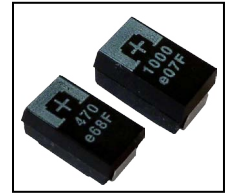


FEATURES

- Ultra Low ESR and High Ripple Current Ratings
- High Capacitance (up to 680 μ F)
- Low Profile (2.8mm height)
- D Case Size (7.3mm x 4.3mm)



CHARACTERISTICS

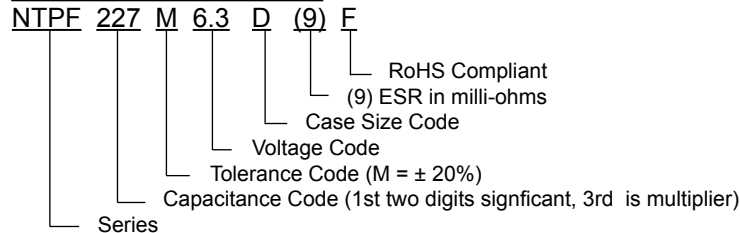
Capacitance Range	150 μ F to 680 μ F
Capacitance Tolerance	\pm 20% (M)
Rated Voltage Range @ 105°C (Vdc)	4.0Vdc ~ 10Vdc
Operating Temperature Range	-55°C ~ +105°C
Dissipation Factor	See Specifications Table
Leakage Current @ +25°C (After 5 Minutes at Rated Voltage)	
Capacitance Change With Temperature	-55°C Δ C \pm 20%
Resistance to Soldering Heat (+260°C for 5 Seconds)	Δ C \pm 10% of initial measured value, LC = Less than 300% of specified max. value, DF = Less than 200% of specified max. value
Moisture Resistance (500 hours; 90~95% RH @ +60°C)	Δ C -20% ~ +40% Max, LC = <300% of specified max. value DF = 150% of specified max. value
Load Life at Rated Voltage (2,000 hours @ 105°C)	Δ C \pm 20% Max, LC = Less than specified max. value DF = 150% of specified max. value
Base Failure Rate	0.5%/1000 hours at +105°C and rated voltage

* Parts with rated voltage \geq 10V recommended derating is 80% of the rated voltage.
For parts with rated voltage <10V recommended derating is 90% of the rated voltage.

STANDARD VALUES AND CASE SIZES

Rated Voltage @ +105°C	4.0	6.3	10	
Surge Voltage @ +105°C	4.6	7.2	12	
Capacitance (μ F)	Code	Case Size	Case Size	Case Size
150	157	-	-	D
220	227	-	D	-
330	337	D	D	-
470	477	D	D9	-
680	687	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
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: tpmg@niccomp.com

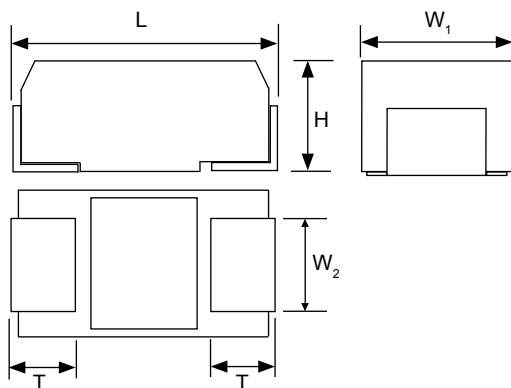


STANDARD PART NUMBERS AND SPECIFICATIONS

NIC Part Number	Capacitance Value (μF)	Rated Voltage (Vdc) +105°C	Leakage Current (μA) after 5 minutes	Dissipation Factor @ +20°C/120Hz	ESR (mΩ) @+20°C/100KHz	Ripple Current Rating (mA) @ +45°C 100KHz ~ 500KHz
NTPF337M4D(12)F	330	4.0	132.0	0.10	12	4000
NTPF477M4D(10)F	470		188.0	0.10	10	4400
NTPF687M4D9(10)F	680		272.0	0.10	10	4400
NTPF227M6.3D(12)F	220	6.3	138.6	0.10	12	4000
NTPF227M6.3D(9)F	220		138.6	0.10	9	4600
NTPF337M6.3D(9)F	330		207.9	0.10	9	3900
NTPF477M6.3D9(10)F	470		296.1	0.10	10	4400
NTPF157M10D(15)F	150	10	150.0	0.10	15	3600

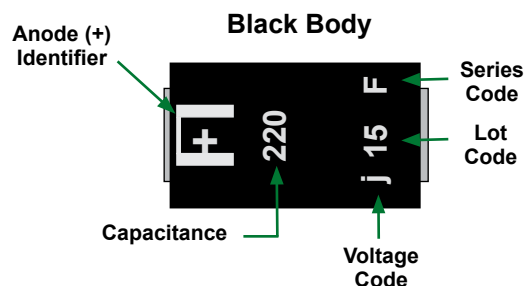
CASE DIMENSIONS (mm)

Case Size	L	H	W ₁	W ₂	T
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



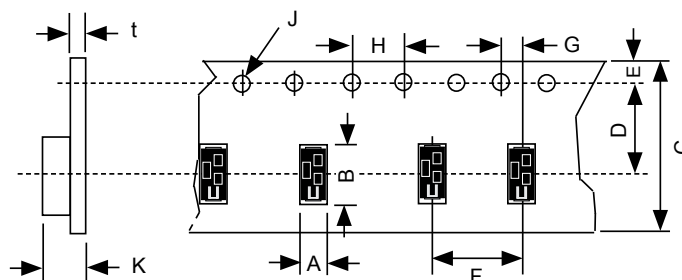
VOLTAGE CODES

g	j	A
4.0V	6.3V	10V



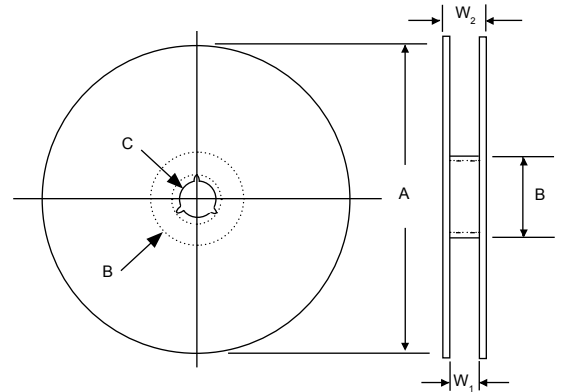
CARRIER DIMENSIONS AND REEL QUANTITIES

Case Size	A	B	C	D	E	F	G	H	J	K	t	Reel Qty
	±0.1	±0.1	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	-0/+0.1	±0.2	±0.1	330mm Reel
D	4.5	7.7	12.0	5.5	1.75	8.0	2.0	4.0	φ1.5	3.2	0.30	2,500
D9	4.5	7.7	12.0	5.5	1.75	8.0	2.0	4.0	φ1.5	4.2	0.30	2,000



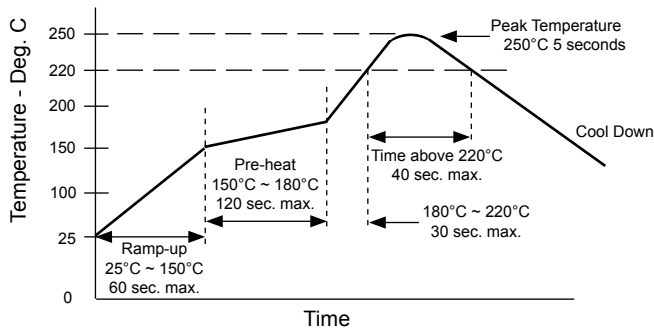
REEL SPECIFICATIONS (mm)

Tape Width	A ± 2.0	B ± 2.0	C ± 0.2	W ₁ ± 0.5	W ₂ ± 1.0
12mm	φ330	φ80	φ13	13.5	17.5

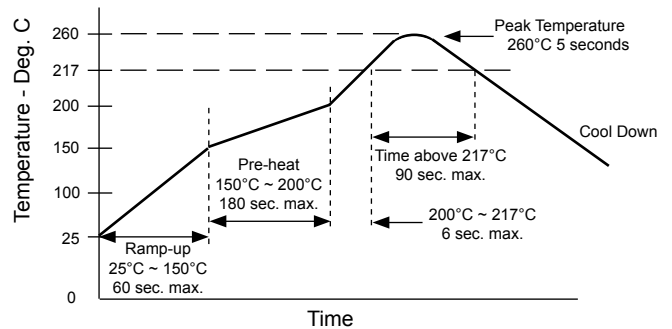


MAXIMUM OF 2 REFLOW PASSES UNDER BELOW CONDITIONS

250°C REFLOW TEMPERATURES/DURATIONS

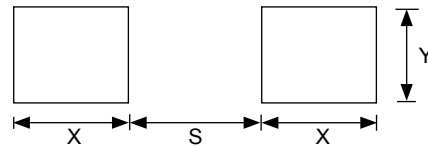


260°C REFLOW TEMPERATURES/DURATIONS (Exception: NTPF157M10D(15F) is 250°C only)



RECOMMENDED LAND PATTERN (mm)

Case Size	S max.	X min.	Y min.
D, D9	3.7	2.4	2.9



1. NTPF 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 timeframe shown in the tables below.

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

250°C PEAK REFLOW TEMPERATURE

Case Size	Time	Conditions	MSL
All Sizes	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