

Thermal Sensors MOXIE[®] (NTC)

FEATURES

- high sensitivity
- quick reaction
- hysteresis approx. 3-6 °C
- excellent reliability
- long service life
- no selecting, no adjusting
- no corrosion of contact surface as semi-conductor
- no +/- polarity
- can be used as logical control element
- isolated casing
- easy installation
- can be delivered in chip form

TS3
TS3 B3
TS3 C3

CONSTRUCTION

Moxies are a family of variable resistance thermal sensors having a highly specific "transition region". Within this transition region the devices typically exhibit a negative temperature coefficient ranging from 40 % per °C to 300 % per °C. Below the transition region they exhibit a linear "thermistor" characteristic of -2 to -4%/°C.

Moxies are available in a TO - 18 transistor package (code TS 3) with two lead-wires, or as individual, trimmed clips.

The Moxie is a solid state component produced by thin film technology. A sapphire die is mounted on a gold plated header and connected to the terminals by gold-wire bonding.

APPLICATIONS

Sensors for temperature protection, control and limiting.

Voltage, current and frequency limiters in electronics.

Examples:

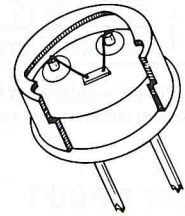
Overtemperature protector for power semi-conductors, such as transistors, power output stages, amplifiers.

Temperature control of electronic appliances and electric equipment.

Temperature sensor for signalling systems and fire detectors .

Control of componentry in industrial and entertainment electronics.

Protection of electronic circuits, such as computers or battery chargers.

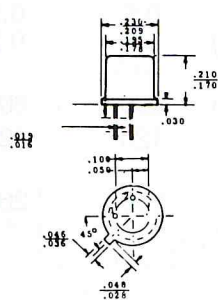


TS3

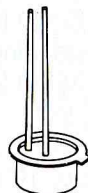
DIMENSIONS

TS3

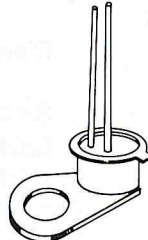
TO18



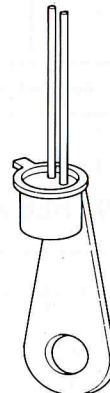
TS3



TS3 B3



TS3 C3

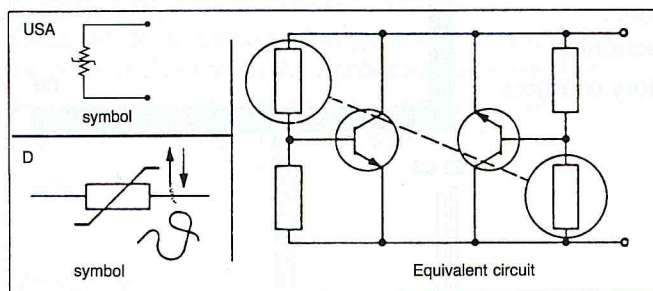


SPECIFICATIONS

Type	Parameter	Temp. (°C)	Condition	Min.	Typ.	Max.	Units
TS3-57	Resistance	35	Heating	35	85	230	kΩ
	Resistance	57	Heating		1.0		kΩ
	Resistance	75	Heating	15	45	100	Ω
	Sensitivity (1)	57	Heating	40	100		%/°C
	Latching Current (2)	—	D.C. Volts	0.6	1.8	3.2	mA
TS3-60	Resistance	35	Heating	50	130	350	kΩ
	Resistance	60	Heating		5		kΩ
	Resistance	75	Heating	20	75	250	Ω
	Sensitivity (1)	60	Heating	40	100		%/°C
	Latching Current (2)	—	D.C. Volts	0.6	1.6	2.8	mA
TS3-65	Resistance	40	Heating	120	620	1700	kΩ
	Resistance	65	Heating		5.0		kΩ
	Resistance	80	Heating	10	50	100	Ω
	Sensitivity (1)	65	Heating	80	200		%/°C
	Latching Current (2)	—	D.C. Volts	0.14	0.33	0.52	mA
TS3-75	Resistance	55	Heating	40	80	300	kΩ
	Resistance	75	Heating		3.0		kΩ
	Resistance	95	Heating	20	115	200	Ω
	Sensitivity (1)	75	Heating	50	70		%/°C
	Latching Current (2)	—	D.C. Volts	0.7	1.9	3.1	mA
TS3-85	Resistance	65	Heating	25	45	90	kΩ
	Resistance	85	Heating		1.5		kΩ
	Resistance	100	Heating	75	150	330	Ω
	Sensitivity (1)	85	Heating	30	40		%/°C
	Latching Current (2)	—	D.C. Volts	1.4	2.0	2.6	mA

Notes: (1) Sensitivity is defined as the percentage of resistance change per variation of 1 °C in temperature.
 (2) Latching current is the smallest current that will cause the device to make changes in resistance while it's cooling from transition to a lower temperature.

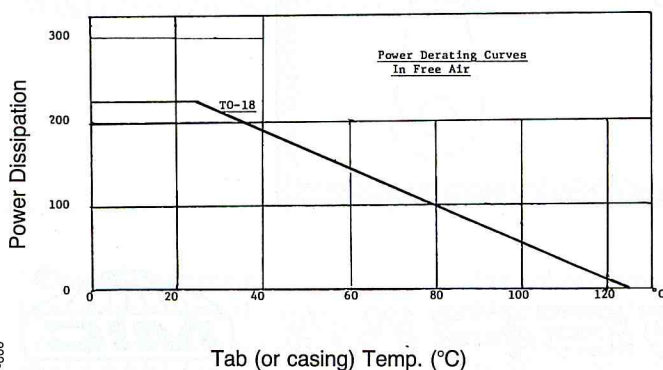
EQUIVALENT CIRCUIT



TYPICAL CHARACTERISTICS

	TS3-XX	TS3-XXB3
Thermal Resistance (°C/W)		
– Die to tab (or casing)	250	300
– Tab (or case) to air	200	200
Time Constant (sec)		
– Air to tab (or casing)	60	60
– Tab (or case) to die	2.0	2.5
Shunt Capacitance (pF)		
– Lead to lead	0.5	0.5
– Lead to tab (or casing)	0.2	0.2
Dielectric Withstanding (V dc)		
– Lead to tab (or casing)	600	600
Storage Temp. (°C)	120	120
Solder Temp. (1/16" from case, 10 sec)	260	260

POWER DERATING CURVES IN FREE AIR

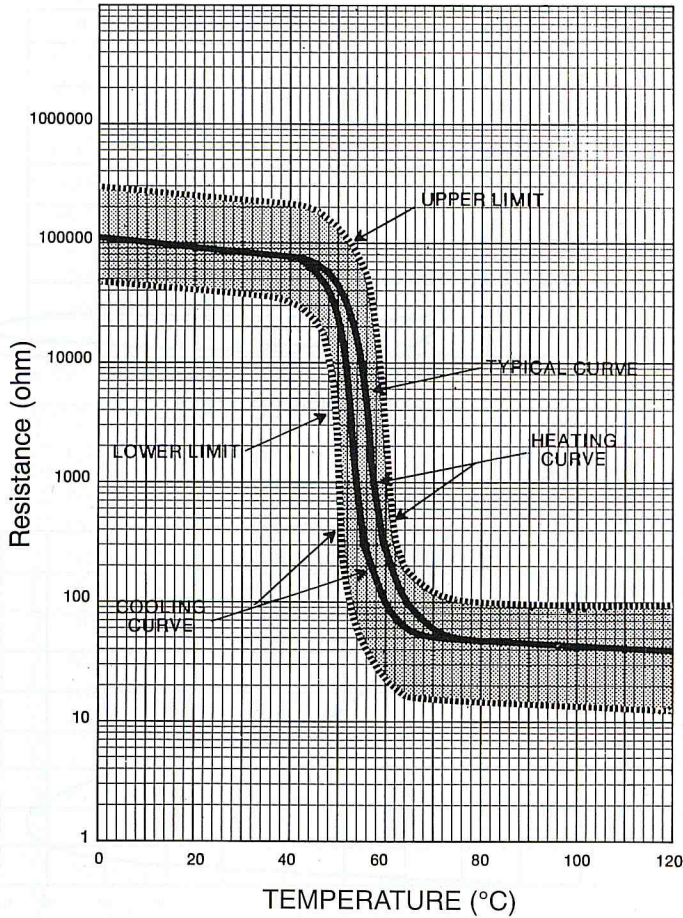


TYPICAL RESPONSE CHARACTERISTICS

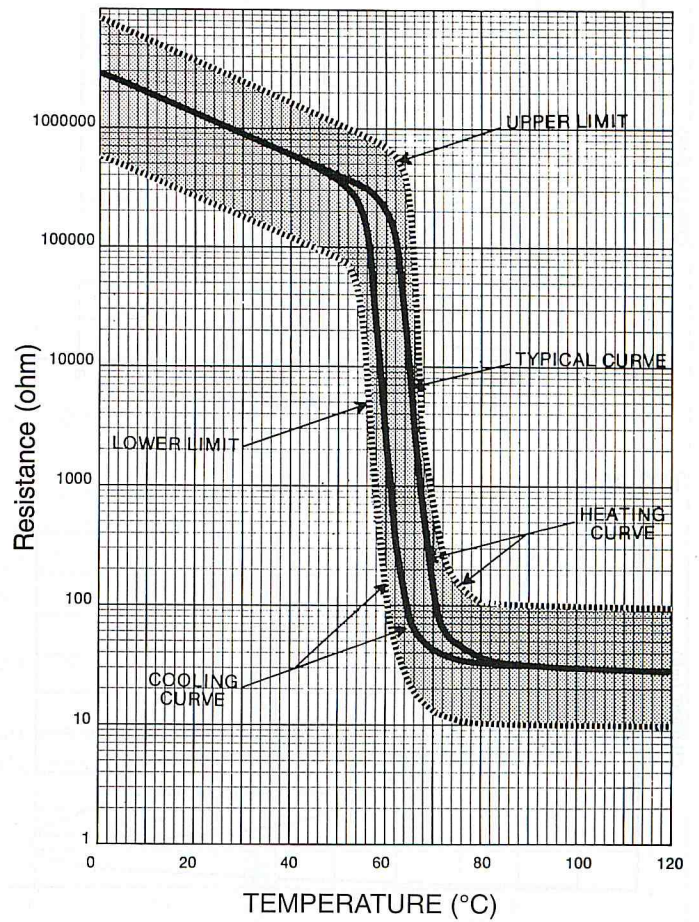
	TS3-57	TS3-60	TS3-65	TS3-75	TS3-85
Temp. Coefficient (%/°C)					
Pre-Transition	-2.0	-2.5	-4.0	-3.5	-3.0
Transition	-100	-100	-200	-70	-40
Post-Transition	-0.25	-0.25	-0.5	-1.0	-1.5

RESPONSE CHARACTERISTICS

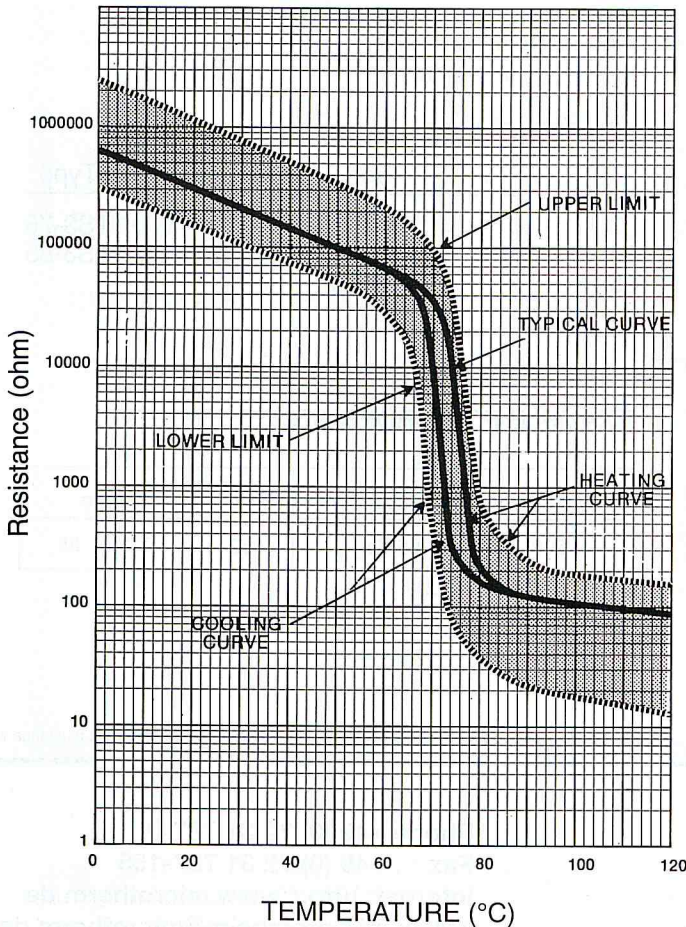
TS 3-57, TS 3-60



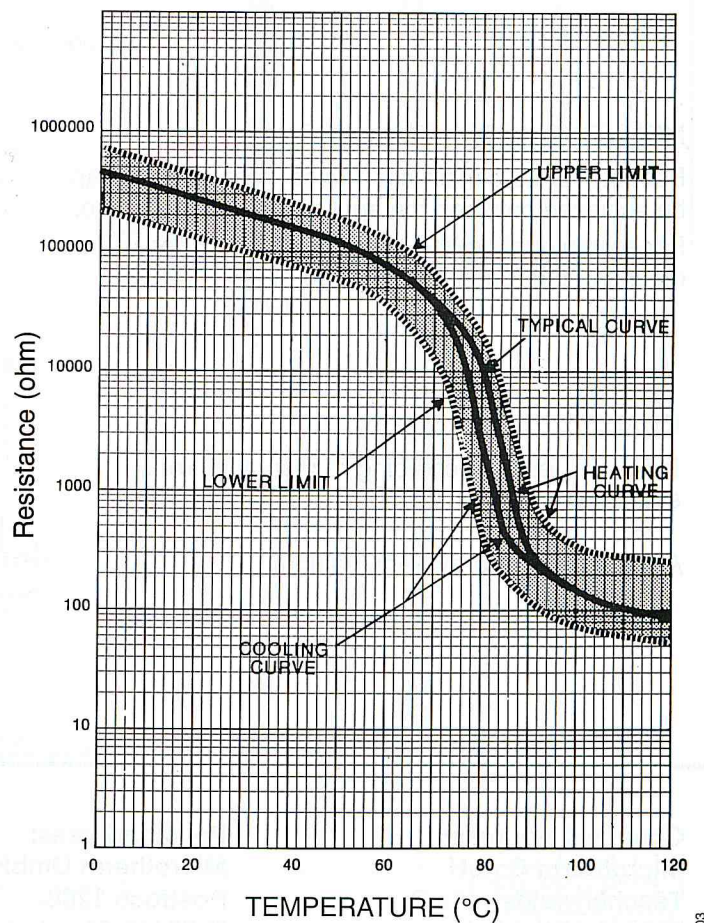
TS 3-65



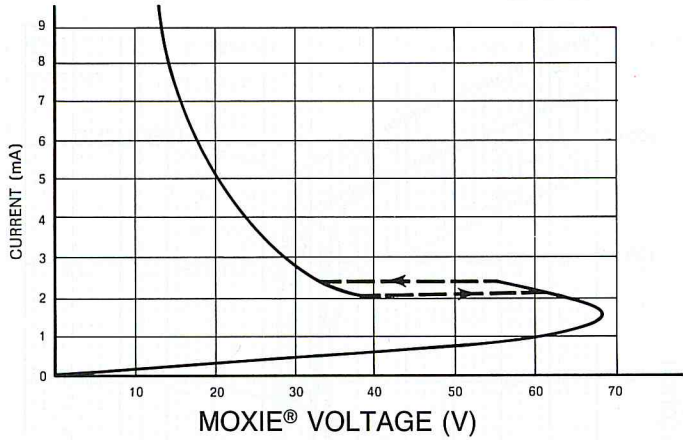
TS 3-75



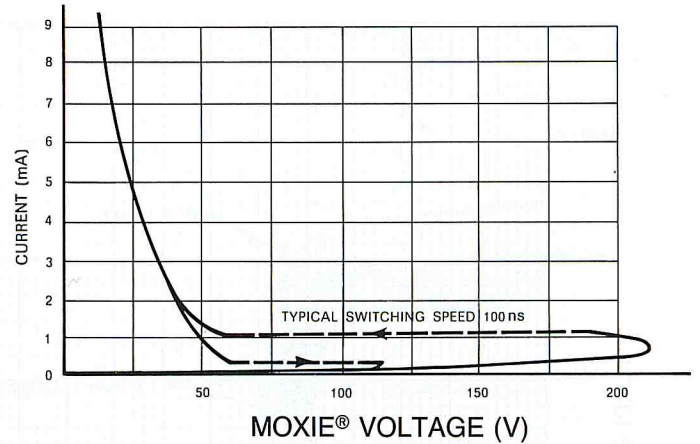
TS 3-85



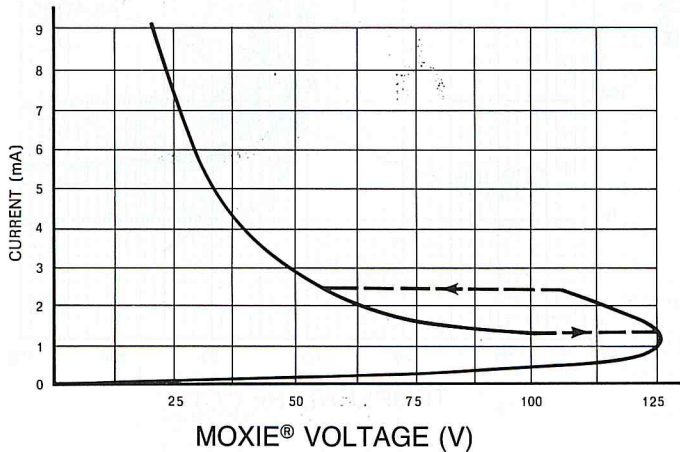
TS3-57/TS3-60



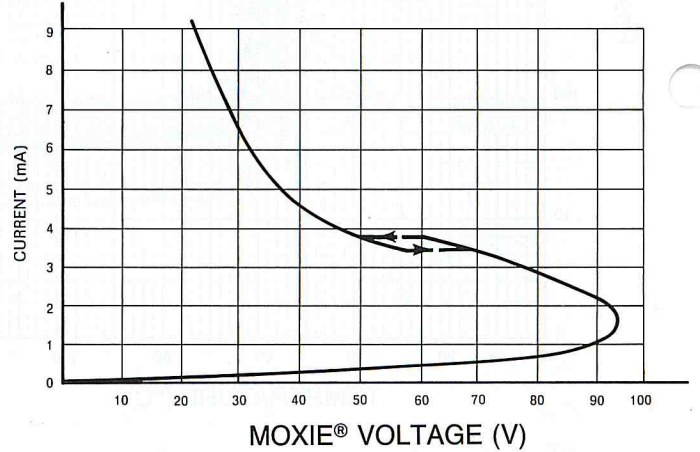
TS3-65



TS3-75



TS3-85



MOUNTING AND INSTALLATION

Because of its construction good heat transfer can be achieved between the application and the Moxie. For easy mounting, the Moxie can be supplied with a mounting tab (code TS3- XX-B3 or TS3-XX-C3).

TEMPERATURES

°C	Type	°C	Type
57	TS3-57	75	TS3-75
60	TS3-60	85	TS3-85
65	TS3-65		

QUALITY

Individual testing according to manufacturer's standard.

All data given are average values.

EXAMPLE FOR ORDERING

Quantity	Temperature	Fixture	Type
500	85 deg c	B3	TS 3 - 85

Technical data and availability are subject to change without notice.

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