

HL · Snap-In · 12000 h/105 °C

Compact Design · Long Life

> Specifications · Spezifikationen

Items	Characteristics
Temperature range	-40°C ~ + 105°C (200VDC - 250VDC) -25°C ~ + 105°C (315VDC - 500VDC)
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	12 000 hours at 105°C
Field failure rate	0.5 FIT = 0.5 • 10 ⁻⁹ Failures/hour
Reference standards	IEC 60384-4, JIS C 5101-4, AEC-Q200 qualified
Vibration	0.75mm, 10...55Hz, 10g, 3x2h
Sleeve withstanding voltage	3000 Vac/1 min between terminals bundled and plate*
Product Compliance	RoHS, REACH, Conflict Minerals a.o. - refer to p. 12-13



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

> Outline Drawings · Bauformen

Refer to page 7 for available terminal shapes and dimensions. · Auf Seite 7 finden Sie die verfügbaren Bauformen und Maße.

> Product Code · Bestellbezeichnung

Example: Series HL · 500 V · 470 μF ± 20 % · 35x60 mm · 2-pin short · without plate

HL	2H	471	M	C	A	S9	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-claw 6.3 mm S: 4-claw 6.3 mm C: 2-claw short 4.0 mm X: 4-claw short 4.0 mm E: 3-claw short 4.0 mm T: 2-lugs 4.5 mm			Outer design code None: PET sleeve and PVC plate WPEC: PET sleeve without plate Others on request			
Rated voltage code		Capacitance tolerance		Diameter code		Length code			
Code	Voltage	M : ± 20% Q : -10% ~ +30%		Code	ØD	Code	L	Code	L
2D	200			X	22	S2	25	S7	50
2E	250			Y	25	S3	30	S8	55
2F	315			Z	30	S4	35	S9	60
2G	400			A	35	S5	40	S13	80
420V	420			B	40	S6	45	S17	100
2W	450								
2H	500								

Rated VoltageCode (Surge Voltage) V_r [V DC]	Capacitance C_r [μ F]	Ripple Current at 105°C/120Hz I_r [A RMS]	Ripple Current at 40°C/120Hz [A RMS]	ESR (typ) at 20°C/100Hz [m Ω]	Dissipation Factor at 20°C/100Hz Tan δ	DxL [mm]	Product Code # = variable value, see terminal code in the product code
200 VDC Code: 2D Surge Voltage 250 VDC	330	1.09	2.51	330	0.15	22x25	HL2D331M#XS2
	470	1.37	3.15	240	0.15	22x30	HL2D471M#XS3
		1.36	3.13	240	0.15	25x25	HL2D471M#YS2
	560	1.57	3.61	200	0.15	22x35	HL2D561M#XS4
		1.57	3.61	200	0.15	25x30	HL2D561M#YS3
	680	1.81	4.16	160	0.15	22x40	HL2D681M#XS5
		1.75	4.03	160	0.15	30x25	HL2D681M#ZS2
	820	2.06	4.74	140	0.15	22x45	HL2D821M#XS6
		1.99	4.58	140	0.15	25x35	HL2D821M#YS4
	1000	2.37	5.45	110	0.15	25x45	HL2D102M#YS6
		2.24	5.15	110	0.15	30x30	HL2D102M#ZS3
		1.94	4.46	110	0.15	35x25	HL2D102M#AS2
	1200	2.67	6.14	100	0.15	25x50	HL2D122M#YS7
		2.56	5.89	100	0.15	30x35	HL2D122M#ZS4
		2.23	5.13	100	0.15	35x30	HL2D122M#AS3
	1500	3.08	7.08	80	0.15	30x45	HL2D152M#ZS6
		2.61	6.00	80	0.15	35x35	HL2D152M#AS4
	1800	3.49	8.03	70	0.15	30x50	HL2D182M#ZS7
		2.97	6.83	70	0.15	35x40	HL2D182M#AS5
	2200	3.39	7.80	50	0.15	35x45	HL2D222M#AS6
2700	3.86	8.88	50	0.15	35x50	HL2D272M#AS7	
250 VDC Code: 2E Surge Voltage 300 VDC	270	0.98	2.25	360	0.15	22x25	HL2E271M#XS2
	330	1.15	2.65	290	0.15	22x30	HL2E331M#XS3
		1.14	2.62	290	0.15	25x25	HL2E331M#YS2
	390	1.31	3.01	250	0.15	22x35	HL2E391M#XS4
	470	1.50	3.45	210	0.15	22x40	HL2E471M#XS5
		1.43	3.29	210	0.15	25x30	HL2E471M#YS3
	560	1.45	3.34	210	0.15	30x25	HL2E471M#ZS2
		1.70	3.91	180	0.15	22x45	HL2E561M#XS6
		1.64	3.77	180	0.15	25x35	HL2E561M#YS4
	680	1.94	4.46	150	0.15	22x50	HL2E681M#XS7
		1.88	4.32	150	0.15	25x40	HL2E681M#YS5
		1.85	4.26	150	0.15	30x30	HL2E681M#ZS3
		1.60	3.68	150	0.15	35x25	HL2E681M#AS2
	820	2.14	4.92	120	0.15	25x45	HL2E821M#YS6
		2.12	4.88	120	0.15	30x35	HL2E821M#ZS4
		1.84	4.23	120	0.15	35x30	HL2E821M#AS3
	1000	2.44	5.61	100	0.15	30x40	HL2E102M#ZS5
	1200	2.76	6.35	80	0.15	30x45	HL2E122M#ZS6
		2.33	5.36	80	0.15	35x35	HL2E122M#AS4
	1500	2.80	6.44	70	0.15	35x45	HL2E152M#AS6
1800	3.16	7.27	60	0.15	35x50	HL2E182M#AS7	
315 VDC Code: 2F Surge Voltage 365 VDC	150	0.86	1.98	850	0.20	22x25	HL2F151M#XS2
	220	1.10	2.53	580	0.20	22x30	HL2F221M#XS3
		1.10	2.53	580	0.20	25x25	HL2F221M#YS2

Additional designs on request · Weitere Designs auf Anfrage

Rated VoltageCode (Surge Voltage) V_r [V DC]	Capacitance C_r [μ F]	Ripple Current at 105°C/120Hz I_r [A RMS]	Ripple Current at 40°C/120Hz [A RMS]	ESR (typ) at 20°C/100Hz [m Ω]	Dissipation Factor at 20°C/100Hz Tan δ	DxL [mm]	Product Code # = variable value, see terminal code in the product code
315 VDC Code: 2F Surge Voltage 365 VDC	270	1.24	2.85	480	0.20	22x35	HL2F271M#XS4
		1.25	2.88	480	0.20	25x30	HL2F271M#YS3
	330	1.40	3.22	390	0.20	22x40	HL2F331M#XS5
		1.44	3.31	390	0.20	25x35	HL2F331M#YS4
		1.43	3.29	390	0.20	30x25	HL2F331M#ZS2
	390	1.56	3.59	330	0.20	22x45	HL2F391M#XS6
		1.60	3.68	330	0.20	25x40	HL2F391M#YS5
		1.56	3.59	330	0.20	30x30	HL2F391M#ZS3
	470	1.79	4.12	280	0.20	25x45	HL2F471M#YS6
		1.48	3.40	280	0.20	35x25	HL2F471M#AS2
		1.99	4.58	230	0.20	25x50	HL2F561M#YS7
	560	1.93	4.44	230	0.20	30x35	HL2F561M#ZS4
		1.70	3.91	230	0.20	35x30	HL2F561M#AS3
		2.19	5.04	190	0.20	30x40	HL2F681M#ZS5
	680	1.96	4.51	190	0.20	35x35	HL2F681M#AS4
		2.51	5.77	160	0.20	30x50	HL2F821M#ZS7
	820	2.23	5.13	160	0.20	35x40	HL2F821M#AS5
		2.55	5.87	130	0.20	35x45	HL2F102M#AS6
	1200	2.87	6.60	110	0.20	35x50	HL2F122M#AS7
	400 VDC Code: 2G Surge Voltage 450 VDC	120	0.77	1.77	800	0.20	22x25
0.87			2.00	640	0.20	22x25	HL2G151M#XS2
150		0.92	2.12	640	0.20	22x30	HL2G151M#XS3
		0.90	2.07	640	0.20	25x25	HL2G151M#YS2
180		1.01	2.32	540	0.20	22x30	HL2G181M#XS3
		1.05	2.42	540	0.20	22x35	HL2G181M#XS4
		0.99	2.28	540	0.20	25x25	HL2G181M#YS2
		1.05	2.42	540	0.20	25x30	HL2G181M#YS3
220		1.17	2.69	440	0.20	22x35	HL2G221M#XS4
		1.22	2.81	440	0.20	22x40	HL2G221M#XS5
		1.16	2.67	440	0.20	25x30	HL2G221M#YS3
		1.21	2.78	440	0.20	25x35	HL2G221M#YS4
		1.17	2.69	440	0.20	30x25	HL2G221M#ZS2
270		1.35	3.11	360	0.20	22x40	HL2G271M#XS5
		1.40	3.22	360	0.20	22x45	HL2G271M#XS6
		1.35	3.11	360	0.20	25x35	HL2G271M#YS4
		1.40	3.22	360	0.20	25x40	HL2G271M#YS5
		1.28	2.94	360	0.20	30x25	HL2G271M#ZS2
330		1.54	3.54	290	0.20	22x45	HL2G331M#XS6
		1.59	3.66	290	0.20	22x50	HL2G331M#XS7
		1.55	3.57	290	0.20	25x40	HL2G331M#YS5
		1.61	3.70	290	0.20	25x45	HL2G331M#YS6
		1.49	3.43	290	0.20	30x30	HL2G331M#ZS3
		1.52	3.50	290	0.20	35x25	HL2G331M#AS2
390		1.74	4.00	250	0.20	25x45	HL2G391M#YS6
		1.80	4.14	250	0.20	25x50	HL2G391M#YS7

Additional designs on request · Weitere Designs auf Anfrage

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 terminal code in the product code
400 VDC Code: 2G Surge Voltage 450 VDC	390	1.62	3.73	250	0.20	30x30	HL2G391M#ZS3
		1.70	3.91	250	0.20	30x35	HL2G391M#ZS4
		1.59	3.66	250	0.20	35x25	HL2G391M#AS2
		1.68	3.86	250	0.20	35x30	HL2G391M#AS3
	470	1.98	4.55	210	0.20	25x50	HL2G471M#YS7
		1.86	4.28	210	0.20	30x35	HL2G471M#ZS4
		1.94	4.46	210	0.20	30x40	HL2G471M#ZS5
		1.84	4.23	210	0.20	35x30	HL2G471M#AS3
		1.92	4.42	210	0.20	35x35	HL2G471M#AS4
	560	2.11	4.85	180	0.20	30x40	HL2G561M#ZS5
		2.19	5.04	180	0.20	30x45	HL2G561M#ZS6
		2.09	4.81	180	0.20	35x35	HL2G561M#AS4
		2.18	5.01	180	0.20	35x40	HL2G561M#AS5
	680	2.48	5.70	150	0.20	30x50	HL2G681M#ZS7
		2.40	5.52	150	0.20	35x40	HL2G681M#AS5
		2.48	5.70	150	0.20	35x45	HL2G681M#AS6
	820	2.72	6.26	120	0.20	35x45	HL2G821M#AS6
		2.80	6.44	120	0.20	35x50	HL2G821M#AS7
	1 000	3.09	7.11	120	0.20	35x50	HL2G102M#AS7
	420 VDC Code: 420V Surge Voltage 470 VDC	100	0.71	1.63	1020	0.20	22x25
120		0.77	1.77	850	0.20	22x25	HL420V121M#XS2
		0.82	1.89	850	0.20	22x30	HL420V121M#XS3
150		0.81	1.86	850	0.20	25x25	HL420V121M#YS2
		0.92	2.12	680	0.20	22x30	HL420V151M#XS3
		0.96	2.21	680	0.20	22x35	HL420V151M#XS4
180		0.90	2.07	680	0.20	25x25	HL420V151M#YS2
		1.05	2.42	570	0.20	22x35	HL420V181M#XS4
		1.10	2.53	570	0.20	22x40	HL420V181M#XS5
		0.99	2.28	570	0.20	25x25	HL420V181M#YS2
		1.05	2.42	570	0.20	25x30	HL420V181M#YS3
220		1.06	2.44	570	0.20	30x25	HL420V181M#ZS2
		1.22	2.81	470	0.20	22x40	HL420V221M#XS5
		1.26	2.90	470	0.20	22x45	HL420V221M#XS6
		1.16	2.67	470	0.20	25x30	HL420V221M#YS3
		1.21	2.78	470	0.20	25x35	HL420V221M#YS4
		1.15	2.65	470	0.20	30x25	HL420V221M#ZS2
270		1.40	3.22	380	0.20	22x45	HL420V271M#XS6
		1.44	3.31	380	0.20	22x50	HL420V271M#XS7
		1.35	3.11	380	0.20	25x35	HL420V271M#YS4
		1.40	3.22	380	0.20	25x40	HL420V271M#YS5
		1.28	2.94	380	0.20	30x25	HL420V271M#ZS2
		1.35	3.11	380	0.20	30x30	HL420V271M#ZS3
		1.38	3.17	380	0.20	35x25	HL420V271M#AS2
330		1.59	3.66	310	0.20	22x50	HL420V331M#XS7
		1.55	3.57	310	0.20	25x40	HL420V331M#YS5

Additional designs on request · Weitere Designs auf Anfrage

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420 VDC Code: 420V Surge Voltage 470 VDC	330	1.61	3.70	310	0.20	25x45	HL420V331M#YS6	
		1.66	3.82	310	0.20	25x50	HL420V331M#YS7	
		1.49	3.43	310	0.20	30x30	HL420V331M#ZS3	
		1.56	3.59	310	0.20	30x35	HL420V331M#ZS4	
		1.46	3.36	310	0.20	35x25	HL420V331M#AS2	
	390	1.74	4.00	270	0.20	25x45	HL420V391M#YS6	
		1.80	4.14	270	0.20	25x50	HL420V391M#YS7	
		1.70	3.91	270	0.20	30x35	HL420V391M#ZS4	
		1.76	4.05	270	0.20	30x40	HL420V391M#ZS5	
		1.67	3.84	270	0.20	35x30	HL420V391M#AS3	
	470	1.98	4.55	220	0.20	25x50	HL420V471M#YS7	
		1.94	4.46	220	0.20	30x40	HL420V471M#ZS5	
		2.00	4.60	220	0.20	30x45	HL420V471M#ZS6	
		1.84	4.23	220	0.20	35x30	HL420V471M#AS4	
		1.92	4.42	220	0.20	35x35	HL420V471M#AS4	
	560	2.19	5.04	190	0.20	30x45	HL420V561M#ZS6	
		2.25	5.18	190	0.20	30x50	HL420V561M#ZS7	
		2.09	4.81	190	0.20	35x35	HL420V561M#AS4	
		2.18	5.01	190	0.20	35x40	HL420V561M#AS5	
	680	2.48	5.70	150	0.20	30x50	HL420V681M#ZS7	
		2.40	5.52	150	0.20	35x40	HL420V681M#AS5	
		2.48	5.70	150	0.20	35x45	HL420V681M#AS6	
	820	2.55	5.87	150	0.20	35x50	HL420V681M#AS7	
		820	2.72	6.26	130	0.20	35x45	HL420V821M#AS6
	450 VDC Code: 2W Surge Voltage 500 VDC	82	0.64	1.47	1250	0.20	22x25	HL2W820M#XS2
		100	0.71	1.63	1020	0.20	22x25	HL2W101M#XS2
		120	0.82	1.89	850	0.20	22x30	HL2W121M#XS3
			0.81	1.86	850	0.20	25x25	HL2W121M#YS2
150		0.92	2.12	680	0.20	22x30	HL2W151M#XS3	
		0.96	2.21	680	0.20	22x35	HL2W151M#XS4	
		0.90	2.07	680	0.20	25x25	HL2W151M#Y23	
		0.96	2.21	680	0.20	25x30	HL2W151M#YS3	
180		1.05	2.42	570	0.20	22x35	HL2W181M#XS4	
		1.10	2.53	570	0.20	22x40	HL2W181M#XS5	
		1.05	2.42	570	0.20	25x30	HL2W181M#YS3	
		1.10	2.53	570	0.20	25x35	HL2W181M#YS4	
220		1.06	2.44	570	0.20	30x25	HL2W181M#ZS2	
		1.22	2.81	470	0.20	22x40	HL2W221M#XS5	
		1.26	2.90	470	0.20	22x45	HL2W221M#XS6	
		1.30	2.99	470	0.20	22x50	HL2W221M#XS7	
		1.21	2.78	470	0.20	25x35	HL2W221M#YS4	
		1.27	2.92	470	0.20	25x40	HL2W221M#YS5	
		1.15	2.65	470	0.20	30x25	HL2W221M#ZS2	
		1.22	2.81	470	0.20	30x30	HL2W221M#ZS3	
		1.24	2.85	470	0.20	35x25	HL2W221M#AS2	

Additional designs on request · Weitere Designs auf Anfrage

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450 VDC Code: 2W Surge Voltage 500 VDC	270	1.44	3.31	380	0.20	22x50	HL2W271M#XS7
		1.40	3.22	380	0.20	25x40	HL2W271M#YS5
		1.45	3.34	380	0.20	25x45	HL2W271M#YS6
		1.35	3.11	380	0.20	30x30	HL2W271M#ZS3
		1.41	3.24	380	0.20	30x35	HL2W271M#ZS4
		1.32	3.04	380	0.20	35x25	HL2W271M#AS2
	330	1.61	3.70	310	0.20	25x45	HL2W331M#YS6
		1.66	3.82	310	0.20	25x50	HL2W331M#YS7
		1.56	3.59	310	0.20	30x35	HL2W331M#ZS4
		1.62	3.73	310	0.20	30x40	HL2W331M#ZS5
		1.54	3.54	310	0.20	35x30	HL2W331M#AS3
	390	1.76	4.05	270	0.20	30x40	HL2W391M#ZS5
		1.82	4.19	270	0.20	30x45	HL2W391M#ZS6
		1.67	3.84	270	0.20	35x30	HL2W391M#AS3
		1.75	4.03	270	0.20	35x35	HL2W391M#AS4
	470	2.00	4.60	220	0.20	30x45	HL2W471M#ZS6
		2.07	4.76	220	0.20	30x50	HL2W471M#ZS7
		1.92	4.42	220	0.20	35x35	HL2W471M#AS4
		1.99	4.58	220	0.20	35x40	HL2W471M#AS5
	560	2.25	5.18	190	0.20	30x50	HL2W561M#ZS7
		2.18	5.01	190	0.20	35x40	HL2W561M#AS5
		2.25	5.18	190	0.20	35x45	HL2W561M#AS6
	680	2.48	5.70	150	0.20	35x45	HL2W681M#AS6
		2.55	5.87	150	0.20	35x50	HL2W681M#AS7
1 200	3.86	8.88	85	0.20	35x100	HL2W122M#AS17	
500 VDC Code: 2H Surge Voltage 550 VDC	47	0.37	0.85	2040	0.20	22x25	HL2H470M#XS2
	56	0.40	0.92	1710	0.20	22x25	HL2H560M#XS2
	68	0.45	1.04	1410	0.20	22x25	HL2H680M#XS2
		0.48	1.10	1410	0.20	22x30	HL2H680M#XS3
		0.49	1.13	1410	0.20	25x25	HL2H680M#YS2
	82	0.54	1.24	1170	0.20	22x30	HL2H820M#XS3
		0.56	1.29	1170	0.20	22x35	HL2H820M#XS4
		0.55	1.27	1170	0.20	25x25	HL2H820M#YS2
		0.57	1.31	1170	0.20	25x30	HL2H820M#YS3
	100	0.62	1.43	960	0.20	22x35	HL2H101M#XS4
		0.65	1.50	960	0.20	22x40	HL2H101M#XS5
		0.64	1.47	960	0.20	25x30	HL2H101M#YS3
		0.67	1.54	960	0.20	25x35	HL2H101M#YS4
		0.68	1.56	960	0.20	30x25	HL2H101M#ZS2
	120	0.72	1.66	800	0.20	22x40	HL2H121M#XS5
		0.75	1.73	800	0.20	22x45	HL2H121M#XS6
		0.71	1.63	800	0.20	25x31	HL2H121M#YS3
		0.74	1.70	800	0.20	25x35	HL2H121M#YS4
		0.77	1.77	800	0.20	25x40	HL2H121M#YS5
		0.75	1.73	800	0.20	30x25	HL2H121M#ZS2
0.79		1.82	800	0.20	30x30	HL2H121M#ZS3	

Additional designs on request · Weitere Designs auf Anfrage

HL · Snap-In · 12000 h/105 °C

Rated VoltageCode (Surge Voltage) V_r [V DC]	Capacitance C_r [μ F]	Ripple Current at 105°C/120Hz I_r [A RMS]	Ripple Current at 40°C/120Hz [A RMS]	ESR (typ) at 20°C/100Hz [m Ω]	Dissipation Factor at 20°C/100Hz Tan δ	DxL [mm]	Product Code # = variable value, see terminal code in the product code
500 VDC Code: 2H Surge Voltage 550 VDC	150	0.85	1.96	640	0.20	22x45	HL2H151M#XS6
		0.84	1.93	640	0.20	25x36	HL2H151M#YS4
		0.88	2.02	640	0.20	25x40	HL2H151M#YS5
		0.91	2.09	640	0.20	25x45	HL2H151M#YS6
		0.90	2.07	640	0.20	30x30	HL2H151M#ZS3
		0.94	2.16	640	0.20	30x35	HL2H151M#ZS4
		0.94	2.16	640	0.20	35x25	HL2H151M#AS2
	180	0.97	2.23	540	0.20	22x51	HL2H181M#XS7
		0.98	2.25	540	0.20	25x41	HL2H181M#YS5
		1.01	2.32	540	0.20	25x45	HL2H181M#YS6
		1.04	2.39	540	0.20	25x50	HL2H181M#YS7
		0.99	2.28	540	0.20	30x31	HL2H181M#ZS3
		1.04	2.39	540	0.20	30x35	HL2H181M#ZS4
		1.08	2.48	540	0.20	30x40	HL2H181M#ZS5
		1.04	2.39	540	0.20	35x25	HL2H181M#AS2
		1.09	2.51	540	0.20	35x30	HL2H181M#AS3
		220	1.17	2.69	440	0.20	25x50
	1.17		2.69	440	0.20	30x36	HL2H221M#ZS4
	1.21		2.78	440	0.20	30x40	HL2H221M#ZS5
	1.26		2.90	440	0.20	30x45	HL2H221M#ZS6
	1.22		2.81	440	0.20	35x30	HL2H221M#AS3
	1.28		2.94	440	0.20	35x35	HL2H221M#AS4
	270	1.36	3.13	360	0.20	30x41	HL2H271M#ZS5
		1.41	3.24	360	0.20	30x45	HL2H271M#ZS6
		1.45	3.34	360	0.20	30x50	HL2H271M#ZS7
		1.44	3.31	360	0.20	35x35	HL2H271M#AS4
		1.49	3.43	360	0.20	35x40	HL2H271M#AS5
	330	1.63	3.75	290	0.20	30x50	HL2H331M#ZS7
		1.67	3.84	290	0.20	35x40	HL2H331M#AS5
		1.73	3.98	290	0.20	35x45	HL2H331M#AS6
	390	1.84	4.23	250	0.20	30x56	HL2H391M#ZS8
		1.89	4.35	250	0.20	30x60	HL2H391M#ZS9
1.90		4.37	250	0.20	35x45	HL2H391M#AS6	
1.96		4.51	250	0.20	35x50	HL2H391M#AS7	
470	2.18	5.01	210	0.20	35x50	HL2H471M#AS7	
560	2.53	5.82	180	0.20	35x60	HL2H561M#AS9	
700	3.55	8.17	140	0.20	35x80	HL2H701M#AS13	
800	3.33	7.66	125	0.20	35x80	HL2H801M#AS13	
1 000	4.07	9.36	100	0.20	40x100	HL2H102M#BS17	

Additional designs on request · Weitere Designs auf Anfrage

> Ripple Current Multiplier · Wechselstrommultiplikator

Frequency [Hz]	50/60	120	300	1k	≥ 10k
Multiplier	0.70	1.00	1.18	1.34	1.45

Temperature [°C]	40	45	50	55	60	65	70	75	80	85	90	95	100	105
Multiplier	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	1.0

Forced cooling – Wind speed [m/sec]	v < 0.25	v ≥ 0.25	v ≥ 0.5	v ≥ 1.0	v ≥ 2.0	v ≥ 3.0
Multiplier	1.00	1.05	1.10	1.15	1.20	1.25

> Life Time Table · Brauchbarkeitsdauer – Tabelle

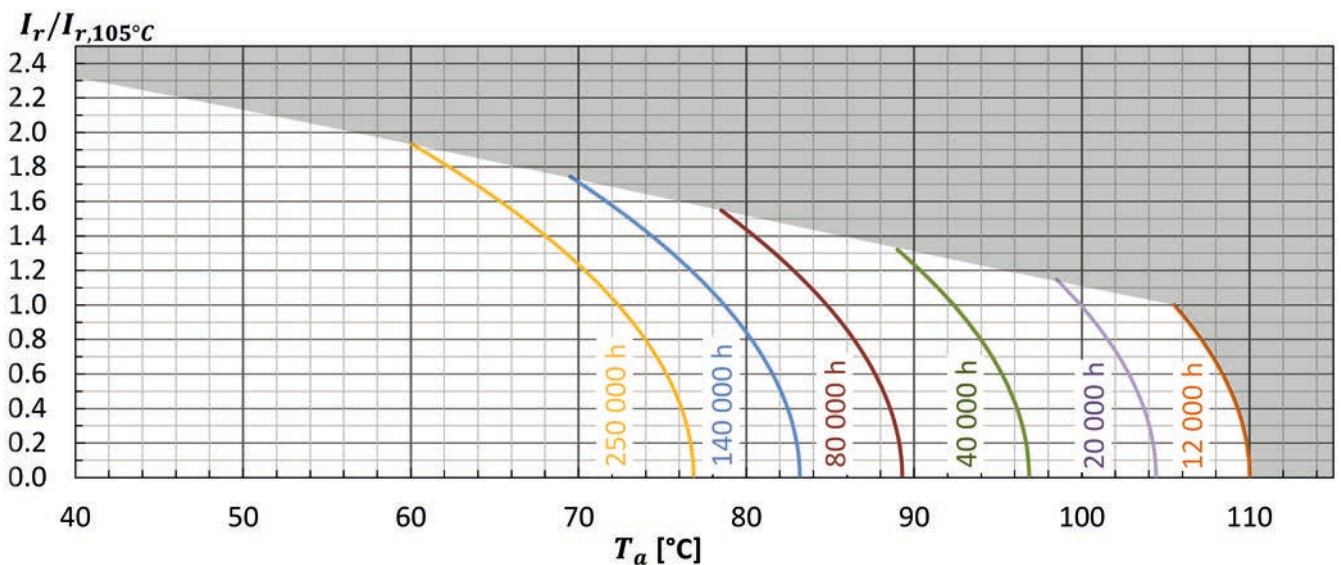
HL	Useful life as function of ambient temperature and ripple current														
	I_r at 105°C	x 1.0	x 1.1	x 1.2	x 1.3	x 1.4	x 1.5	x 1.6	x 1.7	x 1.8	x 1.9	x 2.0	x 2.1	x 2.2	x 2.3
$T_a = 40°C$	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
$T_a = 50°C$	250	250	250	250	250	250	250	250	250	250	250	250	250		
$T_a = 60°C$	250	250	250	250	250	250	250	250	250	250	250	225			
$T_a = 65°C$	250	250	250	250	250	250	250	250	225	194	167				
$T_a = 70°C$	250	250	250	233	208	185	163	142	123						
$T_a = 75°C$	196	180	163	147	132	117	103								
$T_a = 80°C$	124	113	103	93	83	74									
$T_a = 85°C$	78	72	65	59	52										
$T_a = 90°C$	49	45	41	37											
$T_a = 95°C$	31	28	26												
$T_a = 100°C$	19	18													
$T_a = 105°C$	12														

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 Kategorie-temperatur $I_{r, 105°C, 120Hz}$



> Life Time Tests and Requirements · Anforderungen Brauchbarkeitsdauer

Life time test	Test procedure	Life time criteria
Endurance test	$T_a = 105^\circ\text{C}$; V_r , I_r applied 8000 hours	$\Delta C/C \leq 20\%$ (of initial value) $\text{Tan}\delta \leq 200\%$ (of specified value) $I_L \leq$ specified value
Useful life	$T_a = 105^\circ\text{C}$; V_r , I_r applied 12000 hours	$\Delta C/C \leq 30\%$ (of initial value) $\text{Tan}\delta < 300\%$ (of specified value) $I_L \leq$ specified value

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