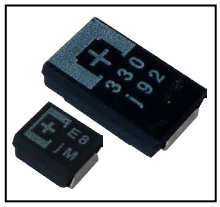
Surface Mount Polymer-Tantalum Capacitor

NTPS Series

FEATURES

- Low ESR and Very High Capacitance
- Values from 47µF to 1,500µF
- B (3.5mm x 2.8mm) and D (7.3mm x 4.3mm) Case Size



CHARACTERISTICS

Capacitance Range	47µF to 1,500µF
Capacitance Tolerance	±20% (M)
Rated Voltage Range @ 105°C (Vdc)	2.0Vdc ~ 10Vdc
Operating Temperature Range	-55°C ~ +105°C (Some parts require voltage derating for operation above +85°C. See part number tables for details)
Dissipation Factor	See Specifications Table
Leakage Current @ +25°C (After 5 Minutes at Rated Voltage)	
Impedance Ratio	Z-55°C/Z+20°C within 0.6 ~ 2.0 Z+105°C/Z+20°C within 0.6 ~ 2.0
Resistance to Soldering Heat (+260°C for 5 Seconds)	ΔC ±10% of initial measured value, LC = Less than 300% spec. max. value DF = Less than 200% of specified max. value
Moisture Resistance (500 hours; 90~95% RH @ +60°C)	ΔC -20% ~ +50% Max, LC = <300% of specified max. value DF = 150% of specified max. value
Load Life at Rated Voltage 2,000 hours @ 105°C (except B) B & +85°C parts 1,000 hours @ +105°C	ΔC ±20% Max, LC = Less than initial specification DF = 150% of specified max. value
Base Failure Rate	B case size: 1%/1000 hours at +105°C and rated voltage Other sizes: 0.5%/1000 hours at +105°C and rated voltage B case size: 1%/1000 hours at +85°C and rated voltage Other sizes: 0.5%/1000 hours at +85°C and rated voltage

* Recommended voltage derating is 90% of rated voltage for ≤ 8V parts and 80% derating for 10V parts.

STANDARD VALUES AND CASE SIZES

Rated Voltage		2.0	2.5	4.0	6.3	8.0	10
Surge Voltage		2.3	2.9	4.6	7.2	9.2	12
Capacitance (µF)	Code	Case Size	Case Size	Case Size	Case Size	Case Size	Case Size
47	476	-	-	-	-	-	B
68	686	-	-	-	-	-	D2
100	107	-	-	B	B, D2	B	-
120	127	-	-	-	B	-	-
150	157	-	-	B, D2	B, D2	-	-
220	227	-	B, D2	B, D2	B, D2	-	D
330	337	B	B, D2	D2	D2, D, D9	-	D9
470	477	B	D2	D	D1, D9	-	-
680	687	-	D	-	D9	-	-
1000	108	-	D9	-	-	-	-
1500	158	-	D9	-	-	-	-

PART NUMBER SYSTEM

NTPS 227 M 6.3 D2 (25) F

- F — RoHS Compliant
- (25) — ESR Code (See specifications tables)
- D2 — Case Size Code
- 6.3 — Voltage Code
- M — Tolerance Code (M = ± 20%)
- 227 — Capacitance Code (1st two digits signficant, 3rd is multiplier)
- NTPS — Series

PRECAUTIONS

Please review the notes on correct use, safety and precautions found on **pages T10** & **T11** of NIC's **Electrolytic Capacitor catalog**.
Also found at **www.niccomp.com/precautions**
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: **tpmg@niccomp.com**

-55°C ~ +85°C (+105°C with derating) STANDARD VALUES AND SPECIFICATIONS

NIC Part Number	Capacitance Value (µF)	Rated Voltage (Vdc) ≤+85°C*	Rated Voltage Derated for Operation >+85°C * (Vdc)	LC (µA) after 5 minutes	Dissipation Factor @ +20°C/120Hz	ESR (mΩ) @+20°C/100KHz	Ripple Current Rating, (mA) @ +45°C 100KHz ~ 500KHz
NTPS337M2B(13)F	330	2.0	1.8	132	0.08	13/300KHz	2000
NTPS477M2B(11)F	470	2.0	1.8	188	0.10	11/300KHz	2300
NTPS227M2.5B(25)F	220	2.5	2.0	55	0.08	25	1600
NTPS337M2.5B(35)F	330	2.5	2.0	82.5	0.08	35	1400
NTPS157M4B(35)F	150	4.0	3.2	60	0.08	35	1400
NTPS227M4B(35)F	220	4.0	3.2	88	0.08	35	1400
NTPS107M6.3B(35)F	100	6.3	5.0	63	0.08	35	1400
NTPS127M6.3B(35)F	120	6.3	5.0	75.6	0.08	35	1400
NTPS157M6.3B(25)F	150	6.3	5.0	94.5	0.08	25	1600
NTPS157M6.3B(35)F	150	6.3	5.0	94.5	0.08	35	1400
NTPS227M6.3B(35)F	220	6.3	5.0	138.6	0.10	35	1400
NTPS337M6.3D2(25)F	330	6.3	5.0	207.9	0.10	25	2400
NTPS337M6.3D(9)F	330	6.3	5.0	207.9	0.10	9/500KHz	3900
NTPS337M6.3D9(10)F	330	6.3	5.0	207.9	0.10	10	4400
NTPS477M6.3D1(35)F	470	6.3	5.0	296.1	0.10	35	1700
NTPS107M8B(35)F	100	8.0	6.3	80	0.08	35	1400
NTPS476M10B(35)F	47	10	8.0	47	0.08	35	1400

* Recommended voltage derating is 90% of rated voltage for ≤ 8V parts and 80% derating for 10V parts.

-55°C ~ +105°C STANDARD VALUES AND SPECIFICATIONS

NIC Part Number	Capacitance Value (µF)	Rated Voltage (Vdc) +105°C*	LC (µA) after 5 minutes	Dissipation Factor @ +20°C/120Hz	ESR (mΩ) @+20°C/100KHz	Ripple Current Rating, (mA) @ +45°C 100KHz ~ 500KHz
NTPS337M2B(15)F	330	2.0	132	0.08	15	2000
NTPS227M2.5B(21)F	220	2.5	55	0.08	21	1700
NTPS227M2.5B(35)F	220	2.5	55	0.08	35	1400
NTPS227M2.5B(15)F	220	2.5	110	0.08	15/300kHz	1800
NTPS227M2.5D2(25)F	220	2.5	55	0.10	25	2400
NTPS227M2.5D2(9)F	220	2.5	55	0.10	9	3900
NTPS227M2.5D2(15)F	220	2.5	55	0.10	15	3100
NTPS227M2.5D2(18)F	220	2.5	55	0.10	18	2800
NTPS337M2.5D2(25)F	330	2.5	82.5	0.10	25	2400
NTPS337M2.5D2(9)F	330	2.5	82.5	0.10	9	3900
NTPS337M2.5D2(7)F	330	2.5	82.5	0.10	7	4400
NTPS337M2.5D2(18)F	330	2.5	82.5	0.10	18	2800
NTPS337M2.5D2(12)F	330	2.5	82.5	0.10	12	3500
NTPS337M2.5D2(15)F	330	2.5	82.5	0.10	15	3100
NTPS477M2.5D2(18)F	470	2.5	117.5	0.10	18	2800
NTPS477M2.5D2(9)F	470	2.5	117.5	0.10	9	3900
NTPS477M2.5D2(15)F	470	2.5	117.5	0.10	15	3100
NTPS477M2.5D2(12)F	470	2.5	117.5	0.10	12	3500
NTPS477M2.5D2(7)F	470	2.5	117.5	0.10	7	4400
NTPS687M2.5D(15)F	680	2.5	170	0.10	15	3100
NTPS687M2.5D(12)F	680	2.5	170	0.10	12	3500
NTPS108M2.5D9(15)F	1000	2.5	250	0.15	15	3900
NTPS158M2.5D9(15)F	1500	2.5	375	0.15	15	3900
NTPS158M2.5D9(12)F	1500	2.5	375	0.15	12	4400
NTPS107M4B(35)F	100	4.0	40	0.08	35	1400
NTPS157M4D2(18)F	150	4.0	60	0.10	18	2800

* Recommended voltage derating is 90% of rated voltage for ≤ 8V parts and 80% derating for 10V parts.

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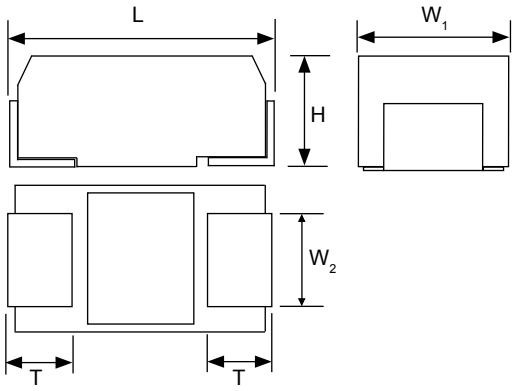
-55°C ~ +105°C STANDARD VALUES AND SPECIFICATIONS

NIC Part Number	Capacitance Value (μF)	Rated Voltage (Vdc) +105°C*	LC (μA) after 5 minutes	Dissipation Factor @ +20°C/120Hz	ESR (mΩ) @+20°C/100KHz	Ripple Current Rating, (mA) @ +45°C 100KHz ~ 500KHz
NTPS227M4D2(25)F	220	4.0	88	0.10	25	2400
NTPS227M4D2(18)F	220	4.0	88	0.10	18	2800
NTPS227M4D2(15)F	220	4.0	88	0.10	15	3100
NTPS337M4D2(25)F	330	4.0	132	0.10	25	2400
NTPS337M4D2(18)F	330	4.0	132	0.10	18	2800
NTPS477M4D(18)F	470	4.0	188	0.10	18	2800
NTPS477M4D(12)F	470	4.0	188	0.10	12	3500
NTPS477M4D(15)F	470	4.0	188	0.10	15	3100
NTPS477M4D(25)F	470	4.0	188	0.10	25	2400
NTPS107M6.3B(25)F	100	6.3	63	0.08	25	1600
NTPS107M6.3D2(25)F	100	6.3	63	0.10	25	2400
NTPS107M6.3D2(18)F	100	6.3	63	0.10	18	2800
NTPS157M6.3D2(25)F	150	6.3	94.5	0.10	25	2400
NTPS157M6.3D2(18)F	150	6.3	94.5	0.10	18	2800
NTPS157M6.3D2(15)F	150	6.3	94.5	0.10	15	3100
NTPS227M6.3D2(25)F	220	6.3	138.6	0.10	25	2400
NTPS227M6.3D2(18)F	220	6.3	138.6	0.10	18	2800
NTPS337M6.3D(25)F	330	6.3	207.9	0.10	25	2400
NTPS337M6.3D(18)F	330	6.3	207.9	0.10	18	2800
NTPS337M6.3D(15)F	330	6.3	207.9	0.10	15	3100
NTPS477M6.3D9(25)F	470	6.3	296.1	0.15	25	3000
NTPS477M6.3D9(18)F	470	6.3	296.1	0.15	18	3500
NTPS687M6.3D9(25)F	680	6.3	428.4	0.15	25	3000
NTPS687M6.3D9(18)F	680	6.3	428.4	0.15	18	3500
NTPS686M10D2(25)F	68	10	68	0.10	25	2400
NTPS227M10D(25)F	220	10	220	0.10	25	2400
NTPS227M10D(18)F	220	10	220	0.10	18	2800
NTPS337M10D9(25)F	330	10	330	0.10	25	3000

* Recommended voltage derating is 90% of rated voltage for ≤ 8V parts and 80% derating for 10V parts.

CASE DIMENSIONS (mm)

Case Size	L	H	W_1	W_2	T
B	3.5 ± 0.2	1.9 ± 0.1	2.8 ± 0.2	2.2 ± 0.1	0.8 ± 0.2
D1	7.3 ± 0.3	1.4 ± 0.1	4.3 ± 0.2	2.4 ± 0.1	1.1 ± 0.2
D2	7.3 ± 0.3	1.9 +0.1/-0.2	4.3 ± 0.2	2.4 ± 0.1	1.3 ± 0.2
D	7.3 ± 0.3	2.8 ± 0.2	4.3 ± 0.2	2.4 ± 0.1	1.3 ± 0.2
D9	7.3 ± 0.3	3.8 ± 0.2	4.3 ± 0.2	2.4 ± 0.1	1.3 ± 0.2

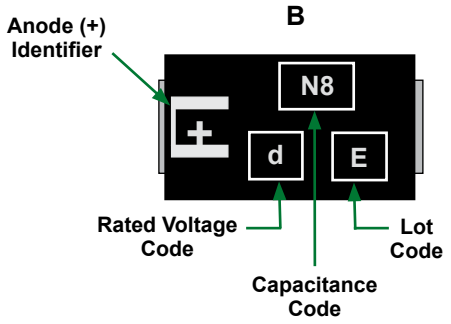


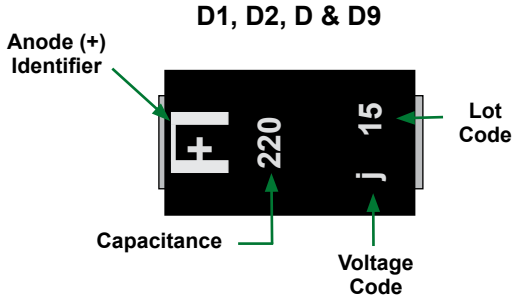
RATED VOLTAGE CODES

d	e	g	j	k	A
2.0V	2.5V	4.0V	6.3V	8.0V	10V

B CASE SIZE CAPACITANCE CODES

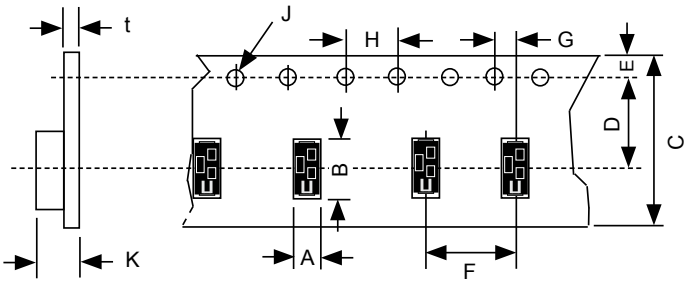
S7	A8	C8	E8	J8	N8	S8
47	100	120	150	220	330	470





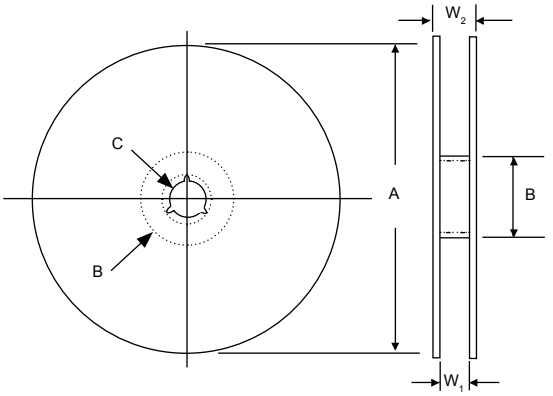
CARRIER DIMENSIONS AND REEL QUANTITIES

Case Size	A ±0.1	B ±0.1	C ±0.3	D ±0.1	E ±0.1	F ±0.1	G ±0.1	H ±0.1	J +0/-0.1	K ±0.2	t max.	Reel Quanty 180mm Reel	Reel Quanty 330mm Reel
B	3.3	3.8	8.0	3.5	1.75	4.0	2.0	4.0	ϕ1.5	2.1	0.35	2,000	n/a
D1	4.7	7.8	12.0	5.5	1.75	8.0	2.0	4.0	ϕ1.5	1.7	0.40	n/a	4,000
D2	4.5	7.5	12.0	5.5	1.75	8.0	2.0	4.0	ϕ1.5	2.4	0.40	n/a	3,000
D	4.5	7.7	12.0	5.5	1.75	8.0	2.0	4.0	ϕ1.5	3.2	0.40	n/a	2,500
D9	4.5	7.7	12.0	5.5	1.75	8.0	2.0	4.0	ϕ1.5	4.2	0.40	n/a	2,000



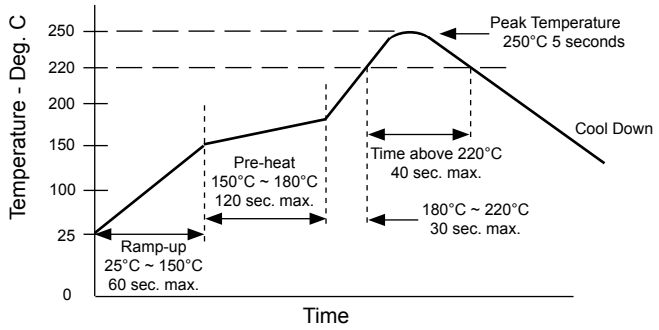
REEL SPECIFICATIONS (mm)

Tape Width	A	B ± 2.0	C ± 0.2	W_1 ± 0.5	W_2 ± 1.0
8mm	ϕ180 +0/-3.0	ϕ60	ϕ13	9.0	11.4
12mm	ϕ330 ±2.0	ϕ80	ϕ13	13.5	17.5

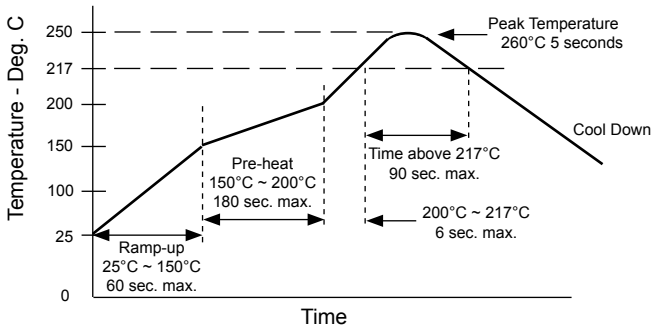


MAXIMUM OF TWO REFLOW PASSES

250°C REFLOW TEMPERATURES/DURATIONS

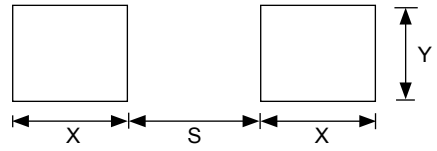


260°C REFLOW TEMPERATURES/DURATIONS



RECOMMENDED LAND PATTERN (mm)

Case Size	S max.	X min.	Y min.
B	1.4	1.6	2.7
D1, D2, D, D9	3.7	2.4	2.9



1. NTPS parts are moisture sensitive and are shipped in moisture control bags. After opening the bag capacitors should be stored at ≤30˚C, relative humidity of ≤60% maximum and soldered within the timeframe shown in the tables below.

250°C Peak Reflow Temperature

Case Size	Time	Conditions	MSL
B	168 hours	≤30°C/60% RH	3
D1, D2, D, D9	4 weeks	≤30°C/60% RH	2a

260°C Peak Reflow Temperature

Case Size	Time	Conditions	MSL
All Sizes	168 hours	≤30°C/60% RH	3

2. The parts should be soldered using the minimum amount of heat required.