTRUCTION AND RELIABILITY

MPE have been designing and manufacturing feedthrough capacitors and filters for more than 40 years, and plastic film feedthrough capacitors for more than 25 years. MPE has always been at the forefront of the design of feedthrough capacitors and the improvements in materials and assembly techniques, which have evolved over the years, have been incorporated into these new ranges of feedthrough capacitors and filters.

The designs covered by this catalogue all utilise self-healing metallised plastic film capacitor material and incorporate a solderless capacitor assembly technique to avoid heat damage to the plastic dielectric material, which would reduce its life and reliability. Cases and terminals are nickel plated for good conductivity.

## FEEDTHROUGH CAPACITOR PERFORMANCE



- Normal two-terminal capacitors resonate with their lead inductance in the region 1-10MHz
- This limits their use as suppression components above a few MHz
- Feedthrough capacitors have no major resonance as they have no lead inductance
- Their performance continues to increase with frequency
- Hence feedthrough capacitors are essential for good high frequency performance
- As an example this graph compares the performance of a 1 $\mu$ F feedthrough capacitor with a 1 $\mu$ F two-terminal capacitor
- Feedthrough filters incorporate feedthrough capacitors for the same benefits

## SAFETY

Relevant safety standards have been adhered to in the design and manufacture of these products. However, all capacitors will store charge after power has been removed and must be treated with respect as this can be lethal when the voltage and charge are high enough. The filters and capacitors contained within this catalogue do not contain internal discharge resistors. It is therefore recommended that they are fitted with external discharge resistors to discharge the capacitors after the power has been removed. Where necessary, terminals should be enclosed by the user to prevent any danger of electric shock or accidental shorting.

In all cases, capacitors and filters should always be shorted to earth prior to touching to ensure they are fully discharged.

The user should ensure he is familiar with restrictions on capacitance value, earth leakage current, test voltage, and safety labelling requirements, which may be applicable to his particular installation.

In particular, safety standards IEC950 and EN60950, which most electrical equipment needs to comply with, contain a number of specific requirements for capacitors, which may be applicable.

## CUSTOM DESIGNS

MPE offers a rapid design service for custom designs where special packaging, mounting, terminations, or multiple lines are required. Over 50% of the feedthrough components manufactured by MPE are custom designs and this can offer a very cost effective installation solution. Please ask to see examples of previously offered solutions.

## FURTHER INFORMATION

For more detailed technical background information, and application notes detailing the benefits of feedthrough capacitors over traditional capacitors, please contact the factory.