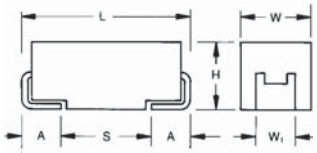
TBW Series

Tantalum Fused DSCC Dwg 04053 COTS-Plus Weibull Grade & Space Level

TBW Fused Tantalum Capacitors offer protection from possible damaging short circuit failure modes. This is accomplished with an internal fuse in series with the capacitor. See the photograph on the right. The AVX fused tantalum offers lower ESR limits than competitive fused tantalum capacitors, and is available with Weibull and surge testing per MIL PRF 55365.

Anode, fuse and leadframe assembly



CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	L±0.20 (0.008)	W+0.20 (0.008) –0.10 (0.004)	H+0.20 (0.008) –0.10 (0.004)	W_1 ±0.20 (0.008)	A+0.30 (0.012) –0.20 (0.008)	S Min.
C	6032-28	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	7343-31	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	7343-43	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

CAPACITANCE AND RATED VOLTAGE, V_R (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance	Rated Voltage DC (V_R) to 85°C							
µF	4	6	10	16	20	25	35	50
0.47								C
0.68								C
1								C
1.5			–	–	–	–	C	C
2.2			–	–	–	C	C	D
3.3			–	–	–	C	C	D
4.7		–	–	–	C	C	D	D
6.8		–	–	C	C	C	D	
10		–	C	C	C	C/D	E	E(20%)
15		C	C	C	D	D	D/E	–
22		C	C	C/D	D	D/E	E	–
33		C	C/D	D	E		–	–
47		C/D	C/D	D/E	E	–	–	–
68	C	C/D	D	E	–	–	–	–
100	C	D/E	D/E		–	–	–	–
150	D	D	D/E	–	–	–	–	–
220	D	D/E	E	–	–	–	–	–
330	E	E						
470	E							

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Tantalum Fused DSCC Dwg 04053 COTS-Plus Weibull Grade & Space Level

HOW TO ORDER

COTS-PLUS & DSCC DWG (04053):

TBW	D	686	*	006	C	□	#	@	0	^	++
Type	**Case Size**	**Capacitance Code** pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	**Capacitance Tolerance** M = ±20% K = ±10% J = ±5%	**Voltage Code** 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	**Standard or Low ESR Range** C = Std ESR L = Low ESR	**Packaging** B = Bulk R = 7" T&R S = 13" T&R W = Waffle See page 5 for additional packaging options.	**Inspection Level** S = Std. Conformance L = Group A D = DSCC DWG	**Reliability Grade** Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. Z = Non-ER	**Qualification Level** 0 = N/A 9 = SRC9000	**Termination Finish** H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	**Surge Test Option** 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull

DSCC DWG P/N CROSS REFERENCE:

04053	-01
DSCC DWG 04053	**Dash Number** See Rating Tables

NOTE: DSCC DWG 04053 specifies 20% capacitance tolerance and solder plated termination options only. For 10% capacitance tolerance, solder fused finish, Weibull grading and MIL surge options, order using AVX part number above.

SPACE LEVEL OPTIONS TO SRC9000*:

TBW	D	686	*	006	C	□	L	@	9	^	++
Type	**Case Size**	**Capacitance Code** pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	**Capacitance Tolerance** M = ±20% K = ±10% J = ±5%	**Voltage Code** 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	**Standard or Low ESR Range** C = Std ESR L = Low ESR	**Packaging** B = Bulk R = 7" T&R S = 13" T&R W = Waffle See page 5 for additional packaging options.	**Inspection Level** L = Group A	**Reliability Grade** Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf.	**Qualification Level** 9 = SRC9000	**Termination Finish** H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	**Surge Test Option** 00 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull

***Qualifications Pending**

TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C									
Capacitance Range:	0.47 µF to 470 µF									
Capacitance Tolerance:	±10%; ±20%									
Rated Voltage (V_R)	≤ +85°C:	4	6	10	15	20	25	35	50	
Category Voltage (V_C)	≤ +125°C:	2.7	4	7	10	13	17	23	33	
Surge Voltage (V_S)	≤ +85°C:	5.2	8	13	20	26	32	46	65	
Surge Voltage (V_S)	≤ +125°C:	3.4	5	8	13	16	20	28	40	
Temperature Range:	-55°C to +125°C									

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Tantalum Fused DSCC Dwg 04053 COTS-Plus Weibull Grade & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating DSCC 04053										Typical Ripple Data by Rating						
				Cap	DC Rated	ESR @	DCL max			DF max			Power	25°C	85°C	125°C	25°C	85°C	125°C
				@ 120Hz	Voltage	100kHz	+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C	Dissipation	Ripple	Ripple	Ripple	Ripple	Ripple	Ripple
AVX P/N	DSCC P/N		Case	µF @ 25°C	V @ +85°C	Ohms @ +25°C	(µA)	(µA)	(µA)	(%)	(%)	(%)	W	A (100kHz)	A (100kHz)	A (100kHz)	V (100kHz)	V (100kHz)	V (100kHz)
TBWC686*004C□#@0^++	04053	001	C	68	4	1.6	2.7	27	32.4	6	9	9	0.110	0.26	0.24	0.10	0.42	0.38	0.17
TBWC107*004C□#@0^++	04053	002	C	100	4	1.2	4	40	48	8	12	12	0.110	0.30	0.27	0.12	0.36	0.33	0.15
TBWD157*004C□#@0^++	04053	003	D	150	4	0.8	6	60	72	8	12	12	0.150	0.43	0.39	0.17	0.35	0.31	0.14
TBWD227*004C□#@0^++	04053	004	D	220	4	0.7	8.8	88	105.6	8	12	12	0.150	0.46	0.42	0.19	0.32	0.29	0.13
TBWD337*004C□#@0^++	04053	005	D	330	4	0.7	13.2	132	158.4	8	12	12	0.150	0.46	0.42	0.19	0.32	0.29	0.13
TBWE337*004C□#@0^++	04053	006	E	330	4	0.7	13.2	132	158.4	8	12	12	0.165	0.49	0.44	0.19	0.34	0.31	0.14
TBWE477*004C□#@0^++	04053	007	E	470	4	0.5	18.8	188	225.6	8	12	12	0.165	0.57	0.52	0.23	0.29	0.26	0.11
TBWC156*006C□#@0^++	04053	011	C	15	6	2	0.7	7	8.4	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWC226*006C□#@0^++	04053	013	C	22	6	2	1.4	14	16.8	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWC336*006C□#@0^++	04053	014	C	33	6	2	2	20	24	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWD476*006C□#@0^++	04053	015	D	47	6	1	2.9	29	34.8	6	9	9	0.150	0.39	0.35	0.15	0.39	0.35	0.15
TBWC476*006C□#@0^++	04053	016	C	47	6	1.6	2.9	29	34.8	6	9	9	0.110	0.26	0.24	0.10	0.42	0.38	0.17
TBWD686*006C□#@0^++	04053	017	D	68	6	1	4.1	41	49.2	6	9	9	0.150	0.39	0.35	0.15	0.39	0.35	0.15
TBWC686*006C□#@0^++	04053	018	C	68	6	1.2	4.1	41	49.2	6	9	9	0.110	0.30	0.27	0.12	0.36	0.33	0.15
TBWX107*006C□#@0^++	04053	019	E	100	6	0.9	6	60	72	8	12	12	0.165	0.43	0.39	0.17	0.39	0.35	0.15
TBWD107*006C□#@0^++	04053	020	D	100	6	0.8	6	60	72	8	12	12	0.150	0.43	0.39	0.17	0.35	0.31	0.14
TBWD157*006C□#@0^++	04053	021	D	150	6	0.7	9	90	108	8	12	12	0.150	0.46	0.42	0.19	0.32	0.29	0.13
TBWD227*006C□#@0^++	04053	022	D	220	6	0.7	13.2	132	158.4	8	12	12	0.150	0.46	0.42	0.19	0.32	0.29	0.13
TBWE227*006C□#@0^++	04053	023	E	220	6	0.7	13.2	132	158.4	8	12	12	0.165	0.49	0.44	0.19	0.34	0.31	0.14
TBWE337*006C□#@0^++	04053	024	E	330	6	0.5	19.8	198	237.6	8	12	12	0.165	0.57	0.52	0.23	0.29	0.26	0.11
TBWC106*010C□#@0^++	04053	028	C	10	10	2	1	10	12	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWC156*010C□#@0^++	04053	030	C	15	10	2	1.5	15	18	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWC226*010C□#@0^++	04053	031	C	22	10	2	2.2	22	26.4	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWD336*010C□#@0^++	04053	032	D	33	10	1	3.3	33	39.6	6	9	9	0.150	0.39	0.35	0.15	0.39	0.35	0.15
TBWC336*010C□#@0^++	04053	033	C	33	10	1.6	3.3	33	39.6	6	9	9	0.110	0.26	0.24	0.10	0.42	0.38	0.17
TBWD476*010C□#@0^++	04053	034	D	47	10	1	4.7	47	56.4	6	9	9	0.150	0.39	0.35	0.15	0.39	0.35	0.15
TBWC476*010C□#@0^++	04053	035	C	47	10	1.2	4.7	47	56.4	6	9	9	0.110	0.30	0.27	0.12	0.36	0.33	0.15
TBWE686*010C□#@0^++	04053	036	E	68	10	0.9	6.8	68	81.6	6	9	9	0.165	0.43	0.39	0.17	0.39	0.35	0.15
TBWD686*010C□#@0^++	04053	037	D	68	10	0.8	6.8	68	81.6	6	9	9	0.150	0.43	0.39	0.17	0.35	0.31	0.14
TBWD107*010C□#@0^++	04053	038	D	100	10	0.7	10	100	120	8	12	12	0.150	0.46	0.42	0.19	0.32	0.29	0.13
TBWE157*010C□#@0^++	04053	039	E	150	10	0.7	15	150	180	8	12	12	0.165	0.49	0.44	0.19	0.34	0.31	0.14
TBWD157*010C□#@0^++	04053	040	D	150	10	0.7	15	150	180	8	12	12	0.150	0.46	0.42	0.19	0.32	0.29	0.13
TBWE227*010C□#@0^++	04053	041	E	220	10	0.5	22	220	264	8	12	12	0.165	0.57	0.52	0.23	0.29	0.26	0.11
TBWC685*016C□#@0^++	04053	045	C	6.8	16	2	1.1	11	13.2	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWC106*016C□#@0^++	04053	047	C	10	16	2	1.6	16	19.2	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWC156*016C□#@0^++	04053	048	C	15	16	2	2.4	24	28.8	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWD226*016C□#@0^++	04053	049	D	22	16	1	3.6	36	43.2	6	9	9	0.150	0.39	0.35	0.15	0.39	0.35	0.15
TBWC226*016C□#@0^++	04053	050	C	22	16	1.6	3.6	36	43.2	6	9	9	0.110	0.26	0.24	0.10	0.42	0.38	0.17
TBWD336*016C□#@0^++	04053	051	D	33	16	1	5.3	53	63.6	6	9	9	0.150	0.39	0.35	0.15	0.39	0.35	0.15
TBWE476*016C□#@0^++	04053	052	E	47	16	0.9	7.5	75	90	6	9	9	0.165	0.43	0.39	0.17	0.39	0.35	0.15
TBWD476*016C□#@0^++	04053	053	D	47	16	0.8	7.5	75	90	6	9	9	0.150	0.43	0.39	0.17	0.35	0.31	0.14
TBWE107*016C□#@0^++	04053	054	E	100	16	0.7	16	160	192	8	12	12	0.165	0.49	0.44	0.19	0.34	0.31	0.14
TBWC475*020C□#@0^++	04053	058	C	4.7	20	2	1	10	12	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWC685*020C□#@0^++	04053	059	C	6.8	20	2	1.4	14	16.8	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWC106*020C□#@0^++	04053	060	C	10	20	2	2	20	24	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWD156*020C□#@0^++	04053	061	D	15	20	1	3	30	36	6	9	9	0.150	0.39	0.35	0.15	0.39	0.35	0.15
TBWD226*020C□#@0^++	04053	062	D	22	20	1	4.4	44	52.8	6	9	9	0.150	0.39	0.35	0.15	0.39	0.35	0.15
TBWE336*020C□#@0^++	04053	063	E	33	20	0.9	6.6	66	79.2	6	9	9	0.165	0.43	0.39	0.17	0.39	0.35	0.15

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.

TBW Series

Tantalum Fused DSCC Dwg 04053 COTS-Plus Weibull Grade & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating DSCC 04053										Typical Ripple Data by Rating						
				Cap	DC Rated	ESR @	DCL max			DF max			Power	25ºC	85ºC	125ºC	25ºC	85ºC	125ºC
				@ 120Hz	Voltage	100kHz	+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C	Dissipation	Ripple	Ripple	Ripple	Ripple	Ripple	Ripple
AVX P/N	DSCC P/N		Case	µF @ 25ºC	V @ +85ºC	Ohms @ +25ºC	(µA)	(µA)	(µA)	(%)	(%)	(%)	W	A (100kHz)	A (100kHz)	A (100kHz)	V (100kHz)	V (100kHz)	V (100kHz)
TBWE476*004C□#@0^++	04053	064	E	47	20	0.3	9.4	94	112.8	6	9	9	0.165	0.74	0.67	0.30	0.22	0.20	0.09
TBWC225*025C□#@0^++	04053	068	C	2.2	25	3.5	0.6	6	7.2	6	9	9	0.110	0.18	0.16	0.07	0.62	0.56	0.25
TBWC335*025C□#@0^++	04053	069	C	3.3	25	2.5	0.9	9	10.8	6	9	9	0.110	0.21	0.19	0.08	0.52	0.47	0.21
TBWC475*025C□#@0^++	04053	070	C	4.7	25	2.5	1.2	12	14.4	6	9	9	0.110	0.21	0.19	0.08	0.52	0.47	0.21
TBWC685*025C□#@0^++	04053	071	C	6.8	25	2	1.7	17	20.4	6	9	9	0.110	0.23	0.21	0.09	0.47	0.42	0.19
TBWC106*025C□#@0^++	04053	072	C	10	25	0.6	2.5	25	30	6	9	9	0.110	0.43	0.39	0.17	0.26	0.23	0.10
TBWD106*025C□#@0^++	04053	073	D	10	25	1.2	2.5	25	30	6	9	9	0.150	0.35	0.32	0.14	0.42	0.38	0.17
TBWD156*025C□#@0^++	04053	074	D	15	25	1	3.8	38	45.6	6	9	9	0.150	0.39	0.35	0.15	0.39	0.35	0.15
TBWE226*025C□#@0^++	04053	075	E	22	25	0.9	5.5	55	66	6	9	9	0.165	0.43	0.39	0.17	0.39	0.35	0.15
TBWD226*025C□#@0^++	04053	076	D	22	25	0.8	5.5	55	66	6	9	9	0.150	0.43	0.39	0.17	0.35	0.31	0.14
TBWC155*035C□#@0^++	04053	080	C	1.5	35	4.5	0.5	5	6	6	9	9	0.110	0.16	0.14	0.06	0.70	0.63	0.28
TBWC225*035C□#@0^++	04053	081	C	2.2	35	3.5	0.8	8	9.6	6	9	9	0.110	0.18	0.16	0.07	0.62	0.56	0.25
TBWC335*035C□#@0^++	04053	082	C	3.3	35	2.5	1.2	12	14.4	6	9	9	0.110	0.21	0.19	0.08	0.52	0.47	0.21
TBWD475*035C□#@0^++	04053	083	D	4.7	35	1.5	1.7	17	20.4	6	9	9	0.150	0.32	0.28	0.13	0.47	0.43	0.19
TBWD685*035C□#@0^++	04053	084	D	6.8	35	1.3	2.4	24	28.8	6	9	9	0.150	0.34	0.31	0.14	0.44	0.40	0.18
TBWE106*035C□#@0^++	04053	085	E	10	35	1	3.5	35	42	6	9	9	0.165	0.41	0.37	0.16	0.41	0.37	0.16
TBWD156*035C□#@0^++			D	15	35	0.75	5.3	53	63.6	6	9	9	0.150	0.45	0.40	0.18	0.34	0.30	0.13
TBWE156*035C□#@0^++	04053	086	E	15	35	0.9	5.3	53	63.6	6	9	9	0.165	0.43	0.39	0.17	0.39	0.35	0.15
TBWE226*035C□#@0^++	04053	087	E	22	35	0.3	7.7	77	92.4	6	9	9	0.165	0.74	0.67	0.30	0.22	0.20	0.09
TBWC474*050C□#@0^++	04053	091	C	0.47	50	8	0.5	5	6	4	6	6	0.110	0.12	0.11	0.05	0.94	0.84	0.38
TBWC684*050C□#@0^++	04053	092	C	0.68	50	7	0.5	5	6	4	6	6	0.110	0.13	0.11	0.05	0.88	0.79	0.35
TBWC105*050C□#@0^++	04053	093	C	1	50	5.5	0.5	5	6	4	6	6	0.110	0.14	0.13	0.06	0.78	0.70	0.31
TBWC155*050C□#@0^++	04053	094	C	1.5	50	5	0.8	8	9.6	6	9	9	0.110	0.15	0.13	0.06	0.74	0.67	0.30
TBWD225*050C□#@0^++	04053	095	D	2.2	50	2.5	1.1	11	13.2	6	9	9	0.150	0.24	0.22	0.10	0.61	0.55	0.24
TBWD335*050C□#@0^++	04053	096	D	3.3	50	2	1.7	17	20.4	6	9	9	0.150	0.27	0.25	0.11	0.55	0.49	0.22
TBWD475*050C□#@0^++			D	4.7	50	0.75	2.4	24	28.8	6	9	9	0.150	0.45	0.40	0.18	0.34	0.30	0.13
TBWE106M050C□#@0^++			E	10	50	1.5	5	50	60	6	9	9	0.165	0.33	0.30	0.13	0.50	0.45	0.20

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.