Shenzhen Songsui Technology Development Co., Ltd.

Song filling (SONT) TCS series molded chip solid tantalum capacitor

Features and uses

1. Molded plastic seal, good sealing, chip type, small size, light weight, polar capacitor;

2. Excellent electrical performance, stable and reliable;

3. Applicable to surface mount DC or pulsating circuits of various electronic devices such as mobile communication, video cameras, program-controlled switches, computers, and automotive electronics.

Main technical performance

Temperature range: -55 ° C ~ 120 ° C (≥ 85 ° when applying the category voltage)

Rated voltage, class voltage. Nominal capacitance: see the table below:

Capacitance tolerance: ±10% ±20%;

25° temperature test:

Io ≤ 0.01 CU (uA) or 0.5 uA (whichever is greater);

Loss tangent (tg δ o): not exceeding the table specification;

Equivalent resistance (ESR value): not exceeding the table specification;

High and low temperature characteristics: not exceeding the table specifications;

Dimensions: Figure 1 and Table 1;:

Figure 1 external dimension drawing

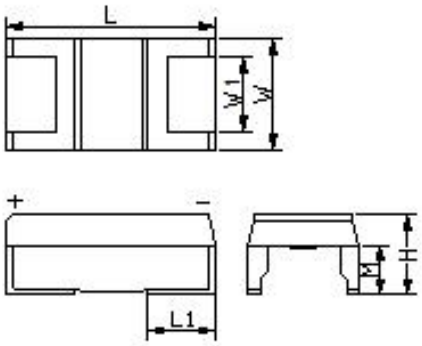

Table 1 size error

Shell code		Dimensions (mm)					
SONT	EIA	L	W	H	L1	W1	M
A	3216-18	3.2±0.2	1.6±0.2	1.6±0.2	0.65±0.2	1.2±0.2	1.0±0.2
B	3528-21	3.5±0.2	2.8±0.2	1.9±0.2	0.70±0.2	2.0±0.2	1.2±0.2
C	6032-28	5.8±0.3	3.2±0.3	2.5±0.3	1.35±0.2	2.2±0.2	1.45±0.2
D	7343-31	7.3±0.3	4.3±0.3	2.8±0.3	1.35±0.2	3.0±0.2	1.6±0.2
E	7343-43	7.3±0.3	4.3±0.3	4.1±0.3	1.35±0.2	3.0±0.2	1.6±0.2
F	7360-38	7.3±0.3	6.0±0.3	3.5±0.3	1.30±0.2	4.0±0.2	1.9±0.2

Address: 10th Floor, Building 2, Fanhai City Plaza, Qianhai Road, Nanshan District, Shenzhen, Guangdong, China
Tel:0755-82539666 Fax: 0755-83213666 Website:http://www.sont.cc

Table 2 Capacitor rated voltage, class voltage and nominal capacitance

Capacitance		Rated Voltage DC(VR)								
uF	Code	4V	6.3V	10V	16V	20V	25V	35V	40V	50V
0.1	104							A	A	A
0.15	154						A	A	A	A/B
0.22	224							A	A	A/B
0.33	334						A	A	A/B	A/B/C
0.47	474						A	A/B	A/B	A/B/C
0.68	684					A	A	A/B	A/B/C	A/B/C
1.0	105				A	A	A/B	A/B	A/B/C	A/B/C
1.5	155			A	A	A	A/B	A/B/C	B/C	B/C/D
2.2	225		A	A	A	A/B	A/B/C	A/B/C	C/D	B/C/D
3.3	335	A	A	A	A/B	A/B	A/B/C	B/C	C/D	C/D
4.7	475	A	A	A/B/C	A/B	A/B	A/B/C	B/C/D	C/D	C/D/E
6.8	685	A	A/B	A/B	A/B/C	A/B/C	B/C/D	C/D	C/D	D/E/F
10	106	A/B	A/B	A/B/C	A/B/C	A/B/C	B/C/D	C/D/E	D/E/F	D/E/F
15	156	A/B	A/B/C	A/B/C	A/B/C	B/C/D	C/D	D/E/F	D/E/F	E/F
22	226	A/B/C	A/B/C	A/B/C	A/B/C/D	B/C/D	C/D/E	D/E/F	E/F	E/F
33	336	A/B/C	A/B/C	B/C/D	B/C/D	C/D/E	D/E/F	D/E/F		
47	476	A/B/C	A/B/C/D	B/C/D/E	B/C/D/E	C/D/E/F	D/E/F	E/F		
68	686	A/B/C/D	A/B/C/D	B/C/D/E	C/D/E/F	D/E/F	D/E/F			
100	107	A/B/C/D /E	A/B/C/D /E	B/C/D/E /F	C/D/E/F	D/E/F	E/F			
150	157	B/C/D/E	B/C/D/E	C/D/E/F	D/E/F	E/F				
220	227	B/C/D/E	C/D/E/F	D/E/F	E/F	F				
330	337	C/D/E/F	C/D/E/F	D/E/F	E/F					
470	477	C/D/E/F	D/E/F	E/F						
680	687	D/E/F	E/F							
1000	108	E/F								

Note: The product specification code is indicated when ordering, and some special products need to be customized.

Table 3 High temperature characteristics of capacitors

Nominal capacity （uF）	Capacitance range			Maximum				
				Loss tangent %			Leakage current （uA）	
	-55°	**85°**	**125°**	**-55°**	**85°**	**125°**	**85°**	**125°**
≤1.0	**±10**	**±10**	**±12**	**6**	**6**		**10Io**	**12.5Io**
1.5~68				**8**	**8**			
100~220				**10**	**10**			
330~470			**±15**	**12**	**12**			
680~1000	**±12**	**±12**	**±15**	**15**	**15**			

Address: 10th Floor, Building 2, Fanhai City Plaza, Qianhai Road, Nanshan District, Shenzhen, Guangdong, China
Tel:0755-82539666 Fax: 0755-83213666 Website:http://www.sont.cc

SONT TCS Part NO	Case Size	Capaitance (uF)	ERS(100KHz,25°)(Ω) max	DC leakage current max uA rated voltage for 5 minutes			Capacitance change range% (test frequency 120HZ 1V level)		Loss tangent (test frequency 120HZ 1V level)		
				+25°	+85°	+125°	-55°~+85°	+125°	-55°	+25°	+85°~+125°
Rated voltage 4V (category voltage 2.5V)											
TCSA225*004#	A	2.2	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA335*004#	A	3.3	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA475*004#	A	4.7	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA685*004#	A	6.8	5.5	0.5	5.0	6.3	±10	±12	8	6	8
TCSB685*004#	B	6.8	4.5	0.5	5.0	6.3	±10	±12	8	6	8
TCSA106*004#	A	10	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSB106*004#	B	10	4.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA156*004#	A	15	6.0	0.6	6.0	7.5	±10	±12	8	6	8
TCSB156*004#	B	15	3.5	0.6	6.0	7.5	±10	±12	8	6	8
TCSA226*004#	A	22	6.0	0.9	8.8	11	±10	±15	8	6	8
TCSB226*004#	B	22	5.0	0.9	8.8	11	±10	±12	8	6	8
TCSC226*004#	C	22	3.2	0.9	8.8	11	±10	±12	8	6	8
TCSA336*004#	A	33	6.0	1.3	13.2	16.5	±10	±15	9	6	8
TCSB336*004#	B	33	3.5	1.3	13.2	16.5	±10	±12	8	6	8
TCSC336*004#	C	33	2.2	1.3	13.2	16.5	±10	±12	8	6	8
TCSA476*004#	A	47	4.0	1.9	18.8	23.5	±10	±15	15	10	12
TCSB476*004#	B	47	3.0	1.9	18.8	23.5	±10	±15	8	6	8
TCSC476*004#	C	47	2.0	1.9	18.8	23.5	±10	±12	8	6	8
TCSE476*004#	E	47	1.6	1.9	18.8	23.5	±10	±12	8	6	8
TCSA686*004#	A	68	5.0	2.7	27.2	34	±10	±15	22	15	18
TCSB686*004#	B	68	4.2	2.7	27.2	34	±10	±15	8	6	8
TCSC686*004#	C	68	2.0	2.7	27.2	34	±10	±12	8	6	8
TCSD686*004#	D	68	1.1	2.7	27.2	34	±10	±12	8	6	8
TCSA107*004#	A	100	6.0	4.0	40	50	±10	±15	30	20	24
TCSB107*004#	B	100	2.0	4.0	40	50	±10	±15	15	10	12
TCSC107*004#	C	100	1.5	4.0	40	50	±10	±12	10	8	10
TCSD107*004#	D	100	0.9	4.0	40	50	±10	±12	10	8	10
TCSB157*004#	B	150	3.0	6.0	60	75	±10	±15	18	12	15
TCSC157*004#	C	150	1.5	6.0	60	75	±10	±15	10	8	10
TCSD157*004#	D	150	1.0	6.0	60	75	±10	±12	10	8	10
TCSE157*004#	E	150	4.0	6.0	60	75	±10	±12	10	8	10
TCSF157*004#	F	150	0.6	6.0	60	75	±10	±12	12	10	12
TCSB227*004#	B	220	2.0	8.8	88	110	±10	±15	22	15	18
TCSC227*004#	C	220	1.5	8.8	88	110	±10	±15	10	8	10
TCSD227*004#	D	220	1.0	8.8	88	110	±10	±12	10	8	10
spare											

Address: 10th Floor, Building 2, Fanhai City Plaza, Qianhai Road, Nanshan District, Shenzhen, Guangdong, China
Tel:0755-82539666 Fax: 0755-83213666 Website:http://www.sont.cc

SONT TCS Part NO	Case Size	Capaitance (uF)	ERS(100KHz,25°)(Ω) max	DC leakage current max uA rated voltage for 5 minutes			Capacitance change range% (test frequency 120HZ 1V level)		Loss tangent (test frequency 120HZ 1V level)		
				+25°	+85°	+125°	-55°~+85°	+125°	-55°	+25°	+85°~+125°
Rated voltage 4V (category voltage 2.5V)											
TCSE227*004#	E	220	1.0	8.8	88	110	±10	±12	12	8	12
TCSF227*004#	F	220	0.5	8.8	88	110	±10	±12	12	10	12
TCSC337*004#	C	330	1.7	13.2	132	165	±10	±15	15	10	12
TCSD337*004#	D	330	0.9	13.2	132	165	±10	±12	12	10	12
TCSE337*004#	E	330	0.7	13.2	132	165	±10	±12	12	10	12
TCSF337*004#	F	330	0.5	13.2	132	165	±12	±18	15	12	15
TCSD477*004#	D	470	0.7	18.8	188	235	±10	±15	12	10	12
TCSE477*004#	E	470	0.7	18.8	188	235	±10	±12	12	10	12
TCSF477*004#	F	470	0.4	18.8	188	235	±12	±18	15	12	15
TCSD687*004#	D	680	0.7	27.8	272	340	±10	±15	12	10	12
TCSE687*004#	E	680	0.7	27.2	272	340	±10	±15	12	10	12
TCSF687*004#	F	680	0.3	27.2	272	340	±12	±20	15	12	15
TCSE108*004#	E	1000	0.7	40	400	500	±10	±15	21	14	17
TCSF108*004#	F	1000	0.2	40	400	500	±15	±20	20	14	20
Rated voltage 6.3V (category voltage 4V)											
TCSA225*006#	A	2.2	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA335*006#	A	3.3	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA475*006#	A	4.7	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSB475*006#	B	4.7	3.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA685*006#	A	6.8	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSB685*006#	B	6.8	4.5	0.5	5.0	6.3	±10	±12	8	6	8
TCSA106*006#	A	10	8.0	0.6	6.3	7.9	±10	±12	8	6	8
TCSB106*006#	B	10	3.5	0.6	6.3	7.9	±10	±12	8	6	8
TCSA156*006#	A	15	6.0	0.9	9.4	11.8	±10	±12	8	6	8
TCSB156*006#	B	15	5.0	0.9	9.4	11.8	±10	±12	8	6	8
TCSC156*006#	C	15	3.0	0.9	9.4	11.8	±10	±12	8	6	8
TCSA226*006#	A	22	6.0	1.4	13.9	17.3	±10	±15	8	6	8
TCSB226*006#	B	22	5.0	1.4	13.9	17.3	±10	±12	8	6	8
TCSC226*006#	C	22	2.2	1.4	13.9	17.3	±10	±12	8	6	8
TCSA336*006#	A	33	5.0	2.1	20.8	26	±10	±15	15	10	12
TCSB336*006#	B	33	3.5	2.1	20.8	26	±10	±15	8	6	8
TCSC336*006#	C	33	2.5	2.1	20.8	26	±10	±12	8	6	8
TCSA476*006#	A	47	5.0	3.0	29.6	37	±10	±15	18	12	15
TCSB476*006#	B	47	3.0	3.0	29.6	37	±10	±15	8	6	8
TCSC476*006#	C	47	5.0	3.0	29.6	37	±10	±12	8	6	8
TCSD476*006#	D	47	1.1	3.0	29.6	37	±10	±12	8	6	8
spare											

SONT TCS Part NO	Case Size	Capaitance (uF)	ERS(100KHz,25°)(Ω) max	DC leakage current max uA rated voltage for 5 minutes			Capacitance change range% (test frequency 120HZ 1V level)		Loss tangent (test frequency 120HZ 1V level)		
				+25°	+85°	+125°	-55°~+85°	+125°	-55°	+25°	+85°~+125°
Rated voltage 6.3V (category voltage 4V)											
TCSA686*006#	A	68	4.0	4.1	43	58	±10	±12	8	6	8
TCSB686*006#	B	68	1.5	4.3	42.8	53.5	±10	±15	12	8	10
TCSC686*006#	C	68	2.0	4.3	42.8	53.5	±10	±12	8	6	8
TCSD686*006#	D	68	0.9	4.3	42.8	53.5	±10	±10	8	6	8
TCSB107*006#	B	100	5.0	6.3	63	78.7	±10	±15	22	15	18
TCSC107*006#	C	100	1.5	6.3	63	78.7	±10	±15	10	8	10
TCSD107*006#	D	100	1.2	6.3	63	78.7	±10	±12	10	8	10
TCSF107*006#	F	100	0.6	6.3	63	78	±10	±12	12	10	12
TCSB157*006#	B	150	2.8	9.5	94.5	118	±10	±15	30	20	24
TCSC157*006#	C	150	1.5	9.5	94.5	118	±10	±15	10	8	10
TCSD157*006#	D	150	1.0	9.5	94.5	118	±10	±12	10	8	10
TCSE157*006#	E	150	1.0	9.5	94.5	118	±10	±12	10	8	10
TCSF157*006#	F	150	0.5	9.5	95	118	±10	±12	12	10	12
TCSC227*006#	C	220	2.4	13.9	139	173	±10	±15	15	10	12
TCSD227*006#	D	220	1.0	13.9	139	173	±10	±12	10	8	10
TCSE227*006#	E	220	0.7	13.9	139	173	±10	±12	10	8	10
TCSF227*006#	F	220	0.5	13.9	139	173	±10	±12	12	10	12
TCSC337*006#	C	330	1.8	20.8	208	260	±10	±15	22	15	18
TCSD337*006#	D	330	0.9	20.8	208	260	±10	±15	12	10	12
TCSE337*006#	E	330	0.9	20.8	208	260	±10	±12	12	10	12
TCSF337*006#	F	330	0.4	20.8	208	260	±12	±18	15	12	15
TCSD477*006#	D	470	0.9	29.6	296	260	±10	±15	18	12	15
TCSE477*006#	E	470	0.7	29.6	296	370	±10	±15	12	10	12
TCSF477*006#	F	470	0.4	29.6	296	370	±12	±18	15	12	15
TCSE687*006#	E	680	0.9	42.8	428	535	±10	±15	18	12	15
TCSF687*006#	F	680	0.3	42.8	428	535	±15	±20	20	14	20
Rated voltage 10V (category voltage 6.3V)											
TCSA105*010#	A	1.0	10	0.5	5.0	6.3	±10	±12	8	6	8
TCSA155*010#	A	1.5	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA225*010#	A	2.2	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSB225*010#	B	2.2	3.5	0.5	5.0	6.3	±10	±12	8	6	8
TCSA335*010#	A	3.3	9.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSB335*010#	B	3.3	5.5	0.5	5.0	6.3	±10	±12	8	6	8
TCSA475*010#	A	4.7	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSB475*010#	B	4.7	4.5	0.5	5.0	6.3	±10	±12	8	6	8
TCSC475*010#	C	4.7	3.0	0.5	5.0	6.3	±10	±12	8	6	8
spare											

Shenzhen Songsui Technology Development Co., Ltd.

SONT TCS Part NO	Case Size	Capaitance (uF)	ERS(100KHz,25°)(Ω) max	DC leakage current max uA rated voltage for 5 minutes			Capacitance change range% (test frequency 120HZ 1V level)		Loss tangent (test frequency 120HZ 1V level)		
				+25°	+85°	+125°	-55°~+85°	+125°	-55°	+25°	+85°~+125°
Rated voltage 10V (category voltage 6.3V)											
TCSA685*010#	A	6.8	8.0	0.7	6.8	8.5	±10	±15	8	6	8
TCSB685*010#	B	6.8	3.5	0.7	6.8	8.5	±10	±12	8	6	8
TCSA106*010#	A	10	8.0	1.0	10	12.5	±10	±15	8	6	8
TCSB106*010#	B	10	6.0	1.0	10	12.5	±10	±12	8	6	8
TCSC106*010#	C	10	3.0	1.0	10	12.5	±10	±12	8	6	8
TCSA156*010#	A	15	8.0	1.5	15	18.7	±10	±15	12	8	10
TCSB156*010#	B	15	5.0	1.5	15	18.7	±10	±12	8	6	8
TCSC156*010#	C	15	2.5	1.5	15	18.7	±10	±12	8	6	8
TCSA226*010#	A	22	10	2.2	22	27.5	±10	±15	15	10	12
TCSB226*010#	B	22	5.0	2.2	22	27.5	±10	±15	8	6	8
TCSC226*010#	C	22	1.6	2.2	22	27.5	±10	±12	8	6	8
TCSA336*010#	A	33	6.0	3.3	33	14.2	±10	±15	8	6	8
TCSB336*010#	B	33	4.0	3.3	33	41.2	±10	±15	8	6	8
TCSC336*010#	C	33	2.5	3.3	33	41.2	±10	±12	8	6	8
TCSD336*010#	D	33	1.1	3.3	33	41.2	±10	±12	8	6	8
TCSA476*010#	A	47	3.0	4.7	47	58.7	±10	±15	12	8	10
TCSB476*010#	B	47	2.4	4.7	47	58.7	±10	±15	12	8	10
TCSC476*010#	C	47	2.0	4.7	47	58.7	±10	±15	8	6	8
TCSD476*010#	D	47	0.22	4.7	47	58.7	±10	±12	8	6	8
TCSB686*010#	B	68	5.0	6.8	68	85	±10	±15	15	10	12
TCSC686*010#	C	68	2.0	6.8	68	85	±10	±15	8	6	8
TCSD686*010#	D	68	1.5	6.8	68	85	±10	±12	8	6	8
TCSB107*010#	B	100	4.0	10	100	125	±10	±15	22	15	18
TCSC107*010#	C	100	1.7	10	100	125	±10	±15	10	8	10
TCSD107*010#	D	100	1.2	10	100	125	±10	±12	10	8	10
TCSE107*010#	E	100	0.8	10	100	125	±10	±12	10	8	10
TCSF107*010#	F	100	0.5	10	100	125	±10	±12	12	10	12
TCSC157*010#	C	150	2.0	15	150	187	±10	±15	15	10	12
TCSD157*010#	D	150	1.0	15	150	187	±10	±15	10	8	10
TCSE157*010#	E	150	0.8	15	150	187	±10	±15	10	8	10
TCSF157*010#	F	150	0.5	15	150	187	±10	±12	12	10	12
TCSD227*010#	D	220	1.0	22	220	275	±10	±15	10	8	10
TCSE227*010#	E	220	1.0	22	220	275	±10	±12	10	8	10
TCSF227*010#	F	220	0.4	22	220	275	±10	±12	12	10	12
TCSD337*010#	D	330	1.2	33	330	412	±10	±15	15	10	12
TCSE337*010#	E	330	0.9	33	330	412	±10	±15	12	10	12
spare											

Address: 10th Floor, Building 2, Fanhai City Plaza, Qianhai Road, Nanshan District, Shenzhen, Guangdong, China
Tel:0755-82539666 Fax: 0755-83213666 Website:http://www.sont.cc

SONT TCS Part NO	Case Size	Capaitance (uF)	ERS(100KHz,25°) (Ω) max	DC leakage current max uA rated voltage for 5 minutes			Capacitance change range% (test frequency 120HZ 1V level)		Loss tangent (test frequency 120HZ 1V level)		
				+25°	+85°	+125°	-55° ~+85°	+125°	-55°	+25°	+85° ~+125°
Rated voltage 10V (category voltage 6.3V)											
TCSF337*010#	F	330	0.4	33	330	412	±12	±18	15	12	15
TCSE477*010#	E	470	0.5	47	470	588	±10	±15	15	10	12
TCSF477*010#	F	470	0.3	47	470	588	±15	±20	20	14	20
Rated voltage 16V (category voltage 10V)											
TCSA105*016#	A	1.0	10	0.5	5.0	6.3	±10	±12	6	4	6
TCSA155*016#	A	1.5	8.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA225*016#	A	2.2	12	0.5	5.0	6.3	±10	±12	8	6	8
TCSB225*016#	B	2.2	4.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA335*016#	A	3.3	9.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSB335*016#	B	3.3	5.5	0.5	5.0	6.3	±10	±12	8	6	8
TCSA475*016#	A	4.7	8.0	0.8	7.5	9.4	±10	±12	8	6	8
TCSB475*016#	B	4.7	4.0	0.8	7.5	9.4	±10	±12	8	6	8
TCSC475*016#	C	4.7	2.4	0.8	7.5	9.4	±10	±12	8	6	8
TCSA685*016#	A	6.8	9.0	1.1	10.9	13.6	±10	±12	8	6	8
TCSB685*016#	B	6.8	6.0	1.1	10.9	13.6	±10	±12	8	6	8
TCSC685*016#	C	6.8	3.6	1.1	10.9	13.6	±10	±12	8	6	8
TCSA106*016#	A	10	10	1.6	16	20	±10	±15	12	8	10
TCSB106*016#	B	10	6.0	1.6	16	20	±10	±15	8	6	8
TCSC106*016#	C	10	2.5	1.6	16	20	±10	±12	8	6	8
TCSA156*016#	A	15	10	2.4	24	30	±10	±18	18	12	15
TCSB156*016#	B	15	5.0	2.4	24	30	±10	±15	8	6	8
TCSC156*016#	C	15	2.5	2.4	24	30	±10	±12	8	6	8
TCSA226*016#	A	22	10	3.5	35	44	±12	±18	18	12	18
TCSB226*016#	B	22	5.0	3.5	35.2	44	±10	±15	8	6	8
TCSC226*016#	C	22	3.0	3.5	35.2	44	±10	±12	8	6	8
TCSD226*016#	D	22	1.1	3.5	35.2	44	±10	±12	8	6	8
TCSB336*016#	B	33	5.0	5.3	52.8	66	±12	±18	18	12	15
TCSC336*016#	C	33	2.5	5.3	52.8	66	±10	±15	8	6	8
TCSD336*016#	D	33	0.9	5.3	52.8	66	±10	±12	8	6	8
TCSE336*016#	E	33	1.5	5.3	52.8	66	±10	±12	8	6	8
TCSB476*016#	B	47	4.0	7.5	75.2	94	±15	±18	18	12	15
TCSC476*016#	C	47	2.0	7.5	75.2	94	±10	±15	8	6	8
TCSD476*016#	D	47	1.5	7.5	75.2	94	±10	±15	8	6	8
TCSE476*016#	E	47	1.5	7.5	75.2	94	±10	±15	8	6	8
TCSF476*016#	F	47	0.6	7.5	75	93	±10	±15	12	10	12
spare											

Address: 10th Floor, Building 2, Fanhai City Plaza, Qianhai Road, Nanshan District, Shenzhen, Guangdong, China
Tel:0755-82539666 Fax: 0755-83213666 Website:http://www.sont.cc

SONT TCS Part NO	Case Size	Capaitance (uF)	ERS(100KHz,25°)(Ω) max	DC leakage current max uA rated voltage for 5 minutes			Capacitance change range% (test frequency 120HZ 1V level)		Loss tangent (test frequency 120HZ 1V level)		
				+25°	+85°	+125°	-55°~+85°	+125°	-55°	+25°	+85°~+125°
Rated voltage 16V (category voltage 10V)											
TCSC686*016#	C	68	3.0	10.9	109	136	±10	±15	12	8	10
TCSD686*016#	D	68	1.5	10.9	109	136	±10	±12	8	6	8
TCSE686*016#	E	68	1.2	10.9	109	136	±10	±12	8	6	8
TCSF686*016#	F	68	0.5	10.9	109	136	±10	±12	12	10	10
TCSC107*016#	C	100	3.0	16	160	200	±15	±18	15	10	12
TCSD107*016#	D	100	1.2	16	160	200	±10	±15	10	8	10
TCSE107*016#	E	100	0.8	16	160	200	±10	±12	10	8	10
TCSF107*016#	F	100	0.5	16	160	200	±10	±12	12	10	12
TCSD157*016#	D	150	1.8	24	160	200	±10	±12	15	10	12
TCSE157*016#	E	150	1.0	24	160	200	±10	±15	10	8	10
TCSF157*016#	F	150	0.4	24	160	200	±10	±15	12	10	12
TCSE227*016#	E	220	1.0	35.2	352	440	±10	±15	15	12	15
TCSF227*016#	F	220	0.4	35.2	352	440	±10	±15	16	10	16
Rated voltage 20V (category voltage 13V)											
TCSA684*020#	A	0.68	12	0.5	5.0	6.3	±10	±12	6	4	6
TCSA105*020#	A	1	10	0.5	5.0	6.3	±10	±12	6	4	6
TCSA155*020#	A	1.5	16	0.5	5.0	6.3	±10	±12	8	6	8
TCSB155*020#	B	1.5	6.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA225*020#	A	2.2	12	0.5	5.0	6.3	±10	±12	8	6	8
TCSB225*020#	B	2.2	5.0	0.5	5.0	6.3	±10	±12	8	6	8
TCSA335*020#	A	3.3	9.0	0.7	6.6	8.2	±10	±12	8	6	8
TCSB335*020#	B	3.3	4.0	0.7	6.6	8.2	±10	±12	8	6	8
TCSA475*020#	A	4.7	10	0.9	9.4	11.7	±10	±15	9	6	8
TCSB475*020#	B	4.7	6.0	0.9	9.4	11.7	±10	±12	8	6	8
TCSC475*020#	C	4.7	3.0	0.9	9.4	11.7	±10	±12	8	6	8
TCSA685*020#	A	6.8	12	1.4	13.6	17	±10	±15	12	8	10
TCSB685*020#	B	6.8	6.0	1.4	13.6	17	±10	±15	8	6	8
TCSC685*020#	C	6.8	2.4	1.4	13.6	17	±10	±12	8	6	8
TCSA106*020#	A	10	5.0	2.0	20	25	±10	±12	12	10	12
TCSB106*020#	B	10	6.0	2.0	20	25	±10	±15	8	6	8
TCSC106*020#	C	10	4.0	2.0	20	25	±10	±12	8	6	8
TCSB156*020#	B	15	6.0	3.0	30	37.5	±10	±15	9	6	8
TCSC156*020#	C	15	4.0	3.0	30	37.5	±10	±12	8	6	8
TCSD156*020#	D	15	11	3.0	30	37.5	±10	±12	8	6	8
TCSB226*020#	B	22	2.0	4.4	44	55	±10	±12	8	6	8
TCSC226*020#	C	22	3.0	4.4	44	55	±10	±15	8	6	8
spare											

Address: 10th Floor, Building 2, Fanhai City Plaza, Qianhai Road, Nanshan District, Shenzhen, Guangdong, China
Tel:0755-82539666 Fax: 0755-83213666 Website:http://www.sont.cc

SONT TCS Part NO	Case Size	Capaitance (uF)	ERS(100KHz,25°) (Ω) max	DC leakage current max uA rated voltage for 5 minutes			Capacitance change range% (test frequency 120HZ 1V level)		Loss tangent (test frequency 120HZ 1V level)		
				+25°	+85°	+125°	-55° ~+85°	+125°	-55°	+25°	+85° ~+125°
Rated voltage 20V (category voltage 13V)											
TCSD226*020#	D	22	0.9	4.4	44	55	±10	±12	8	6	8
TCSC336*020#	C	33	3.0	6.6	66	82.5	±10	±15	9	6	8
TCSD336*020#	D	33	1.5	6.6	66	82.5	±10	±12	8	6	8
TCSE336*020#	E	33	1.5	6.6	66	82.5	±10	±12	8	6	8
TCSF336*020#	F	33	0.6	6.6	66	82.5	±10	±12	12	10	12
TCSC476*020#	C	47	2.0	9.4	94	117	±10	±15	12	8	10
TCSD476*020#	D	47	1.5	9.4	94	117	±10	±12	8	6	8
TCSE476*020#	E	47	0.8	9.4	94	117	±10	±12	8	6	8
TCSF476*020#	F	47	0.5	9.4	94	117	±10	±12	12	10	12
TCSD686*020#	D	68	1.5	13.6	136	170	±10	±15	8	6	8
TCSE686*020#	E	68	0.8	13.6	136	170	±10	±12	8	6	8
TCSF686*020#	F	68	0.5	13.6	136	170	±10	±12	12	10	12
TCSD107*020#	D	100	2.0	20	200	250	±10	±15	12	8	10
TCSE107*020#	E	100	1.0	20	200	250	±10	±15	10	8	10
TCSF107*020#	F	100	0.5	20	200	250	±10	±12	12	10	12
TCSE157*020#	E	150	1.5	30	300	375	±10	±15	15	10	12
TCSF157*020#	F	150	1.5	30	300	375	±15	±20	20	10	20
TCSF227*020#	F	220	0.5	44	440	550	±15	±20	20	12	20
Rated voltage 25V (category voltage 16V)											
TCSA154*025#	A	0.15	21	0.5	5.0	6.3	±10	±12	6	4	6
TCSA334*025#	A	0.33	15	0.5	5.0	6.3	±10	±12	6	4	6
TCSA474*025#	A	0.47	14	0.5	5.0	6.3	±10	±12	6	4	4
TCSA684*025#	A	0.68	17	0.5	5.0	6.3	±10	±12	6	4	6
TCSB684*025#	B	0.68	7.5	0.5	5.0	6.3	±10	±12	6	4	6
TCSA105*025#	A	1.0	16	0.5	5.0	6.3	±10	±12	6	4	6
TCSB105*025#	B	1.0	6.5	0.5	5.0	6.3	±10	±12	6	4	6
TCSA155*025#	A	1.5	16	0.5	5.0	6.3	±10	±12	8	6	8
TCSB155*025#	B	1.5	6.5	0.5	5.0	6.3	±10	±12	8	6	8
TCSA225*025#	A	2.2	16	0.6	5.5	6.9	±10	±15	9	6	8
TCSB225*025#	B	2.2	8.0	0.6	5.5	6.9	±10	±12	8	6	8
TCSC225*025#	C	2.2	5.0	0.6	5.5	6.9	±10	±12	8	6	8
TCSA335*025#	A	3.3	9.0	0.8	8.2	10.3	±12	±20	9	6	8
TCSB335*025#	B	3.3	7.0	0.8	8.2	10.3	±10	±12	8	6	8
TCSC335*025#	C	3.3	4.0	0.8	8.2	10.3	±10	±12	8	6	8
TCSA475*025#	A	4.7	6.0	1.2	12	15	±10	±15	10	8	10
spare											

Address: 10th Floor, Building 2, Fanhai City Plaza, Qianhai Road, Nanshan District, Shenzhen, Guangdong, China
Tel:0755-82539666 Fax: 0755-83213666 Website:http://www.sont.cc

SONT TCS Part NO	Case Size	Capaitance (uF)	ERS(100KHz, 25°) (Ω) max	DC leakage current max uA rated voltage for 5 minutes			Capacitance change range% (test frequency 120HZ 1V level)		Loss tangent (test frequency 120HZ 1V level)		
				+25°	+85°	+125°	-55° ~+85°	+125°	-55°	+25°	+85° ~+125°
Rated voltage 25V (category voltage 16V)											
TCSB475*025#	B	4.7	6.0	1.2	11.7	14.7	±10	±15	8	6	8
TCSC475*025#	C	4.7	2.5	1.2	11.7	14.7	±10	±12	8	6	8
TCSB685*025#	B	6.8	6.0	1.7	17	21.2	±10	±15	8	6	8
TCSC685*025#	C	6.8	3.0	1.7	17	21.2	±10	±12	8	6	8
TCSB106*025#	B	10	6.0	2.5	25	31.2	±12	±20	8	6	8
TCSC106*025#	C	10	4.0	2.5	25	31.2	±10	±12	8	6	8
TCSD106*025#	D	10	1.2	2.5	25	31.2	±10	±12	8	6	8
TCSB156*025#	B	15	4.0	3.8	67.5	46.9	±10	±15	10	8	10
TCSC156*025#	C	15	4.0	3.8	37.5	46.9	±10	±15	8	6	8
TCSD156*025#	D	15	1.5	3.8	37.5	46.9	±10	±12	8	6	8
TCSC226*025#	C	22	3.5	5.5	55	68.7	±12	±20	9	6	8
TCSD226*025#	D	22	1.8	5.5	55	68.7	±10	±12	8	6	8
TCSE226*025#	E	22	1.8	5.5	55	68.7	±10	±12	8	6	8
TCSC336*025#	C	33	1.8	8.3	82.5	103	±10	±12	8	6	8
TCSD336*025#	D	33	1.5	8.3	82.5	103	±10	±15	8	6	8
TCSE336*025#	E	33	0.9	8.3	82.5	103	±10	±12	8	6	8
TCSF336*025#	F	33	0.6	8.3	83	103	±10	±12	12	10	12
TCSD476*025#	D	47	1.5	11.7	117	147	±12	±20	8	6	8
TCSE476*025#	E	47	1.2	11.7	117	147	±10	±15	8	6	8
TCSF476*025#	F	47	0.6	11.7	117	147	±10	±12	12	10	12
TCSD686*025#	D	68	2.0	17	170	213	±15	±20	8	6	8
TCSE686*025#	E	68	1.2	17	170	213	±12	±20	8	8	6
TCSF686*025#	F	68	0.5	17	170	213	±15	±20	16	10	16
TCSE107*025#	E	100	0.9	25	250	313	±12	±20	12	8	10
TCSF107*025#	F	100	0.5	25	250	313	±15	±20	20	12	20
Rated voltage 35V (category voltage 20V)											
TCSA104*035#	A	0.10	34	0.5	5.0	6.3	±10	±12	6	4	6
TCSA154*035#	A	0.15	21	0.5	5.0	6.3	±10	±12	6	4	6
TCSA224*035#	A	0.22	18	0.5	5.0	6.3	±10	±12	6	4	6
TCSA334*035#	A	0.33	15	0.5	5.0	6.3	±10	±12	6	4	6
TCSA474*035#	A	0.47	18	0.5	5.0	6.3	±10	±12	6	4	6
TCSB474*035#	B	0.47	10	0.5	5.0	6.3	±10	±12	6	4	6
TCSA684*035#	A	0.68	17	0.5	5.0	6.3	±10	±12	6	4	6
TCSB684*035#	B	0.68	8.0	0.5	5.0	6.3	±10	±12	6	4	6
TCSA105*035#	A	1.0	16	0.5	5.0	6.3	±10	±12	6	4	6
TCSB105*035#	B	1.0	6.5	0.5	5.0	6.3	±10	±12	6	4	6
spare											

Address: 10th Floor, Building 2, Fanhai City Plaza, Qianhai Road, Nanshan District, Shenzhen, Guangdong, China
Tel:0755-82539666 Fax: 0755-83213666 Website:http://www.sont.cc

SONT TCS Part NO	Case Size	Capaitance (uF)	ERS(100KHz,25°) (Ω) max	DC leakage current max uA rated voltage for 5 minutes			Capacitance change range% (test frequency 120HZ 1V level)		Loss tangent (test frequency 120HZ 1V level)		
				+25°	+85°	+125°	-55° ~+85°	+125°	-55°	+25°	+85° ~+125°
Rated voltage 35V (category voltage 20V)											
TCSA155*035#	A	1.5	16	0.5	5.0	6.3	±12	±20	9	6	8
TCSB155*035#	B	1.5	12	0.5	5.0	6.3	±10	±12	8	6	8
TCSC155*035#	C	1.5	4.5	0.5	5.0	6.3	±10	±12	8	6	8
TCSA225*035#	A	2.2	16	0.8	7.7	9.6	±10	±12	6	4	6
TCSB225*035#	B	2.2	8.0	0.8	7.7	9.6	±10	±12	8	6	8
TCSC225*035#	C	2.2	3.5	0.8	7.7	9.6	±10	±12	8	6	8
TCSB335*035#	B	3.3	7.0	1.2	11.5	14.4	±12	±20	8	6	8
TCSC335*035#	C	3.3	2.5	1.2	11.5	14.4	±10	±12	8	6	8
TCSB475*035#	B	4.7	8.0	1.6	16.4	20.5	±10	±12	8	6	8
TCSC475*035#	C	4.7	5.0	1.6	16.4	20.5	±10	±12	8	6	8
TCSD475*035#	D	4.7	1.5	1.6	16.4	20.5	±10	±12	8	6	8
TCSE475*035#	E	4.7	1.5	1.6	16.4	20.5	±10	±12	8	6	8
TCSC685*035#	C	6.8	3.0	2.4	23.8	29.7	±10	±12	8	6	8
TCSD685*035#	D	6.8	1.3	2.4	23.8	29.7	±10	±12	8	6	8
TCSE685*035#	E	6.8	1.3	2.4	23.8	29.7	±10	±12	8	6	8
TCSC106*035#	C	10	3.5	3.5	35	43.7	±10	±15	9	6	8
TCSD106*035#	D	10	1.1	3.5	35	43.7	±10	±12	8	6	8
TCSE106*035#	E	10	1.0	3.5	35	43.7	±10	±12	8	6	8
TCSC156*035#	C	15	2.5	5.3	52.5	65.6	±10	±12	8	5	8
TCSD156*035#	D	15	2.0	5.3	52.5	65.6	±10	±15	8	6	8
TCSE156*035#	E	15	1.1	5.3	52.5	65.6	±10	±12	8	6	8
TCSF156*035#	F	15	0.7	5.3	52.5	65.6	±10	±12	12	10	12
TCSD226*035#	D	22	1.8	7.7	77	96.2	±10	±15	8	6	8
TCSE226*035#	E	22	1.0	7.7	77	96.2	±10	±15	8	6	8
TCSF226*035#	F	22	0.6	7.7	77	96.2	±10	±12	12	10	12
TCSD336*035#	D	33	2.0	11.6	116	145	±12	±20	9	6	8
TCSE336*035#	E	33	1.2	11.6	116	145	±10	±15	8	6	8
TCSF336*035#	F	33	0.6	11.6	116	145	±15	±20	16	10	10
TCSE476*035#	E	47	1.2	16.5	165	206	±12	±20	8	6	8
TCSF476*035#	F	47	0.6	16.5	165	206	±15	±20	20	12	20
Rated voltage 40V (category voltage 25V)											
TCSA104*040#	A	0.10	24	0.5	5.0	6.3	±10	±12	6	4	6
TCSA154*040#	A	0.15	21	0.5	5.0	6.3	±10	±12	6	4	6
TCSA224*040#	A	0.22	18	0.5	5.0	6.3	±10	±12	6	4	6
TCSA334*040#	A	0.33	20	0.5	5.0	6.3	±10	±12	6	4	6
spare											

SONT TCS Part NO	Case Size	Capaitance (uF)	ERS(100KHz,25°)(Ω) max	DC leakage current max uA rated voltage for 5 minutes			Capacitance change range% (test frequency 120HZ 1V level)		Loss tangent (test frequency 120HZ 1V level)		
				+25°	+85°	+125°	-55°~+85°	+125°	-55°	+25°	+85°~+125°
Rated voltage 40V (category voltage 25V)											
TCSB334*040#	B	0.33	15	0.5	5.0	6.3	±10	±12	6	4	6
TCSA474*040#	A	0.47	18	0.5	5.0	6.3	±10	±15	6	4	6
TCSB474*040#	B	0.47	10	0.5	5.0	6.3	±10	±12	6	4	6
TCSA684*040#	A	0.68	18	0.5	5.0	6.3	±10	±15	6	4	6
TCSB684*040#	B	0.68	15	0.5	5.0	6.3	±10	±12	6	4	6
TCSC684*040#	C	0.68	8.0	0.5	5.0	6.3	±10	±12	6	4	6
TCSA105*040#	A	1.0	12	0.5	5.0	6.3	±10	±15	6	4	6
TCSB105*040#	B	1.0	10	0.5	5.0	6.3	±10	±15	6	4	6
TCSC105*040#	C	1.0	6.5	0.5	5.0	6.3	±10	±12	6	4	6
TCSB155*040#	B	1.5	10	0.6	6.0	7.5	±10	±15	8	6	8
TCSC155*040#	C	1.5	4.5	0.6	6.0	7.5	±10	±12	8	6	8
TCSC225*040#	C	2.2	7.0	0.9	8.8	11	±10	±12	8	6	8
TCSD225*040#	D	2.2	3.5	0.9	8.8	11	±10	±12	8	6	8
TCSC335*040#	C	3.3	5.0	1.3	13.2	16.5	±10	±12	8	6	8
TCSD335*040#	D	3.3	2.5	1.3	13.2	16.5	±10	±12	8	6	8
TCSC475*040#	C	4.7	6.0	1.9	18.8	23.5	±10	±15	8	6	8
TCSD475*040#	D	4.7	1.5	1.9	18.8	23.5	±10	±12	8	6	8
TCSC685*040#	C	6.8	2.0	2.7	27.2	34	±10	±15	9	6	8
TCSD685*040#	D	6.8	1.3	2.7	27.2	34	±10	±12	8	6	8
TCSD106*040#	D	10	2.0	4.0	40	50	±10	±15	8	6	8
TCSE106*040#	E	10	1.3	4.0	40	50	±10	±12	8	6	8
TCSF106*040#	F	10	0.9	4.0	40	50	±10	±12	12	10	12
TCSD156*040#	D	15	2.5	6.0	60	75	±10	±15	9	6	8
TCSE156*040#	E	15	1.8	6.0	60	75	±10	±15	8	6	8
TCSF156*040#	F	15	0.7	6.0	60	75	±10	±12	12	10	12
TCSE226*040#	E	22	1.5	8.8	88	110	±10	±15	12	8	10
TCSF226*040#	F	22	0.7	8.8	88	110	±15	±20	12	10	12
Rated voltage 50V (category voltage 32V)											
TCSA104*050#	A	0.10	22	0.5	5.0	6.3	±10	±12	6	4	6
TCSA154*050#	A	0.15	28	0.5	5.0	6.3	±10	±12	6	4	6
TCSB154*050#	B	0.15	17	0.5	5.0	6.3	±10	±12	6	4	6
TCSA224*050#	A	0.22	18	0.5	5.0	6.3	±10	±12	6	4	6
TCSB224*050#	B	0.22	14	0.5	5.0	6.3	±10	±12	6	4	6
TCSA334*050#	A	0.33	20	0.5	5.0	6.3	±10	±12	6	4	6
TCSB334*050#	B	0.33	12	0.5	5.0	6.3	±10	±12	6	4	6
TCSA474*050#	A	0.47	20	0.5	5.0	6.3	±10	±15	6	4	6
spare											

Address: 10th Floor, Building 2, Fanhai City Plaza, Qianhai Road, Nanshan District, Shenzhen, Guangdong, China
Tel:0755-82539666 Fax: 0755-83213666 Website:http://www.sont.cc

SONT TCS Part NO	Case Size	Capaitance (uF)	ERS(100KHz,25°)(Ω) max	DC leakage current max uA rated voltage for 5 minutes			Capacitance change range% (test frequency 120HZ 1V level)		Loss tangent (test frequency 120HZ 1V level)		
				+25°	+85°	+125°	-55°~+85°	+125°	-55°	+25°	+85°~+125°
Rated voltage 50V (category voltage 32V)											
TCSB474*050#	B	0.47	16	0.5	5.0	6.3	±10	±12	6	4	6
TCSC474*050#	C	0.47	8.0	0.5	5.0	6.3	±10	±12	6	4	6
TCSA684*050#	A	0.68	20	0.5	5.0	6.3	±10	±15	6	4	6
TCSB684*050#	B	0.68	15	0.5	5.0	6.3	±10	±15	6	4	6
TCSC684*050#	C	0.68	7.0	0.5	5.0	6.3	±10	±12	6	4	6
TCSA105*050#	A	1.0	10	0.5	5.0	6.3	±10	±12	6	4	6
TCSB105*050#	B	1.0	10	0.5	5.0	6.3	±10	±15	6	4	6
TCSC105*050#	C	1.0	6.0	0.5	5.0	6.3	±10	±12	6	4	6
TCSC155*050#	C	1.5	8.0	0.8	7.5	9.4	±10	±12	8	6	8
TCSD155*050#	D	1.5	4.0	0.8	7.5	9.4	±10	±12	8	6	8
TCSE155*050#	E	1.5	4.0	0.8	7.5	13.7	±10	±12	8	6	8
TCSC225*050#	C	2.2	7.0	1.1	11	13.7	±10	±12	8	6	8
TCSD225*050#	D	2.2	2.5	1.1	11	13.7	±10	±12	8	6	8
TCSE225*050#	E	2.2	2.5	1.1	11	13.7	±10	±12	8	6	8
TCSC335*050#	C	3.3	5.0	1.7	16.5	20.6	±10	±15	8	6	8
TCSD335*050#	D	3.3	2.0	1.7	16.5	20.6	±10	±12	8	6	8
TCSE335*050#	E	3.3	2.0	1.7	16.5	20.6	±10	±12	8	6	8
TCSC475*050#	C	4.7	2.0	2.4	23.5	29.4	±10	±15	8	6	8
TCSD475*050#	D	4.7	1.5	2.4	23.5	29.4	±10	±12	8	6	8
TCSE475*050#	E	4.7	1.2	2.4	23.5	29.4	±10	±12	8	6	8
TCSD685*050#	D	6.8	2.0	3.4	34	42.5	±10	±15	8	6	8
TCSE685*050#	E	6.8	1.5	3.4	34	42.5	±10	±12	8	6	8
TCSF685*050#	F	6.8	1.0	3.4	34	42	±10	±12	12	10	12
TCSD106*050#	D	10	2.0	5.0	50	62.5	±10	±15	8	6	8
TCSE106*050#	E	10	1.8	5.0	50	62.5	±10	±15	8	6	8
TCSF106*050#	F	10	0.9	5.0	50	62	±10	±12	12	10	12
TCSE156*050#	E	15	1.8	7.5	75	93.7	±10	±15	8	6	8
TCSF156*050#	F	15	0.7	7.5	75	94	±10	±15	12	10	12
TCSE226*050#	E	22	1.5	11	130	137	±10	±15	8	6	8
TCSF226*050#	F	22	0.7	11	110	137	±10	±15	12	10	12
spare											
spare											

Note: 1. Capacitance and loss tangent measurement conditions: measurement voltage level 1V; measurement frequency: 120Hz.

2. Leakage current measurement conditions, applied rated voltage measurement, charging time ≤ 5min (measurement of class voltage when measuring 125° > 85° leakage current).

3. Equivalent series resistance (ESR) measurement conditions: measurement frequency (100 ± 5) KHz; level 1V.

Application Guide

(1) Ripple current and voltage

If the ripple current is applied to the capacitor, the Joule heat (power dissipated) will be generated in the capacitor, so it will affect the reliability of the capacitor.

1) Power Dissipated

The actual power dissipated can be calculated using the following formula:

P=I2 × ESR..... 1 Formula 1

Power dissipated (Watt)

Ripple current (ampere)

Equivalent series resistance (ohme)

Power Dissipation

Product shell number and size		Max.Power Dissipation
Case Code	EIA Metric	mw @+25℃
A	3216-16	65
B	3528-19	75
C	6032-25	90
D	7343-28	105
E	7343-43	125
F	7360-38	150
W	7361-41	200
G	8575-45	240
S	11090-45	280
T	110125-55	330

2) Ripple current

Using the maximum power dissipation in Table 1, the max. ripple current can be calculated using the following formula:

$$I=\sqrt{\frac{P}{ESR}}\times K\times F$$.....Formula 2

Temperature derating factor..... Table 2

Frequency derating factor..... Table 3.

Refer to the ratings of each specific product

Table 2: temperature drop factor K

temperature	temperature derating factor K
25℃	1
85℃	0.9
125℃	0.4

Table 3: frequency reduction factor F

frequency	10KHz	100 KHz	500KHz	1MHz
reduction factor F	0.80	1.00	1.15	1.20

Using formula 3 to calculate corrugated voltage E ：

Formula 3

Ripple voltage

Here：Specific frequency impedance

3) Ripple voltage

The ripple voltage applied to the capacitor is limited by three criteria.

(a)

The power dissipation in the the ESR of capacitor must not exceed the appropriate values in Table1.

(b)

The positive peak AC voltage pluse the DC bias voltage,if any, must not exceed the DC voltage rating of the capacitor.

(c)

The negative peak AC voltage ,in combination with the bias voltage, if any , must not exceed the permissible reverse voltage ratings presented .

（2） Reverse voltage

Solid tantalum capacitors are polarized devices , and applied reverse voltage can not be allowed . If the reverse voltage is unavoidable, a small degree of transient reverse voltage is permissible for short periods as follow.

25℃.....

10% of Max. rated voltage or 1V whichever is smaller .

85℃.....

5% of Max. rated voltage or 0.5V whichever is smaller

125℃.....

1% of Max. rated voltage or 0.1V whichever is smaller

Even under these restrictions, capacitors can not be used continuously in reverse voltage mode.

（3） Working voltage

1)

For general applications, using 70% of rated voltage of capacitors or less.

2)

When used at the power circuit , low impedance circuit , coupling circuit or witching circuit which has leakage current problems , please design the circuit with voltage under 30% of the working voltage (max 50%) to avoid the adverse effect of the surge current.

3)

Derating voltage when temperature above 85℃.

When the chip tantalum capacitor is used at 85 or more temperatures， the reduced voltage （UT）is calculated from the following expression，however, note that the ambient temperature is not more than 125.

UT=V0(UR-UC)(T-85)/40

Here：

UR： Rated voltage (V)

UC： Derating voltage at 125℃

T： Ambient temperature(℃)

（4） Protective resistance

In a circuit(switching circuit, charge / discharge circuit, etc.) that has an instantaneous current, series resistance is at least 3Ω/V, this can improve the reliability of tantalum capacitors. If the capacitor is in a low impedance circuit, the voltage applied to the capacitor should be half or one third of the rated voltage.

（5） Redundancy

MnO2 tantalum capacitors will heat, and may cause fire and burn in the short circuit . This is determined by the situation, time and other factors.When the circuit is designed, it is possible to provide the best possible space to keep the tantalum capacitor reliability.

（6） Soldering

The chip tantalum capacitor can be used for reflow soldering, which is not suitable for wave soldering and manual welding. The reflow temperature are less than 260℃, less than 5 seconds. If you must use manual welding, should use the melted solder to contact lead, and the electric soldering iron power should be less than or equal to 25W, temperature should be less than 300℃, welding time should be less than 3 seconds,can not use electric iron contact the product lead directly, and in particular,can not contact the product ontology directly.