



# NTC Thermistor

## PRODUCT DATA

### ■ Temperature Compensation/Sensing TSM Series (SMD Type)

#### ● Features

1. EIA size 0402, 0603, 0805, 1206
2. Highly reliable monolithic structure
3. -40 ~ +125 °C operating temperature range
4. Wide resistance range
5. Cost effective

#### ● Recommended applications

1. Battery pack
2. Mother board/notebook PC
3. Liquid crystal display
4. Cellular phones

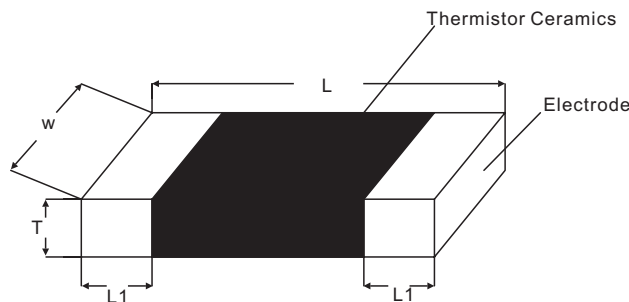


#### ● Approvals



\* UL 1434 Recognized (File#E138827)

#### ● Dimensions



(Unit:mm)

Part no.	Size	L	W	Tmax.	L1
TSM0	0402	1.00±0.15	0.50±0.10	0.6	0.20±0.10
TSM1	0603	1.60±0.15	0.80±0.15	0.95	0.25±0.15
TSM2	0805	2.00±0.20	1.25±0.20	1.2	0.40±0.20
TSM3	1206	3.20±0.30	1.60±0.20	1.5	0.50±0.20



● Characteristics

Part no.	Zero power resistance at 25°C (KΩ)	Tolerance of resistance (±%)	B value (K)	Tolerance of B value (±%)	Max. power rating at 25°C (mW)	Thermal dissipation constant (mW/°C)	Thermal time constant (Sec.)	Operating temperature range (°C)							
TSM0A103□34D*	10	1、2、3、5、10	25/85	1、2、3	170	1.7	2	-40 ~ +125							
TSM0A103□39H*	10								3435						
TSM0A223□395*	22								3975						
TSM0A333□39H*	33								3950						
TSM0A473□395*	47								3975						
TSM0A503□395*	50								3950						
TSM0A104□400*	100								4000						
TSM1A202□340*	2	1、2、3、5、10	25/85	1、2、3	210	2.1	3.1	-40 ~ +125							
TSM1A472□34D*	4.7								3400						
TSM1A502□34D*	5								3435						
TSM1A682□34D*	6.8								3435						
TSM1A103□34D*	10								3435						
TSM1A103□39H*	10								3975						
TSM1A223□392*	22								3920						
TSM1A333□385*	33								3850						
TSM1A473□395*	47								3950						
TSM1A503□395*	50								3950						
TSM1A683□400*	68								4000						
TSM1A104□402*	100								4020						
TSM1A204□39H*	200								3975						
TSM1A224□39H*	220								3975						
TSM1A334□402*	93								4020						
TSM2A472□34D*	4.7								1、2、3、5、10	25/85	1、2、3	240	2.4	5.4	-40 ~ +125
TSM2A502□34D*	5														
TSM2A103□34D*	10	3435													
TSM2A103□39H*	10	3975													
TSM2A223□380*	22	3800													
TSM2A473□400*	47	4000													
TSM2A503□400*	50	4000													
TSM2A683□402*	68	4020													
TSM2A104□39H*	100	3975													
TSM2A204□39H*	200	3975													
TSM2A224□39H*	220	3975													
TSM3A472□34D*	4.7	1、2、3、5、10	25/85	1、2、3	320	3.2	6.7	-40 ~ +125							
TSM3A502□34D*	5								3435						
TSM3A103□34D*	10								3435						
TSM3A103□39H*	10								3975						
TSM3A223□380*	22								3800						
TSM3A473□400*	47								4000						
TSM3A503□400*	50								4000						
TSM3A683□402*	68								4020						
TSM3A104□39H*	100								3975						
TSM3A204□39H*	200								3975						
TSM3A224□39H*	220								3975						

Note 1: □ = Tolerance of resistance  
 Note 2: \* = Tolerance of B value



● Reliability test

Item	Standard	Test conditions / Methods	Specifications															
Solderability	IEC68-2-20	235 ± 5°C , 2 ± 0.5 sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC68-2-20	260 ± 5°C , 10 ± 1 sec	No visible damage   ΔR/R   ≤ 3 %															
High Temperature Storage	IEC68-2-2 UL1434	Tmax ± 5°C , 1000 ± 24 HRS	No visible damage   ΔR/R   ≤ 5%															
Damp Heat	IEC68-2-3 UL1434	40 ± 2°C , 90 ~ 95 % RH , 1000 ± 24 HRS	No visible damage   ΔR/R   ≤ 3 %															
Thermal Shock	IEC68-2-14 UL1434	The thermal shock conditions shown below shall be repeated 5 cycles <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40 ± 5</td> <td>30 ± 3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>5 ± 3</td> </tr> <tr> <td>3</td> <td>125 ± 5</td> <td>30 ± 3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>5 ± 3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Period (minutes)	1	-40 ± 5	30 ± 3	2	Room temperature	5 ± 3	3	125 ± 5	30 ± 3	4	Room temperature	5 ± 3	No visible damage   ΔR/R   ≤ 3 %
Step	Temperature (°C)	Period (minutes)																
1	-40 ± 5	30 ± 3																
2	Room temperature	5 ± 3																
3	125 ± 5	30 ± 3																
4	Room temperature	5 ± 3																
Life Test	CNS5550	25 ± 5°C , Pmax. , 1000 ± 24 HRS	No visible damage   ΔR/R   ≤ 5 %															