

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	+/- 20%
Surge voltage	Repetitive max. 30 sec per 6 Minutes
Leakage current max. I_L (20°C, 5 min)	$0.01 \cdot C \cdot V_r$ [μA] or 3 mA, which is smaller.
Useful life	10000 h at 85°C
Field failure rate	0.5 FIT = $0.5 \cdot 10^{-9}$ Failures/hour
RoHS conform	Directive 2002/95/ECff Annex
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)

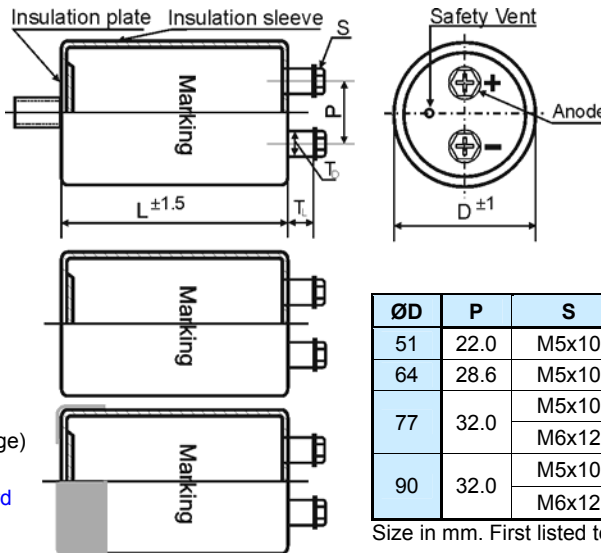
Form: B (ØD = 51-101)
(für Bolzenbefestigung, M12x16, Bolzen nicht isoliert)

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, bracket free of charge)

Form: Y (ØD = 51-101)
(mit doppelter Isolierung, 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	32.0	M5x10	5.0	10	PH
		M6x12	5.0	16	PPS
90	32.0	M5x10	5.0	10	PH
		M6x12	4.0	16	PPS

Size in mm. First listed terminal is standard.

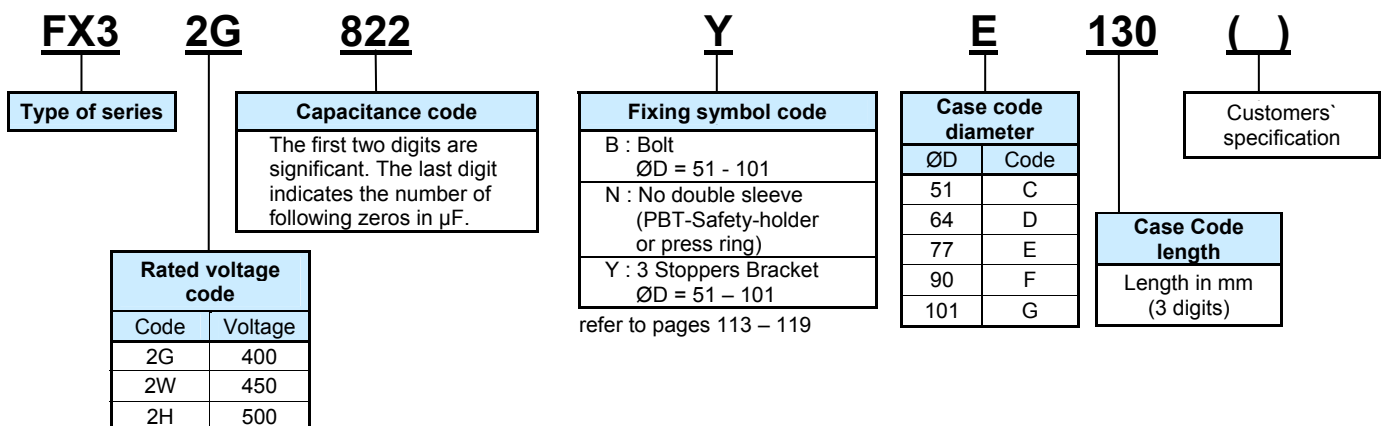
► **Ripple Current Multiplier / Wechselstrommultiplikator**

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

► **Product Code / Bestellbezeichnung**

Example: FX3 8200µF 400V D=77mm L=130mm with Y-Bracket



Rated Voltage Code (Surge Voltage) V_r [V DC]	Capacitance C_r [μ F]	Ripple Current at 40°C/120Hz [A RMS]	Ripple Current at 85°C/120Hz I_r [A RMS]	ESR (typ) at 20°C/100Hz [m Ω]	Zmax at 20°C/10kHz [m Ω]	ESL (typ) [nH]	DxL [mm]	Product Code
400 2G (450)	2 200	20.3	9.7	46	48	17	51x96	FX32G222□C096
	3 300	28.0	13.3	30	32	17	51x130	FX32G332□C130
	3 900	29.7	14.1	26	28	18	64x96	FX32G392□D096
	4 700	35.0	16.7	21	22	18	64x115	FX32G472□D115
	5 600	40.1	19.1	18	19	18	64x130	FX32G562□D130
	6 800	47.6	22.7	15	15	18	64x155	FX32G682□D155
		44.7	21.3	15	15	20	77x115	FX32G682□E115
	8 200	51.2	24.4	12	15	20	77x130	FX32G822□E130
	10 000	60.6	28.9	10	15	20	77x155	FX32G103□E155
	12 000	73.2	34.8	8	13	20	77x195	FX32G123□E195
	15 000	82.1	39.1	8	10	20	90x171	FX32G153□F171
	18 000	95.2	45.3	6	9	20	90x196	FX32G183□F196
22 000	113.5	54.1	6	8	20	90x236	FX32G223□F236	
450 2W (500)	1 800	17.4	8.3	71	73	17	51x96	FX32W182□C096
	2 200	20.8	9.9	58	60	17	51x115	FX32W222□C115
	2 700	24.4	11.6	47	49	17	51x130	FX32W272□C130
	3 300	26.1	12.4	39	41	18	64x96	FX32W332□D096
	3 900	30.4	14.5	33	35	18	64x115	FX32W392□D115
	4 700	35.3	16.8	27	29	18	64x130	FX32W472□D130
	5 600	41.3	19.7	23	25	18	64x155	FX32W562□D155
		38.6	18.4	23	25	20	77x115	FX32W562□E115
	6 800	44.7	21.3	19	21	20	77x130	FX32W682□E130
	8 200	52.6	25.1	16	18	20	77x155	FX32W822□E155
		54.8	26.1	16	18	20	77x170	FX32W822□E170
	10 000	62.1	29.6	13	15	20	90x157	FX32W103□F157
12 000	70.3	33.5	11	13	20	90x171	FX32W123□F171	
15 000	83.1	39.6	9	11	20	90x196	FX32W153□F196	
500 2H (550)	1 200	15.2	7.2	92	100	17	51x96	FX32H122□C096
	1 500	18.4	8.7	74	80	17	51x115	FX32H152□C115
	1 800	21.0	10.0	53	50	17	51x130	FX32H182□C130
	2 200	22.7	10.8	40	35	18	64x96	FX32H222□D096
	2 700	28.3	13.5	37	33	18	64x130	FX32H272□D130
	3 300	33.6	16.0	36	32	18	64x155	FX32H332□D155
		31.6	15.1	36	32	20	77x115	FX32H332□E115
	3 900	36.0	17.1	27	29	20	77x130	FX32H392□E130
	4 700	42.3	20.1	25	25	20	77x155	FX32H472□E155
	5 600	48.1	22.9	23	21	20	77x171	FX32H562□E171
		46.1	22.0	23	21	20	90x131	FX32H562□F131
	6 800	56.0	26.7	20	18	20	77x195	FX32H682□E195
		54.3	25.9	20	18	20	90x157	FX32H682□F157
	8 200	61.8	29.4	17	16	20	90x171	FX32H822□F171
10 000	72.2	34.4	15	14	20	90x196	FX32H103□F196	
12 000	85.2	40.6	13	12	20	90x236	FX32H123□F236	

► **Life Time Table / Brauchbarkeitsdauer – Tabelle**

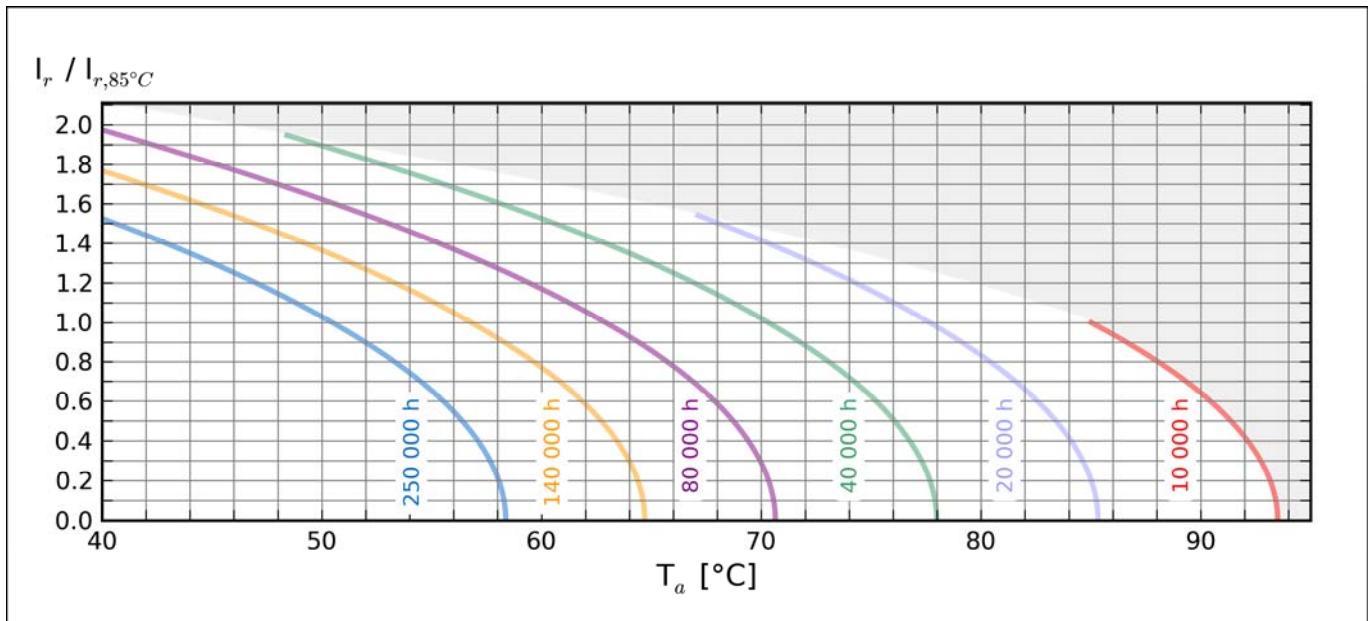
FX3 I _r at 85°C	Useful life as function of ambient temperature and ripple current											
	x 1.0	x 1.1	x 1.2	x 1.3	x 1.4	x 1.5	x 1.6	x 1.7	x 1.8	x 1.9	x 2.0	x 2.1
T _a = 40°C	250	250	250	250	250	250	210	166	128	98	74	55
T _a = 45°C	250	250	250	250	205	166	133	105	81	62	47	
T _a = 50°C	250	224	189	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 Kategoriertemperatur I_{r,85°C,120Hz}



► **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