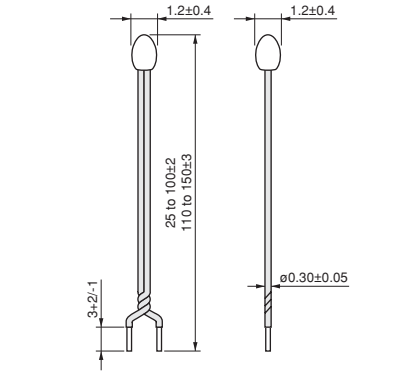
NTC Thermistors

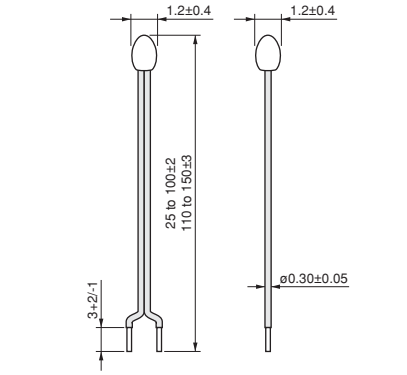
Temperature Sensor Thermo String Type

This product is a small flexible lead type NTC Thermistor with the small head and the thin lead wire.



The full length 25mm, 30 to 150mm interval 10mm. (in mm)

NXFT15_1B Type(twist)



The full length 25mm, 30 to 150mm interval 10mm. (in mm)

NXFT15_2B Type(without twist)

■ Features

1. High accuracy and high sensibility temperature sensing is available by the small size and high accuracy NTC Thermistor.
2. Narrow space temperature sensing is available by the small sensing head and the thin lead wire.
3. Flexibility and wide variety length (25 mm to 150mm) enables designing flexible temperature sensing architectures.
4. This product is compatible with our 0402 (EIA) size chip Thermistor.
5. Excellent long time aging stability
6. This is halogen free product. *
   * Cl= max.900ppm, Br=max.900ppm and Cl+Br=max.1500ppm
7. NXFT series are recognized by UL/cUL. (UL1434, File No.E137188).

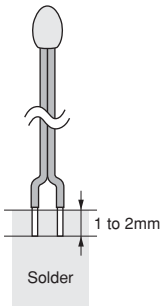
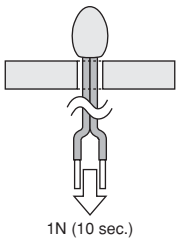
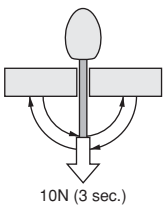
■ Applications

1. Temperature compensation for transistor, IC and crystal oscillator in mobile communications
2. Temperature sensor for rechargeable batteries
3. Temperature compensation of LCD
4. Temperature compensation in general use of electric circuits

Part Number	Resistance (25°C) (ohm)	B-Constant (25-50°C) (K)	B-Constant (25-80°C) (Reference Value) (K)	B-Constant (25-85°C) (Reference Value) (K)	B-Constant (25-100°C) (Reference Value) (K)	Operating Current for Sensor (25°C) (mA)	Rated Electric Power (25°C) (mW)	Typical Dissipation Constant (25°C) (mW/°C)	Thermal Time Constant (25°C) (s)
NXFT15XH103FA□B□□□	10k ±1%	3380 ±1%	3428	3434	3455	0.12	7.5	1.5	4
NXFT15WB473FA□B□□□	47k ±1%	4050 ±1%	4101	4108	4131	0.06	7.5	1.5	4
NXFT15WF104FA□B□□□	100k ±1%	4250 ±1%	4303	4311	4334	0.04	7.5	1.5	4

□ is the filled with lead shape (1: twist, 2: without twist).
□□□ is the filled with Total-length codes. (25mm, 30 to 150mm interval 10mm, ex. 050=50mm)
Operating Current for Sensor rises Thermistor's temperature by 0.1°C
Rated Electric Power shows the required electric power that causes Thermistor's temperature to rise to 30°C by self heating, at ambient temperature of 25 °C.
Operating Temperature Range: -40°C to +125°C

Temperature Sensor Thermo String Type Specifications and Test Methods

No.	Item	Specifications	Test Methods
1	High Temperature Storage Test	· Resistance (R25°C) fluctuation rate: less than ±1%. · B-Constant (B25/50°C) fluctuation rate: less than ±1%.	125±2°C in air, for 1000 +48/-0 hours without loading.
2	Low Temperature Storage Test		-40 +0/-3°C in air, for 1000 +48/-0 hours without loading.
3	Humidity Storage Test	· Resistance (R25°C) fluctuation rate: less than ±2%. · B-Constant (B25/50°C) fluctuation rate: less than ±1%.	60±2°C, 90 to 95%RH in air, for 1000 +48/-0 hours without loading.
4	Temperature Cycle		-40 +0/-3°C, 30 minutes in air +25±2°C, 10 to 15 minutes in air +125±2°C, 30 minutes in air + 25 +2/-0°C, 10 to 15 minutes in air (1 cycle) Continuous 100 cycles, without loading.
5	High Temperature Load		85±2°C in air, with 'Operating Current for Sensor' for 1000 +48/-0 hrs.
6	Insulation Break - down Voltage	· No damage electrical characteristics at DC100 V, 1 min.	2mm length of coating resin from the top of Thermistor is to be dipped into beads of lead (Pb), and DC100V 1 minute is applied to circuit between beads of lead (Pb) and lead wire.
7	Resistance to Soldering Heat	· Resistance (R25°C) fluctuation rate: less than ±1%. · B-Constant (B25/50°C) fluctuation rate: less than ±1%.	Both lead wires are dipped into 350±10°C solder for 3.5±0.5 seconds, or 260±5°C solder for 10±1 seconds according to Fig-1 (solder <JIS Z 3282 H60A>).  Fig-1
8	Solderability	More than 90% of lead wire surface shall be covered by solder.	Both lead wires are dipped into flux (25wt% colophony <JIS K 5902> isopropyl alcohol <JIS K 8839>) for 5 to 10 seconds. Then both lead wires are dipped into 235±5°C solder <JIS Z 3282 H60A> for 2±0.5 seconds according to Fig-1.
9	Lead Wire Pull Strength	· Resistance (R25°C) fluctuation rate: less than ±1%. · B-Constant (B25/50°C) fluctuation rate: less than ±1%.	The lead wire shall be inserted in a ø1.0mm hole until resin part contacts with a substrate as shown in fig.-2, and 1N force for 10 seconds shall be applied to the lead wire.  Fig-2
10	Lead Wire Bending Strength	· Lead wire does not break.	Hold the lead wires as in Fig-3. Bend by 90 degrees and again bend back to the initial position. Then bend to the other side by 90 degrees and again bend back to the initial position. After bending process, 10N force for 3 seconds shall be applied to the lead wire.  Fig-3

* · R25 is zero-power resistance at 25°C.
· B25/50 is calculated by zero-power resistance of Thermistor in 25°C -50°C.
· After each test, NTC Thermistor should be kept for 1 hour at room temperature (normal humidity and normal atmospheric pressure).

Continued on the following page.

Temperature Sensor Thermo String/Lead Type Temperature Characteristics (Center Value)

Part Number	NXFT15XH103	NXFT15WB473	NXFT15WF104
Resistance	10kΩ	47kΩ	100kΩ
B-Constant	3380K	4050K	4250K
Temp. (°C)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)
−40	197.388	1690.590	4221.280
−35	149.395	1215.320	2995.040
−30	114.345	882.908	2147.000
−25	88.381	647.911	1554.600
−20	68.915	480.069	1136.690
−15	54.166	359.009	839.019
−10	42.889	270.868	624.987
−5	34.196	206.113	469.678
0	27.445	158.126	355.975
5	22.165	122.267	272.011
10	18.010	95.256	209.489
15	14.720	74.754	162.559
20	12.099	59.075	127.057
25	10.000	47.000	100.000
30	8.309	37.636	79.222
35	6.939	30.326	63.167
40	5.824	24.583	50.677
45	4.911	20.043	40.904
50	4.160	16.433	33.195
55	3.539	13.545	27.091
60	3.024	11.223	22.224
65	2.593	9.345	18.323
70	2.233	7.818	15.184
75	1.929	6.571	12.635
80	1.673	5.548	10.566
85	1.455	4.704	8.873
90	1.270	4.004	7.481
95	1.112	3.422	6.337
100	0.976	2.936	5.384
105	0.860	2.528	4.594
110	0.759	2.184	3.934
115	0.673	1.893	3.380
120	0.598	1.646	2.916
125	0.532	1.436	2.522

Part Number	NXRT15XM202	NXRT15XH103	NXRT15XV103	NXRT15WB333	NXRT15WB473	NXRT15WF104
Resistance	2.0kΩ	10kΩ	10kΩ	33kΩ	47kΩ	100kΩ
B-Constant	3500K	3380K	3936K	4050K	4050K	4250K
Temp. (°C)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)
−40	44.981	195.652	337.503	1227.263	1747.920	4397.119
−35	33.671	148.171	243.332	874.449	1245.428	3088.599
−30	25.444	113.347	177.496	630.851	898.485	2197.225
−25	19.417	87.559	130.859	460.457	655.802	1581.881
−20	14.955	68.237	97.428	339.797	483.954	1151.037
−15	11.619	53.650	73.230	253.363	360.850	846.579
−10	9.097	42.506	55.529	190.766	271.697	628.988
−5	7.178	33.892	42.467	144.964	206.463	471.632
0	5.707	27.219	32.747	111.087	158.214	357.012
5	4.568	22.021	25.450	85.842	122.259	272.500
10	3.682	17.926	19.932	66.861	95.227	209.710
15	2.986	14.674	15.727	52.470	74.730	162.651
20	2.437	12.081	12.498	41.471	59.065	127.080
25	2.000	10.000	10.000	33.000	47.000	100.000
30	1.651	8.315	8.054	26.430	37.643	79.222
35	1.370	6.948	6.529	21.298	30.334	63.167
40	1.143	5.834	5.324	17.266	24.591	50.677
45	0.958	4.917	4.366	14.076	20.048	40.904
50	0.807	4.161	3.601	11.538	16.433	33.195
55	0.682	3.535	2.985	9.506	13.539	27.091
60	0.580	3.014	2.488	7.870	11.209	22.224
65	0.495	2.586	2.083	6.549	9.328	18.323
70	0.424	2.228	1.752	5.475	7.798	15.184
75	0.365	1.925	1.480	4.595	6.544	12.635
80	0.315	1.669	1.256	3.874	5.518	10.566
85	0.273	1.452	1.070	3.282	4.674	8.873
90	0.237	1.268	0.916	2.789	3.972	7.481
95	0.207	1.110	0.787	2.379	3.388	6.337
100	0.181	0.974	0.679	2.038	2.902	5.384
105	0.160	0.858	0.588	1.751	2.494	4.594
110	0.141	0.758	0.512	1.509	2.150	3.934
115	0.124	0.672	0.446	1.306	1.860	3.380
120	0.110	0.596	0.391	1.134	1.615	2.916
125	0.098	0.531	0.343	0.987	1.406	2.522

Detailed Resistance - Temperature Tables are downloadable from the following URL.
http://search.murata.co.jp/Ceramy/CatsearchAction.do?sLang=en