

# Surface Mount Solid Aluminum Electrolytic Capacitors

NPC Series

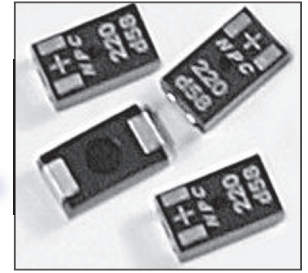
## FEATURES

- LOW IMPEDANCE & ESR AT HIGH FREQUENCY
- HIGH RIPPLE CURRENT
- REPLACES MULTIPLE TANTALUM CHIPS IN POWER SUPPLIES
- FITS EIA (7343) "D" LAND PATTERNS
- Pb-FREE (GOLD TERMINATION PLATING)
- COMPATIBLE WITH +250°C REFLOW SOLDERING

**RoHS  
Compliant**

includes all homogeneous materials

\*See Part Number System for Details



## CHARACTERISTICS

Rated Working Range	2.0 ~ 8VDC		
Rated Capacitance Range	10 ~ 390 $\mu$ F		
Operating Temperature Range	-55 ~ +105°C		
Capacitance Tolerance	$\pm$ 20% (M)		
Max. Leakage Current ( $\mu$ A) After 5 Minutes (+20°C)	$\leq$ 0.04CV		
Max. Tan $\delta$ , 120Hz, +20°C	D1, D6	$\leq$ 0.05	
	D7, D8	$\leq$ 0.1	
High Temperature Load Life 2,000 Hours @ 105°C at Rated Working Voltage	Capacitance Change	Within $\pm$ 20% of initial measured value	
	Tan $\delta$	D7, D8 (D1 10 $\mu$ F/6.3V)	Less than 150% of specified max. value
		D1, D6	Less than 200% of specified max. value
Leakage Current	Less than specified max. value		
Moisture Resistance* 500 Hours @ +60°C at 90 ~ 95% RH and No Voltage Applied	Capacitance Change	Within -20%/+40% of initial measured value	
	Tan $\delta$	D7, D8	Less than 150% of specified max. value
		D1, D6	Less than 200% of specified max. value
Leakage Current	Less than 300% of specified max. value Less than 500% of specified max. value for D1 10 $\mu$ F/6.3V		

\*JEDEC MSL-3

## STANDARD PRODUCTS AND SPECIFICATIONS

NIC Part Number	WV (Vdc)	Cap. ( $\mu$ F)	Max. LC ( $\mu$ A)	Tan $\delta$	Max. Ripple Current 100KHz @ +105°C	Max. ESR +20°C & 100KHz ( $\Omega$ )	Height H $\pm$ 0.1	
NPC101M2D1ZTRF	2	100	8.0	0.05	3,000	0.009	1.4	
NPC101M2D6XTRF		100	8.0	0.05	3,000	0.013	1.9	
NPC101M2D6ZTRF		100	8.0	0.05	3,000	0.009	1.9	
NPC121M2D6ZTRF		120	9.6	0.05	3,000	0.009	1.9	
NPC151M2D6ZTRF		150	12.0	0.05	3,000	0.009	1.9	
NPC181M2D6ZTRF		180	14.4	0.05	3,000	0.009	1.9	
NPC221M2D6ZTRF		220	17.6	0.05	3,000	0.009	1.9	
NPC221M2D7XTRF		220	17.6	0.10	3,500	0.010	2.7	
NPC271M2D8ZTRF		270	21.6	0.10	3,500	0.007	2.9	
NPC331M2D8ZTRF		330	26.4	0.10	3,500	0.007	2.9	
NPC391M2D8ZTRF		390	31.2	0.10	3,500	0.007	2.9	
NPC820M2.5D1ZTRF		2.5	82	8.2	0.05	3,000	0.009	1.4
NPC820M2.5D6XTRF			82	8.2	0.05	3,000	0.013	1.9
NPC820M2.5D6ZTRF			82	8.2	0.05	3,000	0.009	1.9
NPC101M2.5D6ZTRF	100		10.0	0.05	3,000	0.009	1.9	
NPC121M2.5D6ZTRF	120		12.0	0.05	3,000	0.009	1.9	
NPC151M2.5D6ZTRF	150		15.0	0.05	3,000	0.009	1.9	
NPC181M2.5D7XTRF	180		18.0	0.10	3,500	0.010	2.7	
NPC221M2.5D8ZTRF	220		22.0	0.10	3,500	0.007	2.9	
NPC271M2.5D8ZTRF	270		27.0	0.10	3,500	0.007	2.9	
NPC331M2.5D8ZTRF	330		33.0	0.10	3,500	0.007	2.9	
NPC680M4D1XTRF	4		68	10.9	0.05	3,000	0.010	1.4
NPC680M4D6XTRF			68	10.9	0.05	3,000	0.013	1.9
NPS680M4D6ZTRF			68	10.9	0.05	3,000	0.010	1.9
NPC820M4D6XTRF			82	13.1	0.05	3,000	0.010	1.9
NPC101M4D6XTRF		100	16.0	0.05	3,000	0.010	1.9	
NPC121M4D6XTRF		120	19.2	0.05	3,000	0.010	1.9	
NPC151M4D6XTRF		150	24.0	0.05	3,000	0.010	1.9	
NPC151M4D7XTRF		150	24.0	0.10	3,500	0.010	2.7	



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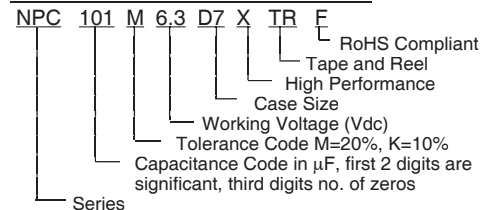
## STANDARD PRODUCTS AND SPECIFICATIONS

NIC Part Number	WV (Vdc)	Cap. (μF)	Max. LC (μA)	Tan δ	Max. Ripple Current 100KHz @ +105°C	Max. ESR +20°C & 100KHz (Ω)	Height H ± 0.1
NPC181M4D8ZTRF	4.0	180	28.8	0.10	3,500	0.009	2.9
NPC221M4D8ZTRF		220	35.2	0.10	3,500	0.009	2.9
NPC271M4D8ZTRF		270	43.2	0.10	3,500	0.009	2.9
NPC100M6.3D1TRF	6.3	10	2.5	0.05	1,900	0.050	1.4
NPC330M6.3D6TRF		33	8.3	0.05	3,000	0.015	1.9
NPC470M6.3D1XTRF		47	11.8	0.05	3,000	0.010	1.4
NPC470M6.3D6XTRF		47	11.8	0.05	3,000	0.013	1.9
NPC470M6.3D8ZTRF		47	11.8	0.05	3,000	0.010	1.9
NPC560M6.3D6XTRF		56	14.1	0.05	3,000	0.010	1.9
NPC680M6.3D6XTRF		68	17.1	0.05	3,000	0.010	1.9
NPC820M6.3D6XTRF		82	20.7	0.05	3,000	0.010	1.9
NPC101M6.3D6XTRF		100	25.2	0.05	3,000	0.010	1.9
NPC101M6.3D7XTRF		100	25.2	0.10	3,500	0.010	2.7
NPC121M6.3D8ZTRF		120	30.2	0.10	3,500	0.009	2.9
NPC151M6.3D8ZTRF		150	37.8	0.10	3,500	0.009	2.9
NPC150M8D6TRF		8	15	4.8	0.05	3,000	0.015
NPC330M8D7XTRF	33		10.6	0.10	3,000	0.013	2.7

## RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

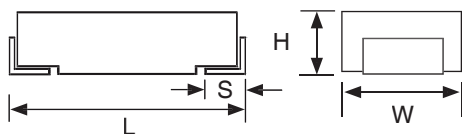
Frequency	1KHz <=f< 10KHz	10KHz <=f< 100KHz	100KHz <=f< 1MHz
Correction Factor	0.6	0.85	1.0

## PART NUMBERING SYSTEM

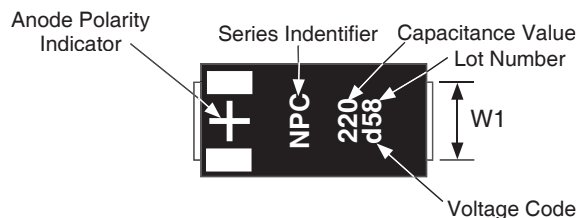
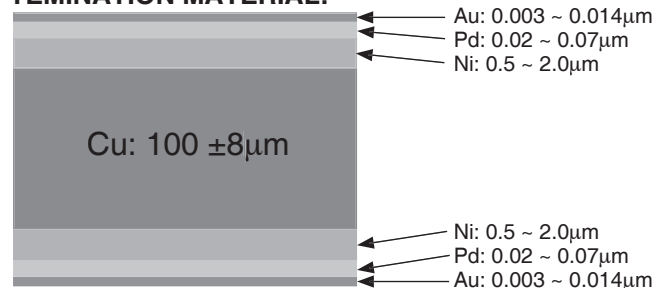


## DIMENSIONS (mm)

Case Code	L ±0.2	W ±0.2	H ±0.1	W1 ±0.1	S ±0.2
D1	7.3	4.3	1.4	2.4	1.3
D6			1.9		
D7			2.7		
D8			2.9		



## TERMINATION MATERIAL:



## VOLTAGE CODES

Voltage	Code
2.0VDC	d
2.5VDC	e
4.0VDC	g
6.3VDC	j
8.0VDC	k

## 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)

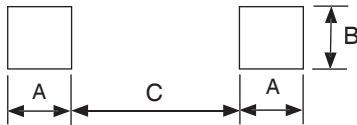


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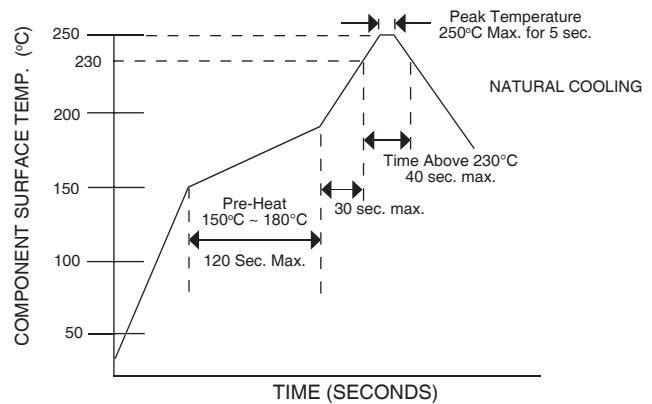
NPC Series

## RECOMMENDED LAND PATTERNS (mm)

Case Code	a	b	c
D1, D6, D7, D8	2.4	2.9	3.7



## RECOMMENDED REFLOW SOLDERING PROFILE



### APPLICATION NOTES:

1. NPC Series cannot be used in coupling, time-constant or other circuits that are greatly affected by leakage current.
2. NPC parts are polarized so be sure to verify component orientation when mounting components.
3. Do not apply over voltage exceeding the rated voltage.
4. Do not apply ripple current over the specified maximum ripple current rating.

### NOTES ON REFLOW SOLDERING:

1. SAC alloy (+217°C) reflow soldering compatible
2. Soldering heat limits apply to the top surface of component
3. If you have concerns about your reflow soldering profile review them with NIC to insure compatible [tpmg@niccomp.com]

## REEL TAPE DIMENSIONS (mm)

Case Code	A ±1.0	B ±0.5	C ±0.2	W ±0.5	t ±0.5	Reel Quantity
D1, D6	330	80	13	13.5	2.0	3,000
D7, D8						2,000

## TAPE DIMENSIONS (mm)

Case Code	A ±0.1	B ±0.1	C ±0.3	D ±0.05	E ±0.1	F ±0.1	G ±0.05	H ±0.1	J -0/+0.1	K ±0.1	t ±0.05
D1	4.55	7.65	12.0	5.5	1.75	8.0	2.0	4.0	1.5	0.3	1.6
D6											2.1
D7											2.9
D8											3.1

