

► Specifications / Spezifikationen

Items	Characteristics
Temperature range	-10°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 7 mA, which is smaller.
Useful life	6000 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)

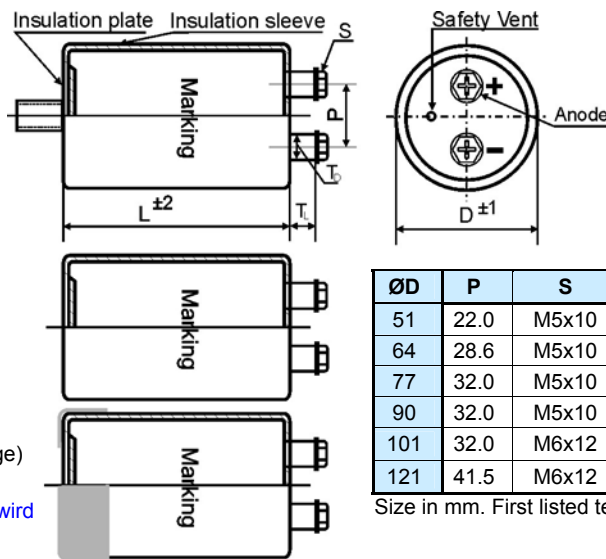
Form: B (ØD = 51-101)
(für Bolzenbefestigung, M12x16, Bolzen nicht isoliert)

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

Form: N, X (ØD = 121)
(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, Y-Schelle wird kostenlos mitgeliefert)



Size in mm. First listed terminal is standard.

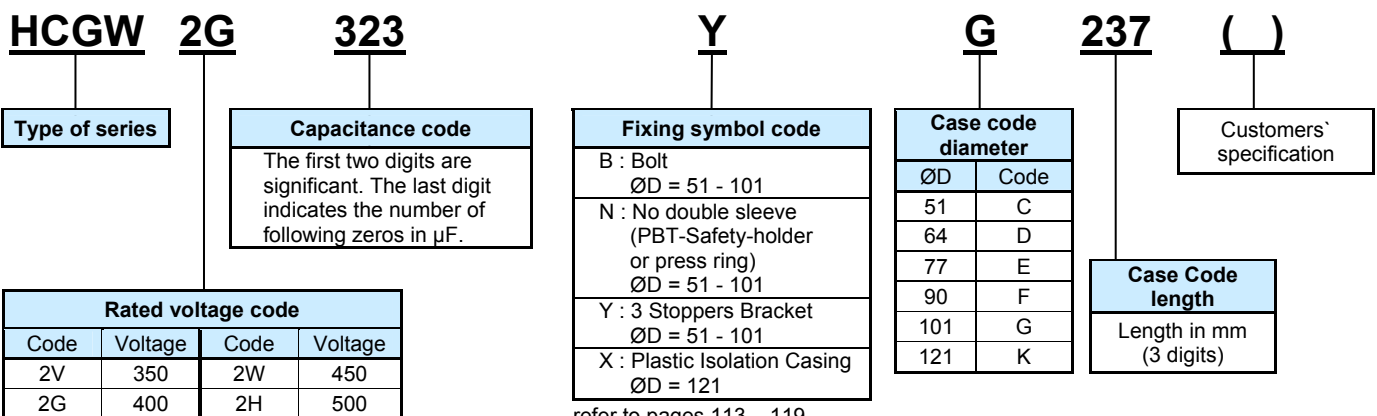
► Ripple Current Multiplier / Wechselstrommultiplikator

Frequency [Hz]	50/60	120	300	1k	≥ 10k
multiplier	0.70	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: 32000µF 400V D=101mm L=237mm with Y-Bracket



refer to pages 113 – 119

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
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
	20 000	35.1	13.0	19	20	22	77x235	HCGW2V203□E235
	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
	30 000	45.6	16.9	13	14	22	90x236	HCGW2V303□F236
	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 ¹⁾	HCGW2V393□G237
44 000	61.6	22.8	10	12	32	101x283	HCGW2V443□G283	
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
	15 000	30.2	11.2	23	24	22	77x220	HCGW2G153□E220
	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 ¹⁾	HCGW2G323□G237
	36 000	54.8	20.3	11	15	32	101x250	HCGW2G363□G250
	37 000	55.7	20.6	10	11	32	101x283	HCGW2G373□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	32.9	12.2	20	21	22	90x196	HCGW2W183□F196
		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 ¹⁾	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 ¹⁾	HCGW2H163□G237	

¹⁾ For Bolt - Mounting dimensions are 101x242mm.

► Life Time Table / Brauchbarkeitsdauer – Tabelle

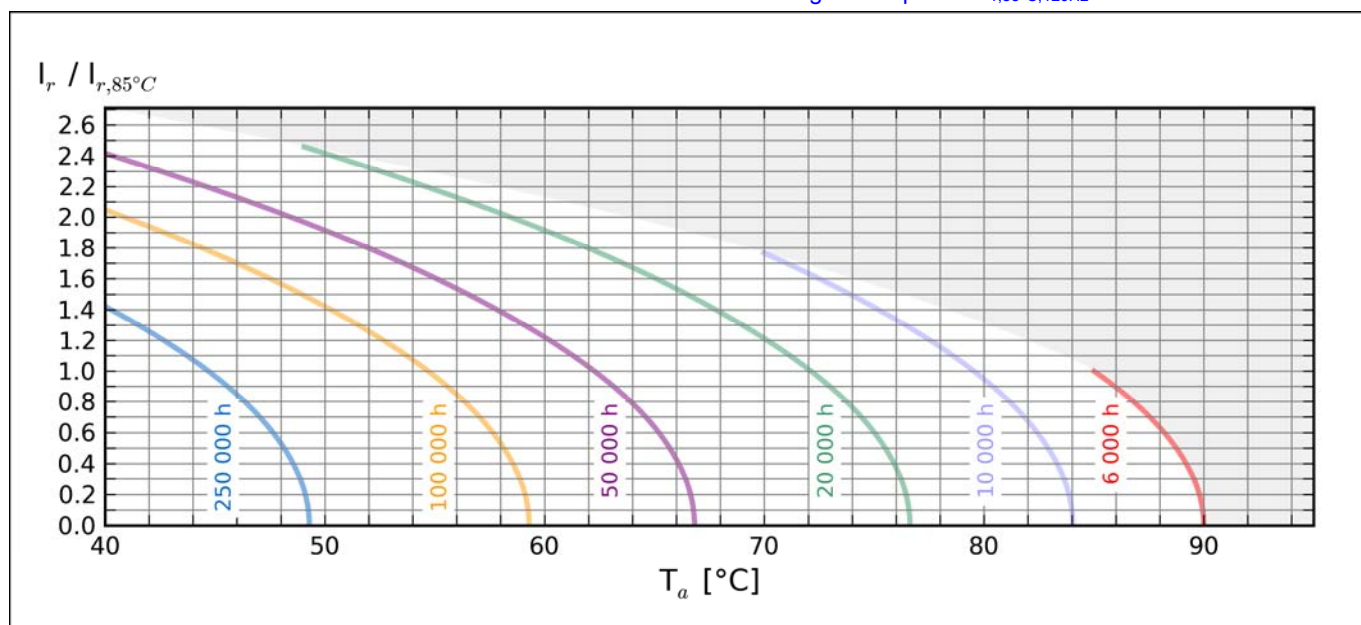
HCGW	Useful life as function of ambient temperature and ripple current												
	x 1.0	x 1.2	x 1.4	x 1.6	x 1.8	x 2.0	x 2.1	x 2.2	x 2.3	x 2.4	x 2.5	x 2.6	x 2.7
$T_a = 40^\circ\text{C}$	250	250	250	199	149	108	91	76	63	51	42	33	27
$T_a = 45^\circ\text{C}$	243	201	162	125	94	68	57	48	39	32	26	21	
$T_a = 50^\circ\text{C}$	153	127	102	79	59	43	36	30	25	20			
$T_a = 55^\circ\text{C}$	97	80	64	50	37	27	23	19					
$T_a = 60^\circ\text{C}$	61	51	41	31	23	17							
$T_a = 65^\circ\text{C}$	38	32	25	20	15								
$T_a = 70^\circ\text{C}$	24	20	16	12									
$T_a = 75^\circ\text{C}$	15	12	10										
$T_a = 80^\circ\text{C}$	9	8											
$T_a = 85^\circ\text{C}$	6												

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 $I_{r,85^\circ\text{C},120\text{Hz}}$

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



► Life Time Tests and Requirements / Anforderungen Brauchbarkeitsdauer

Life time test	Test procedure	Life time criteria
Endurance test	$T_a = 85^\circ\text{C}$; V_r , I_r applied 4000 hours	$\Delta C/C \leq 15\%$ (of initial value) $\text{Tan}\delta \leq 175\%$ (of specified value) $I_L \leq$ specified value
Useful life	$T_a = 85^\circ\text{C}$; V_r , I_r applied 6000 hours	$\Delta C/C \leq 20\%$ (of initial value) $\text{Tan}\delta < 200\%$ (of specified value) $I_L \leq$ specified value

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