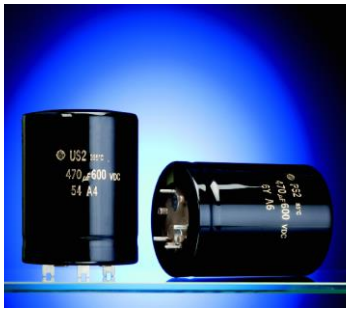
US2 Board-Mount 6 000h / 105°C

These capacitors combine both the advantage of screw type capacitors (higher CV values and **higher ripple current capabilities**) as well as the compact size and the termination of snap mount parts.

Diese Kondensatoren vereinen die Vorteile der Schraubanschlusstypen (höhere CV-Werte und **höhere Wechselstrombelastungen**) mit denen für die Leiterplattenmontage (kompakte Bauformen und Snap-Mount-Anschlüsse).

►Specifications / Spezifikationen

Items	Characteristics
Temperature range	-40°C ~ + 105°C
Capacitance tolerance	+/- 20% at 20°C/120Hz
Surge voltage	Repetitive max. 30 sec per 6 Minutes
Leakage current max. I_L (20°C, 5 min)	0.01 • C • V_r [µA] or 3 mA, which is smaller.
Useful life	6000h at 105°C
Field failure rate	0.5 FIT = 0.5 • 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 < 0.5	v ≥ 0.5	v ≥ 1.0	v ≥ 2.0
multiplier	1.00	1.10	1.20	1.25

Temperature [°C]	40	60	70	85	105
multiplier	2.8	2.4	2.1	2.0	1.0

►Product Code / Bestellbezeichnung

Example: US2 420V 1200µF ±20% 51x70mm Shape „T“

US2 420V 122 M T C ( )

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

S: 4-pin terminal
T: T-type terminal

Length code

Code	L
Ly	y

Rated voltage code

Code	Voltage	Code	Voltage
2D	200	2W	450
2E	250	2H	500
2G	400	2L	550
420V	420	600V	600

Capacitance tolerance

M : ± 20%
Q : -10% ~ +30%

Case code diameter

Code	ØD
B	41
H	46
C	51

US2 Series — Board-Mount — 6 000 h / 105°C

Rated Voltage Code (Surge Voltage) V_r [V DC]	Capacitance C_r [µF]	Dissipation factor tan δ	Ripple Current at 40°C/120Hz [A RMS]	Ripple Current at 105°C/120Hz I_r [A RMS]	ESR (typ) at 20°C/100Hz [mΩ]	DxL [mm]	Product Code
200 2D (250)	**1 500**	0.15	12.29	4.39	76	41x45	US22D152MSB
	2 200	0.15	13.83	4.94	52	46x51	US22D222MSH
		0.15	14.78	5.28	52	41x55	US22D222MSB
	2 700	0.15	14.90	5.32	43	51x51	US22D272MTC
		0.15	16.55	5.91	42	41x64	US22D272MSB
	3 300	0.15	17.14	6.12	34	46x61	US22D332MSH
	3 900	0.15	18.09	6.46	30	51x61	US22D392MTC
		0.15	18.56	6.63	29	46x70	US22D392MSH
	4 700	0.15	19.77	7.06	25	51x70	US22D472MTC
250 2E (300)	**1 000**	0.15	10.05	3.59	115	41x45	US22E102MSB
	1 500	0.15	12.21	4.36	76	41x55	US22E152MSB
	1 800	0.15	12.15	4.34	67	51x51	US22E182MTC
		0.15	12.52	4.47	63	46x51	US22E182MSH
		0.15	13.50	4.82	63	41x64	US22E182MSB
	2 200	0.15	13.97	4.99	52	46x61	US22E222MSH
	2 700	0.15	15.04	5.37	45	51x61	US22E272MTC
		0.15	15.46	5.52	42	46x70	US22E272MSH
	3 300	0.15	16.58	5.92	38	51x70	US22E332MTC
	470	0.15	8.99	3.21	120	41x45	US22G471MSB
	680	0.15	10.78	3.85	83	41x55	US22G681MSB
		0.15	10.86	3.88	83	46x51	US22G681MSH
	820	0.15	11.93	4.26	69	41x64	US22G821MSB
		0.15	11.93	4.26	69	46x51	US22G821MSHL51
		0.15	12.40	4.43	69	51x51	US22G821MTC
	1 000	0.15	12.91	4.61	47	41x68	US22G102MSBL68
		0.15	13.33	4.76	56	46x61	US22G102MSH
		0.15	14.20	5.07	75	41x78	US22G102MSBL78
	1 200	0.15	14.48	5.17	47	41x78	US22G122MSBL78
		0.15	14.56	5.20	47	46x70	US22G122MSH
		0.15	15.15	5.41	47	51x61	US22G122MTC
	1 500	0.15	16.88	6.03	38	51x70	US22G152MTC
	1 800	0.15	18.79	6.71	44	51x80	US22G182MTCL80
420 420V (470)	**390**	0.15	7.90	2.82	190	41x45	US2420V391MSB
	560	0.15	9.35	3.34	132	41x55	US2420V561MSB
	680	0.15	10.44	3.73	109	46x51	US2420V681MSH
	820	0.15	11.45	4.09	90	41x64	US2420V821MSB
		0.15	11.59	4.14	90	46x61	US2420V821MSH
		0.15	11.93	4.26	90	51x51	US2420V821MTC
	1 000	0.15	12.80	4.57	74	46x70	US2420V102MSH
		0.15	13.27	4.74	74	51x61	US2420V102MTC
	1 200	0.15	14.50	5.18	62	51x70	US2420V122MTC
450 2W (500)	**330**	0.15	7.22	2.58	225	41x45	US22W331MSB
	470	0.15	8.60	3.07	158	41x55	US22W471MSB
	560	0.15	9.46	3.38	132	41x64	US22W561MSB
		0.15	9.46	3.38	132	46x51	US22W561MSH
	680	0.15	10.56	3.77	109	46x61	US22W681MSH
		0.15	10.84	3.87	109	51x51	US22W681MTC
	820	0.15	11.54	4.12	90	46x70	US22W821MSH
		0.15	12.01	4.29	90	51x61	US22W821MTC
	1 000	0.15	12.54	4.48	83	41x78	US22W102MSBL78
		0.15	13.86	4.95	83	41x100	US22W102MSBL100
		0.15	13.24	4.73	74	51x70	US22W102MTC
	1 200	0.15	13.24	4.73	70	41x90	US22W122MSBL90
		0.15	15.15	5.41	69	41x100	US22W122MSBL100
	1 500	0.15	14.95	5.34	80	46x80	US22W152MSHL80

US2 Series — Board-Mount — 6 000 h / 105°C

Rated Voltage Code (Surge Voltage) V_r [V DC]	Capacitance C_r [µF]	Dissipation factor tan δ	Ripple Current at 40°C/120Hz [A RMS]	Ripple Current at 105°C/120Hz I_r [A RMS]	ESR (typ) at 20°C/100Hz [mΩ]	DxL [mm]	Product Code
	470	0.15	7.50	2.68	207	41x64	US22H471MSBL64
	560	0.15	7.14	2.55	188	41x81	US22H561MSBL81
		0.15	7.48	2.67	174	51x61	US22H561MSCL61
	680	0.15	9.18	3.28	143	46x70	US22H681MSH
	1 000	0.15	10.75	3.84	90	46x100	US22H102MSHSL100
600 600V (650)	**120**	0.25	2.53	1.01	930	41x45	US2600V121MSBS6
	180	0.25	3.08	1.23	620	41x55	US2600V181MSBS8
	220	0.25	3.48	1.39	510	41x64	US2600V221MSBS10
		0.25	3.58	1.43	510	46x51	US2600V221MSHS7
	270	0.25	4.23	1.69	420	51x51	US2600V271MTCS7
		0.25	4.03	1.61	420	46x61	US2600V271MSHS9
	330	0.25	4.4	1.76	340	46x70	US2600V331MSHS11
	390	0.25	5.15	2.06	290	51x61	US2600V391MTCS9
	470	0.25	6.28	2.51	240	51x70	US2600V471MTCS11
	640	0.25	8.34	2.98	135	51x80	US2600V641MTCS13

►Life Time Table / Brauchbarkeitsdauer – Tabelle

US2	Useful life as function of ambient temperature and ripple current													
I_r at 105°C	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	x 2.8
T_a = 40°C	250	250	250	250	250	250	250	250	250	250	250	250	216	174
T_a = 45°C	250	250	250	250	250	250	250	250	250	247	204	168	136	
T_a = 50°C	250	250	250	250	250	250	250	223	188	156	129	106		
T_a = 55°C	250	250	250	250	250	196	167	141	118	99	81			
T_a = 60°C	250	250	250	216	166	124	105	89	75	62				
T_a = 65°C	250	211	173	137	105	78	66	56	47					
T_a = 70°C	158	134	109	86	66	49	42							
T_a = 75°C	100	84	69	54	42	31	26							
T_a = 80°C	63	53	43	34	26	19								
T_a = 85°C	40	33	27	21	16	12								
T_a = 90°C	25	21	17	13	10									
T_a = 95°C	16	13	11	8										
T_a = 100°C	10	8												
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 4000 hours**	**ΔC/C ≤ 15% (of initial value) Tanδ ≤ 175% (of specified value) I_L ≤ specified value**
Useful life	**T_a = 105°C; V_r, I_r applied 6000 hours**	**ΔC/C ≤ 20% (of initial value) Tanδ < 200% (of specified value) I_L ≤ specified value**

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