

# Surface Mount Solid Aluminum Electrolytic Capacitors

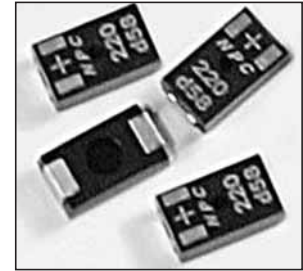
NPC Series

## 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 +260°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 (+260°C Reflow)	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
NPC101M2D1ZATRF	2	100	8.0	0.05	3,000	0.009	1.4
NPC101M2D6XATRF		100	8.0	0.05	3,000	0.013	1.9
NPC101M2D6ZATRF		100	8.0	0.05	3,000	0.009	1.9
NPC121M2D6ZATRF		120	9.6	0.05	3,000	0.009	1.9
NPC151M2D6ZATRF		150	12.0	0.05	3,000	0.009	1.9
NPC181M2D6ZATRF		180	14.4	0.05	3,000	0.009	1.9
NPC221M2D6ZATRF		220	17.6	0.05	3,000	0.009	1.9
NPC221M2D7XATRF		220	17.6	0.10	3,500	0.010	2.7
NPC271M2D8ZATRF		270	21.6	0.10	3,500	0.007	2.9
NPC331M2D8ZATRF		330	26.4	0.10	3,500	0.007	2.9
NPC391M2D8ZATRF		390	31.2	0.10	3,500	0.007	2.9
NPC820M2.5D1ZATRF	2.5	82	8.2	0.05	3,000	0.009	1.4
NPC820M2.5D6XATRF		82	8.2	0.05	3,000	0.013	1.9
NPC820M2.5D6ZATRF		82	8.2	0.05	3,000	0.009	1.9
NPC101M2.5D6ZATRF		100	10.0	0.05	3,000	0.009	1.9
NPC121M2.5D6ZATRF		120	12.0	0.05	3,000	0.009	1.9
NPC151M2.5D6ZATRF		150	15.0	0.05	3,000	0.009	1.9
NPC181M2.5D7XATRF		180	18.0	0.10	3,500	0.010	2.7
NPC221M2.5D8ZATRF		220	22.0	0.10	3,500	0.007	2.9
NPC271M2.5D8ZATRF		270	27.0	0.10	3,500	0.007	2.9
NPC331M2.5D8ZATRF		330	33.0	0.10	3,500	0.007	2.9
NPC680M4D1ZATRF		4	68	10.9	0.05	3,000	0.009
NPC680M4D6XATRF	68		10.9	0.05	3,000	0.013	1.9
NPC680M4D6ZATRF	68		10.9	0.05	3,000	0.009	1.9
NPC820M4D6XATRF	82		13.1	0.05	3,000	0.010	1.9
NPC101M4D6XATRF	100		16.0	0.05	3,000	0.010	1.9
NPC121M4D6XATRF	120		19.2	0.05	3,000	0.010	1.9
NPC151M4D6XATRF	150		24.0	0.05	3,000	0.010	1.9
NPC151M4D7XATRF	150		24.0	0.10	3,500	0.010	2.7



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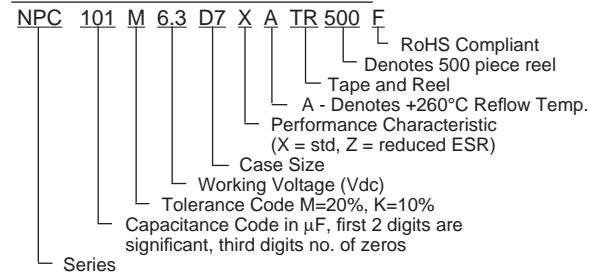
NIC Part Number (+260°C Reflow)	WV	Cap.	Max. LC	Tan δ	Max. Ripple Current 100KHz @ +105°C	Max. ESR +20°C & 100KHz (Ω)	Height H ± 0.1
	(Vdc)	(μF)	(μA)				
NPC181M4D8ZATRF	4.0	180	28.8	0.10	3,500	0.009	2.9
NPC221M4D8ZATRF		220	35.2	0.10	3,500	0.009	2.9
NPC271M4D8ZATRF		270	43.2	0.10	3,500	0.009	2.9
NPC330M6.3D6XATRF	6.3	33	8.3	0.05	3,000	0.015	1.9
NPC470M6.3D1XATRF		47	11.8	0.05	3,000	0.010	1.4
NPC470M6.3D6XATRF		47	11.8	0.05	3,000	0.013	1.9
NPC470M6.3D6ZATRF		47	11.8	0.05	3,000	0.010	1.9
NPC560M6.3D6XATRF		56	14.1	0.05	3,000	0.010	1.9
NPC680M6.3D6XATRF		68	17.1	0.05	3,000	0.010	1.9
NPC820M6.3D6XATRF		82	20.7	0.05	3,000	0.010	1.9
NPC101M6.3D6XATRF		100	25.2	0.05	3,000	0.010	1.9
NPC101M6.3D7XATRF		100	25.2	0.10	3,500	0.010	2.7
NPC121M6.3D8ZATRF		120	30.2	0.10	3,500	0.009	2.9
NPC151M6.3D8ZATRF		150	37.8	0.10	3,500	0.009	2.9
NPC150M8D6XATRF	8	15	4.8	0.05	3,000	0.015	1.9
NPC330M8D7XATRF		33	10.6	0.10	3,000	0.013	2.7

Please contact NIC for additional values (example: 10uF @ 6.3VDC)

## RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

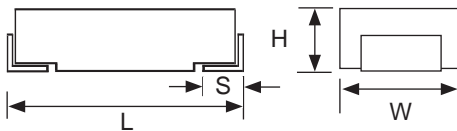
Frequency	1KHz ≤f< 10KHz	10KHz ≤f< 100KHz	100KHz ≤f< 1MHz
Correction Factor	0.6	0.85	1.0

## PART NUMBERING SYSTEM

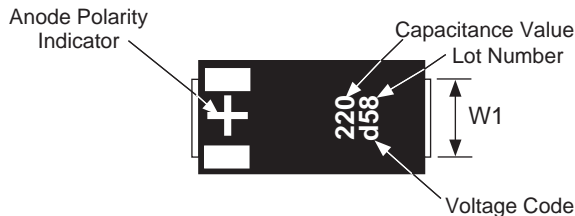
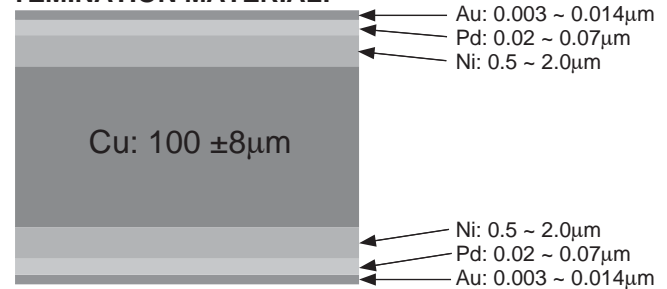


## DIMENSIONS (mm)

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)

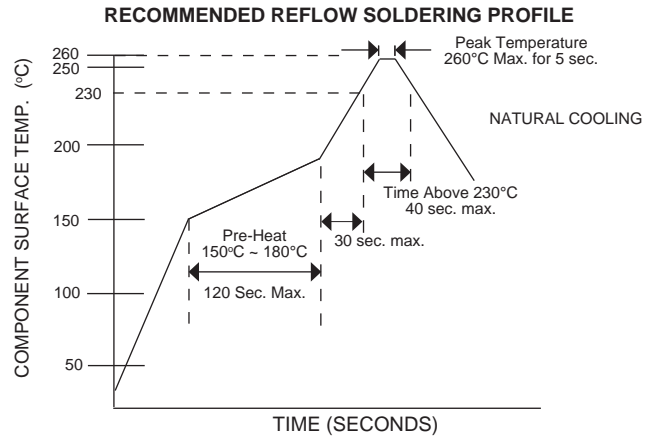
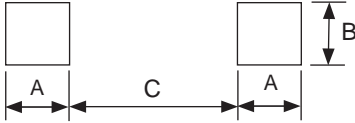


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NPC Series

## RECOMMENDED LAND PATTERNS (mm)

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



### 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	500*
D7, D8						2,000	

\*See part number system for details on designating reel quantity

## 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	1.6	0.3
D6										2.1	
D7										2.9	
D8										3.1	

