

# VS series

## Standard

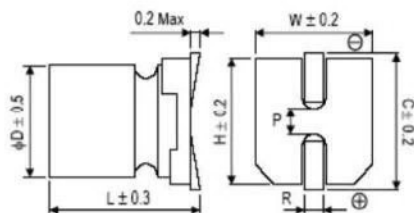
- SMD Type, Low ESR, High ripple current
- Load life of 2000 hours at 105°C
- Compliant to the RoHS directive (2011/65/EU)

低ESR和超大纹波电流贴片固态产品，产品满足RoHS指令(2011/65/EU)。

## Specifications

Items	Characteristics	
Operating Temp. Range	-55°C ~ +105°C	
Capacitance Range	150 ~ 3900 uF	
Capacitance Tolerance	M: ±20%	
Rated Voltage Range	2.5V ~ 16V DC	
Dissipation Factor	Not to exceed the value specified	
Leakage Current	Not to exceed the value specified (after 2 minutes)	
ESR ( 100K~300KHz )	Not to exceed the value specified	
Endurance 105°C, 2000h, at rated voltage	Capacitance Change	Within ±20% of the value before test
	Leakage current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified
Moisture Resistance Stored at 60°C, Rh90 ~ 95%, 1000h	Capacitance Change	Within ±20% of the value before test
	Leakage Current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified

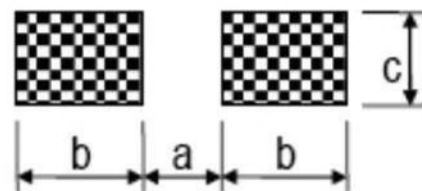
## Diagram of Dimensions



(unit: mm)

φ D×L	W	H	C	R	P
6.3×7.7	6.6	6.6	7.2	0.5to0.8	2.1
6.3×9	6.6	6.6	7.2	0.5to0.8	2.1
6.3×10	6.6	6.6	7.2	0.5to0.8	2.1
8×9.2	8.3	8.3	9.0	0.8to1.1	3.2
8×12.2	8.3	8.3	9.0	0.8to1.1	3.2
10×10.5	10.3	10.3	11.0	0.8to1.1	4.6
10×12.7	10.3	10.3	11.0	0.8to1.1	4.6

## Recommended land pattern



(unit: mm)

φ D×L	a	b	c
6.3×7.7	2.1	3.5	1.6
6.3×9	2.1	3.5	1.6
6.3×10	2.1	3.5	1.6
8×9.2	2.8	4.2	1.9
8×12.2	2.8	4.2	1.9
10×10.5	4.3	4.4	1.9
10×12.7	4.3	4.4	1.9

## » Capacitance List

W.V (S.V)	2.5 (2.8)	4 (4.6)	6.3 (7.3)	10 (11.5)	16 (18.4)
6.3 × 7.7	560~820 $\mu$ F	470~680 $\mu$ F	330~560 $\mu$ F	270~390 $\mu$ F	150~270 $\mu$ F
6.3 × 9	680~1000 $\mu$ F	560~820 $\mu$ F	470~680 $\mu$ F	330~470 $\mu$ F	220~330 $\mu$ F
6.3 × 10	820~1200 $\mu$ F	680~1000 $\mu$ F	560~820 $\mu$ F	390~560 $\mu$ F	270~390 $\mu$ F
8 × 9.2	1000~1800 $\mu$ F	820~1200 $\mu$ F	680~1000 $\mu$ F	470~820 $\mu$ F	270~560 $\mu$ F
8 × 12.2	1200~2200 $\mu$ F	1000~1800 $\mu$ F	820~1500 $\mu$ F	680~1200 $\mu$ F	390~820 $\mu$ F
10 × 10.5	1500~2700 $\mu$ F	1200~2200 $\mu$ F	1000~1800 $\mu$ F	680~1200 $\mu$ F	470~820 $\mu$ F
10 × 12.7	2200~3900 $\mu$ F	1500~2700 $\mu$ F	1200~2200 $\mu$ F	1000~1800 $\mu$ F	680~1200 $\mu$ F

## » Characteristics List

W.V. (V)	Capacitance ( $\mu$ F)	L.C. ( $\mu$ A, 2min)	tg $\delta$ (120Hz, 20 $^{\circ}$ C)	ESR ( $m\Omega$ , 100kHz)	Rated Ripple Current (mA, r. m. s)	Size $\Phi$ D × L (mm)	Part Number
2.5	560	300	0.08	15	3500	6.3 × 7.7	VS561M2R5E077TR
	820	410	0.08	9	5100	6.3 × 9	VS821M2R5E090TR
	1000	500	0.08	9	5300	6.3 × 10	VS102M2R5E100TR
	1200	600	0.08	9	5300	8 × 9.2	VS122M2R5F092TR
	2200	1100	0.08	9	5700	8 × 12.2	VS222M2R5F122TR
	2700	1350	0.08	9	5500	10 × 10.5	VS272M2R5G105TR
	3300	1650	0.08	8	6100	10 × 12.7	VS332M2R5G127TR
4	560	448	0.08	15	3500	6.3 × 7.7	VS561M004E077TR
	680	544	0.08	9	5100	6.3 × 9	VS681M004E090TR
	820	656	0.08	9	5300	6.3 × 10	VS821M004F100TR
	1000	800	0.08	9	5300	8 × 9.2	VS102M004F092TR
	1200	960	0.08	9	5700	8 × 12.2	VS122M004F122TR
	1500	1200	0.08	9	5500	10 × 10.5	VS152M004G105TR
	2200	1760	0.08	8	6100	10 × 12.7	VS222M004G127TR
6.3	330	415.8	0.08	15	3500	6.3 × 7.7	VS331M6R3E077TR
	470	592.2	0.08	9	5100	6.3 × 9	VS471M6R3E090TR
	560	705.6	0.08	9	5300	6.3 × 10	VS561M6R3E100TR
	820	1033.2	0.08	9	5300	8 × 9.2	VS821M6R3F092TR
	1000	1260	0.08	9	5700	8 × 12.2	VS102M6R3F122TR
	1200	1512	0.08	9	5500	10 × 10.5	VS122M6R3G105TR
	2200	2772	0.08	8	6100	10 × 12.7	VS222M6R3G127TR
10	330	660	0.08	15	3500	6.3 × 7.7	VS331M010E077TR
	390	780	0.08	9	5100	6.3 × 9	VS391M010E090TR
	470	940	0.08	9	5300	6.3 × 10	VS471M010E100TR
	820	1640	0.08	9	5300	8 × 9.2	VS821M010F092TR
	1000	2000	0.08	9	5700	8 × 12.2	VS102M010F122TR
	1000	2000	0.08	9	5500	10 × 10.5	VS102M010G105TR
	1200	2400	0.08	8	6100	10 × 12.7	VS122M010G127TR

W.V. (V)	Capacitance (uF)	L.C. (uA,2min)	tg $\delta$ (120Hz,20°C)	ESR (m $\Omega$ ,100kHz)	Rated Ripple Current (mA, r. m. s)	Size $\Phi$ D $\times$ L (mm)	Part Number
16	220	704	0.10	20	2900	6.3 $\times$ 7.7	VS221M016E077TR
	270	864	0.10	15	3500	6.3 $\times$ 9	VS271M016E090TR
	330	1056	0.10	15	3600	6.3 $\times$ 10	VS331M016E100TR
	470	1504	0.10	16	3800	8 $\times$ 9.2	VS471M016F092TR
	560	1792	0.10	15	4600	8 $\times$ 12.2	VS561M016F122TR
	680	2176	0.10	15	4300	10 $\times$ 10.5	VS681M016G105TR
	1000	3000	0.10	12	5200	10 $\times$ 12.7	VS102M016G127TR

### »» Frequency Coefficient for Ripple Current

Frequency	120Hz $\leq$ freq. < 1KHz	1KHz $\leq$ freq. < 10KHz	10KHz $\leq$ freq. < 100KHz	100KHz $\leq$ freq. < 300KHz
Coefficient	0.05	0.3	0.7	1