

Multilayer Chip NTC Thermistors

Type: **ERTJ**

The Multilayer Chip NTC Thermistors are especially designed for surface mountings featuring the miniature sizes of "0201", "0402" and "0603" type (EIA) with highly reliable multilayer and monolithic structure.



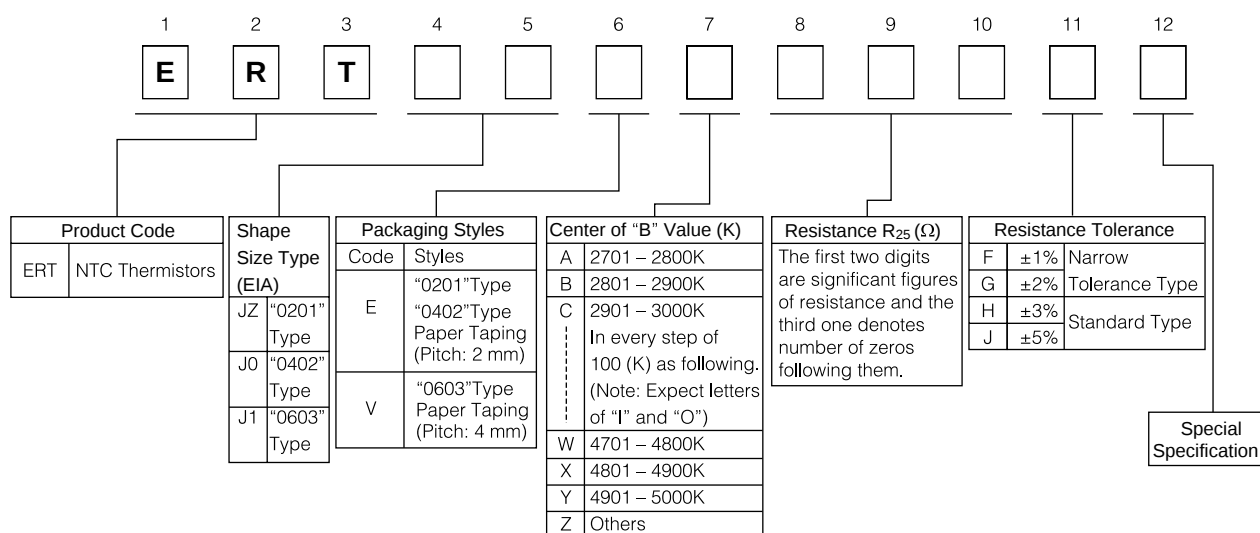
■ Features

- Highly reliable multilayer / monolithic structure
- Superior heat resistance to reflow soldering and excellent solderability thanks to the unique external electrodes of three metallic layers
- Wide ranges of operating temperature (–40 to 125 °C)

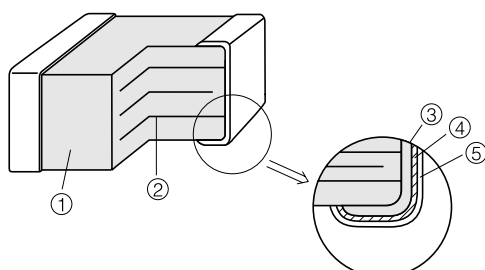
■ Recommended Applications

- Cellular Phone
 - Temperature compensation for Crystal Oscillator
 - Temperature compensation for Semiconductor
- Personal Computer
 - Temperature detection for CPU and memory device
 - Temperature compensation for Ink-viscosity (Inkjet Printer)
- Battery Pack
 - Temperature detection for battery cell
- Liquid Crystal Display
 - Temperature compensation for contrast
 - Temperature compensation for Back light

■ Explanation of Part Numbers

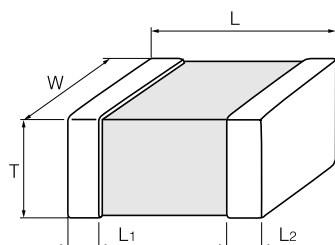


■ Construction



No	Name
①	Ceramic Semiconductor
②	Inner electrode
③	Substrate electrode
④	Intermediate electrode
⑤	External electrode

■ Dimensions in mm (not to scale)



Size Code (EIA)	L	W	T	L ₁ , L ₂
JZ(0201)	0.60±0.03	0.30±0.03	0.30±0.03	0.15±0.05
J0(0402)	1.00±0.10	0.50±0.05	0.50±0.05	0.25±0.15
J1(0603)	1.60±0.15	0.80±0.10	0.80±0.10	0.30±0.20

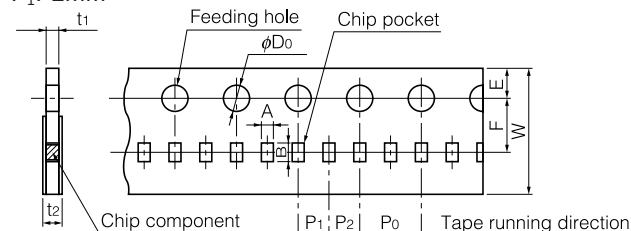
■ Packaging Specifications

● Standard Packing Quantity

Size Code	Thickness	Style	Paper taping
JZ (0201)	0.3 mm		Pitch 2 mm: 15000 pcs./reel
J0 (0402)	0.5 mm		Pitch 2 mm: 10000 pcs./reel
J1 (0603)	0.8 mm		Pitch 4 mm: 4000 pcs./reel

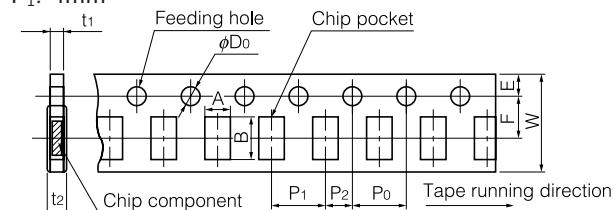
● Paper Taping

P₁: 2mm



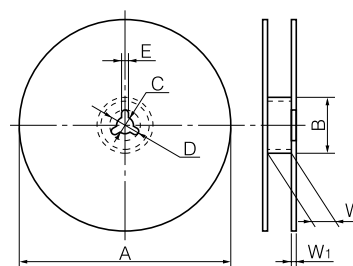
Size Code	Symbol	A	B	W	F	E	P ₁	P ₂	P ₀	φD ₀	t ₁	t ₂
Dim.	JZ	0.37	0.67	8.0	3.50	1.75	2.00	2.00	4.0	1.5	0.5	0.8
(mm)	(0201)	±0.03	±0.03	±0.2	±0.05	±0.10	±0.05	±0.05	±0.1	+0.1 0	max.	max.
	J0	0.65	1.15	±0.2	±0.05	±0.10	±0.05	±0.05	±0.1	0.7	max.	1.0
	(0402)	±0.05	±0.05									max.

P₁: 4mm



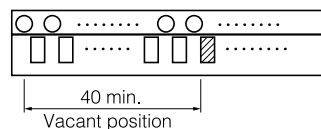
Size Code	Symbol	A	B	W	F	E	P ₁	P ₂	P ₀	φD ₀	t ₁	t ₂
Dim.	J1	1.10	1.90	8.0	3.50	1.75	4.0	2.00	4.0	1.5	1.1	1.4
(mm)	(0603)	±0.10	±0.10	±0.2	±0.05	±0.10	±0.1	±0.05	±0.1	+0.1 0	max.	max.

● Reel for Taping

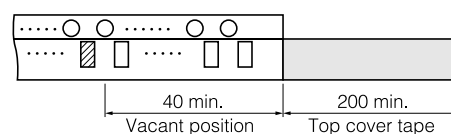


Symbol	A	B	C	D	E	W	W ₁
Dim. (mm)	φ180 ⁺⁰ ₋₃	φ60.0±0.5	13.0±0.5	21.0±0.8	2.0±0.5	9.0±0.3	1.3±0.2

● Leader Part and Taped End



Leader part



Unit : mm

■ Ratings and Characteristics

Size code (EIA)	0603 Type	0402 Type	0201 Type
Operating Temperature Range	-40 to 125 °C		
Resistance to Soldering Heat	270 °C-3s, 260 °C-10s		
Heat Dissipation Constant *	approximately 3mW / °C	approximately 2mW / °C	approximately 1mW / °C
Rated Maximum Power Dissipation	100 mW	66 mW	33 mW

* Mounted on a glass epoxy board (1.6t)

● Resistance ratios to R25 at each temperature

(for obtaining resistance at each temperature by using R25 shown in part number)

T(°C)	ERTJ□□A (2750 K)	ERTJ□□A (2800 K)	ERTJ□□T (4500 K)	ERTJ□□R (4250 K)	ERTJ□□P (4050 K)	ERTJ□□V (4700 K)	ERTJ□□G *(3435 K)	ERTJ□□S *(4390 K)
	typical	typical	typical	typical	typical	typical	typical	typical
-40	12.965	13.583	62.936	42.791	36.401	59.797	20.238	45.549
-35	10.177	10.615	42.679	30.246	26.052	41.298	15.292	32.019
-30	8.060	8.372	29.347	21.628	18.865	28.758	11.669	22.774
-25	6.438	6.660	20.445	15.635	13.813	20.267	8.988	16.379
-20	5.184	5.341	14.421	11.420	10.219	14.428	6.984	11.904
-15	4.205	4.317	10.291	8.424	7.636	10.368	5.472	8.738
-10	3.436	3.514	7.425	6.271	5.759	7.519	4.322	6.475
-5	2.826	2.880	5.414	4.710	4.382	5.500	3.439	4.841
0	2.340	2.376	3.987	3.567	3.362	4.056	2.755	3.650
5	1.949	1.973	2.964	2.723	2.600	3.015	2.221	2.773
10	1.634	1.649	2.226	2.096	2.026	2.260	1.803	2.124
15	1.379	1.387	1.689	1.626	1.591	1.709	1.473	1.640
20	1.171	1.174	1.294	1.271	1.257	1.302	1.210	1.276
25	1	1	1	1	1	1	1	1
30	0.8585	0.8562	0.7795	0.7923	0.8006	0.7733	0.8309	0.7889
35	0.7409	0.7369	0.6127	0.6318	0.6450	0.6022	0.6941	0.6265
40	0.6425	0.6373	0.4852	0.5069	0.5229	0.4720	0.5826	0.5006
45	0.5598	0.5539	0.3872	0.4090	0.4264	0.3723	0.4914	0.4024
50	0.4899	0.4836	0.3111	0.3319	0.3496	0.2954	0.4164	0.3253
55	0.4286	0.4220	0.2517	0.2710	0.2882	0.2358	0.3543	0.2645
60	0.3774	0.3708	0.2049	0.2224	0.2388	0.1894	0.3027	0.2162
65	0.3345	0.3279	0.1679	0.1834	0.1989	0.1530	0.2596	0.1776
70	0.2982	0.2918	0.1385	0.1520	0.1664	0.1242	0.2233	0.1467
75	0.2674	0.2611	0.1148	0.1266	0.1398	0.1014	0.1928	0.1217
80	0.2411	0.2350	0.09570	0.1059	0.1180	0.08322	0.1670	0.1014
85	0.2185	0.2125	0.08021	0.08894	0.1000	0.06862	0.1451	0.08486
90	0.1980	0.1923	0.06766	0.07507	0.08511	0.05684	0.1260	0.07137
95	0.1801	0.1746	0.05735	0.06361	0.07271	0.04731	0.1097	0.06027
100	0.1645	0.1592	0.04884	0.05412	0.06235	0.03956	0.09570	0.05111
105	0.1507	0.1456	0.04177	0.04622	0.05366	0.03322	0.08370	0.04350
110	0.1386	0.1337	0.03588	0.03962	0.04634	0.02801	0.07338	0.03717
115	0.1279	0.1232	0.03094	0.03408	0.04015	0.02371	0.06448	0.03187
120	0.1183	0.1138	0.02679	0.02941	0.03490	0.02015	0.05678	0.02743
125	0.1098	0.1055	0.02328	0.02547	0.03043	0.01719	0.05011	0.02368

*:B25/85

Design, Specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.
Whenever a doubt about safety arises from this product, please inform us immediately for technical consultation without fail.

Ratings and Characteristics

Narrow Tolerance Type (Resistance Tolerance: $\pm 2\%$, $\pm 1\%$)

Size Code	Part No.	Zero-Power Resistance (at 25 °C)	B Value	
			B25/50	B25/85
J0 (0402)	ERTJ0EG103□A	10 k Ω	(3375 K)	3435 K $\pm 1\%$
	ERTJ0EV104□	100 k Ω	4700 K $\pm 1\%$	(4750 K)
J1 (0603)	ERTJ1VG103□A	10 k Ω	(3375 K)	3435 K $\pm 1\%$
	ERTJ1VS104□A	100 k Ω	(4330 K)	4390 K $\pm 1\%$

Standard Products (Resistance Tolerance: $\pm 5\%$, $\pm 3\%$)

Size Code	Part No.	Zero-Power Resistance (at 25 °C)	B Value	
			B25/50	B25/85
JZ (0201)	ERTJZET202□	2 k Ω	4500 K $\pm 2\%$	(4450 K)
	ERTJZET302□	3 k Ω		
J0 (0402)	ERTJ0EA220□	22 Ω	2750 K $\pm 3\%$	(2700 K)
	ERTJ0EA330□	33 Ω		
	ERTJ0EA400□	40 Ω		
	ERTJ0EA470□	47 Ω		
	ERTJ0EA680□	68 Ω	2800 K $\pm 3\%$	(2750 K)
	ERTJ0EA101□	100 Ω		
	ERTJ0EA151□	150 Ω		
	ERTJ0ET102□	1 k Ω	4500 K $\pm 2\%$	(4450 K)
	ERTJ0ET152□	1.5 k Ω		
	ERTJ0ET202□	2.0 k Ω		
	ERTJ0ET222□	2.2 k Ω		
	ERTJ0ET302□	3.0 k Ω		
	ERTJ0ET332□	3.3 k Ω		
	ERTJ0ET472□	4.7 k Ω		
	ERTJ0ER332□	3.3 k Ω	4250 K $\pm 2\%$	(4300 K)
	ERTJ0ER472□	4.7 k Ω		
	ERTJ0ER682□	6.8 k Ω		
	ERTJ0ER103□	10 k Ω		
	ERTJ0ER153□	15 k Ω	4050 K $\pm 2\%$	(4100 K)
	ERTJ0ER223□	22 k Ω		
	ERTJ0ER333□	33 k Ω		
	ERTJ0EP473□	47 k Ω		
	ERTJ0EV473□	47 k Ω	4700 K $\pm 2\%$	(4750 K)
	ERTJ0EV683□	68 k Ω		
	ERTJ0EV104□	100 k Ω		
	ERTJ0EV154□	150 k Ω		
	ERTJ0EV224□	220 k Ω		
	ERTJ0EV334□	330 k Ω		
J1 (0603)	ERTJ0EV474□	470 k Ω	2750 K $\pm 3\%$	(2700 K)
	ERTJ1VA220□	22 Ω		
	ERTJ1VA330□	33 Ω		
	ERTJ1VA400□	40 Ω		
	ERTJ1VA470□	47 Ω	2800 K $\pm 3\%$	(2750 K)
	ERTJ1VA680□	68 Ω		
	ERTJ1VA101□	100 Ω		
	ERTJ1VT102□	1 k Ω	4500 K $\pm 2\%$	(4450 K)
	ERTJ1VT152□	1.5 k Ω		
	ERTJ1VT202□	2.0 k Ω		
	ERTJ1VT222□	2.2 k Ω		
	ERTJ1VT302□	3.0 k Ω		
	ERTJ1VT332□	3.3 k Ω		
	ERTJ1VT472□	4.7 k Ω		
	ERTJ1VR332□	3.3 k Ω	4250 K $\pm 2\%$	(4300 K)
	ERTJ1VR472□	4.7 k Ω		
	ERTJ1VR682□	6.8 k Ω		
	ERTJ1VR103□	10 k Ω		
	ERTJ1VR153□	15 k Ω		
	ERTJ1VR223□	22 k Ω		
	ERTJ1VR333□	33 k Ω		
	ERTJ1VR473□	47 k Ω	4050 K $\pm 2\%$	(4100 K)
	ERTJ1VR683□	68 k Ω		
	ERTJ1VP473□	47 k Ω		
	ERTJ1VV473□	47 k Ω	4700 K $\pm 2\%$	(4750 K)
	ERTJ1VV683□	68 k Ω		
	ERTJ1VV104□	100 k Ω		
	ERTJ1VV154□	150 k Ω		

* □ : Resistance Tolerance Code

$$B_{25/50} = \frac{\ln(R_{25}/R_{50})}{1/298.15 - 1/323.15}$$

$$B_{25/85} = \frac{\ln(R_{25}/R_{85})}{1/298.15 - 1/358.15}$$

R_{25} =Resistance at 25.0 $\pm$ 0.1 °C
 R_{50} =Resistance at 50.0 $\pm$ 0.1 °C
 R_{85} =Resistance at 85.0 $\pm$ 0.1 °C

Design, Specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.
 Whenever a doubt about safety arises from this product, please inform us immediately for technical consultation without fail.