

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

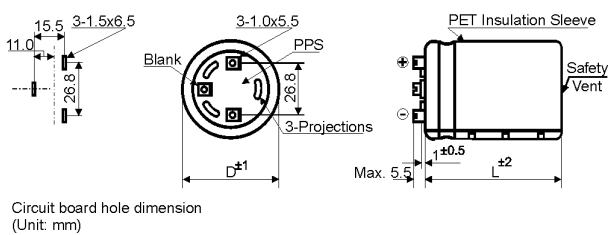
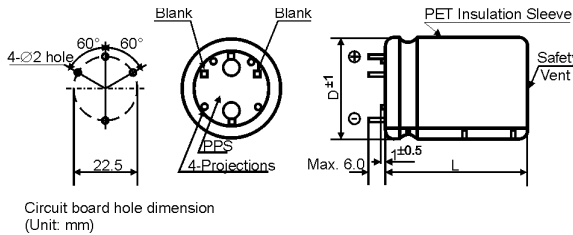
**► Specifications /**

Items	Characteristics
Temperature range	-40°C ~ + 105°C
Rated voltage	200VDC - 500VDC *)
Surge voltage	Repetitive max. 30 sec per 6 Minutes
Leakage current at 20°C	$0.01 \cdot C \cdot V_r$ [ $\mu$ A] or 3 mA, which is smaller.
Capacitance tolerance	+/- 20%
Useful life	6000h at 105°C
Field failure rate	0.5 FIT = $0.5 \cdot 10^{-9}$ Failures/hour
Failure rate	Less than 0.1% within the useful life



\*) 550 VDC ~ 600 VDC under development

**► Outline Drawing /**



Shape / Form: S (D = 41, 46mm)

Shape / Form: T (D = 51mm)

**► Ripple Current Multiplier /**

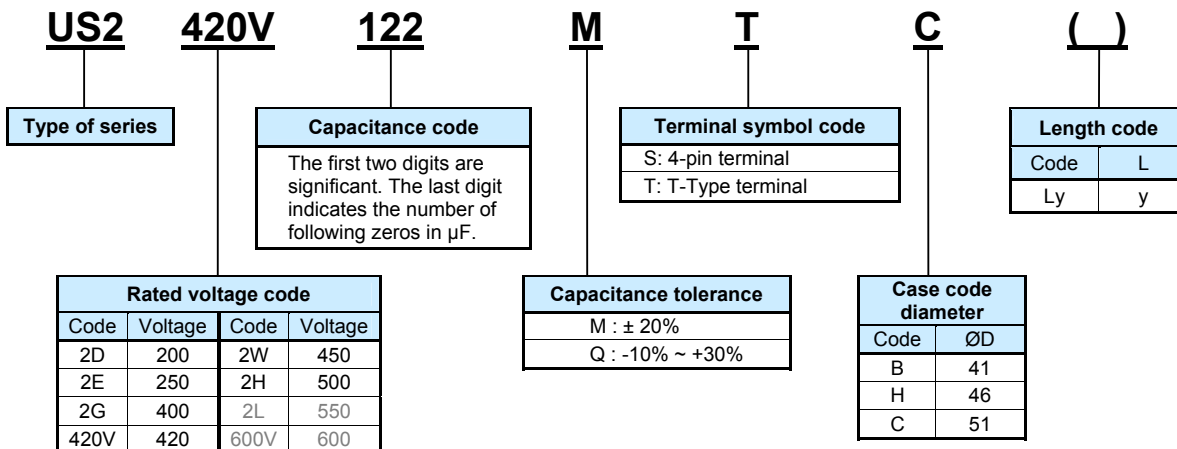
Frequency [Hz]	50/60	120	300	1k	≥ 10k
multiplier	0.7	1.0	1.1	1.3	1.4

Forced cooling [m/sec]	v < 0.5	v ≥ 0.5
multiplier	1.0	1.1

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

**► Product Code /**

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



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)	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	
400 2G (450)	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	12.40	4.43	69	51x51	US22G821MTC
	1 000	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	
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	91	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	91	51x61	US22W821MTC
	1 000	0.15	13.24	4.73	74	51x70	US22W102MTC
1 200	0.15	15.15	5.41	69	41x100	US22W122MSBL100	
500 2H (550)	470	0.15	7.50	2.68	207	41x64	US22H471MSB
	680	0.15	9.18	3.28	143	46x70	US22H681MSH
	1 000	0.15	10.75	3.84	90	46x100	US22H102MSHSL100

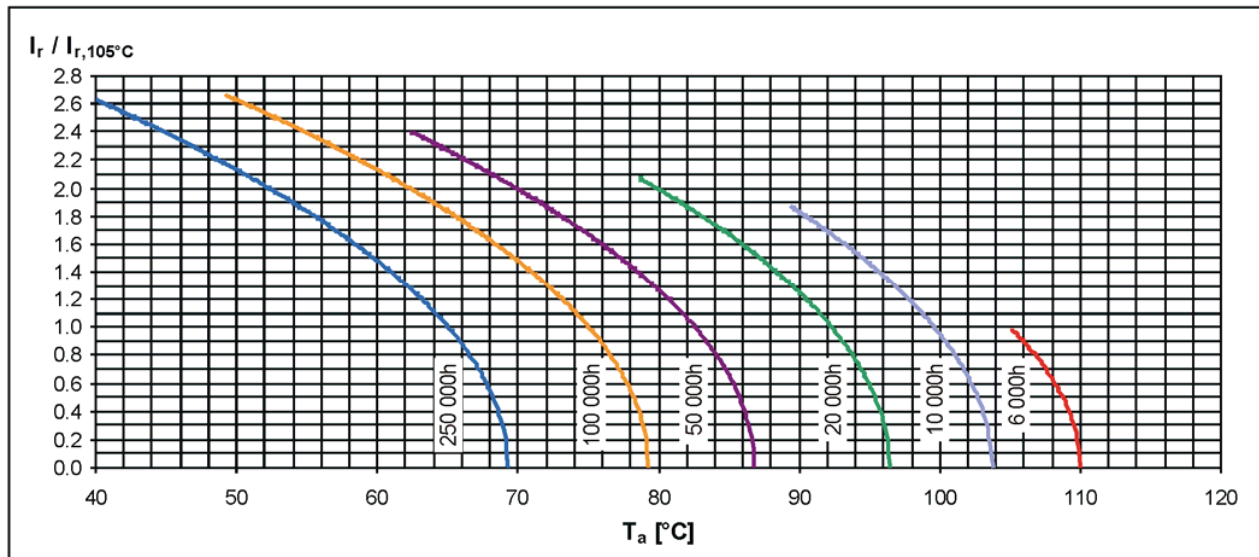
► **Life Time Table /**

US2 $I_r$ at 105°C	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	x 2.8
$T_a = 40^\circ\text{C}$	250	250	250	250	250	250	250	250	250	250	250	250	216	175
$T_a = 45^\circ\text{C}$	250	250	250	250	250	250	250	250	250	248	205	168	137	
$T_a = 50^\circ\text{C}$	250	250	250	250	250	250	250	224	188	157	130	106		
$T_a = 55^\circ\text{C}$	250	250	250	250	250	196	167	142	119	99	82			
$T_a = 60^\circ\text{C}$	250	250	250	217	167	124	106	90	75	63				
$T_a = 65^\circ\text{C}$	250	212	173	137	105	78	67	57	48					
$T_a = 70^\circ\text{C}$	159	134	110	87	67	50	42							
$T_a = 75^\circ\text{C}$	101	85	69	55	42	31	27							
$T_a = 80^\circ\text{C}$	64	54	44	35	27	20								
$T_a = 85^\circ\text{C}$	40	34	28	22	17	13								
$T_a = 90^\circ\text{C}$	25	21	18	14	11									
$T_a = 95^\circ\text{C}$	16	14	11	9										
$T_a = 100^\circ\text{C}$	10	9												
$T_a = 105^\circ\text{C}$	6													

khrs                      Max. value limited to 250 000 hours.

► **Life Time Graph /**

Useful life depending on ambient temperature  $T_a$  and ripple current operating conditions  $I_r$  versus rated ripple current at the upper category temperature  $I_{r,105^\circ\text{C},120\text{Hz}}$



► **Life Time Tests and Requirements /**

Life time test	Reference	Test procedure	Life time criteria
Endurance test	JIS-C-5101-4 JIS-C-5102 IEC 60384-4	$T_a = 105^\circ\text{C}$ ; $V_r, I_r$ applied 4000 hours	$\Delta C/C < 15\%$ $\text{Tan}\delta < 175\%$ (of initial value) $I_L = \text{spec. value}$
Useful life	JIS-C-5104-4 IEC 60384-4	$T_a = 105^\circ\text{C}$ ; $V_r, I_r$ applied 6000 hours	$\Delta C/C < 20\%$ $\text{Tan}\delta < 200\%$ (of initial value) $I_L = \text{spec. value}$