

# Wet Tantalum Capacitors, Sintered Anode TANTALEX™, Tantalum Foil Replacement



## FEATURES

- High ripple current capability
- Extended temperature range
- Very low impedances over wide frequency ranges
- Long history of reliable operation
- Mounting: axial

Type 285D capacitors are commercial replacements for Military Style M39006/01, 02, 03, 04, 16, 17 and are designed to meet the performance requirements of Military Specification MIL-PRF-39006. Internal cells are M39006/22 and M39006/25.

## PERFORMANCE CHARACTERISTICS

**Operating Temperature:** -55 °C to +85 °C (to +125 °C with voltage derating)

**Capacitance Tolerance:** at 120 Hz, +25 °C: ± 20 % standard, ± 10 %, ± 5 % available as special

**DC Leakage Current (DCL Max.):** at +25 °C, +85 °C, +125 °C: leakage current shall not exceed the values listed in the Standard Ratings Tables

**Life Test:** capacitors are capable of withstanding a 2000 h life test at a temperature of +85 °C or +125 °C at the applicable DC working voltage.

Following the life test:

1. DCL shall not exceed the initial requirement.
2. Dissipation factor shall meet the initial requirement.
3. Change in capacitance shall not exceed 10 % from the initial measurement. For capacitors with voltage ratings of 15 V<sub>DC</sub> and below, change in capacitance shall not exceed + 10 %, - 25 % from the initial measurement.

ORDERING INFORMATION						
285D	126	X0	250	B	0	POLARITY
MODEL	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT +85 °C	CASE CODE	STYLE NUMBER	
	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	X0 = ± 20 % X9 = ± 10 %	This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating.	See Ratings and Case Codes table	0 = no outer tube 2 = outer polyester-film insulation	P = polar N = non polar

DIMENSIONS in inches [millimeters]				
Case material: Aluminum Case neutral				
CASE CODE	BARE CASE		WITH INSULATION SLEEVE	
	D ± 0.010	L ± 0.062	D (MAX.)	L
A	0.385 [9.78]	1.850 [46.99]	0.406 [10.31]	(Sleeve will extend over both ends of the case)
B	0.385 [9.78]	2.250 [57.15]	0.406 [10.31]	
C	0.385 [9.78]	2.700 [68.58]	0.406 [10.31]	
D	0.385 [9.78]	3.000 [76.20]	0.406 [10.31]	
E	0.478 [12.14]	1.950 [49.53]	0.500 [12.70]	
F	0.478 [12.14]	2.380 [60.43]	0.500 [12.70]	
G	0.478 [12.14]	3.060 [77.72]	0.500 [12.70]	
H	0.478 [12.14]	3.500 [88.90]	0.500 [12.70]	



RATINGS AND CASE CODES, POLAR CAPACITORS				
µF	150 V	200 V	250 V	300 V
1.0				C
1.5		A		
1.8			A	
2.3		A		
3.4			B	
11		B		
13			B	D
14				H
21		F		
23			F	
41			G	
43		G		
55	B			

RATINGS AND CASE CODES, NON-POLAR CAPACITORS											
µF	6 V	15 V	25 V	30 V	50 V	75 V	100 V	125 V	150 V	200 V	250 V
1.2										E	
1.7											E
1.8								A			
5.0							A				
7.0								B			
8.3									E		
11						A	B				
15							F				
23.5								F			
28								G			
34			A		A						
41						B					
55						G					
58				A							
60					B						
135			B								
235				B	F						
340					G						
410	B	F									



STANDARD RATINGS POLAR CAPACITORS												
CAPACITANCE ( $\mu$ F)	CASE CODE	PART NUMBER	MAX. DCL ( $\mu$ A)			Z MAX. IMPEDANCE AT -55 °C 120 Hz ( $\Omega$ )	CAPACITANCE CHANGE (%)			DF (%)	RIPPLE CURRENT <sup>(1)</sup> (mA)	
			25 °C	85 °C	125 °C		-55 °C	85 °C	125 °C			
<b>150 V<sub>DC</sub> AT 85 °C; 100 V<sub>DC</sub> AT +125 °C</b>												
55	B	285D556(1)150B(2)P	2	10	10	48	-35	6	10	10	1650	
<b>200 V<sub>DC</sub> AT 85 °C; 135 V<sub>DC</sub> AT +125 °C</b>												
1.5	A	285D155(1)200A(2)P	1	2	2	1420	-16	7	8	3	400	
2.3	A	285D235(1)200A(2)P	1	2	2	995	-16	7	8	3	565	
11	B	285D116(1)200B(2)P	1	9	9	200	-16	8	8	8	970	
21	F	285D216(1)200F(2)P	2	17	17	140	-20	8	8	8.5	1335	
43	G	285D436(1)200G(2)P	9	36	36	60	-25	15	15	10	1800	
<b>250 V<sub>DC</sub> AT 85 °C; 165 V<sub>DC</sub> AT +125 °C</b>												
1.8	A	285D185(1)250A(2)P	1	2	2	1200	-16	7	8	3	520	
3.4	B	285D345(1)250B(2)P	3	12	12	600	-14	10	12	6	700	
13	B	285D136(1)250B(2)P	5	24	24	180	-18	12	15	7.2	1200	
23	F	285D236(1)250F(2)P	10	40	40	100	-26	14	16	8	1500	
41	G	285D416(1)250G(2)P	12	48	48	64	-30	15	17	17.4	1900	
<b>300 V<sub>DC</sub> AT 85 °C; 200 V<sub>DC</sub> AT +125 °C</b>												
1.0	C	285D105(1)300C(2)P	1	2	2	2130	-16	7	8	2.8	400	
13	D	285D136(1)300D(2)P	5	24	24	240	-20	12	15	10	1300	
14	H	285D146(1)300H(2)P	2	17	17	210	-20	8	8	8.5	1335	

**Notes**

- Part number definitions:

(1) Capacitance tolerance:

X0 = 20 %,

X9 = 10 %

(2) Style number or case insulation:

0 = no insulation,

2 = polyester film insulation

- <sup>(1)</sup> Ripple current is at 40 kHz and is govern by the ripple current multipliers associated with MIL-PRF-39006/22 and MIL-PRF-39006/25. All capacitance, DF and Z measurements are based on 120 Hz frequency and equivalent series circuit measuring equipment settings. Other ratings are available. Contact factory with inquiry.



STANDARD RATINGS NON-POLAR CAPACITORS											
CAPACITANCE ( $\mu$ F)	CASE CODE	PART NUMBER	MAX. DCL ( $\mu$ A)			Z MAX. IMPEDANCE AT -55 °C 120 Hz ( $\Omega$ )	CAPACITANCE CHANGE (%)			DF (%)	RIPPLE CURRENT <sup>(1)</sup> (mA)
			25 °C	85 °C	125 °C		-55 °C	85 °C	125 °C		
<b>6 V<sub>DC</sub> AT 85 °C; 4 V<sub>DC</sub> AT +125 °C</b>											
410	B	285D417(1)006B(2)N	3	14	14	36	-88	16	20	155	1500
<b>15 V<sub>DC</sub> AT 85 °C; 10 V<sub>DC</sub> AT +125 °C</b>											
410	F	285D417(1)015F(2)N	6	24	24	44	-77	20	25	3.6	1800
<b>25 V<sub>DC</sub> AT 85 °C; 15 V<sub>DC</sub> AT +125 °C</b>											
34	A	285D346(1)025A(2)N	2	9	9	180	-40	12	15	22	850
135	B	285D147(1)025B(2)N	3	16	16	66	-62	13	16	55	1400
<b>30 V<sub>DC</sub> AT 85 °C; 20 V<sub>DC</sub> AT +125 °C</b>											
58	A	285D586(1)030A(2)N	1	5	5	60	-38	8	12	12	1200
235	B	285D247(1)030B(2)N	2	10	10	30	-65	10	18	30	1800
<b>50 V<sub>DC</sub> AT 85 °C; 30 V<sub>DC</sub> AT +125 °C</b>											
34	A	285D346(1)050A(2)N	1	5	5	66	-25	8	15	7.6	1050
60	B	285D606(1)050B(2)N	4	24	24	98	-42	12	15	23	1200
235	F	285D247(1)050F(2)N	3	25	25	20	-45	8	15	31	2100
340	G	285D347(1)050G(2)N	5	40	40	16	-58	10	20	35	2750
<b>75 V<sub>DC</sub> AT 85 °C; 50 V<sub>DC</sub> AT +125 °C</b>											
11	A	285D116(1)075A(2)N	3	12	12	314	-19	10	12	8.5	600
41	B	285D416(1)075B(2)N	4	24	24	126	-30	12	15	15.2	1000
55	G	285D556(1)075G(2)N	9	36	36	58	-35	20	20	12	1850
<b>100 V<sub>DC</sub> AT 85 °C; 65 V<sub>DC</sub> AT +125 °C</b>											
5	A	285D505(1)100A(2)N	3	12	12	400	-35	16	20	4.5	800
11	B	285D116(1)100B(2)N	1	9	9	200	-16	8	8	7.5	965
15	F	285D156(1)100F(2)N	2	12	12	160	-16	8	8	7	1240
<b>125 V<sub>DC</sub> AT 85 °C; 87 V<sub>DC</sub> AT +125 °C</b>											
1.8	A	285D185(1)125A(2)N	1	2	2	1200	-16	7	8	2.7	520
7.0	B	285D705(1)125B(2)N	1	7	7	334	-16	7	8	6	860
23.5	F	285D246(1)125F(2)N	10	40	40	100	-26	14	16	7.9	1200
28	G	285D286(1)125G(2)N	10	40	40	64	-25	15	15	6.5	1800
<b>150 V<sub>DC</sub> AT 85 °C; 100 V<sub>DC</sub> AT +125 °C</b>											
8.3	E	285D835(1)150E(2)N	1	5	5	264	-25	5	9	10	1050
<b>200 V<sub>DC</sub> AT 85 °C; 150 V<sub>DC</sub> AT +125 °C</b>											
1.2	E	285D125(1)200E(2)N	1	2	2	2260	-16	7	8	3	600
<b>250 V<sub>DC</sub> AT 85 °C; 165 V<sub>DC</sub> AT +125 °C</b>											
1.7	E	285D175(1)250E(2)N	3	12	12	1200	-14	10	12	6	700

**Notes**

- Part number definitions:
  - (1) Capacitance tolerance:
    - X0 = 20 %
    - X9 = 10 %
  - (2) Style number or case insulation:
    - 0 = no insulation,
    - 2 = polyester film insulation
- (1) Ripple current is at 40 kHz and is govern by the ripple current multipliers associated with MIL-PRF-39006/22 and MIL-PRF-39006/25. All capacitance, DF and Z measurements are based on 120 Hz frequency and equivalent series circuit measuring equipment settings. Other ratings are available. Contact factory with inquiry.



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