

GENERAL INFORMATION

MANUFACTURING

ANODE AND INSULATOR

Tantalum capacitors have the highest ratio of capacitance per volume. This is mainly due to the high dielectric constant of its insulator and to its large surface area.

The basic raw material is a high purity (greater than 99.99%) tantalum powder with a very fine granulation, compressed to form a cylinder or a parallelepiped constituting the anode of the capacitor (positive plate).

The pellet is then sintered at high temperature (1500 to 2000°C), under hard vacuum (10^{-6} torr), firstly to purify the powder and secondly to obtain a strong mechanical structure by welding of the particles.

The insulating part is obtained by anodization to a depth of the tantalum surface which forms a tantalum pentoxide film (Ta_2O_5) with a thickness of about 16 angstroms per anodization volt. The dielectric constant is between 21 and 27, depending upon the anodization conditions.

SOLID ELECTROLYTE: CATHODE AND ENCAPSULATION

The cathode is formed by manganese dioxide which is a grey semi-conductor. It is obtained by dipping the pellets into a manganese nitrate water solution which impregnates the internal structure; this solution is then decomposed in a high temperature oven to obtain manganese dioxide. This operation is repeated several times. The nature and quality of this semi-conductor greatly influence the electrical parameters (especially the series resistance).

To finish the negative plate, a graphite coating and then a silver coating are deposited on the outside surface of the manganese dioxide.

The positive nickel lead is welded on the tantalum wire and the negative lead is either soldered with wire leads, or pasted with a silver epoxy for surface mount models.

WET ELECTROLYTE: CATHODE AND ENCAPSULATION

The cathode (for wet tantalum capacitors) is formed by a sulphuric acid solution. The anodized tantalum pellet is impregnated with this solution and then placed in a silver or tantalum case, into which some equivalent gelled solution has been previously deposited.

The case is then crimped on the internal PTFE bush to create the sealing. The final steps are either the soldering of a glass metal seal, or the crimping of an elastomer seal on the top of the case.

BURN-IN - SORTING - INSPECTION

All the products are then submitted to a final burn-in, with differing severities depending upon the required characteristics of each type (temperature, voltage, time, etc.).

Sorting, marking and inspection operations follow. These procedures are the same for approved and non-approved parts (with exception of periodic testing).

TYPE IDENTIFICATION — ORDERING INFORMATION

THE COMPLETE IDENTIFICATION OF A PRODUCT IS MADE UP OF:

- Type (or model)
- Tolerance
- Testing parameters (standard catalog part vs. tested in accordance with MIL-SPEC standards)
- Rated capacitance
- Rated voltage
- Case size
- RoHS or non-RoHS
- For solid tantalum capacitors specify tape or bulk packaging

THE TYPE

It identifies the basic capacitor (DCTSXX).

Example: DCTS1

THE RATED CAPACITANCE

Expressed in picofarads, the first two digits are significant figures; the third is the number of zeros following:

Example: 102 = 10×10^2 pF = 0.001 μ F
103 = 10×10^3 pF = 0.01 μ F
334 = 33×10^4 pF = 0.33 μ F

THE TOLERANCE

It can be expressed directly in % or identified by a code letter:

X0 = $\pm 20\%$ X9 = $\pm 10\%$ X5 = $\pm 5\%$

Note: The standard tolerance for tantalum capacitors is $\pm 20\%$; if no tolerance is given, it is considered as 20%. A 20% tolerance means in fact -20% to +20% of the nominal value.

THE RATED VOLTAGE

It is expressed directly in volts (V), with three significant figures.

Example: 006 = 6 V DC; 050 = 50 V DC; 100 = 100 V DC

The case size: It is indicated on the technical data sheets following the voltage value and is generally identified by a letter code. It is important to give this information because there can be, for the same type, a standard range and an extended range in which the same value will be available in two different sizes.

THE TESTING PARAMETERS

C indicates a standard catalog part and S indicates tested in accordance with MIL-SPEC standards.

ORDERING INFORMATION EXAMPLE

Part Number = DCTS1105X9040AC

Type: DCTS1

Capacitance = 1 μ F

Tolerance = $\pm 10\%$

Voltage = 40 V DC

Case Size = A

C indicates standard catalog part

F indicates RoHS part

T indicates non-RoHS part

S indicates screened according to MIL

LOT ACCEPTANCE TEST PER MIL-PRF-39003

SOLID TANTALUM DCTS1, DCTS21, DCTS23, DCTS33

GROUP A ACCEPTANCE INSPECTION SUBGROUP 1 (100%)

- 1. Thermal Shock (Ref MIL-STD-202, Method 107, Test Condition B).
- 2. Surge Current when specified, 25°C ± 5 °C subjected to 3 consecutive cycles.
- 3. Seal Test, 125°C ± 5 °C Fluorocarbon liquid (Ref MIL-STD-202, Method 112, Test Condition D).
- 4. Radiographic Inspection (Ref MIL-STD-202, Method 209).

SUBGROUP 2 (5 SAMPLES)

- 5. Mechanical inspection for dimensions.

SUBGROUP 3 (13 SAMPLES)

- 6. Visual inspection for workmanship. Capacitors shall be processed in such a manner as to be uniform in quality when using 2X minimum-4X maximum magnification.
- 7. Visual inspection for materials such as the case, solder and soldering flux.
- 8. Visual inspection for marking including part or identifying number, pin, trademark, CAGE code, date code, lot symbol, capacitance and rated voltage.

SUBGROUP 4 (13 SAMPLES)

- 9. Stability at low and high temperature for DC leakage, capacitance, dissipation factor at each of temperature (+25°C, -55°C, +25°C, +85°C, +125°C, +25°C). Measurement of leakage current is not required for -55°C.

SUBGROUP 5 (13 SAMPLES)

- 10. Surge voltage, subjected to 1000 cycles at 85°C with 1.3 times of rated voltage. Each cycle consists of a 30 s surge voltage followed by a 30 s discharge period and voltage shall be made thru a 33-ohm resistor.

SUBGROUP 6 (13 SAMPLES)

- 11. Solderability (Ref MIL-STD-202, Method 208).

LOT ACCEPTANCE TEST PER MIL-PRF-39006 WET TANTALUM

GROUP A ACCEPTANCE INSPECTION SUBGROUP 1 (100%)

1. DC BURN-IN 48 hours minimum at 85°C +6°C/-0°C with the rated DC voltage applied through a resistor with a maximum value of 1100 ohm.
2. Visually examine using 2X-4X lighted magnification for mechanical damage and leakage of electrolyte after the units have cooled to room temperature.
3. DC Leakage, measured at 25°C. Do not exceed a charge of 5 minutes with the DC rated voltage applied.
4. Check Capacitance at 120Hz ± 5Hz.
 - For capacitors with ≤ 75 V DC, use the DC bias voltage 2.2 V DC, +0.0 V DC, -1.0 V DC
 - For capacitors with >75 V DC, use the DC bias voltage 10.0 V DC, +0.0 V DC, -1.0 V DC
5. Check Dissipation Factor at a frequency of 120Hz ± 5Hz.
 - For capacitors with ≤ 75 V DC, use the DC bias voltage 2.2 V DC, +0.0 V DC, -1.0 V DC
 - For capacitors with >75 V DC, use the DC bias voltage 10.0 V DC, +0.0 V DC, -1.0 V DC
6. Seal Test, 125°C ± 5°C Fluorocarbon liquid. (Ref MIL-STD-202, Method 112, Test Condition D).
7. Seal Test, Helium. (Ref MIL-STD-202, Method 112, Test Condition C).

Note: This test condition only applies to MIL-39006/22 "S" parts.

SUBGROUP 2 (SAMPLE)

MIL-PRF-39006 INSPECTION LOT SAMPLING CRITERIA

LOT SIZE	SAMPLE SIZE PPM-2
1 to 13	100%
14 to 150	13
151 to 280	20
281 to 500	29
501 to 1200	34
1201 to 3200	42
3201 to 10,000	42

8. Mechanical inspection for dimensions.

SUBGROUP 3

9. Solderability Test per MIL-STD-202, Method 208, Category 3 (8 hour ± 15 minutes steam aging), Test Condition "A". Test both lead wires of each capacitor. Terminals shall be immersed in flux and solder to within 0.050" of the capacitor body. There shall be no physical damage after test.

SUBGROUP 4

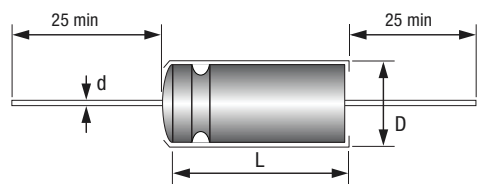
10. Visual inspection for workmanship. Capacitors shall be processed in such a manner as to be uniform in quality when using 2X minimum-4X maximum magnification. External leads shall not exhibit cuts, nicks, or scrapes exceeding 10% of the diameter for round and flat lead wire parts, except as follows:
 - **For Round Leads:** Within 0.050" beyond the weld area of the component, 10% of the surface area of the leads may exhibit bare base metal.
11. Visual inspection for materials such as the case, solder and soldering flux.
12. Visual inspection for marking including part or identifying number, PIN, trademark, CAGE code, date code, lot symbol, capacitance, and rated voltage.

SEALED SILVER CASES
AXIAL LEADS – POLARIZED TYPES



DIMENSIONS WITH INSULATING SLEEVE (in mm)

Case code	L Max.	D Max.	d ^{+10%} _{-0.05}
A	17	5.8	0.6
B	19	7.4	0.6
C	23	10.1	0.6
D	28	10.1	0.6



MARKING, PACKAGING, CONSTRUCTION: see general characteristics

ELECTRICAL AND ENVIRONMENTAL CHARACTERISTICS

	DCT4	DCT4E
Operating temperature	-55°C +125°C	-55°C +125°C
Humidity	56 days	56 days
Capacitance range	4.7 µF - 1000 µF	1.7 µF - 2200 µF
Tolerance	20%...10%	20%...10%
Voltage range	10 V...125 V	6.3 V...150 V
MAXIMUM CAPACITANCE CHANGE		
-55°C	see table	see table
+85°C	see table	see table
+125°C	see table	see table
MAXIMUM DF		
+20°C	see table	see table
+85°C	= lim 20°C	= lim 20°C
+125°C	= lim 20°C	= lim 20°C
MAXIMUM IMPEDANCE		
-55°C (100Hz)	see table	see table
MAXIMUM LEAKAGE CURRENT		
+20°C	see table	see table
+85°C	see table	see table
+125°C	= 1.6 x lim +85°C	= lim +85°C
MAXIMUM RIPPLE CURRENT		
+85°C (100kHz)	see table	see table
MAXIMUM REVERSE VOLTAGE		
+20°C	0 V	0 V
+85°C	0 V	0 V
+125°C	0 V	0 V
MAX SURGE VOLTAGE		
+85°C	1.15 x U _R	1.15 x U _R
+125°C	1.15 x U _C	1.15 x U _C

SEALED SILVER CASES

AXIAL LEADS – POLARIZED TYPES

STANDARD RATINGS – ELECTRICAL CHARACTERISTICS (EXTENDED RANGE)

		DCT4E							
Capacitance 100Hz +20°C (µF)	Case Code	Maximum Capacitance Change			Max. DF +20°C (%)	Max. Imped. 100Hz -55°C (Ω)	Maximum Leakage Current		Max. I rms 100kHz +85°C (mA)
		-55°C (%)	+85°C (%)	+125°C (%)			+20°C (µA)	+85°C (µA)	
RATED VOLTAGE (+85°C) 6 V – 6.3 V - CATEGORY VOLTAGE (+125°C) 4 V									
27	A	-50	+15	+15	9	110	1	2	130
30	A	-40	+12	+12	8	100	1	2	140
68	A	-40	+16	+16	18	59	1	2	160
120	B	-50	+20	+20	18	48	1	3	330
140	B	-40	+16	+16	18	40	1	3	330
200	A	-58	+13	+13	40	25	2	9	180
220	A	-65	+16	+16	40	22	2	9	90
270	B	-44	+20	+20	70	25	1	7	270
290	C	-70	+20	+20	45	24	2	7	410
330	C	-40	+16	+16	43	22	2	8	410
560	B	-80	+20	+20	42	21	3	14	210
560	C	-64	+20	+20	110	25	2	13	340
820	B	-80	+20	+20	68	20	3	14	280
1000	D	-80	+25	+25	100	20	3	14	530
1200	C	-85	+25	+25	82	20	5	20	510
1200	D	-80	+25	+25	60	20	3	12	530
1500	C	-85	+20	+25	82	10	5	20	540
1800	D	-80	+25	+25	72	16	7	25	650
2200	D	-80	+20	+25	80	15	9	30	800
RATED VOLTAGE (+85°C) 8 V - CATEGORY VOLTAGE (+125°C) 5 V									
22	A	-50	+15	+15	7	115	1	2	130
25	A	-40	+12	+12	7	100	1	2	140
56	A	-40	+12	+12	15	60	1	2	160
100	B	-50	+20	+20	32	52	1	3	330
120	B	-50	+20	+20	40	48	1	4	330
180	A	-54	+13	+16	36	28	2	9	180
220	B	-44	+20	+20	57	30	1	7	270
260	C	-70	+20	+20	60	37	2	8.5	410
290	C	-70	+20	+20	55	24	2	9.5	410
430	B	-80	+20	+20	42	20	3	14	280
430	C	-64	+20	+20	84	25	2	14	340
620	B	-80	+20	+20	53	17	3	14	290
680	B	-80	+20	+20	55	15	3	14	300
850	C	-80	+25	+25	65	25	4	16	430
850	D	-80	+25	+25	50	22	4	16	670
1200	C	-80	+25	+25	82	13	5	20	460
1400	C	-85	+20	+25	84	11	5	20	480
1600	D	-80	+25	+25	68	18	7	25	650
1800	D	-80	+25	+25	70	16	8	28	670
RATED VOLTAGE (+85°C) 10 V - CATEGORY VOLTAGE (+125°C) 6.3 V									
18	A	-40	+15	+15	5	130	1	2	130
20	A	-32	+12	+12	5	120	1	2	140
47	A	-36	+16	+16	15	90	1	2	160
85	B	-45	+20	+20	13	61	1	3.5	270
100	A	-50	+16	+16	15	60	1	4	160
100	B	-36	+16	+16	13	60	1	4	270
120	A	-45	+13	+16	32	35	2	9	160
140	A	-50	+16	+16	32	40	2	9	160
150	A	-50	+16	+16	32	40	2	9	90
180	B	-36	+16	+16	46	40	1	7	270
220	C	-60	+20	+20	30	40	2	9	410
250	C	-40	+16	+16	32	35	2	10	410
330	C	-64	+20	+20	75	25	2	16	340
390	C	-64	+20	+20	75	25	2	16	340
470	B	-65	+16	+20	35	16	3	16	300
510	B	-70	+20	+20	45	15	3	16	300
560	B	-70	+20	+20	50	21	3	16	280
680	D	-72	+25	+30	32	19	8	32	610
750	C	-75	+25	+25	67	22	5	20	410
750	D	-80	+25	+25	44	23	4	16	670
1000	C	-75	+20	+25	67	12	5	20	470
1200	C	-75	+20	+25	82	12	5	20	540
1200	D	-75	+30	+30	60	18	8	32	670
1300	D	-75	+25	+25	63	17	7	25	670
1500	D	-75	+25	+25	66	17	8	28	800

STANDARD RATINGS – ELECTRICAL CHARACTERISTICS (EXTENDED RANGE)

		DCT4E							
Capacitance 100Hz +20°C (μF)	Case Code	Maximum Capacitance Change			Max. DF +20°C (%)	Max. Imped. 100Hz -55°C (Ω)	Maximum Leakage Current		Max. I rms 100kHz +85°C (mA)
		-55°C (%)	+85°C (%)	+125°C (%)			+20°C (μA)	+85°C (μA)	
RATED VOLTAGE (+85°C) 15 V - 16 V - CATEGORY VOLTAGE (+125°C) 10 V									
13	A	-30	+15	+15	5	160	1	2	120
15	A	-24	+12	+12	5	145	1	2	130
22	A	-20	+12	+12	7	140	1	3	160
33	A	-28	+16	+16	10	100	1	2	160
55	B	-35	+20	+20	11	70	1	3.5	270
68	B	-24	+15	+15	26	60	1	8	270
70	B	-28	+16	+16	11	63	1	4	270
82	A	-38	+13	+16	28	45	2	9	160
100	A	-40	+16	+16	28	40	2	9	80
120	B	-28	+20	+20	27	50	1	7	270
150	C	-55	+20	+20	25	40	2	9	410
170	C	-32	+16	+16	22	38	2	10	410
220	B	-60	+20	+20	24	38	3	16	270
270	B	-60	+20	+20	30	32	3	16	270
270	C	-56	+20	+20	50	30	2	16	340
330	B	-60	+16	+20	30	18	3	16	300
360	B	-60	+20	+20	38	23	3	16	270
390	B	-60	+20	+20	38	21	3	16	280
540	C	-70	+25	+25	45	23	5	20	610
540	D	-80	+25	+25	15	32	3	24	610
560	C	-70	+25	+25	55	20	5	20	440
680	C	-65	+20	+25	50	13	5	20	440
750	C	-70	+25	+25	52	13	6	24	440
820	C	-70	+15	+20	60	13	6	24	510
820	D	-70	+30	+30	60	20	10	40	610
1000	D	-70	+30	+30	60	19	10	40	610
1100	D	-70	+25	+25	53	18	8	25	700
1200	D	-70	+25	+25	55	17	8	28	750
RATED VOLTAGE (+85°C) 20 V - CATEGORY VOLTAGE (+125°C) 13 V									
82	A	-40	+16	+16	25	50	2	9	70
270	B	-60	+20	+20	24	24	3	16	270
330	B	-60	+20	+20	30	21	3	16	280
560	C	-70	+15	+20	40	20	5	20	510
1000	D	-70	+25	+25	40	21	8	28	750
RATED VOLTAGE (+85°C) 25 V - CATEGORY VOLTAGE (+125°C) 16 V									
9	A	-20	+15	+15	4	210	1	2	120
10	A	-16	+9	+9	4	190	1	2	130
12	A	-16	+12	+12	12	155	2	9	70
15	A	-16	+12	+12	12	130	3	12	70
22	A	-20	+12	+12	7	140	1	3	160
39	B	-28	+12	+12	18	90	1	9	250
45	B	-35	+20	+20	15	78	1	5	270
50	A	-35	+15	+15	18	80	2	9	160
50	B	-35	+20	+20	15	70	1	5	270
68	A	-35	+12	+15	22	50	2	9	160
100	B	-28	+15	+15	15	50	1	10	270
100	C	-50	+20	+20	23	45	2	10	410
110	C	-55	+20	+20	25	42	2	11	410
120	C	-30	+20	+20	18	28	6	26	420
180	B	-45	+16	+16	23	40	2	18	270
180	C	-48	+15	+15	46	32	2	18	340
220	B	-45	+16	+16	24	38	3	16	270
270	B	-45	+13	+16	24	19	3	16	300
270	D	-45	+20	+25	23	23	9	36	550
350	C	-60	+25	+25	27	26	7	28	410
350	D	-70	+25	+25	25	24	7	28	580
430	C	-60	+25	+25	27	19	7	28	410
470	C	-60	+25	+25	33	18	6	24	410
510	C	-60	+25	+25	33	16	7	28	440
560	C	-60	+20	+25	35	14	7	28	440
680	D	-72	+25	+30	32	19	8	32	610
750	D	-60	+25	+25	36	18	8	29	610
820	D	-60	+25	+25	40	17	9	30	610

SEALED SILVER CASES

AXIAL LEADS – POLARIZED TYPES

STANDARD RATINGS – ELECTRICAL CHARACTERISTICS (EXTENDED RANGE)

		DCT4E							
Capacitance 100Hz +20°C (μF)	Case Code	Maximum Capacitance Change			Max. DF +20°C (%)	Max. Imped. 100Hz -55°C (Ω)	Maximum Leakage Current		Max. I rms 100kHz +85°C (mA)
		-55°C (%)	+85°C (%)	+125°C (%)			+20°C (μA)	+85°C (μA)	
RATED VOLTAGE (+85°C) 30 V - CATEGORY VOLTAGE (+125°C) 20 V									
7	A	-20	+15	+15	4	275	1	2	110
8	A	-16	+12	+12	4	235	1	2	130
15	A	-20	+12	+12	8	175	1	2	160
35	B	-30	+20	+20	12	85	1	4	230
39	A	-28	+10	+12	10	70	2	9	140
40	B	-24	+12	+12	10	80	1	5	270
56	A	-32	+15	+15	20	55	2	9	70
68	B	-24	+15	+15	26	60	1	8	270
80	C	-45	+20	+20	15	52	2	10	410
100	C	-28	+12	+12	16	45	2	12	410
150	B	-40	+12	+15	20	24	3	16	300
150	C	-48	+15	+15	38	35	2	18	340
180	B	-40	+13	+16	21	22	3	16	300
200	B	-40	+16	+16	21	21	3	16	300
220	B	-40	+16	+16	23	38	3	16	270
300	C	-55	+25	+25	25	18	7	28	360
300	D	-60	+25	+25	27	25	4	31	550
330	C	-45	+20	+25	25	16	6	24	440
390	C	-55	+20	+25	27	15	6	24	510
430	C	-55	+25	+25	27	15	7	28	440
470	C	-55	+20	+25	29	14	8	32	440
470	D	-55	+30	+30	25	23	8	32	550
560	D	-65	+25	+30	28	20	9	36	590
620	D	-60	+25	+25	32	22	8	29	590
680	D	-60	+25	+25	36	20	7	25	750
RATED VOLTAGE (+85°C) 35 V - 40 V - CATEGORY VOLTAGE (+125°C) 23 V - 25 V									
6.8	A	-20	+9	+9	4	300	1	2	70
27	B	-25	+15	+15	20	90	5	24	250
39	A	-32	+15	+15	18	80	2	9	70
47	A	-32	+15	+15	16	60	2	9	70
100	C	-30	+20	+20	18	33	8	32	420
150	B	-40	+16	+16	20	38	3	16	270
150	D	-30	+20	+25	25	34	12	48	750
220	D	-40	+20	+20	16	24	9	36	450
330	C	-55	+20	+25	26	25	6	24	500
400	D	-60	+25	+25	28	31	8	29	750
470	C	-55	+20	+20	26	24	7	25	500
470	D	-55	+20	+20	26	29	7	25	750
480	D	-60	+25	+25	28	25	8	29	750
560	D	-60	+25	+25	29	24	8	32	750
RATED VOLTAGE (+85°C) 50 V - CATEGORY VOLTAGE (+125°C) 32 V									
4.5	A	-20	+10	+10	3	380	1	2	110
5	A	-16	+6	+6	3	355	1	2	130
5.6	A	-16	+12	+12	5	375	3	12	130
10	A	-24	+9	+9	5	250	1	2	160
22	A	-24	+12	+12	16	125	2	9	130
22	B	-25	+20	+20	10	95	1	4	230
25	A	-24	+12	+12	14	90	1	5	270
25	B	-20	+12	+12	10	90	1	4	270
33	A	-24	+12	+12	16	120	2	9	70
47	B	-28	+15	+15	18	70	1	9	270
55	C	-30	+20	+20	12	55	2	11	410
60	B	-25	+12	+15	12	60	4	24	270
60	C	-16	+12	+12	12	50	2	12	410
82	B	-35	+15	+15	20	45	2	16	270
82	C	-32	+15	+15	21	45	2	16	340
120	B	-35	+15	+15	18	26	3	18	280
150	C	-40	+25	+25	30	33	7	28	370
150	D	-50	+20	+20	17	29	5	32	460
160	C	-40	+25	+25	30	32	12	48	370
160	D	-50	+20	+20	15	27	5	32	460
270	C	-40	+20	+25	24	24	7	28	500
330	D	-46	+25	+30	24	22	9	36	550
360	D	-45	+25	+25	24	21	8	32	750
390	D	-45	+20	+25	25	20	8	32	750

STANDARD RATINGS – ELECTRICAL CHARACTERISTICS (EXTENDED RANGE)

		DCT4E							
Capacitance 100Hz +20°C (μF)	Case Code	Maximum Capacitance Change			Max. DF +20°C (%)	Max. Imped. 100Hz -55°C (Ω)	Maximum Leakage Current		Max. I rms 100kHz +85°C (mA)
		-55°C (%)	+85°C (%)	+125°C (%)			+20°C (μA)	+85°C (μA)	
RATED VOLTAGE (+85°C) 60 V - 63 V - CATEGORY VOLTAGE (+125°C) 40 V									
3.6	A	-20	+10	+10	3	485	1	2	100
4	A	-16	+6	+6	3	405	1	2	110
8.2	A	-24	+9	+9	4	275	1	2	140
18	B	-25	+15	+15	7	125	1	4.5	210
20	A	-20	+12	+12	7	120	1	5	140
20	B	-16	+12	+12	6	105	1	5	270
27	A	-20	+12	+12	14	90	3	12	70
39	B	-28	+12	+12	18	90	1	9	230
45	C	-25	+15	+15	10	57	2	11	410
50	B	-30	+15	+15	9	60	2	12	230
50	C	-16	+12	+12	9	55	2	12	410
68	B	-25	+12	+15	12	60	4	24	270
68	C	-32	+12	+12	27	50	2	16	340
100	B	-30	+15	+15	15	28	4	20	280
140	C	-30	+16	+20	18	32	7	28	420
140	D	-40	+20	+20	21	28	8	32	430
220	C	-35	+15	+20	18	17	7	28	510
270	D	-45	+20	+25	23	23	9	36	550
300	D	-45	+20	+20	21	23	8	32	550
330	D	-45	+20	+20	23	24	9	36	750
RATED VOLTAGE (+85°C) 75 V - 80 V - CATEGORY VOLTAGE (+125°C) 50 V									
3	A	-20	+10	+10	2	625	1	2	100
3.5	A	-16	+6	+6	2	505	1	2	110
6.8	A	-20	+9	+9	4	300	1	2	140
8.2	A	-16	+12	+12	12	175	1.5	7	140
10	A	-16	+12	+12	12	165	1.5	7	140
12	A	-16	+12	+12	12	155	2	9	70
13	B	-20	+15	+15	6	160	1	4	190
15	A	-14	+10	+12	12	150	3	12	140
15	B	-16	+9	+9	6	135	1	5	270
18	A	-16	+12	+12	12	125	3	12	140
22	A	-16	+10	+12	12	100	3	12	140
33	B	-24	+15	+15	15	90	1	10	230
35	C	-20	+15	+15	13	68	2	11	410
39	B	-25	+15	+15	20	75	3.5	20	230
40	C	-16	+12	+12	13	60	2	12	410
47	B	-18	+10	+12	20	75	3.5	20	270
56	B	-20	+12	+15	20	70	2	16	270
56	C	-28	+15	+15	22	60	2	17	300
68	B	-25	+15	+15	12	42	4	24	270
82	B	-25	+12	+15	12	30	4	24	300
82	C	-20	+12	+15	18	33	9	36	420
100	C	-30	+20	+20	18	33	8	32	420
100	D	-35	+20	+20	18	31	5	36	420
110	C	-25	+16	+20	18	33	8	32	420
110	D	-35	+20	+20	15	29	5	36	400
120	C	-30	+20	+20	18	28	6	26	420
150	C	-30	+20	+20	18	25	7	28	440
180	C	-30	+16	+20	18	17	8	32	440
180	D	-30	+20	+20	16	28	9	36	470
220	D	-40	+20	+20	16	24	9	36	450
240	D	-40	+20	+20	17	23	9	36	450
270	D	-40	+20	+20	18	22	10	40	450
RATED VOLTAGE (+85°C) 100 V - CATEGORY VOLTAGE (+125°C) 63 V									
2.5	A	-15	+4	+4	2	710	1	2	100
4.7	A	-16	+6	+6	3	500	1	2	130
8.2	A	-12	+12	+12	12	250	3	12	130
10	A	-12	+12	+12	12	200	3	12	130
10	B	-16	+12	+12	12	200	3	12	60
11	B	-15	+6	+6	4	200	1	4	230
22	B	-16	+6	+6	10	100	1	9	230
27	C	-20	+15	+15	8	90	2	11	230
30	C	-15	+8	+8	8	85	2	12	340
33	B	-18	+15	+15	20	85	4	24	250

DCT4E

SEALED SILVER CASES
AXIAL LEADS – POLARIZED TYPES

STANDARD RATINGS – ELECTRICAL CHARACTERISTICS (EXTENDED RANGE)

		DCT4E							
Capacitance 100Hz +20°C (μF)	Case Code	Maximum Capacitance Change			Max. DF +20°C (%)	Max. Imped. 100Hz -55°C (Ω)	Maximum Leakage Current		Max. I rms 100kHz +85°C (mA)
		-55°C (%)	+85°C (%)	+125°C (%)			+20°C (μA)	+85°C (μA)	
RATED VOLTAGE (+85°C) 100 V - CATEGORY VOLTAGE (+125°C) 63 V									
39	B	-18	+15	+15	20	80	4	24	250
43	C	-20	+8	+8	16	70	2	17	300
47	B	-25	+10	+10	17	65	5	24	250
56	C	-20	+15	+15	18	45	9	36	400
68	C	-20	+15	+15	18	40	9	36	400
68	D	-25	+15	+15	25	40	6	30	450
82	C	-30	+10	+15	30	30	10	40	500
86	D	-25	+15	+15	15	30	5	35	370
120	D	-40	+20	+20	25	36	12	48	450
150	D	-30	+20	+25	25	34	12	48	750
RATED VOLTAGE (+85°C) 125 V - CATEGORY VOLTAGE (+125°C) 80 V									
1.7	A	-15	+4	+4	2	1090	1	2	100
3.6	A	-16	+5	+5	4	615	1	2	110
6.8	A	-16	+12	+12	12	300	3	12	130
8.2	A	-17	+12	+12	14	270	4	15	50
9	A	-16	+12	+12	12	250	4	15	130
9	B	-15	+6	+6	9	220	1	5	210
10	B	-16	+10	+10	10	210	1	5	190
14	B	-16	+7	+7	10	160	1	7	190
18	C	-15	+10	+10	16	135	4	12	340
25	C	-16	+10	+10	16	120	2	13	260
27	B	-25	+15	+15	20	90	5	24	250
47	C	-30	+10	+15	18	50	10	40	500
56	D	-25	+15	+15	18	32	10	40	330
80	D	-20	+20	+20	20	34	9	50	400
82	D	-40	+20	+20	25	40	12	48	400
120	D	-30	+20	+25	20	38	12	48	750
RATED VOLTAGE (+85°C) 150 V - CATEGORY VOLTAGE (+125°C) 100 V									
3	A	-20	+15	+15	15	750	1	4	100
6.8	B	-15	+10	+10	15	300	2	5	190
11	B	-20	+15	+15	15	200	2	12	190
14	C	-15	+10	+10	20	175	4	24	260
22	C	-20	+15	+15	20	136	4	24	260