

Special charge-discharge proof design available upon request.

Auf Anfrage spezielles Design für Lade-, Entladeanwendungen erhältlich.

## ► Specifications / Spezifikationen

Items	Characteristics
Temperature range	-10°C ~ + 85°C
Rated voltage $V_r$	350 VDC - 500 VDC
Surge voltage	Repetitive max. 30 sec per 6 Minutes
Leakage current max. $I_L$ (20°C, 5 min)	$0.01 \cdot C \cdot V_r$ [ $\mu$ A] or 5 mA, which is smaller.
Capacitance tolerance	+/- 20%
Useful life	6000 h at 85°C
Field failure rate	0.5 FIT = $0.5 \cdot 10^{-9}$ Failures/hour
Failure rate	Less than 0.1% within the useful life



## ► Outline Drawing / Bauformen

Shape: B ( $\varnothing D = 51-101$ )  
(for Bolt - Mounting, M12x16)

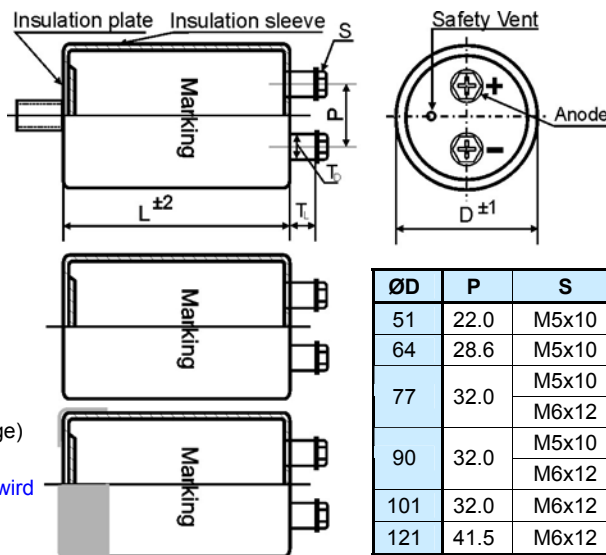
Form: B ( $\varnothing D = 51-101$ )  
(für Bolzenbefestigung, M12x16)

Shape: N, X ( $\varnothing D = 121$ )  
(for PBT-Holder  $\varnothing D = 77-101$  and Press Ring  $\varnothing D = 64-90$ )

Form: N, X ( $\varnothing D = 121$ )  
(für PBT-Halter  $\varnothing D = 77-101$  und Einpressring  $\varnothing D = 64-90$ )

Shape: Y ( $\varnothing D = 51-101$ )  
(double sleeve, bracket free of charge)

Form: Y ( $\varnothing D = 51-101$ )  
(mit doppelter Isolierung, Y-Schelle wird kostenlos mitgeliefert)



$\varnothing D$	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	4.5	16	PPS
101	32.0	M6x12	3.0	14	PPS
121	41.5	M6x12	3.0	14	PPS

Size in mm. First listed terminal is standard.

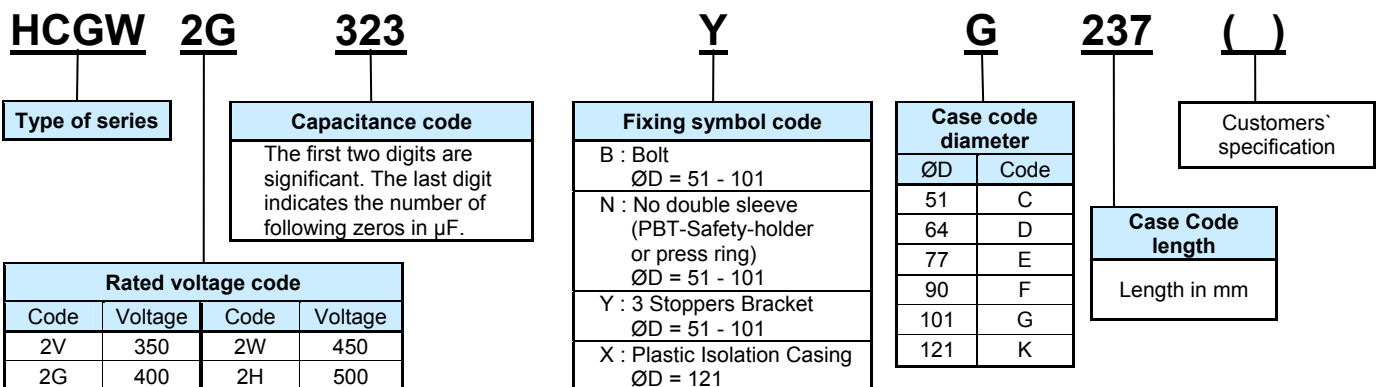
## ► Ripple Current Multiplier / Wechselstrommultiplikator

Frequency [Hz]	50/60	120	300	1k	$\geq 10k$
multiplier	0.70	1.00	1.18	1.34	1.45

Forced cooling [m/sec]	$v < 1.0$	$v \geq 1.0$
multiplier	1.0	1.1

## ► Product Code / Bestellbezeichnung

Example: 32000 $\mu$ F 400V D=101mm L=237mm with Y-Bracket



refer to pages 89 – 96

Rated Voltage Code (Surge Voltage) $V_r$ [V DC]	Capacitance $C_r$ [ $\mu$ 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 $\Omega$ ]	Zmax at 20°C/10kHz [m $\Omega$ ]	ESL (typ) [nH]	DxL [mm]	Product Code
350 2V (400)	13 000	23.8	8.8	25	26	22	77x155	HCGW2V133□E155
	17 000	29.2	10.8	19	20	22	90x157	HCGW2V173□F157
	18 000	30.8	11.4	18	20	22	77x195	HCGW2V183□E195
	22 000	37.0	13.7	17	18	22	77x235	HCGW2V223□E235
	24 000	38.9	14.4	16	18	32	101x175	HCGW2V243□G175
	25 000	38.6	14.3	15	16	22	90x196	HCGW2V253□F196
	31 000	43.7	16.2	12	13	32	101x195	HCGW2V313□G195
		46.4	17.2	12	13	22	90x236	HCGW2V313□F236
39 000	53.2	19.7	10	12	32	101x237	HCGW2V393□G237	
400 2G (450)	11 000	22.1	8.2	31	32	22	77x155	HCGW2G113□E155
	14 000	27.5	10.2	24	25	22	77x195	HCGW2G143□E195
	16 000	28.6	10.6	21	22	22	90x157	HCGW2G163□F157
		32.1	11.9	21	22	22	77x235	HCGW2G163□E235
	20 000	34.8	12.9	20	21	22	90x196	HCGW2G203□F196
	22 000	35.4	13.1	18	19	32	101x175	HCGW2G223□G175
		38.3	14.2	18	19	22	90x221	HCGW2G223□F221
	25 000	39.7	14.7	16	18	32	101x195	HCGW2G253□G195
		42.1	15.6	16	18	22	90x236	HCGW2G253□F236
	32 000	48.1	17.8	12	13	32	101x237	HCGW2G323□G237
	36 000	51.9	19.2	14	15	32	101x250	HCGW2G363□G250
37 000	55.7	20.6	10	11	32	101x283	HCGWA2G373□G283	
50 000	72.7	26.9	9	11	32	121x283	HCGW2G503XK283	
450 2W (500)	3 300	9.7	3.6	114	118	19	51x130	HCGW2W332□C130
	5 600	14.0	5.2	67	70	20	64x130	HCGW2W562□D130
	9 500	20.5	7.6	36	37	22	77x155	HCGW2W952□E155
	10 000	20.2	7.5	34	35	22	90x145	HCGW2W103□F145
	12 000	25.4	9.4	28	29	22	77x195	HCGW2W123□E195
	13 000	24.0	8.9	26	27	22	90x157	HCGW2W133□F157
	15 000	31.3	11.6	24	27	22	77x235	HCGW2W153□E235
	17 000	32.1	11.9	21	22	22	90x196	HCGW2W173□F196
	18 000	32.1	11.9	20	21	32	101x175	HCGW2W183□G175
	22 000	37.0	13.7	18	19	32	101x195	HCGW2W223□G195
		39.4	14.6	18	19	22	90x236	HCGW2W223□F236
	27 000	44.3	16.4	15	17	32	101x237	HCGW2W273□G237
	29 000	46.7	17.3	14	16	32	101x250	HCGW2W293□G250
	33 000	52.6	19.5	12	15	32	101x283	HCGW2W333□G283
42 000	66.5	24.6	10	12	32	121x283	HCGW2W423XK283	
500 2H (550)	5 600	15.7	5.8	60	62	22	77x155	HCGW2H562□E155
	8 200	20.2	7.5	41	43	22	90x157	HCGW2H822□F157
		21.1	7.8	41	43	22	77x195	HCGW2H822□E195
	9 500	24.8	9.2	36	37	22	77x235	HCGW2H952□E235
	11 000	25.6	9.5	32	33	22	90x196	HCGW2H113□F196
	12 000	26.2	9.7	30	33	32	101x175	HCGW2H123□G175
		29.2	10.8	30	33	22	90x236	HCGW2H123□F236
	14 000	29.4	10.9	29	30	32	101x195	HCGW2H143□G195
		31.6	11.7	29	30	22	90x236	HCGW2H143□F236
16 000	34.0	12.6	25	26	32	101x237	HCGW2H163□G237	

► Life Time Table / Brauchbarkeitsdauer – Tabelle

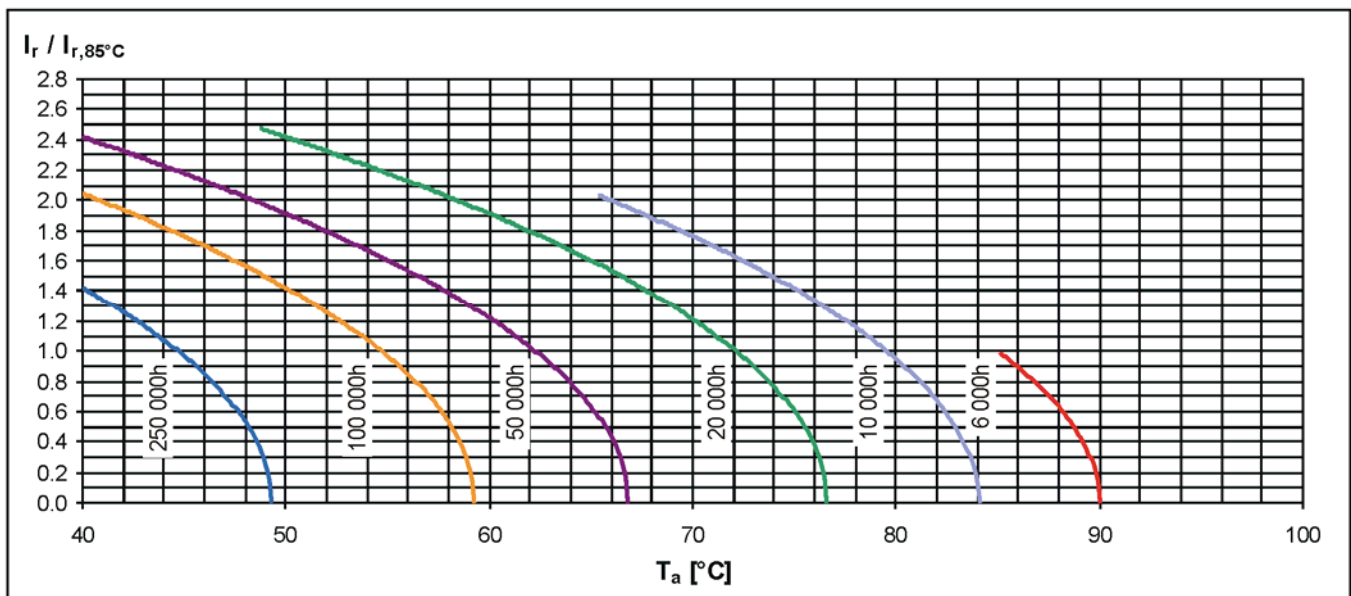
HCGW I <sub>r</sub> at 85°C	Useful life as function of ambient temperature and ripple current												
	x 1.0	x 1.2	x 1.4	x 1.6	x 1.8	x 2.0	x 2.1	x 2.2	x 2.3	x 2.4	x 2.5	x 2.6	x 2.7
T <sub>a</sub> = 40°C	250	250	250	199	150	109	91	76	63	52	42	34	27
T <sub>a</sub> = 45°C	243	202	162	126	95	69	58	48	40	33	27		
T <sub>a</sub> = 50°C	154	128	103	80	60	43	37	30	25	21			
T <sub>a</sub> = 55°C	97	81	65	50	38	27	23	19	16				
T <sub>a</sub> = 60°C	62	51	41	32	24	17	15						
T <sub>a</sub> = 65°C	39	32	26	20	15	11							
T <sub>a</sub> = 70°C	25	20	16	13	10								
T <sub>a</sub> = 75°C	16	13	10										
T <sub>a</sub> = 80°C	10	8											
T <sub>a</sub> = 85°C	6												

khrs                      Max. value limited to 250 000 hours.

► Life Time Graph / Brauchbarkeitsdauer – Diagramm

Useful life depending on ambient temperature T<sub>a</sub> and ripple current operating conditions I<sub>r</sub> versus rated ripple current at the upper category temperature I<sub>r,85°C,120Hz</sub>

Brauchbarkeitsdauer in Abhängigkeit von Umgebungstemperatur T<sub>u</sub> und Wechselstrombelastung I<sub>r</sub> im Verhältnis zur max. Wechselstrombelastung bei oberer Kategorietemperatur I<sub>r,85°C,120Hz</sub>



► Life Time Tests and Requirements / Anforderungen Brauchbarkeitsdauer

Life time test	Reference	Test procedure	Life time criteria
Endurance test	JIS-C-5101-4 JIS-C-5102 IEC 60384-4	T <sub>a</sub> = 85°C; V <sub>r</sub> , I <sub>r</sub> applied 4000 hours	ΔC/C < 15% Tanδ < 175% (of initial value) I <sub>L</sub> = spec. value
Useful life	JIS-C-5104-4 IEC 60384-4	T <sub>a</sub> = 85°C; V <sub>r</sub> , I <sub>r</sub> applied 6000 hours	ΔC/C < 20% Tanδ < 200% (of initial value) I <sub>L</sub> = spec. value