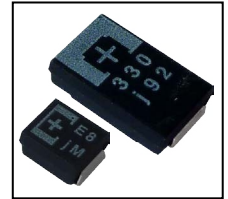


### FEATURES

- Low ESR and Very High Capacitance
- Values from 47µF to 1,500µF
- B2 (3.5mm x 2.8mm) and D (7.3mm x 4.3mm) Case Size



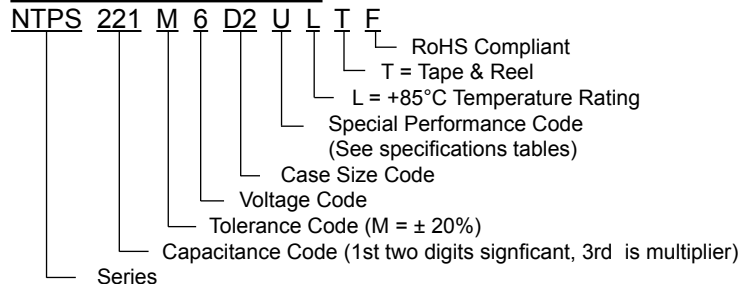
### CHARACTERISTICS

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 B2) B2 & +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	B2 case size: 1%/1000 hours at +105°C and rated voltage Other sizes: 0.5%/1000 hours at +105°C and rated voltage B2 case size: 1%/1000 hours at +85°C and rated voltage Other sizes: 0.5%/1000 hours at +85°C and rated voltage

### 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
47	470	-	-	-	-	B2
68	680	-	-	-	-	D2
100	101	-	-	B2	B2, D2	B2
120	121	-	-	-	B2	-
150	151	-	-	B2, D2	B2, D2	-
220	221	-	B2, D2	B2, D2	B2, D2	D3
330	331	B2	B2, D2	D2	D2, D3, D9	D9
470	471	B2	D2	D3	D1, D9	-
680	681	-	D3	-	D9	-
1000	102	-	D9	-	-	-
1500	152	-	D9	-	-	-

### PART NUMBER SYSTEM



### 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](http://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](mailto: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
NTPS331M2B2ZLTF	330	2.0	1.8	132	0.08	13/300KHz	2000
NTPS331M2B2YLTF	330	2.0	1.8	132	0.08	15	2000
NTPS471M2B2ZLTF	470	2.0	1.8	188	0.10	11/300KHz	2300
NTPS221M2.5B2YLTF	220	2.5	2.0	110	0.08	15	2000
NTPS221M2.5B2XLTF	220	2.5	2.0	55	0.08	25	1600
NTPS221M2.5B2LTF	220	2.5	2.0	55	0.08	35	1400
NTPS331M2.5B2LTF	330	2.5	2.0	82.5	0.08	35	1400
NTPS151M4B2LTF	150	4.0	3.2	60	0.08	35	1400
NTPS221M4B2LTF	220	4.0	3.2	88	0.08	35	1400
NTPS101M6B2LTF	100	6.3	5.0	63	0.08	35	1400
NTPS121M6B2LTF	120	6.3	5.0	75.6	0.08	35	1400
NTPS151M6B2XLTF	150	6.3	5.0	94.5	0.08	25	1600
NTPS151M6B2LTF	150	6.3	5.0	94.5	0.08	35	1400
NTPS221M6B2LTF	220	6.3	5.0	138.6	0.10	35	1400
NTPS221M6D2LTF	220	6.3	5.0	138.6	0.10	25	2400
NTPS331M6D2LTF	330	6.3	5.0	207.9	0.10	25	2400
NTPS331M6D3LTF	330	6.3	5.0	207.9	0.10	25	2400
NTPS331M6D3ULTF	330	6.3	5.0	207.9	0.10	9/500KHz	3900
NTPS331M6D9ULTF	330	6.3	5.0	207.9	0.10	10	4400
NTPS471M6D1LTF	470	6.3	5.0	296.1	0.10	35	1700
NTPS101M8B2LTF	100	8.0	6.3	80	0.08	35	1400
NTPS470M10B2LTF	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
NTPS331M2B2YTF	330	2.0	132	0.08	15	2000
NTPS221M2.5B2XTF	220	2.5	55	0.08	21	1700
NTPS221M2.5B2TF	220	2.5	55	0.08	35	1400
NTPS221M2.5B2YTF	220	2.5	110	0.08	15/300kHz	1800
NTPS221M2.5D2TF	220	2.5	55	0.10	25	2400
NTPS221M2.5D2UTF	220	2.5	55	0.10	9	3900
NTPS221M2.5D2YTF	220	2.5	55	0.10	15	3100
NTPS221M2.5D2XTF	220	2.5	55	0.10	18	2800
NTPS331M2.5D2TF	330	2.5	82.5	0.10	25	2400
NTPS331M2.5D2UTF	330	2.5	82.5	0.10	9	3900
NTPS331M2.5D2VTF	330	2.5	82.5	0.10	7	4400
NTPS331M2.5D2XTF	330	2.5	82.5	0.10	18	2800
NTPS331M2.5D2ZTF	330	2.5	82.5	0.10	12	3500
NTPS331M2.5D2YTF	330	2.5	82.5	0.10	15	3100
NTPS471M2.5D2XTF	470	2.5	117.5	0.10	18	2800
NTPS471M2.5D2UTF	470	2.5	117.5	0.10	9	3900
NTPS471M2.5D2YTF	470	2.5	117.5	0.10	15	3100
NTPS471M2.5D2ZTF	470	2.5	117.5	0.10	12	3500
NTPS471M2.5D2VTF	470	2.5	117.5	0.10	7	4400
NTPS681M2.5D3YTF	680	2.5	170	0.10	15	3100
NTPS681M2.5D3ZTF	680	2.5	170	0.10	12	3500
NTPS102M2.5D9YTF	1000	2.5	250	0.15	15	3900
NTPS152M2.5D9YTF	1500	2.5	375	0.15	15	3900
NTPS152M2.5D9ZTF	1500	2.5	375	0.15	12	4400
NTPS101M4B2TF	100	4.0	40	0.08	35	1400
NTPS151M4D2XTF	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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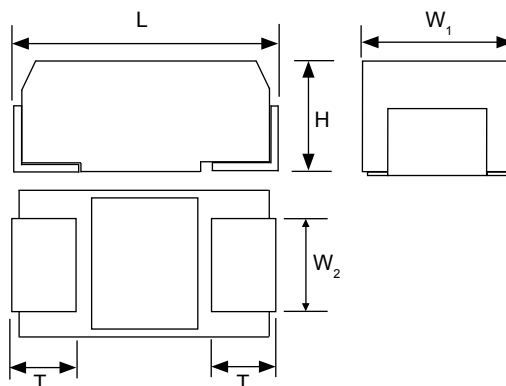
## -55°C ~ +105°C STANDARD VALUES AND SPECIFICATIONS

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
NTPS221M4D2TF	220	4.0	88	0.10	25	2400
NTPS221M4D2XTF	220	4.0	88	0.10	18	2800
NTPS221M4D2YTF	220	4.0	88	0.10	15	3100
NTPS331M4D2TF	330	4.0	132	0.10	25	2400
NTPS331M4D2XTF	330	4.0	132	0.10	18	2800
NTPS471M4D3XTF	470	4.0	188	0.10	18	2800
NTPS471M4D3UTF	470	4.0	188	0.10	10	4400
NTPS471M4D3ZTF	470	4.0	188	0.10	12	3500
NTPS471M4D3YTF	470	4.0	188	0.10	15	3100
NTPS471M4D3TF	470	4.0	188	0.10	25	2400
NTPS101M6B2TF	100	6.3	63	0.08	25	1600
NTPS101M6D2TF	100	6.3	63	0.10	25	2400
NTPS101M6D2XTF	100	6.3	63	0.10	18	2800
NTPS151M6D2TF	150	6.3	94.5	0.10	25	2400
NTPS151M6D2XTF	150	6.3	94.5	0.10	18	2800
NTPS151M6D2YTF	150	6.3	94.5	0.10	15	3100
NTPS221M6D2TF	220	6.3	138.6	0.10	25	2400
NTPS221M6D2XTF	220	6.3	138.6	0.10	18	2800
NTPS331M6D3TF	330	6.3	207.9	0.10	25	2400
NTPS331M6D3XTF	330	6.3	207.9	0.10	18	2800
NTPS331M6D3YTF	330	6.3	207.9	0.10	15	3100
NTPS471M6D9TF	470	6.3	296.1	0.15	25	3000
NTPS471M6D9XTF	470	6.3	296.1	0.15	18	3500
NTPS681M6D9TF	680	6.3	428.4	0.15	25	3000
NTPS681M6D9XTF	680	6.3	428.4	0.15	18	3500
NTPS680M10D2TF	68	10	68	0.10	25	2400
NTPS221M10D3TF	220	10	220	0.10	25	2400
NTPS221M10D3XTF	220	10	220	0.10	18	2800
NTPS331M10D9TF	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 <sub>1</sub>	W <sub>2</sub>	T
B2	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
D3	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

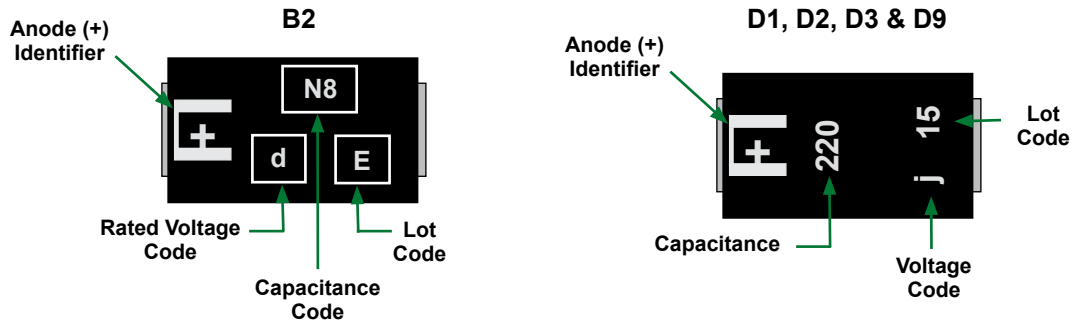


## RATED VOLTAGE CODES

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

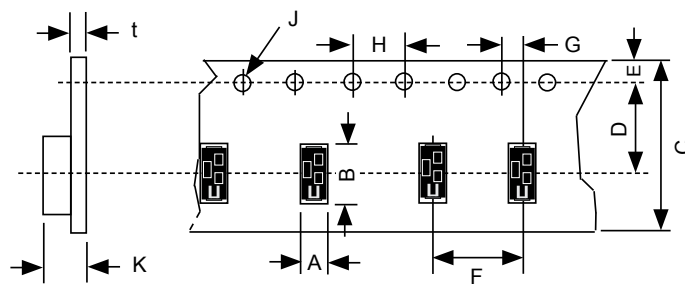
## B2 CASE SIZE CAPACITANCE CODES

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



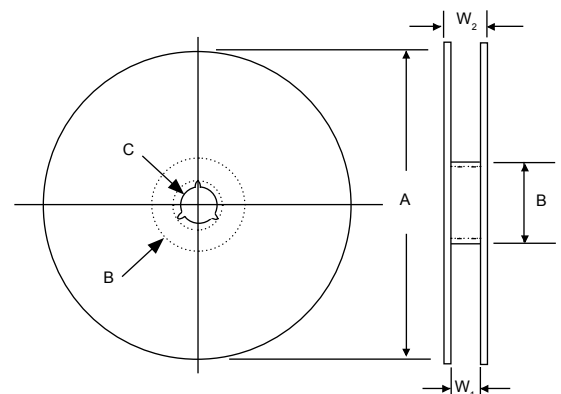
## CARRIER DIMENSIONS AND REEL QUANTITIES

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 Qty	
												180mm Reel	330mm Reel
B2	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
D3	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

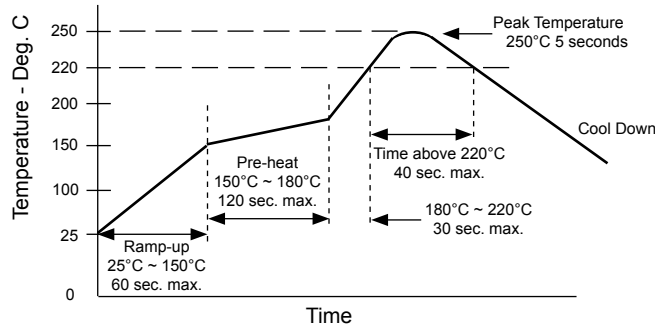


## REEL SPECIFICATIONS (mm)

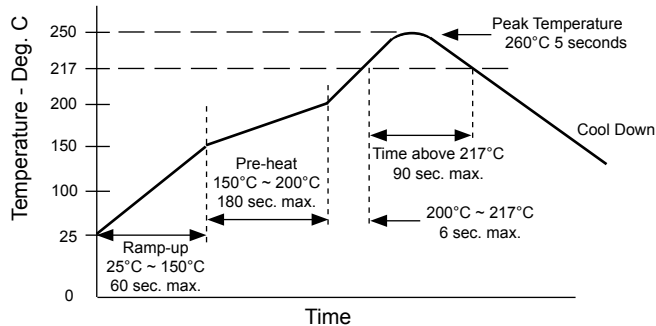
Tape Width	A	B ± 2.0	C ± 0.2	W <sub>1</sub> ± 0.5	W <sub>2</sub> ± 1.0
8mm	φ180 +0/-3.0	φ60	φ13	9.0	11.4
12mm	φ330 ±2.0	φ80	φ13	13.5	17.5



## MAXIMUM OF TWO REFLOW PASSES 250°C REFLOW TEMPERATURES/DURATIONS

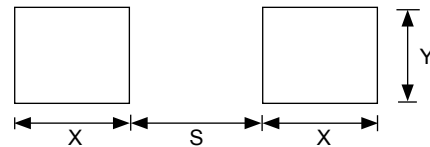


## 260°C REFLOW TEMPERATURES/DURATIONS



## RECOMMENDED LAND PATTERN (mm)

Case Size	S max.	X min.	Y min.
B2	1.4	1.6	2.7
D1, D2, D3, 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  $\leq 30^{\circ}\text{C}$ , relative humidity of  $\leq 60\%$  maximum and soldered within the timeframe shown in the tables below.

### 250°C Peak Reflow Temperature

Case Size	Time	Conditions	MSL
B2	168 hours	$\leq 30^{\circ}\text{C}/60\% \text{ RH}$	3
D1, D2, D3, D9	4 weeks	$\leq 30^{\circ}\text{C}/60\% \text{ RH}$	2a

### 260°C Peak Reflow Temperature

Case Size	Time	Conditions	MSL
All Sizes	168 hours	$\leq 30^{\circ}\text{C}/60\% \text{ RH}$	3

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