



TANTALUM CAPACITORS WITH SOLID ELECTROLYTE

DESCRIPTION:

The NDTM series due to its good electrical characteristics is recommended for professional and industrial uses. It has high temperature range and low leakage current. The extremely stable oxide layer of solid tantalum capacitors allows only a very small leakage current even after long storage. The solid electrolyte guarantees very stable electrical performance over wide temperature ranges and long time period.

HOW TO ORDER

NDTM 106 K 16 F1

SERIES: _____

CAPACITANCE CODE: _____

Capacitance expressed in pico farads (pF).
 First two digits are significant figures.
 Third digit denotes the number of zeros.
 A few examples are shown with codes.

(μ F)	(nF)	CAPACITANCE (pF)	CODE
0.10 μ F	100 nF	100,000 pF	104
0.68 μ F	680 nF	680,000 pF	684
1 μ F	1,000 nF	1,000,000 pF	105
6.8 μ F	6,800 nF	6,800,000 pF	685
10 μ F	10,000 nF	10,000,000 pF	106
330 μ F	330,000 nF	330,000,000 pF	337

TOLERANCE CODE: _____

CODE	TOLERANCE
K	$\pm 10\%$
M	$\pm 20\%$

RATED VOLTAGE CODE: _____

CODE	VOLTAGE	CODE	VOLTAGE
3.1	3.15V	20	20V
6.3	6.3V	25	25V
10	10V	35	35V
16	16V	50	50V

PACKAGING CODE: _____

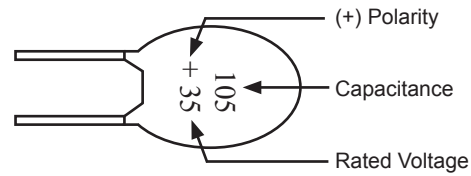
CODE	LEAD SPACING & PACKAGING
F1	2.54mm (0.1") lead space, Bulk
F1TA	2.54mm (0.1") lead space, Tape and Ammo Box
F1TR	2.54mm (0.1") lead space, Tape and Reel
F2	5.08mm (0.2") lead space, Bulk
F2TR	5.08mm (0.2") lead space, Tape and Reel

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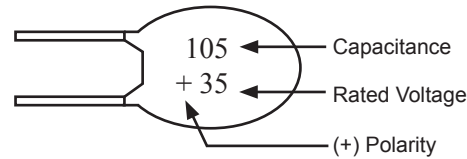
SYMBOL MARKING

Cap (μF)	PF	Cap (μF)	PF
0.1	104	10	106
0.15	154	15	156
0.22	224	22	226
0.33	334	33	336
0.47	474	47	476
0.68	684	68	686
1.0	105	100	107
1.5	155	150	157
2.2	225	220	227
3.3	335	330	337
4.7	475		
6.8	685		

Standard Marking



Alternative Marking



PERFORMANCE SPECIFICATIONS

Operating Temperature Range: -55°C to +85°C (+125°C with Derating)

Leakage Current: $I \leq 0.01 CV$ or $0.5\mu A$ less than the value whichever larger (measured after 5 minutes of applied Rated Voltage)

I = Leakage Current (μA)

C = Nominal Capacitance (μF)

V = Rate Voltage (VR)

Capacitance Tolerance: $\pm 20\%$, $\pm 10\%$ ($\pm 5\%$ upon request)

Dissipation Factor: Measured at 20°C, 120Hz

C	$\leq 1\mu F$	1.5~6.8 μF	10~68 μF	100~150 μF	$\geq 200\mu F$
tan δ	$\leq 4\%$	$\leq 6\%$	$\leq 8\%$	$\leq 10\%$	$\leq 12\%$

Operating Voltage (Vo) and Surge Voltage (Vs)

T $\leq 85^\circ C$	Vr	3.15	6.3	10	16	20	25	35	50
	Vo	3.15	6.3	10	16	20	25	35	50
	Vs	4	8	13	20	26	33	46	65
85°C < T $\leq 125^\circ C$	Vr	3.15	6.3	10	16	20	25	35	50
	Vo	1.9	4	6.3	10	13	16	22	32
	Vs	2.5	5	8	13	16	21	28	40

Load Life: 2000hrs +85°C (+185°F) and Rated Voltage

C : Within $\pm 10\%$ of initial value

tan δ : Within values specified above

I : Within 12.5 times of specified above

Shelf Life: After 2000hrs no application of the rated voltage at 85°C, capacitor shall meet the requirements of above "Load Life".

Temperature Characteristic:

-55°C C : Within +0, -12% of initial value

tan δ : Within values specified above

+85°C C : Within +12, 0% of initial value

tan δ : Within values specified above

I : Within 10 times of specified above

-55°C C : Within +15, 0% of initial value

tan δ : Within values specified above

I : Within 10 times of specified above

Humidity Test: at 40°C, 90-95% humidity, 500hrs no voltage

C : Within $\pm 8\%$ of initial value

tan δ : Within values specified above

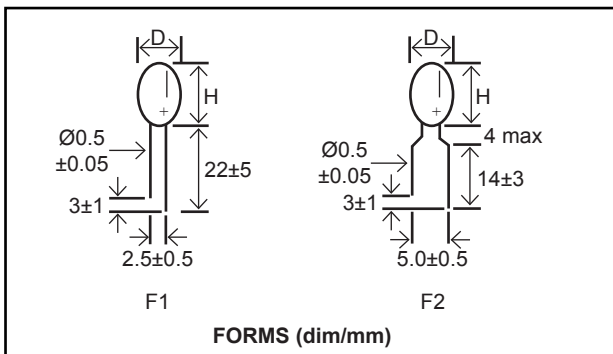
I : Within values specified above

Failure Rate: 1% / 1000hrs

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W.V μF	3.15	6.3	10	16	20	25	35	50
	OF	OJ	1A	1C	1D	1E	1V	1H
0.10							A	B
0.15							A	B
0.22							B	B
0.33							B	C
0.47							B	D
0.68							B	E
1.0				A	B	B	C	F
1.5				B	B	B	D	H
2.2			B	B	C	C	E	J
3.3		B	B	C	D	D	G	L
4.7	B	B	C	D	E	E	H	L
6.8	B	C	D	E	F	G	I	M
10	B	D	E	G	H	I	J	N
15	C	E	F	I	J	J	L	
22	D	F	H	J	K	L	M	
33	E	H	I	K	L	M	N	
47	F	I	K	L	M	N	N	
68	H	K	L	M	N	N		
100	I	L	M	N	P			
150	K	M	N	P				
220	L	N	P					
330	M	P						

Lead Dimensions



Case Dimensions

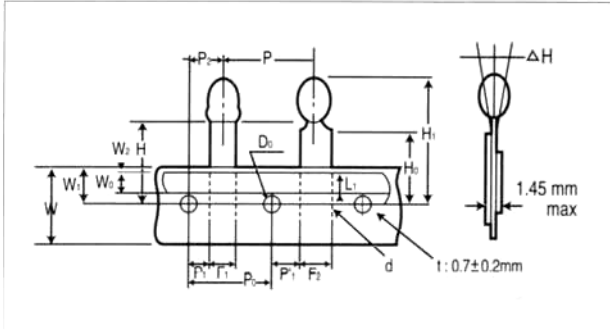
Case Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
D	4.5	4.5	5	5	5	5.5	5.5	6	6	6.5	7	7.5	8.5	9	9.5
H	7.5	8	8	9	9.5	10	10.5	10.5	11	11	12.5	13.5	14.5	15.5	16



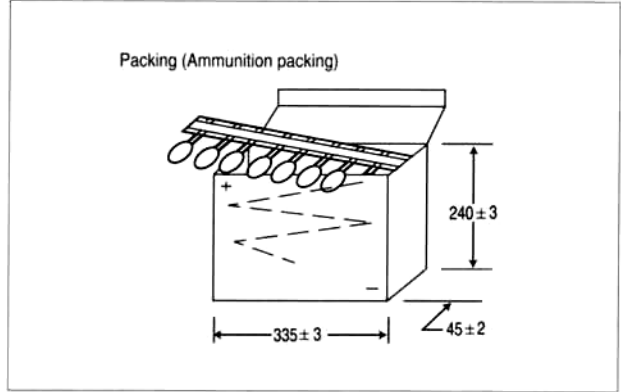
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PACKAGING

Taping Specification



Ammo Specification



Item	Symbol	Lenght (mm)	Tolerance (mm)
Lead diameter	d	0.5	±0.05
Components pitch	P	12.7	±1.0
Feed hole pitch	P ₀	12.7	±0.2
Hole center to lead	P ₁ /P ₁	3.85/5.1	±0.7
Feed hole center to component center	P ₂	6.35	±0.5
Lead to lead distance	F ₁ /F ₂	2.5/5.0	±0.5
Component alignment F-R	ΔH	0	±2.0
Tape width	W	18.0	±0.5
Hole down tape width	W ₀	6.0	±0.5
Hole position	W ₁	9.0	+0.75, -0.5
Hole down tape position	W ₂	2.0	max
Height of component from tape center	H	19	±0.5
Lead-wire clinch height	H ₀	16.0	±0.5
Components height	H ₁	32.25	max
Feed holde diameter	D ₀	4	±0.3
Lead protrusion	L ₁	7	+2.0, -2.5

Ammo Taping Packaging

Size	Inner Box
A - C	1,500 / 2,000 pcs
D- G	2,000 pcs
H - J	1,000 pcs
K - L	1,000 pcs

Bulk Packaging

Size	Vynil Bag
A - B	1,000 pcs
C- H	1,000 pcs
I - K	300 pcs
L - P	200 pcs