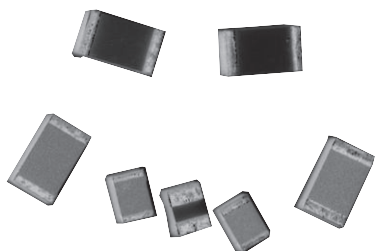


Wraparound and Single-In-Line, Thin Film Nickel Temperature Sensors



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 ⁽¹⁾ Ω	RATED POWER W	TOLERANCE ± %	TEMPERATURE COEFFICIENT ^{(2) (3)} ± ppm/°C
TFS-S	0.2" lead spacing ⁽⁴⁾	25 to 2500	0.500	1, 2	6180
TFS-W	0805	25 to 100	0.200	1, 2	6180
TFS-W	1206	25 to 250	0.330	1, 2	6180

Notes

⁽¹⁾ Nominal value at 23 °C

⁽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

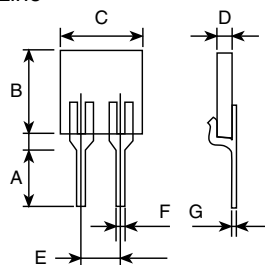
Resistive element	Nickel, around 1.5 μm thick
Substrate material	99.6 % alumina
Leads (TFS-S)	Tin/silver plated on copper alloy
Terminals (TFS-W)	Tin silver over nickel

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

DIMENSIONS

TFS-S Single-In-Line

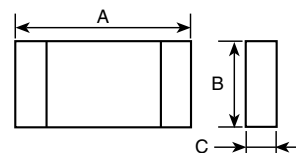


DIMENSION	INCHES	MILLIMETERS
A	0.200	3.17
B	0.200	5
C	0.200	5
D	0.025	0.63
E	0.100	2.54
F	0.020	0.50
G	0.010	0.25

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

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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