

► **Specifications / Spezifikationen**

Items	Characteristics
Temperature range	-40°C ~ + 105°C (200VDC - 250VDC) -25°C ~ + 105°C (400VDC - 500VDC)
Capacitance tolerance	+/- 20%
Surge voltage	Repetitive max. 30 sec per 6 Minutes
Leakage current max. $I_L$ (20°C, 5 min)	$0.02 \cdot C \cdot V_r$ [ $\mu$ A] or 3 mA, which is smaller.
Useful life	12000h at 105°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**

Refer to page 6 for available terminal shapes and dimensions. / Auf Seite 6 finden Sie die verfügbaren Bauformen und Maße.

► **Ripple Current Multiplier / Wechselstrommultiplikator**

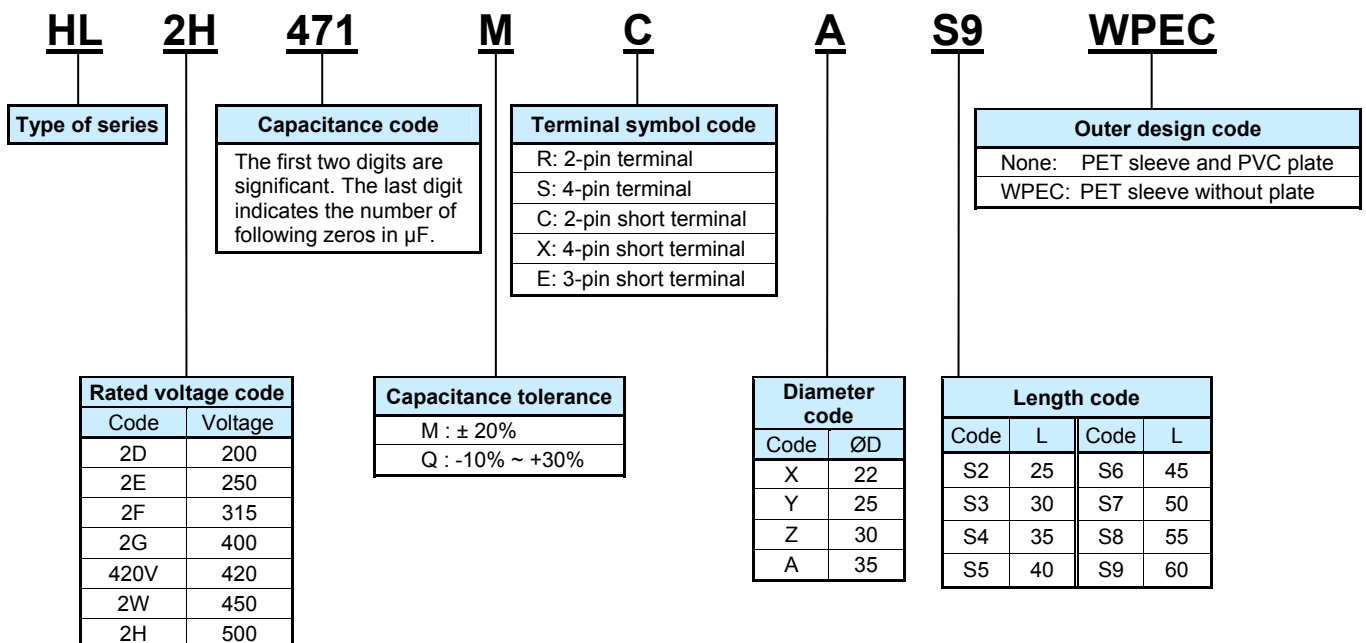
Frequency [Hz]	50/60	120	300	1k	≥ 10k
multiplier	0.70	1.00	1.18	1.34	1.45

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

► **Product Code / Bestellbezeichnung**

**Example: HL 500V 470µF ±20% 35x60mm Shape „C“**



Rated Voltage Code (Surge Voltage) $V_r$ [V DC]	Capacitance $C_r$ [ $\mu$ F]	Dissipation factor $\tan \delta$	Ripple Current	Ripple Current	ESR (typ) at 20°C/100Hz [m $\Omega$ ]	DxL [mm]	Product Code
			at 40°C/120Hz [A RMS]	at 105°C/120Hz $I_r$ [A RMS]			
200 2D (250)	330	0.15	2.51	1.09	330	22x25	HL2D331M□XS2WPEC
	470	0.15	3.15	1.37	240	22x30	HL2D471M□XS3WPEC
		0.15	3.13	1.36	240	25x25	HL2D471M□YS2WPEC
	560	0.15	3.61	1.57	200	22x35	HL2D561M□XS4WPEC
		0.15	3.61	1.57	200	25x30	HL2D561M□YS3WPEC
	680	0.15	4.16	1.81	160	22x40	HL2D681M□XS5WPEC
		0.15	4.03	1.75	160	30x25	HL2D681M□ZS2WPEC
	820	0.15	4.74	2.06	140	22x45	HL2D821M□XS6WPEC
		0.15	4.58	1.99	140	25x35	HL2D821M□YS4WPEC
	1000	0.15	5.45	2.37	110	25x45	HL2D102M□YS6WPEC
		0.15	5.15	2.24	110	30x30	HL2D102M□ZS3WPEC
		0.15	4.46	1.94	110	35x25	HL2D102M□AS2WPEC
	1200	0.15	6.14	2.67	100	25x50	HL2D122M□YS7WPEC
		0.15	5.89	2.56	100	30x35	HL2D122M□ZS4WPEC
		0.15	5.13	2.23	100	35x30	HL2D122M□AS3WPEC
	1500	0.15	7.08	3.08	80	30x45	HL2D152M□ZS6WPEC
0.15		6.00	2.61	80	35x35	HL2D152M□AS4WPEC	
1800	0.15	8.03	3.49	70	30x50	HL2D182M□ZS7WPEC	
	0.15	6.83	2.97	70	35x40	HL2D182M□AS5WPEC	
2200	0.15	7.80	3.39	50	35x45	HL2D222M□AS6WPEC	
2700	0.15	8.88	3.86	50	35x50	HL2D272M□AS7WPEC	
250 2E (300)	270	0.15	2.25	0.98	360	22x25	HL2E271M□XS2WPEC
	330	0.15	2.65	1.15	290	22x30	HL2E331M□XS3WPEC
		0.15	2.62	1.14	290	25x25	HL2E331M□YS2WPEC
	390	0.15	3.01	1.31	250	22x35	HL2E391M□XS4WPEC
	470	0.15	3.45	1.50	210	22x40	HL2E471M□XS5WPEC
		0.15	3.29	1.43	210	25x30	HL2E471M□YS3WPEC
		0.15	3.34	1.45	210	30x25	HL2E471M□ZS2WPEC
	560	0.15	3.91	1.70	180	22x45	HL2E561M□XS6WPEC
		0.15	3.77	1.64	180	25x35	HL2E561M□YS4WPEC
	680	0.15	4.46	1.94	150	22x50	HL2E681M□XS7WPEC
		0.15	4.32	1.88	150	25x40	HL2E681M□YS5WPEC
		0.15	4.26	1.85	150	30x30	HL2E681M□ZS3WPEC
		0.15	3.68	1.60	150	35x25	HL2E681M□AS2WPEC
	820	0.15	4.92	2.14	120	25x45	HL2E821M□YS6WPEC
		0.15	4.88	2.12	120	30x35	HL2E821M□ZS4WPEC
		0.15	4.23	1.84	120	35x30	HL2E821M□AS3WPEC
1000	0.15	5.61	2.44	100	30x40	HL2E102M□ZS5WPEC	
1200	0.15	6.35	2.76	80	30x45	HL2E122M□ZS6WPEC	
	0.15	5.36	2.33	80	35x35	HL2E122M□AS4WPEC	
1500	0.15	6.44	2.80	70	35x45	HL2E152M□AS6WPEC	
1800	0.15	7.27	3.16	60	35x50	HL2E182M□AS7WPEC	
315 2F (365)	150	0.20	1.98	0.86	850	22x25	HL2F151M□XS2WPEC
	220	0.20	2.53	1.10	580	22x30	HL2F221M□XS3WPEC
		0.20	2.53	1.10	580	25x25	HL2F221M□YS2WPEC
	270	0.20	2.85	1.24	480	22x35	HL2F271M□XS4WPEC
		0.20	2.88	1.25	480	25x30	HL2F271M□YS3WPEC
	330	0.20	3.22	1.40	390	22x40	HL2F331M□XS5WPEC
		0.20	3.31	1.44	390	25x35	HL2F331M□YS4WPEC
		0.20	3.29	1.43	390	30x25	HL2F331M□ZS2WPEC
	390	0.20	3.59	1.56	330	22x45	HL2F391M□XS6WPEC
		0.20	3.68	1.60	330	25x40	HL2F391M□YS5WPEC
		0.20	3.59	1.56	330	30x30	HL2F391M□ZS3WPEC
470	0.20	4.12	1.79	280	25x45	HL2F471M□YS6WPEC	
	0.20	3.40	1.48	280	35x25	HL2F471M□AS2WPEC	

Rated Voltage Code (Surge Voltage) $V_r$ [V DC]	Capacitance $C_r$ [ $\mu$ F]	Dissipation factor	Ripple Current at 40°C/120Hz	Ripple Current at 105°C/120Hz	ESR (typ) at 20°C/100Hz	DxL	Product Code
		$\tan \delta$	[A RMS]	[A RMS]	[m $\Omega$ ]	[mm]	
315 2F (365)	560	0.20	4.58	1.99	230	25x50	HL2F561M□YS7WPEC
		0.20	4.44	1.93	230	30x35	HL2F561M□ZS4WPEC
		0.20	3.91	1.70	230	35x30	HL2F561M□AS3WPEC
	680	0.20	5.04	2.19	190	30x40	HL2F681M□ZS5WPEC
		0.20	4.51	1.96	190	35x35	HL2F681M□AS4WPEC
	820	0.20	5.77	2.51	160	30x50	HL2F821M□ZS7WPEC
		0.20	5.13	2.23	160	35x40	HL2F821M□AS5WPEC
	1000	0.20	5.87	2.55	130	35x45	HL2F102M□AS6WPEC
1200	0.20	6.60	2.87	110	35x50	HL2F122M□AS7WPEC	
400 2G (450)	120	0.20	1.77	0.77	800	22x25	HL2G121M□XS2WPEC
	150	0.20	2.12	0.92	640	22x30	HL2G151M□XS3WPEC
		0.20	2.07	0.90	640	25x25	HL2G151M□YS2WPEC
	180	0.20	2.42	1.05	540	22x35	HL2G181M□XS4WPEC
		0.20	2.42	1.05	540	25x30	HL2G181M□YS3WPEC
	220	0.20	2.81	1.22	440	22x40	HL2G221M□XS5WPEC
		0.20	2.78	1.21	440	25x35	HL2G221M□YS4WPEC
		0.20	2.69	1.17	440	30x25	HL2G221M□ZS2WPEC
	270	0.20	3.22	1.40	360	22x45	HL2G271M□XS6WPEC
		0.20	3.22	1.40	360	25x40	HL2G271M□YS5WPEC
	330	0.20	3.70	1.61	290	25x45	HL2G331M□YS6WPEC
		0.20	3.43	1.49	290	30x30	HL2G331M□ZS3WPEC
		0.20	3.50	1.52	290	35x25	HL2G331M□AS2WPEC
	390	0.20	4.14	1.80	250	25x50	HL2G391M□YS7WPEC
		0.20	3.91	1.70	250	30x35	HL2G391M□ZS4WPEC
		0.20	3.86	1.68	250	35x30	HL2G391M□AS3WPEC
	470	0.20	4.46	1.94	210	30x40	HL2G471M□ZS5WPEC
		0.20	4.42	1.92	210	35x35	HL2G471M□AS4WPEC
	560	0.20	5.04	2.19	180	30x45	HL2G561M□ZS6WPEC
		0.20	5.01	2.18	180	35x40	HL2G561M□AS5WPEC
680	0.20	5.70	2.48	150	35x45	HL2G681M□AS6WPEC	
820	0.20	6.44	2.80	120	35x50	HL2G821M□AS7WPEC	
420 420V (470)	100	0.20	1.63	0.71	1020	22x25	HL420V101M□XS2WPEC
	120	0.20	1.89	0.82	850	22x30	HL420V121M□XS3WPEC
		0.20	1.86	0.81	850	25x25	HL420V121M□YS2WPEC
	150	0.20	2.21	0.96	680	22x35	HL420V151M□XS4WPEC
	180	0.20	2.53	1.10	570	22x40	HL420V181M□XS5WPEC
		0.20	2.42	1.05	570	25x30	HL420V181M□YS3WPEC
		0.20	2.44	1.06	570	30x25	HL420V181M□ZS2WPEC
	220	0.20	2.90	1.26	470	22x45	HL420V221M□XS6WPEC
		0.20	2.78	1.21	470	25x35	HL420V221M□YS4WPEC
	270	0.20	3.31	1.44	380	22x50	HL420V271M□XS7WPEC
		0.20	3.22	1.40	380	25x40	HL420V271M□YS5WPEC
		0.20	3.11	1.35	380	30x30	HL420V271M□ZS3WPEC
		0.20	3.17	1.38	380	35x25	HL420V271M□AS2WPEC
	330	0.20	3.82	1.66	310	25x50	HL420V331M□YS7WPEC
		0.20	3.59	1.56	310	30x35	HL420V331M□ZS4WPEC
	390	0.20	4.05	1.76	270	30x40	HL420V391M□ZS5WPEC
		0.20	3.84	1.67	270	35x30	HL420V391M□AS3WPEC
	470	0.20	4.60	2.00	220	30x45	HL420V471M□ZS6WPEC
0.20		4.42	1.92	220	35x35	HL420V471M□AS4WPEC	
560	0.20	5.01	2.18	190	35x40	HL420V561M□AS5WPEC	
680	0.20	5.87	2.55	150	35x50	HL420V681M□AS7WPEC	
450 2W (500)	82	0.20	1.47	0.64	1250	22x25	HL2W820M□XS2WPEC
	120	0.20	1.89	0.82	850	22x30	HL2W121M□XS3WPEC
		0.20	1.86	0.81	850	25x25	HL2W121M□YS2WPEC
	150	0.20	2.21	0.96	680	22x35	HL2W151M□XS4WPEC

Rated Voltage Code (Surge Voltage) $V_r$ [V DC]	Capacitance $C_r$ [ $\mu$ F]	Dissipation factor $\tan \delta$	Ripple Current	Ripple Current	ESR (typ) at 20°C/100Hz [m $\Omega$ ]	DxL [mm]	Product Code
			at 40°C/120Hz [A RMS]	at 105°C/120Hz $I_r$ [A RMS]			
450 2W (500)	150	0.20	2.21	0.96	680	25x30	HL2W151M□YS3WPEC
	180	0.20	2.53	1.10	570	22x40	HL2W181M□XS5WPEC
		0.20	2.53	1.10	570	25x35	HL2W181M□YS4WPEC
		0.20	2.44	1.06	570	30x25	HL2W181M□ZS2WPEC
	220	0.20	2.99	1.30	470	22x50	HL2W221M□XS7WPEC
		0.20	2.92	1.27	470	25x40	HL2W221M□YS5WPEC
		0.20	2.81	1.22	470	30x30	HL2W221M□ZS3WPEC
		0.20	2.85	1.24	470	35x25	HL2W221M□AS2WPEC
	270	0.20	3.34	1.45	380	25x45	HL2W271M□YS6WPEC
		0.20	3.24	1.41	380	30x35	HL2W271M□ZS4WPEC
	330	0.20	3.73	1.62	310	30x40	HL2W331M□ZS5WPEC
		0.20	3.54	1.54	310	35x30	HL2W331M□AS3WPEC
	390	0.20	4.19	1.82	270	30x45	HL2W391M□ZS6WPEC
		0.20	4.03	1.75	270	35x35	HL2W391M□AS4WPEC
	470	0.20	4.76	2.07	220	30x50	HL2W471M□ZS7WPEC
		0.20	4.58	1.99	220	35x40	HL2W471M□AS5WPEC
560	0.20	5.18	2.25	190	35x45	HL2W561M□AS6WPEC	
680	0.20	5.87	2.55	150	35x50	HL2W681M□AS7WPEC	
500 2H (550)	47	0.20	1.01	0.44	2040	22x25	HL2H470M□XS2WPEC
	68	0.20	1.24	0.54	1410	22x30	HL2H680M□XS3WPEC
		0.20	1.27	0.55	1410	25x25	HL2H680M□YS2WPEC
	82	0.20	1.43	0.62	1170	22x35	HL2H820M□XS4WPEC
		0.20	1.47	0.64	1170	25x30	HL2H820M□YS3WPEC
	100	0.20	1.61	0.70	960	22x40	HL2H101M□XS5WPEC
		0.20	1.66	0.72	960	25x35	HL2H101M□YS4WPEC
		0.20	1.68	0.73	960	30x25	HL2H101M□ZS2WPEC
	120	0.20	1.82	0.79	800	22x50	HL2H121M□XS7WPEC
		0.20	1.86	0.81	800	25x40	HL2H121M□YS5WPEC
		0.20	1.91	0.83	800	30x30	HL2H121M□ZS3WPEC
		0.20	1.89	0.82	800	35x25	HL2H121M□AS2WPEC
	150	0.20	2.12	0.92	640	25x45	HL2H151M□YS6WPEC
		0.20	2.21	0.96	640	30x35	HL2H151M□ZS4WPEC
	180	0.20	2.35	1.02	540	25x50	HL2H181M□YS7WPEC
		0.20	2.46	1.07	540	30x40	HL2H181M□ZS5WPEC
		0.20	2.37	1.03	540	35x30	HL2H181M□AS3WPEC
	220	0.20	2.81	1.22	440	30x45	HL2H221M□ZS6WPEC
		0.20	2.67	1.16	440	35x35	HL2H221M□AS4WPEC
	270	0.20	3.04	1.32	360	30x50	HL2H271M□ZS7WPEC
0.20		3.04	1.32	360	35x40	HL2H271M□AS5WPEC	
330	0.20	3.36	1.46	290	35x45	HL2H331M□AS6WPEC	
470	0.20	4.88	2.12	210	35x60	HL2H471M□AS9WPEC	

