NTRT Series

Tantalum Nitride High Precision Thin Film Chip Resistor

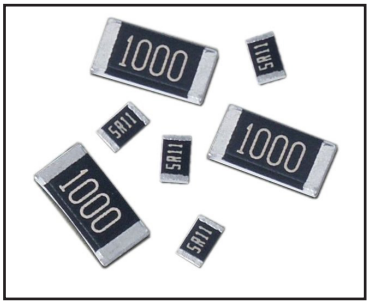
AEC-Q200 QUALIFIED

ROHS/REACH COMPLIANT HALOGEN FREE

NIC COMPONENTS
Performance Passives By Design

FEATURES

- TANTALUM NITRIDE THIN FILM RESISTOR
- 10 Ω ~ 1M Ω RESISTANCE RANGE
- RESISTOR TOLERANCES DOWN TO ±0.05%
- LOW TCR OPTIONS DOWN TO ±10 PPM/°C
- HIGH STABILITY HIGH HUMIDITY, MOISTURE, AND SULFUR ENVIRONMENTS
- AEC-Q200 QUALIFIED



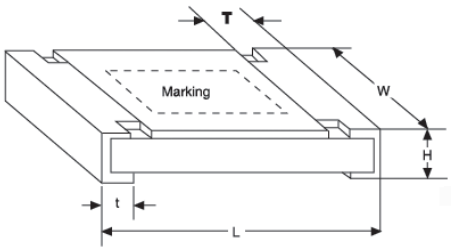
SPECIFICATIONS

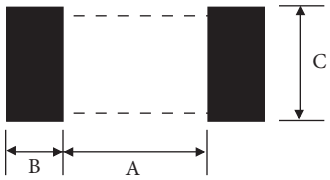
Type	EIA Size	Power Rating At 70°C	Temperature Range	Max.*1 Working Voltage	Max.*2 Overload Voltage	Resistance Tolerance (Code)	Temperature Coefficient (ppm/°C)	Resistance Range (Ω)
NTRT04	0402	1/16 W	-55°C ~ +155°C	50V	100V	±0.05% (A) ±0.1% (B) ±0.25 (C) ±0.5%(D) ±1% (F)	±10(B) ±15(N) ±25(C) ±50(D)	40.3Ω ~ 34.8KΩ
NTRT06	0603	1/6 W		75V	150V			40.3Ω ~ 130KΩ
NTRT10	0805	1/5 W		100V	200V			10Ω ~ 348KΩ
NTRT12	1206	1/2 W		200V	400V			10Ω ~ 1MΩ

*Please refer to page 3 for information regarding max working and overload voltage ratings

DIMENSIONS (mm) & LAND PATTERNS (mm)

Type	L	W	H	T	t	A	B	C
NTRT04	1.00 ± 0.05	0.50 ± 0.05	0.30 ± 0.05	0.20 ± 0.10	0.20 ± 0.10	0.50	0.50	0.60 ± 0.2
NTRT06	1.55 ± 0.10	0.80 ± 0.10	0.45 ± 0.15	0.30 ± 0.20	0.30 ± 0.20	0.80	1.00	0.90 ± 0.2
NTRT10	2.00 ± 0.15	1.25 ± 0.15	0.55 ± 0.15	0.30 ± 0.20	0.40 ± 0.20	1.00	1.00	1.35 ± 0.2
NTRT12	3.05 ± 0.15	1.55 ± 0.15	0.55 ± 0.15	0.42 ± 0.20	0.35 ± 0.25	2.00	1.15	1.70 ± 0.2





PART NUMBER SYSTEM

NTRT 10 B 10R0 C TR QY F

- F — RoHS compliant
- QY — AEC-Q200 qualified and IATF-16949 certified production
- TR — Tape & Reel Packaging: TR = Standard Tape & Reel, TR1K = Optional 1,000 quantity
- C — Temperature Coefficient Code: B = ±10ppm, N = ±15ppm, ±25ppm, D = ±50ppm
- 10R0 — Resistance Code: First 3 digits are significant figures (both E-24 and E-96 values), 4th digit is the multiplier, “R” indicates a decimal point.
- B — Tolerance Code: A = ± 0.05%, B = ± 0.1%, C = ± 0.25%, D = ± 0.5%, F = ± 1%
- 10 — Size Code: 02=0201, 04=0402, 06=0603, 10=0805, 12=1206
- NTRT — Series

NIC Components Corp.
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Last Updated 3/4/2026. Specification subject to change without notice. Please check web site for latest information.

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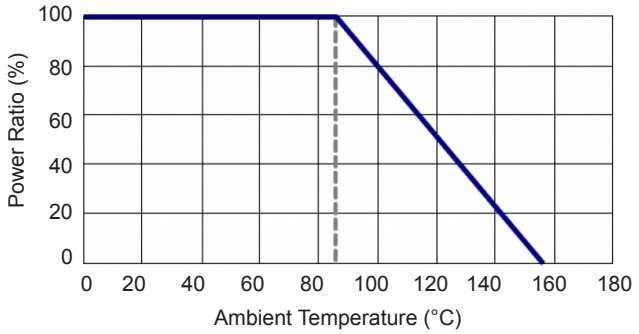
Power Derating Curve: For operation above 85°C, power rating must be derated according to the following chart:



RCWV (Rated Continuous Working Voltage) = √(P*R) or Max. Operating voltage whichever is lower

Note *1 - Maximum allowable continuous Working Voltage for all resistors is the lower of the two values:

Maximum Working Voltage" as specified above or:

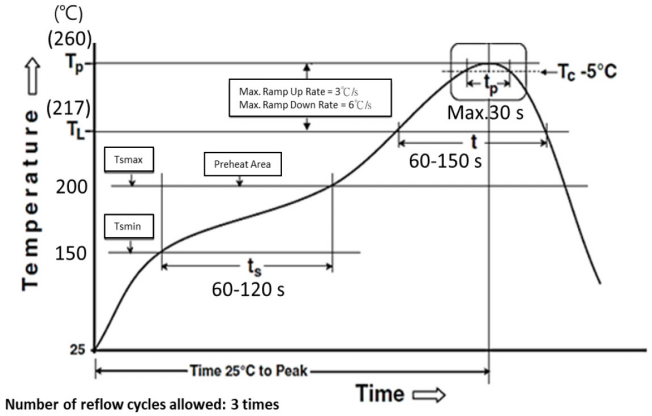
$$\sqrt{\text{Power rating (Watts) x Resistance (Ohms)}}$$

Note *2 - Maximum Overload Voltage for all resistors is the lower of the two values:

Maximum Overload Voltage" as specified above or

$$2 \times \sqrt{\text{Power rating (Watts) x Resistance (Ohms)}}$$

SOLDERING CONDITIONS (IPC/JEDEC J-STD-020)



Pb-Free Assembly	Time
Preheat Temp min (Tsmin)	150°C
Preheat Temp max (Tsmax)	200°C
Preheat time (ts)	60 - 120 seconds
Ramp-up rate (T_L to T_P)	3°C/second max.
Liquidous temperature (T_L)	217°C
Time (t_L) maintained above T_L	60 - 150 seconds
Peak Temperature min (T_P min)	235°C
Peak Temperature max (T_P max)	260°C
Time (T_P) within 5°C of the specified classification temperature (T_C)	30 seconds max.
Ramp-down rate (T_P to T_L)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

STORAGE CONDITIONS

Storage Temperature: 15 ~28 °C; Humidity < 80%RH

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ENVIRONMENTAL CHARACTERISTICS

Item	Requirement	Test Method*
Temperature Coefficient of Resistance	As specified	JIS-C-5201-1 4.8 IEC-60115-1 4.8 -55°C~ +125°C. 25°C is the reference temperature
Short Time Overload	ΔR ±0.1%	JIS-C-5201-1 4:13 RCWV x 2.5 or Max Overloading Voltage for 5 Seconds
Insulation Resistance	> 1000 MΩ	JIS-C-5201-1 4.6 IEC-60115-1 4.6 Apply 100Vdc for 1 minute
Operational Life	ΔR ±0.1%	MIL-STD-202 Method 108 Condition D steady state T_A = 125°C at derated power. Measurement at 24± hours after test conclusion
Biased Humidity	ΔR ±0.1%	MIL-STD-202 Method 103 1000 hrs 85°C / 85% R.H. 10% of operating power
Bending Strength	ΔR ±0.1%	JIS-C-5201-1 4.33 Bending 2mm for 60 seconds
Solderability	95% Minimum Coverage	JIS-C-5201-1 4.17 IEC-60115-1 4.17 245°C ±5°C, for 3 seconds
Resistance to Soldering Heat	ΔR ±0.1%	JIS-C-5201-1 4.18 IEC-60115-1 4.18 260°C ±5°C for 10 seconds
Temperature Cycling	ΔR ±0.1% for 125°C ΔR ±0.2% for 155°C	JESD22 Method JA-104 -55°C to +125°C, 1000 cycles -55°C to +155°C, 1000 cycles
High Temperature Exposure	ΔR ±0.15%	MIL-STD-202 Method 108 @ +155°C for 1000 hrs
Terminal Strength	Not broken	AEC-Q200-006 Force of 1kg for 60 seconds
Mechanical Shock	ΔR ±0.1%	MIL-STD-202 Method 213 Wave form: tolerance for half sine shock pulse. Peak value is 100 Gs. Normal duration (D) is 6.
Vibration	ΔR ±0.1%	MIL-STD-202 Method 204 5 G's for 20 min., 12 cycles each of 3 orientations, 10 - 2000 Hz
ESD	ΔR ±0.1%	AEC-Q200-002 Human Body Model NTRT04, NTRT06 = 0.2KV NTRT10, NTRT12 = 1KV
Resistance to solvents	Marking not smeared	MIL-STD-202 Method 215 Add Aqueous wash chemical, OKEM Clean or equivalent Do not use banned solvents
Sulfur Test	ΔR ±0.1%	ASTM-B-809-95 Modified 105 ± 2°C no power rating for 750 hrs.
Flammability	No ignition of the tissue paper or scorching of pinewood board	UL-94 V-0 or V-1 are acceptable Electrical test not required
Endurance	ΔR ±0.1%	IEC60115-1 4.25 1000 +48/-0 hors, loaded with RCWV or Vmax in chamber controller 85 ± 2°C, 1.5 hours on and 0.5 hours off
Moisture resistance	ΔR ±0.1%	MIL-STD-202 Method 106 65 ± 2°C, 80 ~ 100% R.H., 10 cycles, 24 hours/cycle

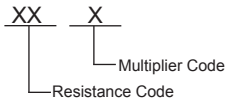
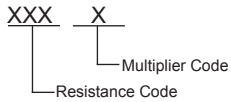
STANDARD E-24 AND E-96 VALUES AND RESISTANCE CODES

E-24	E-96							
Value & Code	Value	Code	Value	Code	Value	Code	Value	Code
10	100	01	102	02	105	03	107	04
11	110	05	113	06	115	07	118	08
12	121	09	124	10	127	11	130	12
13	133	13	137	14	140	15	143	16
15	147	17	150	18	154	19	158	20
16	162	21	165	22	169	23	174	24
18	178	25	182	26	187	27	191	28
20	196	29	200	30	205	31	210	32
22	215	33	221	34	226	35	232	36
24	237	37	243	38	249	39	255	40
27	261	41	267	42	274	43	280	44
30	287	45	294	46	301	47	309	48
33	316	49	324	50	332	51	340	52
36	348	53	357	54	365	55	374	56
39	383	57	392	58	402	59	412	60
43	422	61	432	62	442	63	453	64
47	464	65	475	66	487	67	499	68
51	511	69	523	70	536	71	549	72
56	562	73	576	74	590	75	604	76
62	619	77	634	78	649	79	665	80
68	681	81	698	82	715	83	732	84
75	750	85	768	86	787	87	806	88
82	825	89	845	90	866	91	887	92
91	909	93	931	94	953	95	976	96

MULTIPLIER CODE

Code	A	B, b	C	D, d	E	F	G	H	X	Y	Z
Multiplier	10^0	10^1	10^2	10^3	10^4	10^5	10^6	10^7	10^{-1}	10^{-2}	10^{-3}

MARKING IDENTIFIERS

0402 Size	0603 Size	0805 and 1206 Size
No marking on 0402 sizes	3 Digit Marking System: 2 digit value code + 1 digit multiplier code  E24 0603 Multiplier Code: 10e multiplier E96 0603 Multiplier Code: Per table 0603 Marking Examples: 101 = 100 Ω (E24) 13C = 13.3 KΩ (E96) 68B = 4.99 KΩ (E96) 103 = 10 KΩ (E24)	4 Digit Marking System: 3 digit value code + 1 digit multiplier code where "R" denotes a decimal  Value Multiplier Code: 10e multiplier Marking Examples: 10R0 = 10 Ω 1332 = 13.3 KΩ 4992 = 49.9 KΩ 1003 = 100 KΩ

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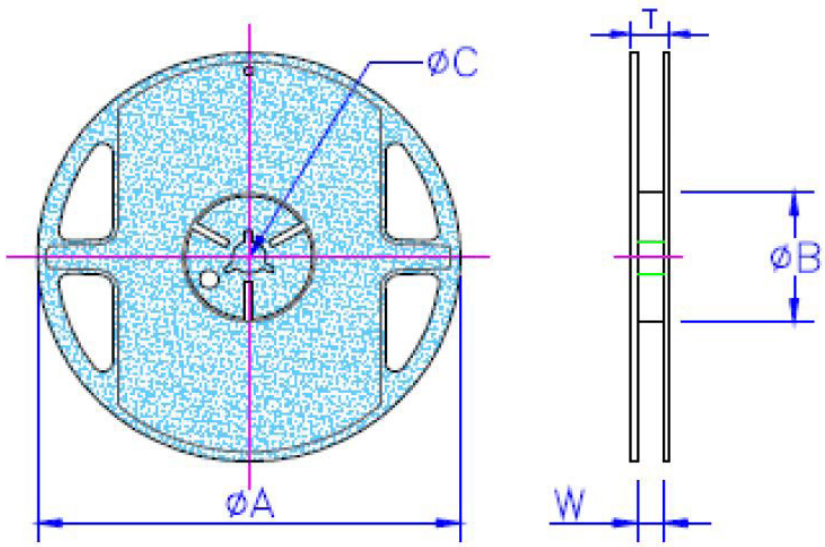
TAPING SPECIFICATIONS

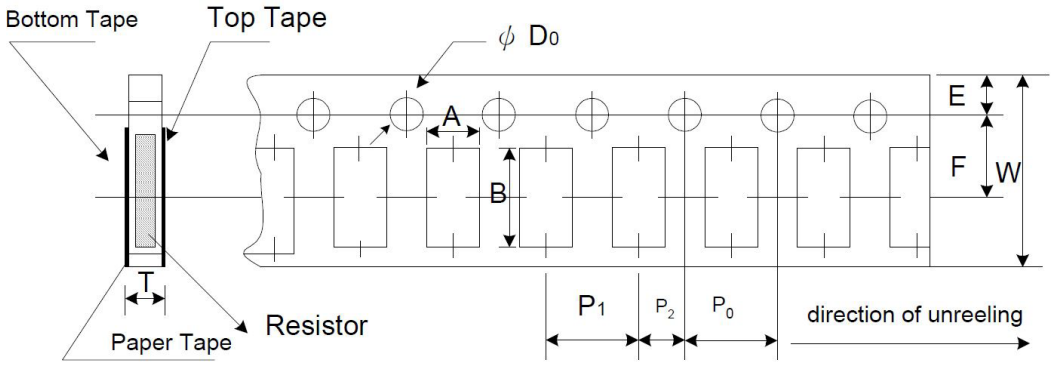
Type	EIA Size	A	B	C	W	T	Paper Tape (EA)
NTRT04	0402	1.78 ±1.0	60.0±1.0	13.5 ±0.7	9.5 ± 1.0	11.5 ±1.0	10,000
NTRT06	0603						5,000
NTRT10	0805						5,000
NTRT12	1206						5,000

REEL DIMENSIONS (mm)



PAPER TAPE DIMENSIONS (mm)

Type	EIA Size	A	B	D	E	F	P_0	P_1	P_2	W	T
NTRT04	0402	0.66 ± 0.06	1.18 ± 0.06	1.55 ±0.05	1.75 ±0.10	3.5 ±0.05	4.00 ± 0.10	2.00 ±0.05	2.00 ±0.05	8.00 ± 0.20	0.60 ± 0.03
NTRT06	0603	1.10 ± 0.05	1.90 ± 0.05	1.55 ±0.05	1.75 ± 0.05	3.5 ±0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ±0.05	8.00 ± 0.10	0.60 ± 0.03
NTRT10	0805	1.60 ± 0.05	2.37 ± 0.05	1.55 ±0.05	1.75± 0.05	3.5 ±0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ±0.05	8.00 ± 0.10	0.75 ± 0.05
NTRT12	1206	2.00 ± 0.05	3.55 ± 0.05	1.55 ±0.05	1.75± 0.05	3.5 ±0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	8.00 ± 0.10	0.75 ± 0.05



Unit: mm