

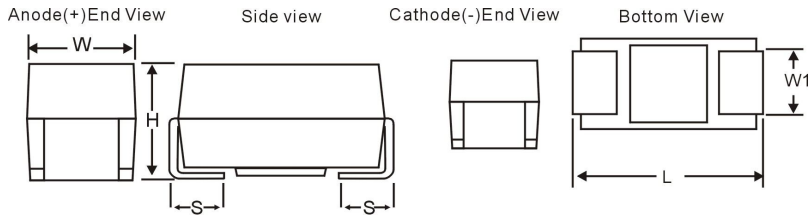
# TS20L

**FEATURES**

- Operating temperature Range: -55°C~+125°C (>80°C with rated volted darating)
- Laser-markec Case
- Capacitance tolerance: +/-20%; +/-10% (for special order)
- DC leakage at 25°C:  $10^{-6} \leq 0.01 Cr$  or 0.5Ma (Whichever is greater)
- Dimensions rated voltage and nominal capacitance Please see Table 1 & 2 and Figure 1

**INTRODUCTION**

The TS20L Series is low ESR tantalum chip capacitor suitable For SMT electric board used for telecommunication computer camcorder and mobile phone set and so on  
 Low ESR value conform with EIA535BAAC size: Tape and Reeled per EIA481-1



case	L	W	H	S	W1
S	2.0+0.2	1.3-0.2	1.2+-0.2	0.5+-0.3	1.2+-0.1
A	3.2+0.2	1.6-0.2	1.6+0.2	0.8-0.3	1.2+0.1
B	3.5+0.2	2.8+0.2	1.8+-0.2	0.8+-0.3	2.2+-0.1
C	6.0+0.3	3.2+0.3	2.5+-0.3	1.3+-0.3	2.2+-0.1
D	7.3+0.3	4.3+-0.3	2.8+-0.3	1.3+-0.3	2.4+-0.1
E	7.3+0.3	4.3+-0.3	4.0+-0.3	1.3+-0.3	2.4+-0.1

**ELECTROLYTE CHARACTERISTICS OF TS20L TANTALUM CHIP CAPACITOR**

Capacitance (μF)	Case Size	(Ua@+25°C Max) DC Leakage	DF (%) @85°C @100Hz (Max)	ESR (Ω) @25°C @100KHZ (Max)
<b>4Volt Rating at +85°C (2.7Volt Rating +125°C)</b>				
3.3	A	0.5	6.0	4.0
4.7	A	0.5	6.0	3.5
6.8	A	0.5	6.0	3.0
10	B	0.5	6.0	1.2
10	A	0.5	6.0	2.0
10	S	0.6	6.0	6.0
15	B	0.6	6.0	1.2
15	A	0.6	6.0	1.5
22	C	0.9	6.0	0.5
22	B	0.9	6.0	0.6
22	A	0.9	6.0	1.5
33	C	1.3	6.0	0.5
33	B	1.3	6.0	0.5
33	A	1.3	6.0	3.0
47	C	1.9	6.0	0.5
47	B	1.9	6.0	0.5
47	A	1.9	12.0	2.0
68	D	2.7	6.0	0.2
68	C	2.7	6.0	0.25
68	B	2.7	6.0	2.0
100	D	4.0	8.0	0.2
100	C	4.0	8.0	0.2
100	B	4.0	10	0.6
150	D	6.0	8.0	0.15
150	C	6.0	8.0	0.3
220	D	8.8	8.0	0.15
330	D	13.2	8.0	0.15
470	E	18.8	8.0	0.15
470	D	18.8	8.0	0.15

Capacitance (μF)	Case Size	(Ua@+25°C Max) DC Leakage	DF (%) @85°C @100Hz (Max)	ESR (Ω) @25°C @100KHZ (Max)
<b>6.3Volt Rating at +85°C (4Volt Rating +125°C)</b>				
2.2	A	0.5	6.0	6.0
3.3	A	0.5	6.0	6.0
4.7	A	0.5	6.0	3.5
6.8	B	0.5	6.0	1.2
6.8	A	0.5	6.0	2.0
6.8	S	0.5	6.0	8.0
10	B	0.6	6.0	1.0
10	A	0.6	6.0	2.0
10	S	0.6	8.0	6.0
15	C	0.9	6.0	0.6
15	B	0.9	6.0	0.7
15	A	0.9	6.0	2.0
22	C	1.4	6.0	0.5
22	B	1.4	6.0	0.6
22	A	1.4	6.0	3.0
33	C	2.0	6.0	0.3
33	B	2.0	6.0	0.6
33	A	2.0	12.0	2.0
47	D	2.9	6.0	0.22
47	C	2.9	6.0	0.25
47	B	2.9	6.0	2.0
68	D	4.1	6.0	0.2
68	C	4.1	6.0	0.2
100	D	6.0	8.0	0.15
100	C	6.0	8.0	0.3
150	D	9.0	8.0	0.15
150	C	9.0	8.0	0.3
220	E	13.2	8.0	0.15
220	D	13.2	8.0	0.15
330	E	19.8	8.0	0.15
330	D	19.8	8.0	0.15
470	E	28.2	10.0	0.1

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Capacitance ( $\mu F$ )	Case Size	( $\mu a@+25^{\circ}C$ Max) DC Leakage	DF (%) @85°C @100Hz (Max)	ESR ( $\Omega$ ) @25°C @100KHZ (Max)
<b>10Volt Rating at +85°C (7.0Volt Rating+125°C)</b>				
1.5	A	0.5	6.0	6.0
2.2	A	0.5	6.0	6.0
3.3	A		6.0	4.0
4.7	B	0.5	6.0	1.5
4.7	A	0.5	6.0	3.0
4.7	S	0.5	8.0	8.0
6.8	B	0.7	6.0	1.2
6.8	A	0.7	6.0	3.0
10.0	C	1.0	6.0	0.6
10.0	B	1.0	6.0	0.8
10.0	A	1.0	6.0	2.0
15.0	C	1.5	6.0	0.5
15.0	B	1.5	6.0	0.7
15.0	A	1.5	8.0	4.0
22.0	C	2.2	6.0	0.4
22.0	B	2.2	6.0	0.7
33.0	D	3.3	6.0	0.25
33.0	C	3.3	6.0	0.3
33.0	B	3.3	6.0	2.0
47.0	D	4.7	6.0	0.22
47.0	C	4.7	6.0	0.3
68.0	D	6.8	6.0	0.2
68.0	C	6.8	6.0	0.3
100.0	D	10.0	8.0	0.15
100.0	C	10.0	8.0	0.3
150.0	E	15.0	8.0	0.15
150.0	D	15.0	8.0	0.15
220.0	E	22.0	8.0	0.15
220.0	D	22.0	8.0	0.15
330.0	E	33.0	10.0	0.10
<b>20Volt Rating at +85°C (13Volt Rating+125°C)</b>				
0.68	A	0.5	4.0	8.0
1.0	A	0.5	4.0	5.5
1.5	A	0.5	6.0	4.5
2.2	B	0.5	6.0	1.5
2.2	A	0.5	6.0	4.0
3.3	B	0.7	6.0	1.3
3.3	A	0.7	6.0	4.0
4.7	C	1.0	6.0	0.6
4.7	B	1.0	6.0	1.0
4.7	A	1.0	6.0	3.5
6.8	C	1.4	6.0	0.6
6.8	B	1.4	6.0	1.0
10.0	C	2.0	6.0	0.5
10.0	B	2.0	6.0	1.0
15.0	D	3.0	6.0	0.36
15.0	C	3.0	6.0	0.4
22.0	D	4.4	6.0	0.3
22.0	C	4.4	6.0	0.4
33.0	D	6.6	6.0	0.25
33.0	C	6.6	6.0	0.4
47.0	D	9.4	6.0	0.2
68.0	E	13.6	6.0	0.2
68.0	D	13.6	8.0	0.2
100.0	E	20.0	8.0	0.15

Capacitance ( $\mu F$ )	Case Size	( $\mu a@+25^{\circ}C$ Max) DC Leakage	DF (%) @85°C @100Hz (Max)	ESR ( $\Omega$ ) @25°C @100KHZ (Max)
<b>16Volt Rating at +85°C (10Volt Rating +125°C)</b>				
1.0	A	0.5	4.0	6.0
1.5	A	0.5	6.0	6.0
2.2	A	0.5	6.0	4.0
2.2	S	0.5	8.0	20.0
3.3	A	0.5	6.0	4.0
3.3	B	0.5	6.0	2.0
4.7	B	0.8	6.0	1.5
4.7	A	0.8	6.0	3.0
6.8	C	1.1	6.0	0.8
6.8	B	1.1	6.0	1.2
6.8	A	1.1	6.0	3.0
10.0	C	1.6	6.0	0.6
10.0	B	1.6	6.0	0.8
15.0	C	2.4	6.0	0.4
15.0	B	2.4	6.0	0.8
22.0	D	3.6	6.0	0.25
22.0	C	3.6	6.0	0.35
33.0	D	5.3	6.0	0.25
33.0	C	5.3	6.0	0.3
47.0	D	7.5	6.0	0.2
47.0	C	7.5	6.0	0.55
68.0	D	10.9	6.0	0.15
100.0	E	16.0	8.0	0.15
100.0	D	16.0	8.0	0.15
150.0	E	24.0	8.0	0.15

Capacitance ( $\mu F$ )	Case Size	( $\mu a@+25^{\circ}C$ Max) DC Leakage	DF (%) @85°C @100Hz (Max)	ESR ( $\Omega$ ) @25°C @100KHZ (Max)
<b>25Volt Rating at +85°C (17Volt Rating +125°C)</b>				
0.33	A	0.5	4.0	10.0
0.47	A	0.5	4.0	9.0
0.68	A	0.5	4.0	6.0
1.0	B	0.5	4.0	2.0
1.0	A	0.5	4.0	4.0
1.5	B	0.5	6.0	1.5
1.5	A	0.5	6.0	5.0
2.2	C	0.6	6.0	1.2
2.2	B	0.6	6.0	2.2
3.3	C	0.9	6.0	1.2
3.3	B	0.9	6.0	2.0
4.7	C	1.2	6.0	0.6
4.7	B	1.2	6.0	1.0
6.8	C	1.7	6.0	0.6
10.0	D	2.5	6.0	0.4
10.0	C	2.5	6.0	0.6
15.0	D	3.8	6.0	0.4
15.0	C	3.8	6.0	0.9
22.0	D	5.5	6.0	0.4
33.0	E	8.3	6.0	0.3
33.0	D	8.3	6.0	0.4
47.0	E	11.8	6.0	0.3

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Capacitance ( $\mu$ F)	Case Size	( $\mu$ a@+25°C Max) DC Leakage	DF (%) @85°C @100Hz (Max)	ESR ( $\Omega$ ) @25°C @100KHZ (Max)
<b>35Volt Rating at +85°C (23Volt Rating+125°C)</b>				
0.1	A	0.5	4.0	10.0
0.15	A	0.5	4.0	6.0
0.22	A	0.5	4.0	6.0
0.33	A	0.5	4.0	6.0
0.47	B	0.5	4.0	2.5
0.47	A	0.5	4.0	4.0
0.68	B	0.5	4.0	2.5
0.68	A	0.5	4.0	6.0
1.0	B	0.5	4.0	2.0
1.0	A	0.5	4.0	6.0
1.5	C	0.5	6.0	2.5
1.5	B	0.5	6.0	3.0
2.2	C	0.8	6.0	1.5
2.2	B	0.8	6.0	2.5
3.3	C	1.2	8.0	0.8
3.3	B	1.2	6.0	2.0
4.7	D	1.7	6.0	0.7
4.7	C	1.7	6.0	0.7
6.8	D	2.4	6.0	0.5
6.8	C	2.4	6.0	0.9
10.0	D	3.5	6.0	0.4
10.0	C	3.5	6.0	1.2
15.0	E	5.3	6.0	0.3
15.0	D	5.3	6.0	0.35
22.0	E	7.7	6.0	0.3
22.0	D	7.7	6.0	0.4

Capacitance ( $\mu$ F)	Case Size	( $\mu$ a@+25°C Max) DC Leakage	DF (%) @85°C @100Hz (Max)	ESR ( $\Omega$ ) @25°C @100KHZ (Max)
<b>50Volt Rating at +85°C (30Volt Rating +125°C)</b>				
0.1	A	0.5	4.0	10.0
0.15	B	0.5	4.0	10.0
0.15	A	0.5	4.0	10.0
0.22	B	0.5	4.0	10.0
0.33	B	0.5	4.0	2.5
0.47	C	0.5	4.0	1.8
0.47	B	0.5	4.0	2.0
0.68	C	0.5	4.0	1.6
0.68	B	0.5	4.0	3.0
1.0	C	0.5	4.0	1.6
1.5	D	0.8	6.0	1.0
1.5	C	0.8	6.0	1.5
2.2	D	1.1	6.0	0.8
2.2	C	1.1	6.0	1.5
3.3	D	1.7	6.0	0.8
4.7	D	2.4	6.0	0.6
6.8	E	3.5	6.0	0.5

Note: Specification are subject to change without notice. For more detail and update, please visit our website.