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Vishay Sfernice

Wraparound and Single-In-Line, Thin Film Nickel Temperature Sensors



LINKS TO ADDITIONAL RESOURCES



Vacuum deposited nickel films are used to produce temperature sensors with various characteristics. The small size and small thermal mass of these devices result in a quick response to changes in temperature.

FEATURES

 Conforms to the DIN 43760 specs in -60 °C to +180 °C temperature range



TCR: 6180 ppm/°C (between 0 °C and 100 °C) (3)

• Wide resistance range: 25 Ω to 2500 Ω , TFS-S 25 Ω to 250 Ω , TFS-W

ROHS*
Available
HALOGEN
FREE

• Packaging available: W/A, SIL

• 2 versions: SMD and through hole

(5-2008) Available

• High stability ($\frac{\Delta R}{R}$ and $\frac{\Delta CT}{CT}$ < 0.2 % 1000 h at Pn at 150 °C)

 Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

Note

This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

STANDARD ELECTRICAL SPECIFICATIONS						
MODEL	SIZE	RESISTANCE RANGE AT 23 °C $^{(1)}$	RATED POWER W	MAX. CURRENT mA	TOLERANCE ± %	TEMPERATURE COEFFICIENT (2) (3) ± ppm/°C
TFS-S	0.2" lead spacing (4)	25 to 2500	0.500	5	1, 2	6180
TFS-W	0805	25 to 100	0.200	4	1, 2	6180
TFS-W	1206	25 to 250	0.330	4.5	1, 2	6180

Notes

- (1) Nominal value
- (2) Between 0 °C and 100 °C
- (3) The ohmic value $R_{\rm T}$ at temperature T (°C) depends on R_0 (ohmic value at 0 °C) according to the following equation: $R_{\rm T}/R_0 = 1 + 5.485 \times 10^{-3} \, {\rm T} + 6.65 \times 10^{-6} \, {\rm T}^2 + 2.805 \times 10^{-11} \, {\rm T}^4$

Example: A T = 100 °C $R_T/R_0 = 1.6180$ TCR = ± 6180 ppm/°C

Vishay Sfernice can calculate ohmic value at T = 0 °C (as ohmic value mentioned in ordering procedure is at 23 °C)

(4) TFS-S is a single in line (through-hole)

CLIMATIC SPECIFICA	TIONS
Operating temperature range	-55 °C to +125 °C
Storage temperature range	-55 °C to +155 °C

MECHANICAL SPECIFICATIONS		
Resistive element	Nickel, around 1.5 µm thick	
Substrate material	99.6 % alumina	
Leads (TFS-S)	Tin/silver plated on copper alloy	
Terminals (TFS-W)	Tin silver over nickel	

TECHNICAL SPECIFICATIONS			
TEST	SPECIFICATIONS	CONDITIONS	
MATERIAL	NICKEL		
Tolerance on temperature	Up to 0, 33 °C		
Stability	$\frac{\Delta R}{R}$ < 0.2 %; $\frac{\Delta CT}{CT}$ < 0.2 %	1000 h at Pn at +150 °C	
Thermal conductance (TFS-S only)	$\frac{1}{R_{\text{th}}}$ = 6.7 mW/°C (for information only)	In air	

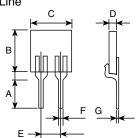


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DIMENSIONS

TFS-S Single-In-Line

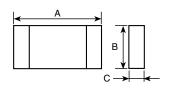


DIMENSION	INCHES	MILLIMETERS
Α	0.200	3.17
В	0.200	5
С	0.200	5
D	0.025	0.63
Е	0.100	2.54
F	0.020	0.50
G	0.010	0.25
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Note

 Please refer to Vishay Sfernice Application Note "Guidelines for Vishay Sfernice Resistive and Inductive Products" for soldering recommendation (document number: 52029), paragraph 2: GENERAL SOLDERING RECOMMENDATION FOR THROUGH HOLE OR SMD COMPONENTS

TFS-W Chip for SMD



0805 DIMENSION	INCHES	MILLIMETERS
Α	0.075	1.90
В	0.050	1.25
С	0.020	0.50

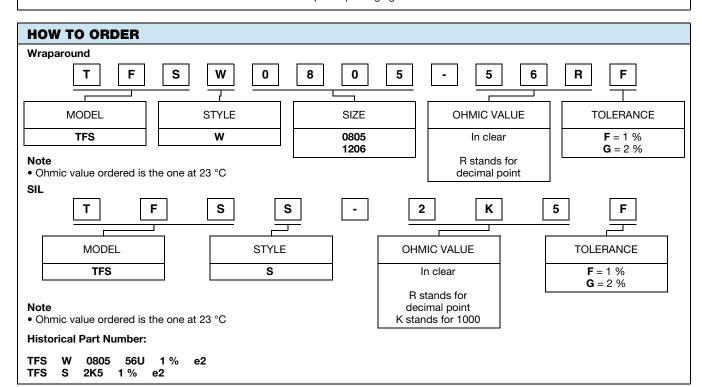
1206 DIMENSION	INCHES	MILLIMETERS
Α	0.125	3.20
В	0.063	1.60
С	0.027	0.70

Note

 Please refer to Vishay Sfernice Application Note "Guidelines for Vishay Sfernice Resistive and Inductive Products" for soldering recommendation (document number: 52029), paragraph 3: GUIDELINES FOR SURFACE MOUNTING COMPONENTS (SMD). Profile #3 applies

PACKAGING

Waffle pack or tape and reel for TFS-W Sticks or special packaging for TFS-S





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