DH · Snap-In · 6000h/105 °C

Permanent Charge-Discharge application Design

These capacitors have been developed especially for deep and frequent charge – discharge applications such as AC servo motors, lamp flash, X-ray, etc.

Diese Kondensatoren wurden speziell für Anwendungen mit häufigen und tiefen Lade-/Entladevorgängen entwickelt wie z.B. AC Motoren, Blitzlampen, Röntgengeräte usw.

› Specifications · Spezifikationen

Items	Characteristics
Temperature range	-25°C ~ + 105°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)	0.02 • C • V_r [µA] or 3 mA, which is smaller.
Useful life	6 000 hours at 105°C
Field failure rate	0.5 FIT = 0.5 • 10^{-9} Failures/hour
RoHS conform	Directive 2011/65/EU & (EU)2015/863
Specifications	JIS C 5101-4, AEC-Q200 qualified
Vibration	0.75mm, 10...55Hz, 10g, 3x2h
Charge – Discharge	ΔV = 150VDC, f = 6Hz life ≥ 150 Mio cycles at 40°C
Sleeve withstanding voltage	3000 Vac/1 min between terminals bundled and plate*

* Typical value using sleeve which is free from any scratches and damages

› Outline Drawings · Bauformen

Refer to page 5 for available terminal shapes and dimensions. · Auf Seite 5 finden Sie die verfügbaren Bauformen und Maße.

› Product Code · Bestellbezeichnung

Example: Series DH · 400 V · 100 µF ±20 % · 22x25 mm · 2-Pin · without plate

DH	2G	101	M	R	X	S2	WPEC

Type of series

Capacitance code

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

Terminal symbol code

- R: 2-pin terminal
- S: 4-pin terminal
- C: 2-pin short terminal
- X: 4-pin short terminal
- E: 3-pin short terminal

Outer design code

- None: PET sleeve and PVC plate
- WPEC: PET sleeve without plate

Others on request

Rated voltage code

Code	Voltage
2G	400
2W	450

Capacitance tolerance

M : ± 20%

Diameter Code

Code	ØD
X	22
Y	25
Z	30
A	35

Length Code

Code	L	Code	L
S2	25	S6	45
S3	30	S7	50
S4	35	S13	80
S5	40		

Rated VoltageCode (Surge Voltage) V_r [V DC]	Capacitance C_r [µF]	Ripple Current at 105°C/120Hz I_r [A RMS]	Ripple Current at 40°C/120Hz [A RMS]	ESR (typ) at 20°C/100Hz [mΩ]	Dissipation Factor at 20°C/100Hz Tan δ	DxL [mm]	Product Code # = variable value, see fixing code in the product code
400 VDC Code: 2G Surge Voltage 450 VDC	**100**	0.70	1.61	1100	0.20	22x25	DH2G101M#XS2
	120	0.82	1.89	920	0.20	22x30	DH2G121M#XS3
		0.81	1.86	920	0.20	25x25	DH2G121M#YS2
	150	0.96	2.21	730	0.20	22x35	DH2G151M#XS4
	180	1.09	2.51	610	0.20	22x40	DH2G181M#XS5
		1.04	2.39	610	0.20	25x30	DH2G181M#YS3
	220	1.25	2.88	500	0.20	22x45	DH2G221M#XS6
		1.21	2.78	500	0.20	25x35	DH2G221M#YS4
		1.15	2.65	500	0.20	30x25	DH2G221M#ZS2
	270	1.44	3.31	410	0.20	22x50	DH2G271M#XS7
		1.39	3.20	410	0.20	25x40	DH2G271M#YS5
		1.34	3.08	410	0.20	30x30	DH2G271M#ZS3
		1.32	3.04	410	0.20	35x25	DH2G271M#AS2
	330	1.60	3.68	330	0.20	25x45	DH2G331M#YS6
		1.55	3.57	330	0.20	30x35	DH2G331M#ZS4
		1.68	3.86	330	0.20	35x30	DH2G331M#AS3
	390	1.76	4.05	280	0.20	30x40	DH2G391M#ZS5
		1.67	3.84	280	0.20	35x30	DH2G391M#AS3
	470	2.00	4.60	230	0.20	30x45	DH2G471M#ZS6
		1.91	4.39	230	0.20	35x35	DH2G471M#AS4
	560	2.25	5.18	200	0.20	30x50	DH2G561M#ZS7
		2.17	4.99	200	0.20	35x40	DH2G561M#AS5
	680	2.47	5.68	160	0.20	35x45	DH2G681M#AS6
	1 500	4.99	11.48	55	0.20	35x80	DH2G152M#AS132PCC
450 VDC Code: 2W Surge Voltage 500 VDC	**82**	0.64	1.47	1220	0.20	22x25	DH2W820M#XS2
	100	0.75	1.73	1000	0.20	22x30	DH2W101M#XS3
		0.74	1.70	1000	0.20	25x25	DH2W101M#YS2
	120	0.86	1.98	830	0.20	22x35	DH2W121M#XS4
		0.85	1.96	830	0.20	25x30	DH2W121M#YS3
	150	1.00	2.30	660	0.20	22x40	DH2W151M#XS5
		1.00	2.30	660	0.20	25x35	DH2W151M#YS4
		0.95	2.19	660	0.20	30x25	DH2W151M#ZS2
	180	1.13	2.60	550	0.20	22x45	DH2W181M#XS6
		1.09	2.51	550	0.20	25x35	DH2W181M#YS4
	220	1.30	2.99	450	0.20	25x45	DH2W221M#YS6
		1.21	2.78	450	0.20	30x30	DH2W221M#ZS3
		1.19	2.74	450	0.20	35x25	DH2W221M#AS2
	270	1.49	3.43	370	0.20	25x50	DH2W271M#YS7
		1.41	3.24	370	0.20	30x35	DH2W271M#ZS4
		1.39	3.20	370	0.20	35x30	DH2W271M#AS3
	300	1.48	3.40	323	0,20	35x30	DH2W301M#AS3
	330	1.62	3.73	300	0.20	30x40	DH2W331M#ZS5
		1.60	3.68	300	0.20	35x35	DH2W331M#AS4
	390	1.88	4.32	260	0.20	30x50	DH2W391M#ZS7
		1.81	4.16	260	0.20	35x40	DH2W391M#AS5
	470	2.05	4.72	210	0.20	35x45	DH2W471M#AS6
	500	2.11	4.85	198	0.20	35x45	DH2W501M#AS6
	560	2.31	5.31	180	0.20	35x50	DH2W561M#AS7

Additional designs on request · Weitere Designs auf Anfrage

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› 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

Temperature [°C]	40	60	70	85	105
Multiplier	2.3	1.9	1.7	1.4	1.0

› Life Time Table · Brauchbarkeitsdauer – Tabelle

DH	Useful life as function of ambient temperature and ripple current													
I_r at 105°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	x 2.2	x 2.3
T_a = 40°C	250	250	250	250	250	250	250	250	250	250	250	250	250	250
T_a = 45°C	250	250	250	250	250	250	250	250	250	250	250	250		
T_a = 50°C	250	250	250	250	250	250	250	250	250	250	250			
T_a = 55°C	250	250	250	250	250	250	250	250	243	209	178			
T_a = 60°C	250	250	250	250	250	231	203	177	154	132				
T_a = 65°C	245	225	204	184	165	146	128	112	97					
T_a = 70°C	155	142	129	116	104	92	81	71						
T_a = 75°C	98	90	81	73	66	58	51							
T_a = 80°C	62	56	51	46	41									
T_a = 85°C	39	36	32	29	26									
T_a = 90°C	24	22	20											
T_a = 95°C	15	14												
T_a = 100°C	9	9												
T_a = 105°C	6													

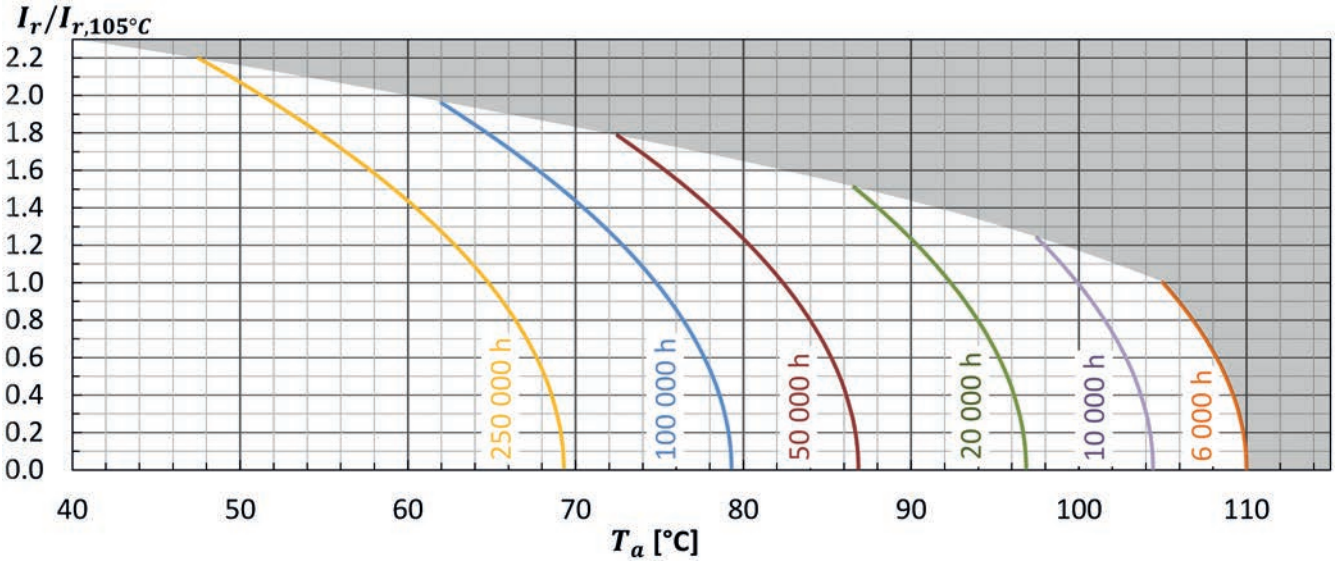
khrs

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 $I_{r,\ 105°C,120Hz}$

Brauchbarkeitsdauer in Abhängigkeit von Umgebungstemperatur T_a und Wechselstrombelastung I_r im Verhältnis zur max. Wechselstrombelastung bei oberer Kategorietemperatur $I_{r,\ 105°C,120Hz}$



› Life Time Tests and Requirements · Anforderungen Brauchbarkeitsdauer

Life time test	Test procedure	Life time criteria
Endurance test	T_a = 105°C; V_r, I_r applied 5000 hours f = 6Hz ≥ 100 Mio cycles at 40°C	ΔC/C ≤ 20% (of initial value) Tanδ ≤ 200% (of specified value) I_L ≤ specified value
Useful life	T_a = 105°C; V_r, I_r applied 6000 hours f = 6Hz ≥ 150 Mio cycles at 40°C	ΔC/C ≤ 30% (of initial value) Tanδ < 300% (of specified value) I_L ≤ specified value

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