

TH Series

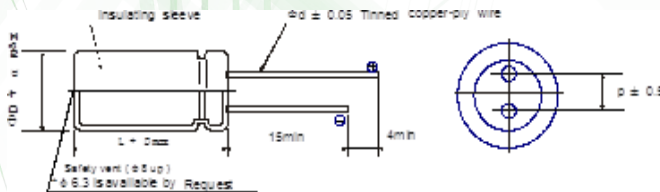
- 105°C, 5,000~10,000 hours assured
- Low ESR, suitable for switching power supplies
- Smaller size with large permissible ripple current
- Rohs compliance.



■ SPECIFICATIONS

Item	Characteristics										
Operating Temperature Range	-55°C ~ +105°C						-40°C ~ +105°C				
Voltage Range	6.3 ~ 63 V.DC						100V.DC				
Nominal Cap. Range	4.7 ~ 15000 μF						0.47 ~ 820 μF				
Leakage Current	I = 0.01CV or 3(μA) whichever is greater.(after 2 minutes) where, I: Max Leakage Current(μA), C: Nominal Capacitance(μF), V: Rated Voltage(V) (at 20 °C)										
Dissipation Factor (tanδ) (at 20°C 120HZ)	WV	6.3	10	16	25	35	50	63	100		
	tanδ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08		
	Add 0.02 per 1,000μF for more than 1,000μF items .										
Low Temperature Characteristics	W.V.			6.3	10	16	25	35	50	63	100
	Z(-25°C)/Z(+20°C)			4	3	2	2	2	2	2	2
Stability at 120Hz	Z(-55°C)/Z(+20°C)			8	6	4	4	3	3	3	
Impedance(Ω)	See Case Size Table										
High Temp. Load Test	After ΦD≤6.3mm:5,000, ΦD=8mm: 8000hrs, ΦD≥Φ10: 10000hrs, application of DC rated working voltage at +105°C, the capacitor shall meet the following limits.										
	Capacitance Change	... ≤ ±25% of the initial measured value									
	Tan δ	... ≤200% of the initial specified value									
	DC Leakage Current	... ≤ the initial specified value									
High Temp. Non-Load Test	After storage for 1000 hours at 105°C with no voltage applied, voltage treatment of JIS-C-5102 article 4-4 is to be given and then measurement shall be made, at which time requirements specified in the table "High Temperature Loading" can be met.										

DRAWING



ΦD	5	6.3	8	10	13	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.5		0.6		0.8		
β	1.0		1.5		2.0		
α	0.5						

▼ MULTIPLIER FOR RIPPLE CURRENT

Frequency coefficient

Freq.(Hz)	120	1K	10K	100K up
under~33	0.42	0.70	0.90	1.00
39~270	0.50	0.73	0.92	1.00
330~680	0.55	0.77	0.94	1.00
820~1800	0.60	0.80	0.96	1.00
2200~15000	0.70	0.85	0.98	1.00

◆ PART NUMBERING SYSTEM

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WV(Vdc)	6.3V				WV(Vdc)	10V			
	ΦDxL	Ripple current	Impedance			ΦDxL	Ripple current	Impedance	
	(mm)	(mArms)	20°C	-10°C		(mm)	(mArms)	20°C	-10°C
Cap (μF)		105°C, 100KHZ	100KHZ	100KHZ	Cap (μF)		105°C, 100KHZ	100KHZ	100KHZ
22	5X11	180	0.6	1.2	22	5X11	180	0.6	1.2
33	5X11	180	0.6	1.2	33	5X11	180	0.6	1.2
47	5X11	180	0.6	1.2	47	5X11	180	0.6	1.2
82					82	5X11	180	0.6	1.2
100	5X11	180	0.6	1.2	100	5X11	180	0.6	1.2
150	6.3X11	290	0.25	0.5	150	6.3X11	290	0.25	0.5
180					180	6.3X11	290	0.25	0.5
220	6.3X11	290	0.25	0.5	220	6.3X11	290	0.25	0.5
						6.3X15	430	0.23	0.46
330	6.3X11	290	0.25	0.50	330	8X11.5	555	0.017	0.234
	6.3X15	430	0.23	0.46					
470	8X11.5	555	0.017	0.234	470	8X11.5	555	0.117	0.234
560	8X11.5	555	0.017	0.234	560				
680	10X12.5	755	0.090	0.180	680	10X12.5	755	0.090	0.180
						8X16	730	0.085	0.170
820	8X16	730	0.085	0.170	820				
	10X12.5	755	0.090	0.180					
1000	10X12.5	755	0.012	0.180	1000	10X16	1050	0.068	0.136
						8X20	995	0.065	0.130
1200	8X20	955	0.065	0.130	1200	10X20	1220	0.052	0.104
	10X16	1050	0.068	0.136					
1500	10X20	1220	0.052	0.104	1500	10X20	1220	0.052	0.104
						10X25	1440	0.045	0.090
2200	10X25	1440	0.045	0.090	2200	13X20	1655	0.038	0.076
	13X20	1815	0.038	0.076		10X30	1815	0.035	0.070
2700	10X30	1815	0.035	0.070	2700	13X25	1945	0.030	0.060
3300	13X20	1655	0.038	0.076	3300	13X25	1945	0.030	0.060
						13X30	2310	0.025	0.050
3900	13X25	1945	0.030	0.060	3900	13X30	2510	0.022	0.044
						16X20	2205	0.029	0.058
4700	16X25	2555	0.022	0.044	4700	16X25	2555	0.022	0.044
	13X30	2310	0.025	0.005					
5600	13X35	2510	0.022	0.044	5600	16X25	2555	0.022	0.044
	16X20	2205	0.029	0.058		18X20	2490	0.028	0.056
6800	16X25	2555	0.022	0.044	6800	16X31.5	3010	0.018	0.036
	18X20	2490	0.028	0.056		18X25	2740	0.020	0.040
8200	16X31.5	3010	0.018	0.036	8200	16X35.5	3150	0.016	0.032
						18X31.5	3635	0.016	0.032
10000	16X31.5	3150	0.016	0.032	10000	18X35.5	3680	0.015	0.030
	18X25	2740	0.020	0.040					
12000	18X31.5	3635	0.016	0.032	12000				
15000	18X35.5	3680	0.015	0.030	15000	18X40	3800	0.014	0.028

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WV(Vdc) Cap (μF)	35V				WV(Vdc) Cap (μF)	50V			
	ΦDxL (mm)	Ripple current (mArms) 105°C, 100KHZ	Impedance			ΦDxL (mm)	Ripple current (mArms) 105°C, 100KHZ	Impedance	
			20°C 100KHZ	-10°C 100KHZ				20°C 100KHZ	-10°C 100KHZ
0.47					0.47				
1					1				
2.2					2.2				
3.3					3.3				
4.7	5X11	180	0.6	1.2	4.7	5X11	90	2.3	4.6
6.8					6.8				
10	5X11	180	0.6	1.2	10	5X11	120	1.4	2.8
12					12				
15					15				
18					18	5X11	155	1.3	2.6
22	5X11	180	0.6	1.2	22	5X11	170	1.2	2.4
27	5X11	180	0.6	1.2	27				
33	5X11	180	0.6	1.2	33	6.3X11	300	0.43	0.86
39					39				
47	6.3X11	290	0.25	0.5	47	6.3X11	300	0.43	0.86
56	6.3X11	290	0.25	0.5	56	6.3X15	360	0.40	0.80
68					68				
82	6.3X15	430	0.23	0.46	82	8X11.5	485	0.234	0.468
100	8X11.5	555	0.117	0.234	100	8X11.5	485	0.234	0.468
120					120	8X16	635	0.155	0.310
150	8X11.5	555	0.117	0.234	150	10X12.5	615	0.162	0.324
180					180	10X12.5	615	0.162	0.324
220	8X11.5	730	0.085	0.17	220	10X16	850	0.119	0.238
270	10X12.5	755	0.090	0.18	270	10X20	1030	0.090	0.180
330	8X20	995	0.065	0.130	330	10X25	1200	0.082	0.164
390	10X16	1050	0.068	0.136	390	10X20	1030	0.090	0.180
470	10X20	1220	0.052	0.104	470	10X30	1610	0.060	0.120
560	10X20	1220	0.052	0.104	560	13X20	1480	0.063	0.126
680	10X25	1440	0.045	0.090	680	13X20	1500	0.060	0.12
820	10X30	1815	0.035	0.070	820	13X25	1832	0.050	0.100
1000	13X20	1655	0.038	0.076	1000	16X20	1835	0.048	0.096
1200					1200	13X35	2285	0.034	0.068
1500	13X25	1945	0.03	0.060	1500	18X20	2420	0.042	0.084
1800	13X30	2310	0.025	0.050	1800	16X25	2235	0.034	0.068
2200	16X20	2205	0.029	0.058	2200	16X31.5	2700	0.028	0.056
2700	13X35	2510	0.022	0.044	2700	18X25	2610	0.029	0.058
3300	16X25	2555	0.022	0.044	3300	16X31.5	2700	0.028	0.056
4700	16X25	2555	0.022	0.044	4700	16X35.5	2790	0.025	0.050
	18X25	2490	0.028	0.056					
	16X31.5	3010	0.018	0.036		18X31.5	3000	0.025	0.05
	18X25	2740	0.020	0.040					
	16X35.5	3150	0.016	0.032					
	18X31.5	3635	0.016	0.032					
	18X31.5	3680	0.015	0.03					
	18X40	3800	0.014	0.028					

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WV(Vdc) Cap (μF)	63V				WV(Vdc) Cap (μF)	100V			
	ΦDxL (mm)	Ripple current (mArms) 105°C, 100KHZ	Impedance			ΦDxL (mm)	Ripple current (mArms) 105°C, 100KHZ	Impedance	
			20°C 100KHZ	-10°C 100KHZ				20°C 100KHZ	-10°C 100KHZ
0.47					0.47	5X11	20	43	86
1					1	5X11	30	20	40
2.2					2.2	5X11	44	9.8	19.6
3.3					3.3	5X11	58	6.6	13.2
4.7	5X11	68	4.7	9.4	4.7	5X11	74	4.6	9.2
6.8	5X11	95	2.5	5	6.8	5X11	95	3.5	7
10	5X11	110	2.1	4.2	10	6.3X11	130	1.8	3.6
12	5X11	145	2	4	12				
15	6.3X11	160	1.2	2.4	15	8X11.5	180	0.83	1.66
18					18	6.3X15	200	0.8	1.6
22	6.3X11	250	0.71	1.42	22	8X11.5	230	0.68	1.36
27					27				
33	6.3X11	250	0.71	1.42	33	8X16 10X12.5	360 320	0.45 0.46	0.90 0.92
39	6.3X15	330	0.7	1.4	39				
47	8X11.5	405	0.342	0.684	47	10X16 8X20	420 420	0.37 0.37	0.74 0.74
56					56				
68	8X11.5	405	0.342	0.684	68	10X20	490	0.30	0.6
82					82	10X25	540	0.25	0.5
100	10X12.5 8X16	535 535	0.256 0.230	0.512 0.460	100	13X20	580	0.18	0.36
120	10X16	600	0.194	0.388	120				
150	10X16	660	0.194	0.388	150	13X25	710	0.13	0.26
180	10X20 13X16	885 1020	0.147 0.150	0.294 0.300	180	13X30 16X20	790 750	0.12 0.13	0.24 0.26
220	10X20 10X25	885 1050	0.147 0.130	0.294 0.260	220	16X25 18X20	890 850	0.10 0.11	0.2 0.22
270	16X16	1410	0.09	0.18	270				
330	13X20	1285	0.085	0.17	330	16X25	1080	0.09	0.18
3990	13X25 18X16	1720 1690	0.070 0.086	0.140 0.172	3990	18X25	1260	0.083	0.166
470	13X25 13X30 16X20	1720 2090 1765	0.070 0.055 0.059	0.140 0.110 0.118	470	16X31.5	1310	0.076	0.152
560	16X25	2160	0.05	0.100	560	18X31.5 18X35.5	1370 1410	0.068 0.064	0.136 0.128
680	13X35 18X20	2265 2290	0.047 0.055	0.094 0.110	680				
820	16X31.5 18X25	2670 2585	0.043 0.043	0.086 0.086	820	18X40	1520	0.047	0.094
1000	16X31.5 16X35.5	2670 2770	0.043 0.036	0.086 0.072					
1200	18X31.5	2950	0.032	0.064					
1500	18X35.5	3095	0.03	0.06					
2200	18X40	3200	0.028	0.056					