

UL Series 105°C



Features

Standard capacitors

Applications

- ◆ Professional power supplies
- ◆ Frequency converters
- ◆ Uninterruptible power supplies
- ◆ Used for air conditioner, general-purpose inverter

Features

- ◆ High reliability
- ◆ Long useful life
- ◆ High ripple current capability
- ◆ Aluminum case designed explosion-proof vent
- ◆ RoHS-compatible

Construction

- ◆ Charge-discharge proof, polar
- ◆ Aluminum case with insulating sleeve
- ◆ Aluminum case designed explosion-proof vent
- ◆ Snap-in solder pins to hold component in place on PC-board

Specifications

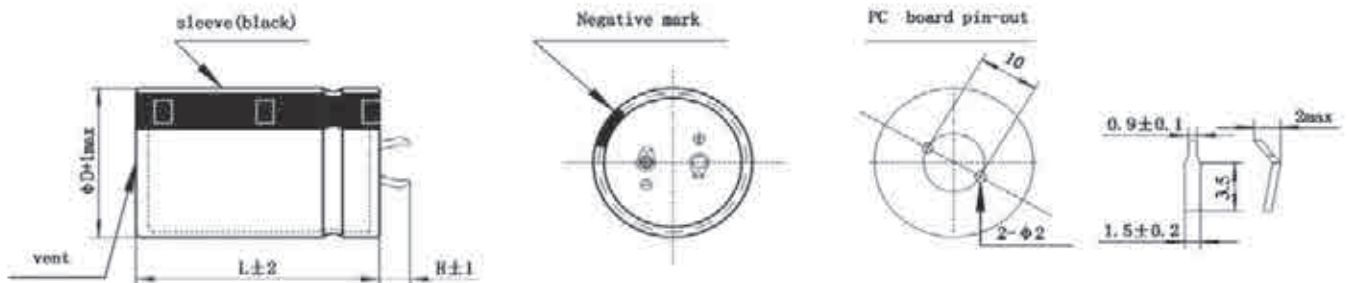
Item	Performance Characteristics			
Operating Temperature Range	-40 to +105°C	-25 to +105°C		
Rated voltage V_R	200 to 450 V DC	500 to 550 V DC		
Surge voltage V_S	$V_R \leq 315V$ 1.15 V_R $V_R > 315V$ 1.10 V_R			
Rated capacitance C_R	82 ~ 2700 μF	47 ~ 680 μF		
Capacitance tolerance	$\pm 20\%$ (120Hz, +20°C)			
Leakage Current I_{leak} (+20°C, max.)	$I \leq 3 \sqrt{CV}$ (μA) After 5 minutes with rated working voltage applied			
Dissipation Factor (tan δ , at 20°C, 120Hz)	Less than the value under table(%)			
	W.V.(V)	160~420 450~550		
	D.F.(%) max	15 20		
Self-inductance ESL	approx. 20 nH			
Useful life 105°C; $V_R, I_{AC, R}$	>10000 h	Requirements:		
		$\Delta C/C \leq \pm 20\%$ of initial value tan $\delta \leq 2$ times initial specified limit $I_{leak} \leq$ initial specified limit		
Voltage Endurance test 105°C; V_R	5000 h	Post test requirements:		
		$\Delta C/C \leq \pm 10\%$ of initial value tan $\delta \leq 1.3$ times initial specified limit $I_{leak} \leq$ initial specified limit		
Shelf Life 105°C	1000 h	Post test requirements:		
		$\Delta C/C \leq \pm 10\%$ of initial value tan $\delta \leq 1.3$ times initial specified limit $I_{leak} \leq$ initial specified limit		
Vibration Resistance test	To IEC 60068-2-6, test Fc:			
	Displacement amplitude 0.75 mm, frequency range 10 ... 55 Hz, acceleration max. 10 g, duration 3x2 h. Capacitor mounted by its body which is rigidly clamped to the work surface.			
Characteristics at low temperature	Max. impedance ratio at 120 Hz			
	$V_R(V)$	200-250 V	315-450 V	500~550 V
	$Z_{-25^\circ C} / Z_{20^\circ C}$	3	5	6
	$Z_{-40^\circ C} / Z_{20^\circ C}$	7	10	-
Sectional specification	IEC 60384-4 and JIS-C-5101			

Multiplier for Ripple Current vs. Frequency

$V_R(V)/$ Frequency(Hz)	50(60)	120	300	1K	10K	50K-100K
$160 \leq V_R \leq 250$	0.81	1	1.17	1.32	1.45	1.5
$315 \leq V_R \leq 600$	0.77	1	1.16	1.30	1.41	1.43

Dimensional drawings

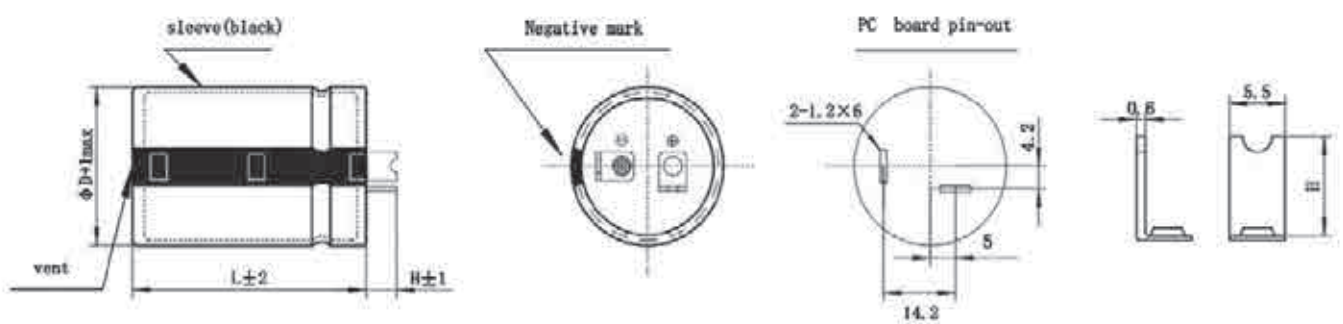
1. Standard 2 terminals



Standard snap-in terminals: length (6.0 ± 1) mm
 Also available with length of (4.0 ± 1) mm

H	h
6	2.5
4	1.5

2. Vibration proof terminal T type



Standard terminals: Length 4.5 ± 1 mm. Also available with length of 5.5 ± 1 mm

Packing

Capacitor diameter D(mm)	Length L(mm)	Terminal length H(mm)	Each carton packing Qty units(pcs.)	Box/carton units(pcs.)	Each box packing Qty units(pcs.)
20	all	/	720	6	120
22	< 55	/	600	6	100
22	≥ 55	/	400	4	100
25	< 65	/	500	5	100
25	≥ 65	/	400	4	100
30	≤ 36	< 6 (L=35、36)	400	8	50
30	$35 \leq L \leq 65$	≥ 6 (L=35、36)	300	6	50
30	> 65	/	200	4	50
35	≤ 25	/	400	8	50
35	$25 < L < 45$	/	300	6	50
35	$45 \leq L \leq 85$	/	200	4	50
35	> 85	/	100	2	50
40	35	< 6	200	5	40
40	35	≥ 6	160	4	40
40	$40 \leq L \leq 45$	/	160	4	40
40	$45 < L \leq 75$	/	120	3	40
40	> 75	/	80	2	40
45	$40 \leq L \leq 65$	/	140	4	35
45	$65 < L \leq 100$	/	70	2	35

Packing of snap-in



Case Size

WV (Vdc)	Cap (uF)	Size (mm)	Rated Ripple current (Arms/105°C /120Hz)	Typ. ESR 20°C 120Hz (mΩ)	MAX ESR 20°C 120Hz (mΩ)
200	180	22x20	0.75	580	1110
200	220	22x25	0.80	470	900
200	270	22x25	1.31	390	740
200	270	22x30	1.35	390	740
200	270	25x25	1.35	390	740
200	330	22x25	1.41	320	600
200	330	22x30	1.53	320	600
200	330	25x25	1.48	320	600
200	390	22x30	1.63	270	510
200	390	22x35	1.68	270	510
200	390	25x25	1.63	270	510
200	390	25x30	1.68	270	510
200	390	30x25	1.68	270	510
200	470	22x30	1.72	220	420
200	470	22x35	1.84	220	420
200	470	25x25	1.63	220	420
200	470	25x30	1.75	220	420
200	470	35x25	1.75	220	420
200	560	22x35	1.95	190	360
200	560	22x40	2.07	190	360
200	560	25x30	1.84	190	360
200	560	25x35	1.92	190	360
200	560	30x30	1.84	190	360
200	560	35x25	1.84	190	360
200	680	22x40	2.22	150	290
200	680	22x45	2.32	150	290
200	680	25x35	2.11	150	290
200	680	25x40	2.32	150	290
200	680	30x30	2.11	150	290
200	680	30x35	2.32	150	290
200	680	35x30	2.32	150	290
200	820	22x50	2.60	130	240
200	820	25x40	2.37	130	240
200	820	30x30	2.11	130	240
200	820	30x35	2.37	130	240
200	820	35x30	2.37	130	240
200	1000	22x60	3.00	110	200
200	1000	25x45	2.63	110	200
200	1000	30x35	2.37	110	200
200	1000	30x40	2.42	110	200
200	1000	35x30	2.37	110	200

WV (Vdc)	Cap (uF)	Size (mm)	Rated Ripple current (Arms/105°C /120Hz)	Typ. ESR 20°C 120Hz (mΩ)	MAX ESR 20°C 120Hz (mΩ)
200	1000	35x35	2.42	110	200
200	1200	25x50	2.88	89	170
200	1200	30x40	2.55	89	170
200	1200	35x30	2.44	89	170
200	1200	35x35	2.88	89	170
200	1500	30x45	2.82	68	130
200	1500	30x50	3.00	68	130
200	1500	35x35	2.98	68	130
200	1500	35x40	3.08	68	130
200	1800	30x50	3.08	58	110
200	1800	35x40	3.18	58	110
200	1800	35x45	3.28	58	110
200	2200	35x50	3.45	48	90
200	2700	35x60	4.00	39	74
250	220	22x25	0.85	470	900
250	270	22x25	1.32	390	740
250	270	22x30	1.36	390	740
250	270	25x25	1.36	390	740
250	330	22x30	1.55	320	600
250	330	22x35	1.60	320	600
250	330	25x25	1.45	320	600
250	330	25x30	1.60	320	600
250	390	22x35	1.75	270	510
250	390	22x40	1.80	270	510
250	390	25x30	1.68	270	510
250	390	25x35	1.73	270	510
250	390	30x30	1.73	270	510
250	470	22x40	1.97	220	420
250	470	22x45	2.02	220	420
250	470	25x30	1.75	220	420
250	470	25x35	1.80	220	420
250	470	30x25	1.75	220	420
250	470	30x30	1.80	220	420
250	560	22x45	2.20	190	360
250	560	25x40	2.20	190	360
250	560	30x30	1.97	190	360
250	560	30x35	2.05	190	360
250	560	35x30	2.05	190	360
250	680	22x50	2.45	150	290
250	680	25x45	2.25	150	290
250	680	30x35	2.18	150	290

VV (Vdc)	Cap (uF)	Size (mm)	Rated Ripple current (Arms/105°C /120Hz)	Typ. ESR 20°C 120Hz (mΩ)	MAX ESR 20°C 120Hz (mΩ)
250	680	30x40	2.25	150	290
250	680	35x30	2.18	150	290
250	820	25x50	2.49	130	240
250	820	30x45	2.19	130	240
250	820	35x35	2.15	130	240
250	1000	25x55	2.91	110	200
250	1000	30x40	2.44	110	200
250	1000	30x45	2.54	110	200
250	1000	35x35	2.38	110	200
250	1000	35x40	2.54	110	200
250	1200	30x45	2.68	89	170
250	1200	30x50	2.73	89	170
250	1200	35x40	2.72	89	170
250	1500	30x55	3.15	68	130
250	1500	35x45	3.15	68	130
250	1500	35x50	3.20	68	130
250	1800	35x50	3.42	58	110
250	1800	35x55	3.60	58	110
250	2200	35x60	3.75	48	90
315	120	22x25	0.72	870	1660
315	150	22x25	1.00	700	1330
315	150	22x30	1.03	700	1330
315	150	30x25	1.00	700	1330
315	180	22x30	1.14	580	1110
315	180	22x35	1.18	580	1110
315	180	25x30	1.18	580	1110
315	220	22x35	1.31	470	900
315	220	22x40	1.35	470	900
315	220	25x30	1.31	470	900
315	220	25x35	1.35	470	900
315	220	30x25	1.31	470	900
315	270	22x40	1.49	390	740
315	270	22x45	1.54	390	740
315	270	25x35	1.39	390	740
315	270	25x40	1.54	390	740
315	270	30x30	1.39	390	740
315	330	22x45	1.69	320	600
315	330	22x50	1.76	320	600
315	330	25x35	1.59	320	600
315	330	25x40	1.63	320	600
315	330	30x25	1.41	320	600
315	330	30x30	1.46	320	600
315	330	35x25	1.46	320	600
315	390	22x50	1.87	270	510
315	390	25x40	1.78	270	510
315	390	25x45	1.83	270	510
315	390	30x30	1.63	270	510
315	390	30x35	1.68	270	510
315	390	35x25	1.48	270	510
315	390	35x30	1.55	270	510
315	470	22x55	2.09	220	420
315	470	25x45	1.99	220	420
315	470	30x35	1.86	220	420
315	470	30x40	1.99	220	420
315	470	35x30	1.74	220	420
315	470	35x35	1.99	220	420
315	560	22x60	2.29	190	360
315	560	25x50	2.21	190	360
315	560	30x40	2.08	190	360
315	560	30x45	2.16	190	360
315	560	35x30	2.08	190	360
315	560	35x35	2.16	190	360
315	680	25x55	2.44	150	290

VV (Vdc)	Cap (uF)	Size (mm)	Rated Ripple current (Arms/105°C /120Hz)	Typ. ESR 20°C 120Hz (mΩ)	MAX ESR 20°C 120Hz (mΩ)
315	680	25x60	2.50	150	290
315	680	30x45	2.32	150	290
315	680	30x50	2.40	150	290
315	680	35x35	2.16	150	290
315	680	35x40	2.13	150	290
315	820	30x50	2.55	130	240
315	820	30x55	2.59	130	240
315	820	35x40	2.26	130	240
315	820	35x45	2.35	130	240
315	1000	30x55	2.78	110	200
315	1000	30x60	2.82	110	200
315	1000	35x50	2.70	110	200
315	1200	30x60	3.01	89	170
315	1200	35x55	2.92	89	170
315	1200	35x60	2.96	89	170
315	1500	35x60	3.42	68	130
315	1500	35x65	3.62	68	130
350	100	22x25	0.50	1050	1990
350	120	22x25	0.92	870	1660
350	120	22x30	0.94	870	1660
350	150	22x30	1.08	700	1330
350	150	25x25	1.05	700	1330
350	180	22x35	1.22	580	1110
350	180	22x40	1.27	580	1110
350	180	25x30	1.20	580	1110
350	220	22x40	1.39	470	900
350	220	22x45	1.43	470	900
350	220	25x30	1.30	470	900
350	220	25x35	1.35	470	900
350	220	30x25	1.30	470	900
350	270	22x45	1.57	390	740
350	270	22x50	1.62	390	740
350	270	25x35	1.49	390	740
350	270	25x40	1.53	390	740
350	270	30x25	1.34	390	740
350	270	30x30	1.49	390	740
350	270	35x25	1.42	390	740
350	330	22x50	1.77	320	600
350	330	25x40	1.69	320	600
350	330	25x45	1.77	320	600
350	330	30x30	1.56	320	600
350	330	30x35	1.69	320	600
350	330	35x25	1.56	320	600
350	390	22x55	1.96	270	510
350	390	25x45	1.88	270	510
350	390	25x50	1.97	270	510
350	390	30x35	1.77	270	510
350	390	30x40	1.83	270	510
350	390	30x45	1.92	270	510
350	390	35x30	1.66	270	510
350	390	35x35	1.73	270	510
350	470	25x50	2.09	220	420
350	470	25x55	2.14	220	420
350	470	30x40	1.99	220	420
350	470	30x45	2.09	220	420
350	470	35x35	1.90	220	420
350	560	25x55	2.30	190	360
350	560	25x60	2.38	190	360
350	560	30x45	2.20	190	360
350	560	30x50	2.30	190	360
350	560	35x40	2.13	190	360
350	560	35x45	2.35	190	360
350	680	30x50	2.43	150	290

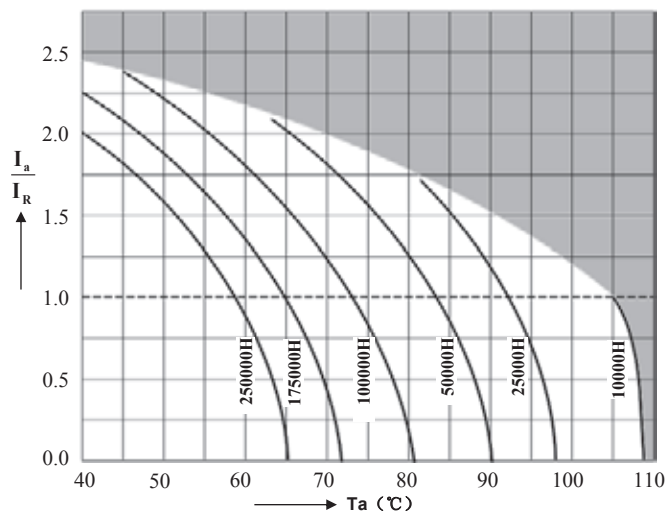
VV (Vdc)	Cap (uF)	Size (mm)	Rated Ripple current (Arms/105°C /120Hz)	Typ. ESR 20°C 120Hz (mΩ)	MAX ESR 20°C 120Hz (mΩ)
350	680	30x55	2.48	150	290
350	680	35x40	2.17	150	290
350	680	35x45	2.40	150	290
350	820	30x55	2.50	130	240
350	820	30x60	2.65	130	240
350	820	35x45	2.45	130	240
350	820	35x50	2.50	130	240
350	1000	35x50	2.80	110	200
350	1000	35x60	3.00	110	200
350	1000	40x50	3.00	110	200
350	1200	35x60	3.01	89	170
350	1200	35x70	3.23	89	170
350	1200	40x60	3.25	89	170
350	1500	40x80	4.21	68	130
350	1500	45x60	4.06	68	130
350	1800	40x90	4.90	58	110
350	1800	45x70	4.75	58	110
350	2200	45x85	5.40	48	90
350	2700	45x100	6.43	39	74
400	82	22x25	0.55	1280	2430
400	100	22x25	0.66	1050	1990
400	100	22x30	0.68	1050	1990
400	100	25x25	0.68	1050	1990
400	120	22x25	0.70	870	1660
400	120	22x30	0.76	870	1660
400	120	25x25	0.76	870	1660
400	150	22x30	0.85	700	1330
400	150	22x35	0.90	700	1330
400	150	25x25	0.85	700	1330
400	150	25x30	0.90	700	1330
400	180	22x35	0.99	580	1110
400	180	22x40	1.05	580	1110
400	180	25x30	1.05	580	1110
400	180	25x35	1.10	580	1110
400	180	30x25	1.05	580	1110
400	220	22x45	1.12	470	900
400	220	22x50	1.16	470	900
400	220	25x30	1.07	470	900
400	220	25x35	1.12	470	900
400	220	30x25	1.10	470	900
400	220	30x30	1.16	470	900
400	270	22x50	1.26	390	740
400	270	25x40	1.26	390	740
400	270	25x45	1.29	390	740
400	270	30x30	1.26	390	740
400	270	30x35	1.29	390	740
400	270	35x25	1.26	390	740
400	330	22x55	1.45	320	600
400	330	25x40	1.35	320	600
400	330	25x45	1.42	320	600
400	330	30x30	1.35	320	600
400	330	30x35	1.42	320	600
400	330	35x30	1.46	320	600
400	390	25x50	1.62	270	510
400	390	25x55	1.69	270	510
400	390	30x40	1.62	270	510
400	390	30x45	1.69	270	510
400	390	35x30	1.59	270	510
400	390	35x35	1.69	270	510
400	470	30x45	1.88	220	420
400	470	30x50	1.97	220	420
400	470	35x35	1.86	220	420
400	470	35x40	1.96	220	420

VV (Vdc)	Cap (uF)	Size (mm)	Rated Ripple current (Arms/105°C /120Hz)	Typ. ESR 20°C 120Hz (mΩ)	MAX ESR 20°C 120Hz (mΩ)
400	560	35x40	2.13	190	360
400	560	35x45	2.25	190	360
400	680	35x45	2.48	150	290
400	680	35x50	2.60	150	290
400	820	35x55	2.67	130	240
400	820	35x60	2.78	130	240
400	820	40x50	2.78	130	240
400	1000	35x65	3.25	110	200
400	1000	40x55	3.25	110	200
400	1200	35x75	3.72	89	170
400	1200	40x65	3.72	89	170
400	1200	45x55	3.72	89	170
400	1500	40x80	4.56	68	130
400	1500	45x65	4.56	68	130
400	1800	45x80	5.36	58	110
450	82	22x25	0.60	1700	3230
450	100	22x25	0.64	1390	2650
450	100	22x30	0.69	1390	2650
450	100	25x25	0.69	1390	2650
450	120	22x30	0.76	1160	2210
450	120	22x35	0.81	1160	2210
450	120	25x25	0.76	1160	2210
450	120	25x30	0.81	1160	2210
450	150	22x35	0.90	930	1770
450	150	22x40	0.96	930	1770
450	150	25x30	0.90	930	1770
450	150	25x35	0.96	930	1770
450	150	30x25	0.90	930	1770
450	150	30x30	0.96	930	1770
450	180	22x40	1.05	770	1470
450	180	22x45	1.10	770	1470
450	180	25x30	1.05	770	1470
450	180	25x35	1.10	770	1470
450	180	30x25	1.03	770	1470
450	180	30x30	1.11	770	1470
450	180	35x25	1.11	770	1470
450	220	22x45	1.16	640	1210
450	220	25x35	1.15	640	1210
450	220	25x40	1.18	640	1210
450	220	30x30	1.15	640	1210
450	220	30x35	1.20	640	1210
450	220	35x25	1.15	640	1210
450	270	22x55	1.31	520	980
450	270	25x45	1.29	520	980
450	270	25x50	1.31	520	980
450	270	30x30	1.23	520	980
450	270	30x40	1.35	520	980
450	270	35x30	1.35	520	980
450	330	25x50	1.50	420	800
450	330	30x40	1.50	420	800
450	330	30x45	1.58	420	800
450	330	35x30	1.50	420	800
450	330	35x35	1.58	420	800
450	390	25x55	1.69	360	680
450	390	30x45	1.72	360	680
450	390	30x50	1.80	360	680
450	390	35x35	1.72	360	680
450	390	35x40	1.79	360	680
450	470	30x50	1.97	290	560
450	470	30x55	2.06	290	560
450	470	35x40	1.95	290	560
450	470	35x45	2.06	290	560
450	560	30x55	2.24	250	470

WV (Vdc)	Cap (uF)	Size (mm)	Rated Ripple current (Arms/105°C /120Hz)	Typ. ESR 20°C 120Hz (mΩ)	MAX ESR 20°C 120Hz (mΩ)
450	560	35x45	2.16	250	470
450	560	35x50	2.36	250	470
450	680	35x50	2.50	210	390
450	680	35x55	2.62	210	390
450	820	35x65	3.00	170	320
450	820	40x55	3.00	170	320
450	1000	35x70	3.10	140	270
450	1000	35x80	3.56	140	270
450	1000	40x70	3.60	140	270
450	1000	45x60	3.60	140	270
450	1200	40x80	3.95	120	220
450	1500	45x80	4.80	95	180
450	1800	45x90	5.67	79	150
500	47	22x25	0.40	2970	5640
500	56	22x25	0.43	2490	4740
500	56	22x30	0.47	2490	4740
500	56	25x25	0.47	2490	4740
500	68	22x30	0.52	2050	3900
500	68	22x35	0.55	2050	3900
500	68	25x25	0.52	2050	3900
500	68	25x30	0.55	2050	3900
500	82	22x35	0.61	1700	3230
500	82	25x30	0.61	1700	3230
500	100	22x40	0.72	1390	2650
500	100	25x35	0.72	1390	2650
500	100	30x30	0.72	1390	2650
500	120	22x45	0.74	1160	2210
500	120	25x40	0.74	1160	2210

WV (Vdc)	Cap (uF)	Size (mm)	Rated Ripple current (Arms/105°C /120Hz)	Typ. ESR 20°C 120Hz (mΩ)	MAX ESR 20°C 120Hz (mΩ)
500	120	30x35	0.77	1160	2210
500	120	35x30	0.80	1160	2210
500	150	22x50	0.96	930	1770
500	150	25x45	0.98	930	1770
500	150	30x35	0.92	930	1770
500	150	35x30	0.92	930	1770
500	180	25x50	1.13	770	1470
500	180	30x35	1.05	770	1470
500	180	35x30	1.10	770	1470
500	220	25x50	1.22	640	1210
500	220	30x45	1.25	640	1210
500	220	35x30	1.10	640	1210
500	220	35x35	1.23	640	1210
500	270	30x50	1.51	520	980
500	270	35x35	1.31	520	980
500	270	35x40	1.42	520	980
500	330	35x40	1.48	420	800
500	330	35x45	1.56	420	800
500	390	35x50	1.78	360	680
500	470	35x55	2.14	290	560
500	470	35x60	2.26	290	560
500	560	35x65	2.38	250	470
500	680	40x65	2.52	210	390
550	220	35x40	1.30	640	1210
550	270	35x50	1.60	520	980
550	330	35x55	1.63	420	800
550	390	35x60	1.80	360	680
550	470	35x70	2.10	290	560

Useful life



depending on ambient temperature T_a versus under ripple current operating conditions