

# Type TDL Solid Tantalum Capacitors

## Dipped, Radial Leaded, Solid Tantalum Capacitors



The Type TDL, like the Type TDC, is a low cost alternative to molded solid tantalum capacitors, and is constructed in a tough, radial dipped flame retardant plastic case. It assures the user that it is a top performer with such attributes as low DCL, Low ESR, low impedance and a great value with low in-place cost. The 0.10" and 0.20" lead spacings of the TDL are what distinguishes it from the Type TDC.

### Highlights

- ◆ Tough plastic case
- ◆ Low DCL
- ◆ Low ESR and impedance
- ◆ Low cost
- ◆ Temperature stable
- ◆ UL94VO flammability rating
- ◆ Resistant to shock and vibration

### Specifications

**Capacitance Range:** 0.10  $\mu$ F to 330  $\mu$ F  
**Voltage Range:** 6 WVdc to 50 WVdc at 85 °C  
**Tolerance:**  $\pm$ 10%,  $\pm$ 20% ( $\pm$ 5% by Special Order)  
**Operating Temperature Range:** -55 °C to +125 °C (with proper derating)

**DC Leakage:** +25 °C - See ratings limit  
+85 °C - 10 x Ratings limit  
+125 °C - 12.5 x Ratings limit

**Capacitance Change Maximum:** -10% @ -55 °C  
+10% @ +85 °C  
+12% @ +125 °C

**Reverse Voltage (Non-continuous):** 15% of rated voltage @ 25 °C  
5% of rated voltage @ 85 °C  
1% of rated voltage @ 125 °C

#### Reel Packaging:

Case Code	Quantity Per Reel
A	1,500
B	1,500
C	1,500
D	1,000
E	1,000
F	1,000

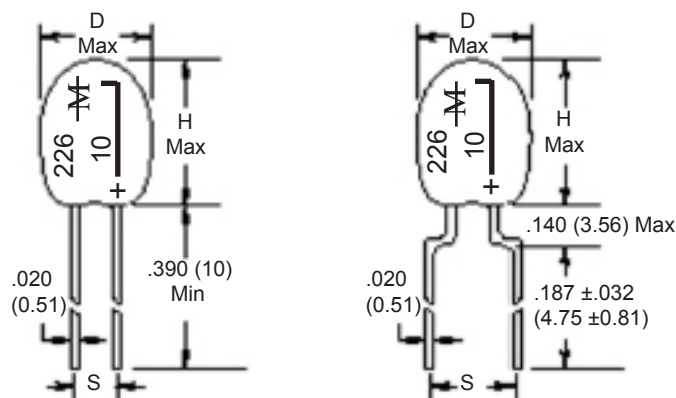
#### RoHS Compliant:



Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

# Type TDL Solid Tantalum Capacitors

## Capacitor Outline Drawing



Lead Form  
Codes S1, M1

Lead Form  
Code M2

Dimensions - Inches (Millimeters)					
Case Code	D (Max.)	H (Max.)	Leads		Quantity Per Reel
			S	Code	
A	0180 (4.57)	.280 (7.11)	.100 (2.54) (Standard)	S1	1,500
			.200 (5.08) (Special)	M2	
B	200 (5.08)	.300 (7.62)	.100 (2.54) (Standard)	S1	1,500
			.200 (5.08) (Special)	M2	
C	.260 (6.60)	.360 (9.14)	.100 (2.54) (Standard)	S1	1,500
			.200 (5.08) (Special)	M2	
D	.340 (8.64)	.400 (10.16)	.100 (2.54) (Standard)	S1	1,000
			.200 (5.08) (Special)	M2	
E	.400 (10.16)	.560 (14.22)	.200 (5.08) (Standard)	M1	1,000
F	.440 (11.18)	.680 (17.27)	.200 (5.08) (Standard)	M1	1,000

Listed Catalog Numbers reflect standard lead forms as indicated below.

M2 lead form and lead lengths of .500 (12.7) minimum are available by special order.

## Ratings

Cap (µF)	Catalog Part Number	Case Code	Lead Spacing (S)	Max. DCL @ +25°C (µA)	Max. DF @ +25°C 120 Hz (%)
<b>6.3 WVdc; 8 Vdc Surge @ 85 °C 4 WVdc; 5 Vdc Surge @ 125 °C</b>					
3.3	TDL335*006S1A	A	0.1	0.5	5
3.9	TDL395*006S1A	A	0.1	0.5	5
4.7	TDL475*006S1A	A	0.1	0.5	5
5.6	TDL565*006S1A	A	0.1	0.5	5
6.8	TDL685*006S1A	A	0.1	0.5	5
8.2	TDL825*006S1B	B	0.1	0.5	6
10	TDL106*006S1B	B	0.1	0.5	6
12	TDL126*006S1B	B	0.1	0.6	6
15	TDL156*006S1B	B	0.1	0.7	6
18	TDL186*006S1B	B	0.1	0.9	6
22	TDL226*006S1C	C	0.1	1.1	6
27	TDL276*006S1C	C	0.1	1.3	6
33	TDL336*006S1C	C	0.1	1.6	6
39	TDL396*006S1C	C	0.1	1.9	6
47	TDL476*006S1D	D	0.1	2.3	6
56	TDL566*006S1D	D	0.1	2.7	6
68	TDL686*006S1D	D	0.1	3.3	6
82	TDL826*006S1D	D	0.1	3.9	8
100	TDL107*006S1D	D	0.1	4.8	8
120	TDL127*006M1D	D	0.2	5.8	8
150	TDL157*006M1E	E	0.2	7.2	8
180	TDL187*006M1E	E	0.2	8.6	8
220	TDL227*006M1E	E	0.2	10	8
270	TDL277*006M1E	E	0.2	10	8
330	TDL337*006M1F	F	0.2	10	8

Cap (µF)	Catalog Part Number	Case Code	Lead Spacing (S)	Max. DCL @ +25°C (µA)	Max. DF @ +25°C 120 Hz (%)
<b>10 WVdc; 13 Vdc Surge @ 85 °C 7 WVdc; 9 Vdc Surge @ 125 °C</b>					
2.2	TDL225*010S1A	A	0.1	0.5	5
2.7	TDL275*010S1A	A	0.1	0.5	5
3.3	TDL335*010S1A	A	0.1	0.5	5
3.9	TDL395*010S1A	A	0.1	0.5	5
4.7	TDL475*010S1A	A	0.1	0.5	5
5.6	TDL565*010S1A	A	0.1	0.5	5
6.8	TDL685*010S1B	B	0.1	0.5	5
8.2	TDL825*010S1B	B	0.1	0.7	6
10	TDL106*010S1B	B	0.1	0.8	6
12	TDL126*010S1C	C	0.1	1.0	6
15	TDL156*010S1C	C	0.1	1.2	6
18	TDL186*010S1C	C	0.1	1.4	6
22	TDL226*010S1C	C	0.1	1.8	6
27	TDL276*010S1C	C	0.1	2.2	6
33	TDL336*010S1D	D	0.1	2.6	6
39	TDL396*010S1D	D	0.1	3.1	6
47	TDL476*010S1D	D	0.1	3.8	6
56	TDL566*010S1D	D	0.1	4.5	6
68	TDL686*010S1D	D	0.1	5.4	6
82	TDL826*010M1E	E	0.2	6.6	8
100	TDL107*010M1E	E	0.2	8.0	8
120	TDL127*010M1E	E	0.2	9.6	8
150	TDL157*010M1E	E	0.2	10.0	8
180	TDL187*010M1E	E	0.2	10.0	8
220	TDL227*010M1F	F	0.2	10.0	8

\* Indicates capacitance tolerance: K = ±10%, M = ±20%, (J = ±5%, Special Order)

CDE reserves the right to substitute a tighter tolerance, higher voltage capacitor within the same case size.

# Type TDL Solid Tantalum Capacitors

## Ratings

Cap ( $\mu$ F)	Catalog Part Number	Case Code	Lead Spacing (S)	Max. DCL @ +25°C ( $\mu$ A)	Max. DF @ +25°C 120 Hz (%)
<b>16 WVdc; 20 Vdc Surge @ 85 °C</b> <b>10 WVdc; 12 Vdc Surge @ 125 °C</b>					
1.5	TDL155*016S1A	A	0.1	0.5	5
1.8	TDL185*016S1A	A	0.1	0.5	5
2.2	TDL225*016S1A	A	0.1	0.5	5
2.7	TDL275*016S1A	A	0.1	0.5	5
3.3	TDL335*016S1A	A	0.1	0.5	5
3.9	TDL395*016S1B	B	0.1	0.5	5
4.7	TDL475*016S1B	B	0.1	0.6	5
5.6	TDL565*016S1B	B	0.1	0.7	5
6.8	TDL685*016S1B	B	0.1	0.9	5
8.2	TDL825*016S1C	C	0.1	1.0	6
10	TDL106*016S1C	C	0.1	1.3	6
12	TDL126*016S1C	C	0.1	1.5	6
15	TDL156*016S1C	C	0.1	1.8	6
18	TDL186*016S1C	C	0.1	2.2	6
22	TDL226*016S1D	D	0.1	2.6	6
27	TDL276*016S1D	D	0.1	3.2	6
33	TDL336*016S1D	D	0.1	4.0	6
39	TDL396*016M1E	E	0.2	4.7	6
47	TDL476*016M1E	E	0.2	5.6	6
56	TDL566*016M1E	E	0.2	6.8	6
68	TDL686*016M1E	E	0.2	8.2	6
82	TDL826*016M1E	E	0.2	9.8	8
100	TDL107*016M1F	F	0.2	10	8
120	TDL127*016M1F	F	0.2	10	8
150	TDL157*016M1F	F	0.2	10	8
<b>20 WVdc; 26 Vdc Surge @ 85 °C</b> <b>13 WVdc; 16 Vdc Surge @ 125 °C</b>					
1.5	TDL155*020S1A	A	0.1	0.5	5
1.8	TDL185*020S1A	A	0.1	0.5	5
2.2	TDL225*020S1A	A	0.1	0.5	5
2.7	TDL275*020S1A	A	0.1	0.5	5
3.3	TDL335*020S1A	A	0.1	0.5	5
3.9	TDL395*020S1B	B	0.1	0.6	5
4.7	TDL475*020S1B	B	0.1	0.8	5
5.6	TDL565*020S1B	B	0.1	0.9	5
6.8	TDL685*020S1B	B	0.1	1.1	5
8.2	TDL825*020S1B	B	0.1	1.3	6

Cap ( $\mu$ F)	Catalog Part Number	Case Code	Lead Spacing (S)	Max. DCL @ +25°C ( $\mu$ A)	Max. DF @ +25°C 120 Hz (%)
<b>20 WVdc; 26 Vdc Surge @ 85 °C</b> <b>13 WVdc; 16 Vdc Surge @ 125 °C</b>					
1.5	TDL155*020S1A	A	0.1	0.5	5
1.8	TDL185*020S1A	A	0.1	0.5	5
2.2	TDL225*020S1A	A	0.1	0.5	5
2.7	TDL275*020S1A	A	0.1	0.5	5
3.3	TDL335*020S1A	A	0.1	0.5	5
3.9	TDL395*020S1B	B	0.1	0.6	5
4.7	TDL475*020S1B	B	0.1	0.8	5
5.6	TDL565*020S1B	B	0.1	0.9	5
6.8	TDL685*020S1B	B	0.1	1.1	5
8.2	TDL825*020S1B	B	0.1	1.3	6
10	TDL106*020S1C	C	0.1	1.6	6
12	TDL126*020S1C	C	0.1	1.9	6
15	TDL156*020S1C	C	0.1	2.4	6
18	TDL186*020S1C	C	0.1	2.9	6
22	TDL226*020S1C	C	0.1	3.5	6
27	TDL276*020M1E	E	0.2	4.3	6
33	TDL336*020M1E	E	0.2	5.3	6
39	TDL396*020M1E	E	0.2	6.2	6
47	TDL476*020M1E	E	0.2	7.5	6
56	TDL566*020M1E	E	0.2	9	6
68	TDL686*020M1E	E	0.2	10	6
82	TDL826*020M1F	F	0.2	10	8
100	TDL107*020M1F	F	0.2	10	8
<b>25 WVdc; 32 Vdc Surge @ 85 °C</b> <b>16.5 WVdc; 21.5 Vdc Surge @ 125 °C</b>					
1.0	TDL105*025S1A	A	0.1	0.5	3
1.2	TDL125*025S1A	A	0.1	0.5	5
1.5	TDL155*025S1A	A	0.1	0.5	5
1.8	TDL185*025S1A	A	0.1	0.5	5
2.2	TDL225*025S1B	B	0.1	0.5	5
2.7	TDL275*025S1B	B	0.1	0.5	5
3.3	TDL335*025S1B	B	0.1	0.7	5
3.9	TDL395*025S1B	B	0.1	0.8	5
4.7	TDL475*025S1C	C	0.1	0.9	5
5.6	TDL565*025S1C	C	0.1	1.1	5
6.8	TDL685*025S1C	C	0.1	1.4	5
8.2	TDL825*025S1C	C	0.1	1.6	6

\* Indicates capacitance tolerance: K =  $\pm$ 10%, M =  $\pm$ 20%, (J =  $\pm$ 5%, Special Order)

CDE reserves the right to substitute a tighter tolerance, higher voltage capacitor within the same case size.

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# Type TDL Solid Tantalum Capacitors

## Ratings

Cap ( $\mu$ F)	Catalog Part Number	Case Code	Lead Spacing (S)	Max. DCL @ +25°C ( $\mu$ A)	Max. DF @ +25°C 120 Hz (%)
<b>25 WVdc; 32 Vdc Surge @ 85 °C</b>					
<b>16.5 WVdc; 21.5 Vdc Surge @ 125 °C</b>					
10	TDL106*025S1C	C	0.1	2.0	6
12	TDL126*025S1C	C	0.1	2.4	6
15	TDL156*025S1D	D	0.1	3.0	6
18	TDL186*025S1D	D	0.1	3.6	6
22	TDL226*025S1D	D	0.1	4.4	6
27	TDL276*025M1E	E	0.2	5.4	6
33	TDL336*025M1E	E	0.2	6.6	6
39	TDL396*025M1E	E	0.2	7.8	6
47	TDL476*025M1E	E	0.2	9.4	6
56	TDL566*025M1E	E	0.2	10.0	6
68	TDL686*025M1E	F	0.2	10.0	6
<b>35 WVdc; 46 Vdc Surge @ 85 °C</b>					
<b>23 WVdc; 28 Vdc Surge @ 125 °C</b>					
.10	TDL104*035S1A	A	0.1	0.5	3
.12	TDL124*035S1A	A	0.1	0.5	3
.15	TDL154*035S1A	A	0.1	0.5	3
.18	TDL184*035S1A	A	0.1	0.5	3
.22	TDL224*035S1A	A	0.1	0.5	3
.27	TDL274*035S1A	A	0.1	0.5	3
.33	TDL334*035S1A	A	0.1	0.5	3
.39	TDL394*035S1A	A	0.1	0.5	3
.47	TDL474*035S1A	A	0.1	0.5	3
.56	TDL564*035S1A	A	0.1	0.5	3
.68	TDL684*035S1A	A	0.1	0.5	3
.82	TDL824*035S1A	A	0.1	0.5	3
1.0	TDL105*035S1B	B	0.1	0.5	3
1.2	TDL125*035S1B	B	0.1	0.5	5
1.5	TDL155*035S1B	B	0.1	0.5	5
1.8	TDL185*035S1B	B	0.1	0.5	5
2.2	TDL225*035S1C	C	0.1	0.6	5
2.7	TDL275*035S1C	C	0.1	0.7	5
3.3	TDL335*035S1C	C	0.1	0.9	5
3.9	TDL395*035S1C	C	0.1	1.0	5
4.7	TDL475*035S1D	D	0.1	1.3	5
5.6	TDL565*035S1D	D	0.1	1.6	5
6.8	TDL685*035S1D	D	0.1	1.9	5
8.2	TDL825*035S1D	D	0.1	2.3	6
10	TDL106*035S1D	D	0.1	2.8	6
12	TDL126*035M1E	E	0.2	3.4	6
15	TDL156*035M1E	E	0.2	4.2	6

Cap ( $\mu$ F)	Catalog Part Number	Case Code	Lead Spacing (S)	Max. DCL @ +25°C ( $\mu$ A)	Max. DF @ +25°C 120 Hz (%)
<b>35 WVdc; 46 Vdc Surge @ 85 °C</b>					
<b>23 WVdc; 28 Vdc Surge @ 125 °C</b>					
18	TDL186*035M1E	E	0.2	5.0	6
22	TDL226*035M1E	E	0.2	6.2	6
27	TDL276*035M1E	E	0.2	7.6	6
33	TDL336*035M1F	F	0.2	9.2	6
39	TDL396*035M1F	F	0.2	10.0	6
47	TDL476*035M1F	F	0.2	10.0	6
<b>50 WVdc; 65 Vdc Surge @ 85 °C</b>					
<b>33 WVdc; 40 Vdc Surge @ 125 °C</b>					
.10	TDL104*050S1A	A	0.1	0.5	3
.12	TDL124*050S1A	A	0.1	0.5	3
.15	TDL154*050S1A	A	0.1	0.5	3
.18	TDL184*050S1A	A	0.1	0.5	3
.22	TDL224*050S1A	A	0.1	0.5	3
.27	TDL274*050S1A	A	0.1	0.5	3
.33	TDL334*050S1A	A	0.1	0.5	3
.39	TDL394*050S1A	A	0.1	0.5	3
.47	TDL474*050S1B	B	0.1	0.5	3
.56	TDL564*050S1B	B	0.1	0.5	3
.68	TDL684*050S1B	B	0.1	0.5	3
.82	TDL824*050S1B	B	0.1	0.5	3
1.0	TDL105*050S1C	C	0.1	0.5	3
1.2	TDL125*050S1C	C	0.1	0.5	5
1.5	TDL155*050S1C	C	0.1	0.6	5
1.8	TDL185*050S1C	C	0.1	0.7	5
2.2	TDL225*050S1D	D	0.1	0.9	5
2.7	TDL275*050S1D	D	0.1	1.1	5
3.3	TDL335*050S1D	D	0.1	1.3	5
3.9	TDL395*050S1D	D	0.1	1.6	5
4.7	TDL475*050S1D	D	0.1	1.9	5
5.6	TDL565*050S1D	D	0.1	2.2	5
6.8	TDL685*050M1F	F	0.2	2.7	5
8.2	TDL825*050M1F	F	0.2	3.3	6
10	TDL106*050M1F	F	0.2	4.0	6
12	TDL126*050M1F	F	0.2	4.8	6
15	TDL156*050M1F	F	0.2	6.0	6
18	TDL186*050M1F	F	0.2	7.2	6
22	TDL226*050M1F	F	0.2	8.8	6

\* Indicates capacitance tolerance: K =  $\pm 10\%$ , M =  $\pm 20\%$ , (J =  $\pm 5\%$ , Special Order)

# Type TDL Solid Tantalum Capacitors

## Part Numbering System

<b>TDL</b> 	<b>106</b> 	<b>M</b> 	<b>050</b> 	<b>M</b> 	<b>1</b> 	<b>F</b> 	<b>-F</b> 
<b>Series</b>	<b>Capacitance</b>	<b>Tolerance</b>	<b>Voltage</b>	<b>Lead Spacing</b>	<b>Lead Length</b>	<b>Case Code</b>	<b>RoHS Compliant</b>
<b>TDL</b>	<b>104</b> = 0.10 $\mu$ F	<b>J</b> = $\pm$ 5%	<b>006</b> = 6.3 Vdc	<b>S</b> = .100	<b>1</b> = Straight .390 Long	<b>A</b>	<b>-F</b> = Compliant
	<b>105</b> = 1.0 $\mu$ F	<b>K</b> = $\pm$ 10%	<b>010</b> = 10 Vdc	<b>M</b> = .200		<b>B</b>	
	<b>225</b> = 2.2 $\mu$ F	<b>M</b> = $\pm$ 20%	<b>015</b> = 15 dc	<b>T</b> = Tape & Reel	<b>2</b> = Straight .187 Long	<b>C</b>	<b>Blank</b> = Not Compliant
	<b>186</b> = 18 $\mu$ F		<b>020</b> = 20 Vdc			<b>D</b>	
	<b>107</b> = 100 $\mu$ F		<b>025</b> = 25 Vdc			<b>E</b>	
			<b>035</b> = 35 Vdc			<b>F</b>	
			<b>050</b> = 50 Vdc				