

KSE4 series

Wide temperature Standard

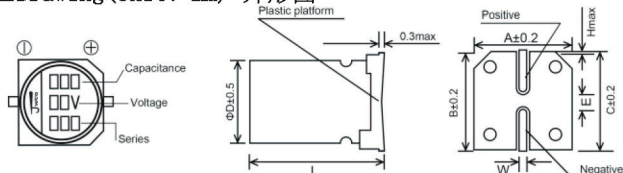
- 105℃, 1000~2000 hours assured.
- Case diameter $\Phi 4\text{mm} \sim \Phi 18\text{mm}$.
- Available for high density surface mounting.
- High stability and reliability.

■ Specifications



Items 项目	Characteristics 主要特性												
Rated Voltage Range 额定工作电压范围	6.3 ~ 100V _{dc}						160 ~ 400Vdc			450V _{dc}			
Category Temperature Range 使用温度范围	-55 ~ +105℃						-40 ~ +105℃			-25 ~ +105℃			
Capacitance Tolerance 静电容量允许偏差	±20% (M), at 20℃, 120Hz												
Leakage Current (at 20℃, Application Rated Voltage) 漏电流(20℃环境下施加额定工作电压)	Rated Voltage 额定工作电压	6.3 ~ 100Vdc						160 ~ 450Vdc					
	Time 时间	After 2 minutes 施加电压2分钟后						After 5 minutes施加电压5分钟后					
	Case Size 产品尺寸	Φ4~Φ10			Φ12.5~Φ18			Φ6.3 Φ18					
	Leakage Current	≤0.01CV or 3uA, whichever is greater			≤0.03CV or 4uA, whichever is greater			≤0.04CV+100uA					
	漏电流	≤0.01CV or 3uA, 取较大值			≤0.03CV or 4uA, 取较大值								
Where, I : Max. leakage current (漏电流, uA), C : Nominal capacitance (静电容量, uF), V : Rated voltage (额定电压V)													
Dissipation Factor (Tand, at 20℃, 120Hz)损耗角正切值 (测试条件为 20℃, 120Hz)	Rated voltage (V) 额定工作电压	6.3	10	16	25	35	50	63	100	160~250	350~450		
	Φ4~Φ10	0.3	0.26	0.22	0.18	0.16	0.14	0.12	0.1	0.2	0.25		
	Φ12.5~Φ18	0.38	0.34	0.3	0.26	0.22	0.18	0.14	0.1	0.2	0.25		
	When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. 静电容量大于1000uF, 每增加1000uF, 损耗角正切增加0.02												
Low Temperature Characteristics(Max. Impedance Ratio, 120Hz) 低温特性最大阻抗比	Rated voltage (V) 额定工作电压	6.3	10	16	25	35	50	63	100	160~250	350~400	450	
	Z(-25℃)/Z(20℃)	Φ4~Φ10	5	4	3	2	2	2	2	3	2	3	3
		Φ12.5~Φ18	7	5	4	2	2	2	2	2	4	5	
	Z(-55℃)/Z(20℃)	Φ4~Φ10	8	6	4	4	3	3	3	4	3	6	—
Φ12.5~Φ18		10	8	6	4	3	3	3	3	6	10	—	
Endurance耐久性	The following specification shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the ripple current is applied for the specified period of time at 105℃. 在105℃环境中, 不超过额定电压的范围内叠加额定纹波电流, 连续加载规定时间的额定电压后, 待温度恢复到20℃进行测量时, 应满足以下要求。												
	Test Time 测试时间	2,000Hrs											
	Case Size 产品尺寸	Φ4~Φ6.3x5.4			Φ6.3x7.7~Φ10			Φ12.5~Φ18					
	Capacitance Change 静电容量变化率	Within ±30% initial value 初始值的±30%以内			Within ±25% initial value 初始值的±25%以内			Within ±20% initial value 初始值的±30%以内					
	Dissipation Factor 损耗角正切	≤300% of specified value 不大于规范值的300%			≤300% of specified value 不大于规范值的300%			≤200% of specified value 不大于规范值的200%					
	Leakage Current 漏电流	≤The initial specified value 不大于规范值											
Shelf Life 高温贮存	After storage for 1000 hours at 105℃ with no voltage applied and then being stabilized at +20℃, capacitors shall meet the limits specified in Endurance. (Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of IEC 60384-4.) 在105℃环境中, 无负荷放置1,000小时后待温度恢复到20℃, 进行试验前处理(IEC 60384-4 4.1项)后进行测量时, 电容器的特性符合高温负荷特性中所列的规格值												

■ Drawing (Unit: mm) 外形图



Case Size	Φ4 x 5.4	Φ5 x 5.4	Φ6.3 x 5.4	Φ6.3 x 7.7	Φ8 x 6.5	Φ8 x 10.5	Φ10 x 10.5	Φ12.5 x 13.5	Φ12.5 x 16	Φ16 x 16.5	Φ18 x 16.5
产品尺寸											
A	4.3	5.3	6.6	6.6	8.3	8.3	10.3	13	13	17	19
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	13	13	17	19
C	5	6	7.3	7.3	9	9	11	13.7	13.7	18	20
E	1	1.5	2	2	3.1	3.1	4.7	4.4	4.4	6.4	6.4
L	5.4±0.3	5.4±0.3	5.4±0.4	7.7±0.3	6.5±0.3	10.5±0.5	10.5±0.5	13.5±0.5	16±0.5	16.5±0.5	16.5±0.5
W	0.5 ~ 0.8					0.8 ~ 1.1		1.0~ 1.4			
H	0.5max.							1.0max.			

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■Standard ratings 标准品一览表

Rated Ripple Current (mA)rms 105℃, 120Hz

uF	WV	6.3v		10v		16v		25v		35v		50v		63v		80v		100v	
		ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.
0.22												4x5.4	3.4	4x5.4	2.3				
0.33												4x5.4	4.1	4x5.4	2.5				
0.47												4x5.4	5	4x5.4	3.5				
1												4x5.4	10	4x5.4	10			4x5.4	10
2.2												4x5.4	16	4x5.4	12			6.3x5.4	14
3.3										4x5.4	13	4x5.4	16	4x5.4	15			6.3x5.4	20
														5x5.4	20			6.3x7.7	32
4.7								4x5.4	22	4x5.4	22	4x5.4	16	5x5.4	20			6.3x5.4	21
												5x5.4	23					6.3x7.7	35
10						4x5.4	28	4x5.4	22	4x5.4	22	5x5.4	23	6.3x5.4	42			6.3x7.7	35
								5x5.4	28	5x5.4	30	6.3x5.4	32	6.3x7.7	50			8x10.5	77
22	4x5.4	22		4x5.4	25	4x5.4	28	5x5.4	32	5x5.4	45	6.3x5.4	42	6.3x7.7	50	8x10.5	100	8x10.5	84
				5x5.4	29	5x5.4	39	6.3x5.4	55	6.3x5.4	60	6.3x7.7	51	8x10.5	98			10x10.5	126
33	4x5.4	22		4x5.4	30	5x5.4	30	5x5.4	35							8x10.5	100		
	5x5.4	31		5x5.4	34	6.3x5.4	34	6.3x5.4	65	6.3x5.4	60	6.3x7.7	60	8x10.5	112			10x10.5	133
47	4x5.4	25		4x5.4	30	5x5.4	30	5x5.4	40	6.3x5.4	65	6.3x7.7	63	8x10.5	119	10x10.5	150	10x10.5	140
	5x5.4	33		5x5.4	45	6.3x5.4	48	6.3x5.4	70	6.3x7.7	80	8x10.5	120	10x10.5	160			12.5x13.5	250
68	5x5.4	46		5x5.4	46	6.3x5.4	60	6.3x5.4	70	6.3x7.7	80	6.3x5.4	80						
100	5x5.4	50		5x5.4	45	6.3x5.4	60	6.3x5.4	70	6.3x7.7	90	8x10.5	140	10x10.5	195	10x10.5	180		
	6.3x5.4	55		6.3x5.4	60	6.3x7.7	100	6.3x7.7	100	8x10.5	120	10x10.5	170	12.5x13.5	270			12.5x13.5	380
150	6.3x5.4	95		6.3x5.4	90	6.3x7.7	100	6.3x7.7	100	8x10.5	155	10x10.5	200	10x13.5	225	12.5x13.5	280	16x16.5	450
								8x10.5	200										
220	6.3x5.4	100		6.3x5.4	95	6.3x7.7	110	6.3x7.7	120	8x10.5	190	10x10.5	220	12.5x13.5	470	16x16.5	410	16x16.5	550
	6.3x7.7	105		6.3x7.7	120	8x10.5	150	8x10.5	200	10x10.5	220	10x13.5	280	16x16.5	580				
330	6.3x7.7	140		6.3x7.7	130	8x10.5	300	8x10.5	220	10x10.5	245	12.5x13.5	420	12.5x16	510	16x16.5	510	18x16.5	590
				8x10.5	198			10x10.5	240			16x16.5	600	16x16.5	650				
470	6.3x7.7	150		6.3x7.7	140	8x10.5	300	8x10.5	220	10x10.5	375	12.5x16	520			18x16.5	560		
	8x10.5	210		8x10.5	330	10x10.5	340	10x10.5	280	10x13.5	520	16x16.5	700	16x16.5	700				
680	8x10.5	340		8x10.5	330	10x10.5	400	10x13.5	400	12.5x13.5	530	16x16.5	750						
				10x10.5	335														
1000	8x10.5	340		8x10.5	340	10x10.5	450	12.5x13.5	580	12.5x16	600	18x16.5	860						
	10x10.5	450		10x10.5	410	10x13.5	500			16x16.5	750								
1500	10x10.5	450		10x13.5	460	12.5x13.5	550	12.5x16.5	750	16x16.5	820								
	10x13.5	500		12.5x13.5	600														
2200	10x13.5	500				12.5x16	750	16x16.5	900	18x16.5	1050								
	12.5x13.5	620		12.5x13.5	680	16x16.5	900												
3300	12.5x13.5	660		16x16.5	950	16x16.5	950	18x16.5	1150										
4700	16x16.5	1000		16x16.5	1000	18x16.5	1050												
6800	18x16.5	1150		18x16.5	1150														

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■Standard ratings 标准品一览表

Rated Ripple Current (mA_{rms})105°C,120Hz

uF	WV	160V		200V		250V		350V V		400vV		450v	
		ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.
2.2												8x10.5	20
2.7												8x10.5	22
3.3										8x10.5	27	8x10.5	24
3.9										8x10.5	29	10x10.5	29
4.7								8x10.5	35	8x10.5	32	10x10.5	32
5.6						8x10.5	42	10x10.5	40	10x10.5	38	10x10.5	35
6.8						8x10.5	46	10x10.5	44	10x10.5	42	12.5x13.5	45
8.2		8x10.5	47	8x10.5	50	10x10.5	55	10x10.5	48	12.5x13.5	58	12.5x13.5	49
10		8x10.5	52	8x10.5	55	10x10.5	60	12.5x13.5	72	12.5x13.5	65	12.5x13.5	54
12		8x10.5	58	10x10.5	65	10x10.5	67	12.5x13.5	78	12.5x13.5	70	12.5x13.5	60
15		10x10.5	70	10x10.5	75	12.5x13.5	89	12.5x13.5	89	12.5x13.5	79	12.5x13.5	65
22		10x10.5	85	10x13.5	90	12.5x13.5	105	12.5x16	105	12.5x16	95	12.5x16	85
27		10x13.5	98	12.5x13.5	115	12.5x13.5	118	12.5x16	115	16x16.5	115	16x16.5	105
33		12.5x13.5	130	12.5x13.5	140	12.5x16	142	16x16.5	140	16x16.5	128	16x16.5	118
39		12.5x13.5	142	12.5x13.5	148	12.5x16	156	16x16.5	150	16x16.5	139	18x16.5	135
47		12.5x13.5	155	12.5x16	172	16x16.5	175	18x16.5	175	18x16.5	160		
56		12.5x16	185	12.5x16	188	16x16.5	190	18x16.5	190				
68		12.5x16	205	16x16.5	210	18x16.5	210						
82		16x16.5	220	16x16.5	230	18x16.5	235						
100		16x16.5	240	16x16.5	255								

Note1: Case size ΦD x L(mm), ripple current (mA, rms) at 105°C, 120Hz. 尺寸ΦD x L(mm), 纹波电流於105°C, 120Hz

Note2: Produce custom product too, which are not found in these tables. 客户定制品不在标准品一览表内

■ Rated ripple current multipliers(Unit: mm) 额定纹波修正系数

Frequency 频率 (Hz)			60Hz	120Hz	300Hz	1KHz	10KHz~
6.3 ~ 100v	Φ4 ~ Φ10	0.1 ~ 68uF	0.7	1	1.17	1.36	1.5
		100 ~ 3300uF	0.85	1	1.08	1.2	1.3
	Φ12.5 ~ Φ18	~ 68uF	0.75	1	1.35	1.57	2
		100 ~ 680uF	0.8	1	1.23	1.34	1.5
		1000 ~ 6800uF	0.85	1	1.1	1.13	1.15
		160 ~ 450v		0.8	1	1.08	1.25

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

铝电解电容器由于在纹波电流叠加时自我发热、温度上升而老化，每升温 5°C 寿命减少一半。要想保持长寿命请在使用过程中降低纹波电流。