FX3 · Screw-Terminal · 10 000 h/85 °C

More Compact Design · Long Life
Suited for optional permanent Charge-Discharge Design

Special charge-discharge proof design available upon request.

Auf Anfrage spezielles Design für Lade-, Entladeanwendungen erhältlich.

› Specifications · Spezifikationen

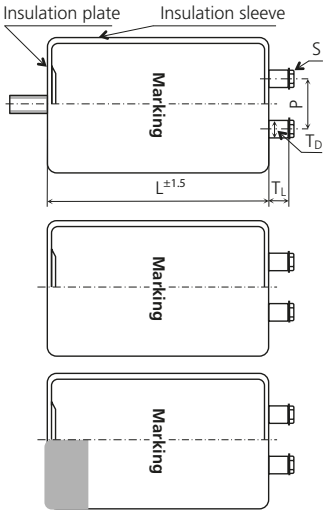
Items	Characteristics
Temperature range	-40°C ~ + 85°C
Capacitance tolerance (at 20°C)	Standard +/- 20%, -10/+30% on request
Surge voltage	Repetitive max. 30 sec per 6 Minutes
Leakage current max. I_L (20°C, 5 min)	0.01 • C • V_r [µA] or 3 mA, which is smaller.
Useful life	10 000 hours at 85°C
Field failure rate	0.5 FIT = 0.5 • 10^{-9} Failures/hour
RoHS conform	Directive 2011/65/EU & (EU)2015/863
Specification / Vibration	JIS C 5101-4 / 0.75mm, 10…55Hz, 10g, 3x2h

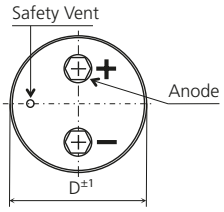
› Outline Drawings · Bauformen

Shape: B (ØD = 51-101)
(for Bolt - Mounting, M12x16, stud bolt is not isolated)
Form: B (ØD = 51-101)
(für Bolzenbefestigung, M12x16, Bolzen ist nicht isoliert)

Shape: N (for PBT-Holder ØD = 77-101 and Press Ring ØD = 64-90)
Form: N (für PBT-Halter ØD = 77-101 und Einpressring ØD = 64-90)

Shape: Y (ØD = 51-101)
(double sleeve, Y-bracket free of charge)
Form: Y (ØD = 51-101)
(mit doppelter Isolierung, Y-Schelle wird kostenlos mitgeliefert)





ØD	P	S	T_L	T_D	Cap material
51	22.0	M5x10	5.5	10	PH
64	28.6	M5x10	5.5	10	PH
77	31.5	M5x10	5.0	10	PH
		M6x12	4.5	17	PH
90	31.5	M5x10	5.0	10	PH
		M6x12	5.0	17	PH

Size in mm. First listed terminal is standard

› Product Code · Bestellbezeichnung

Example: Series FX3 · 8200 µF +/- 20 % · 400 V · D = 77 mm · L = 130 mm with Y-Bracket

FX3 — **Type of series**

2G — **Rated voltage code**

Code	Voltage
2G	400
2W	450
2H	500

822 — **Capacitance code**

The first two digits are significant. The last digit indicates the number of following zeros in µF.

Y — **Fixing symbol code**

B : Bolt
ØD = 51 - 101

N : No double sleeve (PBT-Safety-holder or press ring)

Y : 3 Stoppers Bracket
ØD = 51 – 101

E — **Case code diameter**

ØD	Code
51	C
64	D
77	E
90	F
101	G

130 — **Case Code length**

Length in mm
(3 digits)

(PHM6) — **Customers` specification and sealing code (e.g. M6PH)**

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Rated VoltageCode (Surge Voltage) V_r [V DC]	Capacitance C_r [µF]	Ripple Current at 85°C/120Hz I_r [A RMS]	Ripple Current at 40°C/120Hz [A RMS]	ESR (typ) at 20°C/100Hz [mΩ]	Zmax at 20°C/10kHz [mΩ]	ESL (typ) [nH]	Dissipation Factor at 20°C/120Hz Tan δ	DxL [mm]	Product Code # = variable value, see fixing code in the product code
400 VDC Code: 2G Surge Voltage 450 VDC	**2 200**	9.7	20.3	46	48	17	0.2	51x96	FX32G222#C096PH
	2 700	11.5	24.2	38	40	17	0.2	51x115	FX32G272#C115PH
	3 000	12.1	25.4	34	36	17	0.2	51x115	FX32G302#C115PH
	3 300	13.3	28.0	30	32	17	0.2	51x130	FX32G332#C130PH
	3 900	14.1	29.7	26	28	18	0.2	64x96	FX32G392#D096PH
	4 700	16.7	35.0	21	22	18	0.2	64x115	FX32G472#D115PH
	5 600	19.1	40.1	18	19	18	0.2	64x130	FX32G562#D130PH
	6 800	22.7	47.6	15	15	18	0.2	64x155	FX32G682#D155PH
		21.3	44.7	15	15	20	0.2	77x115	FX32G682#E115PH
	8 200	24.4	51.2	12	15	20	0.2	77x130	FX32G822#E130PH
	8 400	25.6	53.9	12	14	20	0.2	77x143	FX32G842#E143PH
	10 000	28.9	60.6	10	15	20	0.2	77x155	FX32G103#E155PH
	12 000	34.8	73.2	8	13	20	0.2	77x195	FX32G123#E195PH
	15 000	39.1	82.1	8	10	20	0.2	90x171	FX32G153#F171PH
	18 000	45.3	95.2	6	9	20	0.2	90x196	FX32G183#F196PH
	22 000	54.1	113.5	6	8	20	0.2	90x236	FX32G223#F236PH
450 VDC Code: 2W Surge Voltage 500 VDC	**1 800**	8.3	17.4	71	73	17	0.2	51x96	FX32W182#C096PH
	2 200	9.9	20.8	58	60	17	0.2	51x115	FX32W222#C115PH
	2 700	11.6	24.4	47	49	17	0.2	51x130	FX32W272#C130PH
	3 300	12.4	26.1	39	41	18	0.2	64x96	FX32W332#D096PH
	3 900	14.5	30.4	33	35	18	0.2	64x115	FX32W392#D115PH
	4 700	16.8	35.3	27	29	18	0.2	64x130	FX32W472#D130PH
	5 600	19.7	41.3	23	25	18	0.2	64x155	FX32W562#D155PH
		18.4	38.6	23	25	20	0.2	77x115	FX32W562#E115PH
	6 800	21.3	44.7	19	21	20	0.2	77x130	FX32W682#E130PH
	8 200	25.1	52.6	16	18	20	0.2	77x155	FX32W822#E155PH
		26.1	54.8	16	18	20	0.2	77x170	FX32W822#E170PH
	10 000	29.6	62.1	13	15	20	0.2	90x157	FX32W103#F157PH
	12 000	33.5	70.3	11	13	20	0.2	90x171	FX32W123#F171PH
	15 000	39.6	83.1	9	11	20	0.2	90x196	FX32W153#F196PH
	18 000	46.8	98.3	8	10	20	0.2	90x236	FX32W183#F236PH
500 VDC Code: 2H Surge Voltage 550 VDC	**1 200**	7.2	15.2	92	100	17	0.2	51x96	FX32H122#C096PH
	1 500	8.7	18.4	74	80	17	0.2	51x115	FX32H152#C115PH
	1 800	10.0	21.0	53	50	17	0.2	51x130	FX32H182#C130PH
	2 200	10.8	22.7	40	35	18	0.2	64x96	FX32H222#D096PH
	2 700	13.5	28.3	37	33	18	0.2	64x130	FX32H272#D130PH
	3 300	16.0	33.6	36	32	18	0.2	64x155	FX32H332#D155PH
		15.1	31.6	36	32	20	0.2	77x115	FX32H332#E115PH
	3 900	17.1	36.0	27	29	20	0.2	77x130	FX32H392#E130PH
	4 700	19.6	41.2	25	27	20	0.2	77x144	FX32H472#E144PH
	5 600	22.9	48.1	23	21	20	0.2	77x171	FX32H562#E171PH
		22.0	46.1	23	21	20	0.2	90x131	FX32H562#F131PH
	6 800	26.7	56.0	20	18	20	0.2	77x195	FX32H682#E195PH
		25.9	54.3	20	18	20	0.2	90x157	FX32H682#F157PH
	8 200	29.4	61.8	17	16	20	0.2	90x171	FX32H822#F171PH
	10 000	34.4	72.2	15	14	20	0.2	90x196	FX32H103#F196PH
	12 000	40.6	85.2	13	12	20	0.2	90x236	FX32H123#F236PH

Additional designs on request · Weitere Designs auf Anfrage

› Ripple Current Multiplier · Wechselstrommultiplikator

Frequency [Hz]	50/60	120	300	1k	≥ 10k
Multiplier	0.80	1.00	1.18	1.34	1.45

Forced cooling [m/sec]	v < 1.0	v ≥ 1.0
Multiplier	1.0	1.1

Temperature (°C)	40	45	50	55	60	65	70	75	80	85
Multiplier	2.1	2.0	1.9	1.8	1.7	1.5	1.4	1.3	1.1	1.0

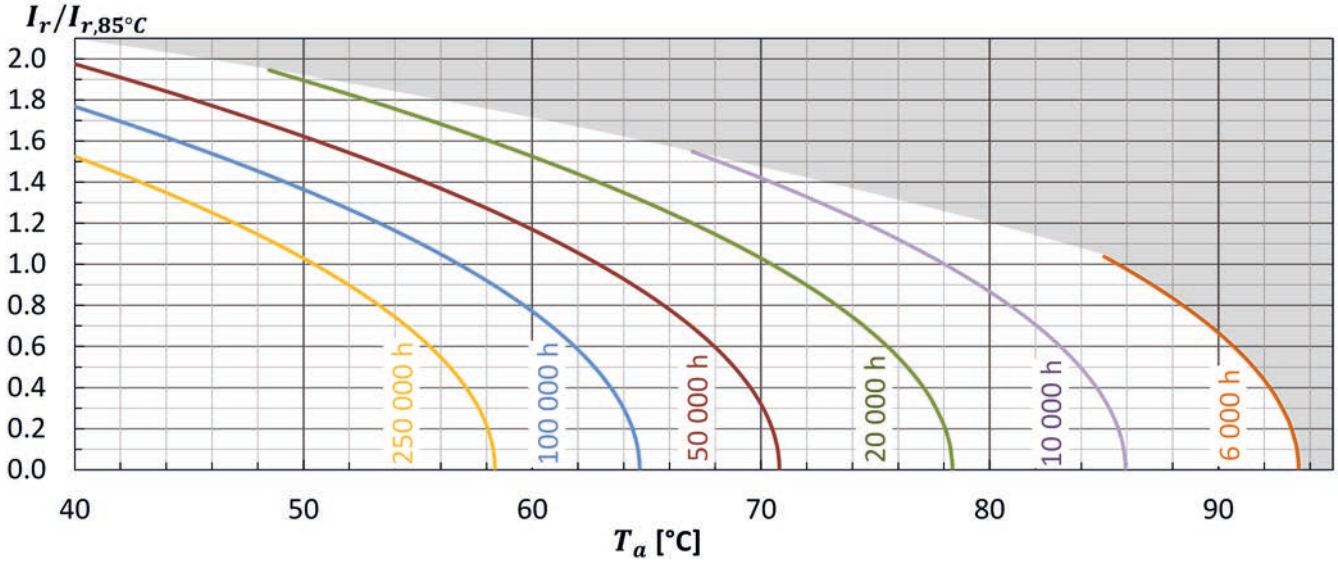
› Life Time Table · Brauchbarkeitsdauer – Tabelle

FX3	Useful life as function of ambient temperature and ripple current											
I_r at 85°C	x 1.0	x 1.1	x 1.2	x 1.3	x 1.4	x 1.5	x 1.6	x 1.7	x 1.8	x 1.9	x 2.0	x 2.1
T_a = 40°C	250	250	250	250	250	250	210	166	128	98	74	55
T_a = 45°C	250	250	250	250	205	166	133	105	81	62	47	
T_a = 50°C	250	224	189	158	130	105	84	66	51	39		
T_a = 55°C	165	141	120	100	82	66	53	42	32			
T_a = 60°C	104	89	75	63	52	42	33	26				
T_a = 65°C	66	56	48	40	32	26						
T_a = 70°C	41	35	30	25	20							
T_a = 75°C	26	22	19	16								
T_a = 80°C	16	14										
T_a = 85°C	10		khrs	Max. value limited to 250 000 hours.								

› Life Time Graph · Brauchbarkeitsdauer – Diagramm

Useful life depending on ambient temperature T_a and ripple current operating conditions I_r versus rated ripple current at the upper category temperature $I_{r,\ 85°C,120Hz}$

Brauchbarkeitsdauer in Abhängigkeit von Umgebungstemperatur T_a und Wechselstrombelastung I_r im Verhältnis zur max. Wechselstrombelastung bei oberer Kategorietemperatur $I_{r,\ 85°C,120Hz}$



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› Life Time Tests and Requirements · Anforderungen Brauchbarkeitsdauer

Life time test	Test procedure	Life time criteria
Endurance test	T_a = 85°C; V_r, I_r applied 8000 hours	ΔC/C ≤ 15% (of initial value) Tanδ ≤ 175% (of specified value) I_L ≤ specified value
Useful life	T_a = 85°C; V_r, I_r applied 10000 hours	ΔC/C ≤ 20% (of initial value) Tanδ < 200% (of specified value) I_L ≤ specified value

Reference Specification: JIS C 5101-4, JIS C 5102, IEC 60384-4