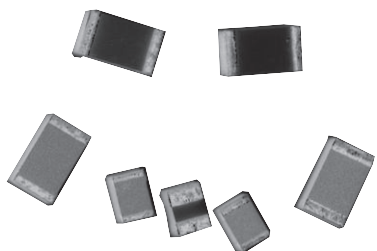




Wraparound and Single-In-Line, Thin Film Nickel Temperature Sensors



LINKS TO ADDITIONAL RESOURCES



3D Models

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
- Packaging available: W/A, SIL
- 2 versions: SMD and through hole
- 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 www.vishay.com/doc?99912



RoHS* Available

HALOGEN FREE Available

GREEN (5-2008) Available

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⁾ Ω	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_T at temperature T (°C) depends on R_0 (ohmic value at 0 °C) according to the following equation:

$$R_T/R_0 = 1 + 5.485 \times 10^{-3} T + 6.65 \times 10^{-6} T^2 + 2.805 \times 10^{-11} T^4$$

Example: A $T = 100$ °C

$$R_T/R_0 = 1.6180$$

$$TCR = \pm 6180 \text{ ppm/°C}$$

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 SPECIFICATIONS

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

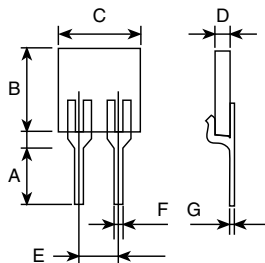
TECHNICAL SPECIFICATIONS

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)	$\frac{1}{R_{th}} = 6.7 \text{ mW/°C}$ (for information only)	In air



DIMENSIONS

TFS-S Single-In-Line

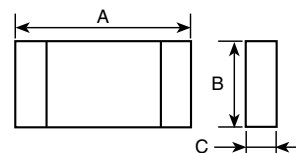


DIMENSION	INCHES	MILLIMETERS
A	0.200	3.17
B	0.200	5
C	0.200	5
D	0.025	0.63
E	0.100	2.54
F	0.020	0.50
G	0.010	0.25

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
A	0.075	1.90
B	0.050	1.25
C	0.020	0.50

1206 DIMENSION	INCHES	MILLIMETERS
A	0.125	3.20
B	0.063	1.60
C	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

HOW TO ORDER

Wraparound

T F S W 0 8 0 5 - 5 6 R F

MODEL	STYLE	SIZE	OHMIC VALUE	TOLERANCE
TFS	W	0805 1206	In clear R stands for decimal point	F = 1 % G = 2 %

Note

- Ohmic value ordered is the one at 23 °C

SIL

T F S S - 2 K 5 F

MODEL	STYLE	OHMIC VALUE	TOLERANCE
TFS	S	In clear R stands for decimal point K stands for 1000	F = 1 % G = 2 %

Note

- Ohmic value ordered is the one at 23 °C

Historical Part Number:

TFS W 0805 56U 1 % e2
TFS S 2K5 1 % e2



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