Surface Mount Solid Polymer Aluminum Electrolytic Capacitors

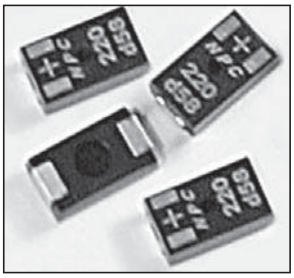
NPC Series

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 ~ 10VDC						
Rated Capacitance Range	10 ~ 470µF						
Operating Temperature Range	-55 ~ +105°C						
Capacitance Tolerance	± 20% (M)						
Max. Leakage Current (µA) After 5 Minutes (+20°C)	≤0.04CV						
Surge Voltage (1000 cycles, 30 sec. on, 5 min. 30 sec. off, 1KΩ)	Working Voltage (Vdc)	2.0	2.5	4.0	6.3	8.0	10
	Surge Voltage (Vdc)	2.6	3.2	5.2	8.2	10.4	11.5
Max. Tan δ, 120Hz, +20°C	D1, D6	≤0.05					
	D7, D8	≤0.1					
High Temperature Load Life 2,000 Hours @ 105°C at Rated Working Voltage after 2x recommended reflow profile	Capacitance Change	Within ±20% of initial measured value					
	Tan δ	D7, D8 (D1 10µF/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 after 2x recommended reflow profile (JEDEC MSL-3)	Capacitance Change	Within -20%/+40% of initial measured value					
		*Within -20%/+60% of initial measured value					
	Tan δ	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 10µF/6.3V					

*Applies to values with asterisk in column "NIC Part Number"

STANDARD PRODUCTS AND SPECIFICATIONS

NIC Part Number (+260°C Reflow)	WV (Vdc)	Cap. (µF)	Max. LC (µA)	Tan δ	Max. Ripple Current (mArms) 100KHz @ +105°C	Max. ESR +20°C & 100KHz (Ω)	Height H ± 0.1
NPC101M2D1UATRF	2	100	8.0	0.05	3,000	0.005	1.4
NPC101M2D1ZATRF		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
NPC151M2D1UATRF		150	12.0	0.05	3,000	0.005	1.4
NPC151M2D6ZATRF		150	12.0	0.05	3,000	0.009	1.9
NPC181M2D6ZATRF		180	14.4	0.05	3,000	0.009	1.9
NPC221M2D6YATRF		220	17.6	0.05	3,000	0.007	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
NPC271M2D6ZATRF		270	21.6	0.05	3,000	0.009	1.9**
NPC271M2D6YATRF		270	21.6	0.05	3,500	0.006	1.9**
NPC271M2D8YATRF		270	21.6	0.10	3,500	0.007	2.9
NPC331M2D6ZATRF*		330	26.4	0.10	3,000	0.009	1.9**
NPC331M2D6YATRF*		330	26.4	0.10	3,500	0.006	1.9**
NPC331M2D6UATRF*		330	26.5	0.10	3,500	0.0045	1.9**
NPC331M2D8YATRF		330	26.4	0.10	3,500	0.007	2.9
NPC391M2D8YATRF		390	31.2	0.10	3,500	0.007	2.9
NPC471M2D8YATRF		470	37.6	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
NPC101M2.5D1UATRF		100	10.0	0.05	3,000	0.005	1.4
NPC101M2.5D6ZATRF		100	10.0	0.05	3,000	0.009	1.9
NPC121M2.5D1UATRF		120	12.0	0.05	3,000	0.005	1.4
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
NPC181M2.5D6ZATRF		180	14.4	0.05	3,000	0.009	1.9

*See note regarding DF in characteristics table (Moisture Resistance).
**height dimension tolerance ±0.2mm

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STANDARD PRODUCTS AND SPECIFICATIONS

NIC Part Number (+260°C Reflow)	WV (Vdc)	Cap. (µF)	Max. LC (µA)	Tan δ	Max. Ripple Current (mArms) 100KHz @ +105°C	Max. ESR +20°C & 100KHz (Ω)	Height H ± 0.1
NPC181M2.5D7XATRF	2.5	180	18.0	0.10	3,500	0.010	2.7
NPC221M2.5D6YATRF*		220	22.0	0.10	3,500	0.006	1.9**
NPC221M2.5D6ZATRF*		220	22.0	0.10	3,000	0.009	1.9**
NPC221M2.5D8YATRF		220	22.0	0.10	3,500	0.007	2.9
NPC271M2.5D6ZATRF*		270	27.0	0.10	3,000	0.009	1.9**
NPC271M2.5D6YATRF*		270	27.0	0.10	3,500	0.006	1.9**
NPC271M2.5D8YATRF		270	27.0	0.10	3,500	0.007	2.9
NPC331M2.5D8YATRF		330	33.0	0.10	3,500	0.007	2.9
NPC680M4D1ZATRF	4.0	68	10.9	0.05	3,000	0.009	1.4
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
NPC181M4D6ZATRF		180	28.8	0.05	3,000	0.009	1.9**
NPC181M4D8ZATRF		180	28.8	0.10	3,500	0.009	2.9
NPC221M4D6ZATRF		220	35.2	0.05	3,000	0.009	1.9**
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	0.013	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	0.009	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
NPC121M6.3D6ZATRF*		120	30.2	0.05	3,000	0.009	1.9**
NPC121M6.3D8ZATRF		120	30.2	0.10	3,500	0.009	2.9
NPC151M6.3D6ZATRF		150	37.8	0.05	3,000	0.009	1.9**
NPC151M6.3D8ZATRF		150	37.8	0.10	3,500	0.009	2.9
NPC181M6.3D8ZATRF		180	45.4	0.10	3,500	0.009	2.9
NPC221M6.3D8ZATRF		220	55.4	0.10	3,500	0.009	2.9
NPC150M8D6XATRF	8	15	4.8	0.05	3,000	0.015	1.9
NPC220M8D6ATRF		22	7.0	0.05	2,500	0.018	1.9
NPC330M8D6ATRF		33	10.6	0.05	2,500	0.018	1.9
NPC330M8D7XATRF		33	10.6	0.10	3,000	0.013	2.7
NPC470M8D6ATRF		47	11.8	0.05	2,500	0.018	1.9
NPC680M8D7ATRF		68	21.8	0.10	2,500	0.018	2.7
NPC101M8D7ATRF		100	32.0	0.10	2,500	0.018	2.7
NPC220M10D6ATRF	10	22	8.8	0.10	1,600	0.030	1.9
NPC470M10D6ATRF		47	18.8	0.10	1,800	0.025	1.9

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

*See note regarding DF in characteristics table (Moisture Resistance).
**height dimension tolerance ±0.2mm

RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

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

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PART NUMBERING SYSTEM

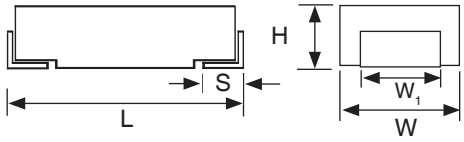
NPC 101 M 6.3 D7 X A TR 500 F

- F — RoHS Compliant
- 500 — Optional 500 piece reel qty
- TR — Tape & Reel Packaging
- A — Denotes +260°C Peak Reflow
- X — Performance Code (see Standard Products & Specifications Tables)
- D7 — Case Size
- 6.3 — Working Voltage (Vdc)
- M — Tolerance Code M=20%, K=10%
- 101 — Capacitance Code in µF, first 2 digits are significant, third digits no. of zeros
- NPC — Series

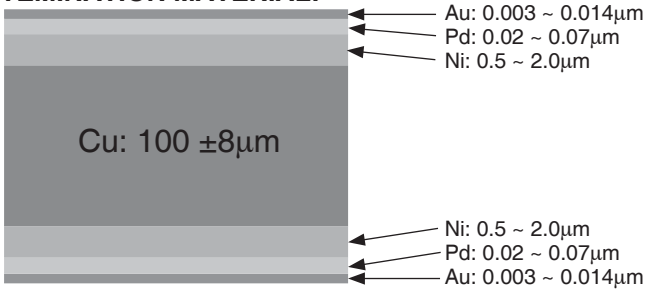
DIMENSIONS (mm)

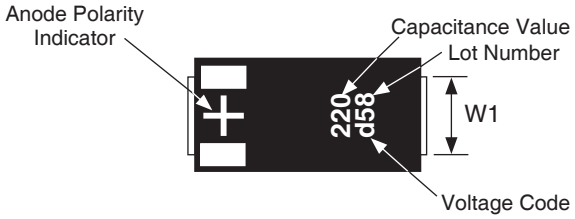
Case Code	L ±0.2	W ±0.2	H ±0.1	W1 ±0.1	S ±0.2
D1	7.3	4.3	1.4	2.4	1.3
D6			1.9*		
D7			2.7		
D8			2.9		

*D6 - See Standard Products & Specifications Tables for height tolerance.



TEMINATION MATERIAL:



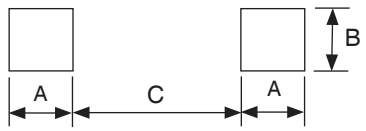


VOLTAGE CODES

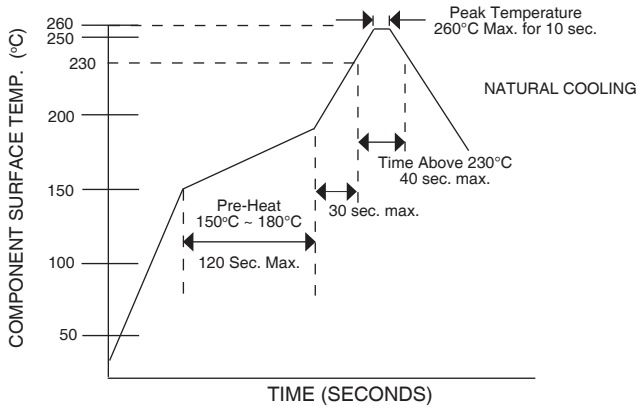
Voltage	Code
2.0VDC	d
2.5VDC	e
4.0VDC	g
6.3VDC	j
8.0VDC	k
10VDC	A

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]

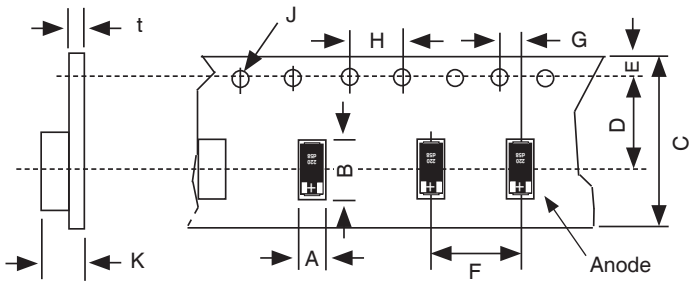
REEL TAPE DIMENSIONS (mm)

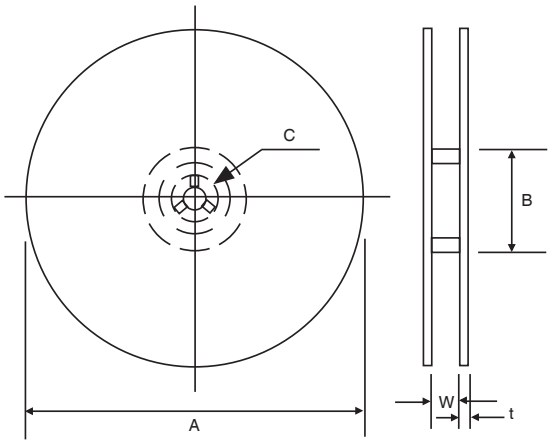
Case Code	A ±2.0	B ±1.0	C ±0.2	W ±1.0	t ±0.5	Reel Quantity	
D1, D6	330	80	13	13.5	2.0	3,500	500*
D7, D8						2,000	

*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	4.50	7.60	12.0	5.5	1.75	8.0	2.0	4.0	1.5	1.6	0.3
D6										2.2	
D7										2.9	
D8										3.1	





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**