Innovative Sensor Technology

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TSic 716

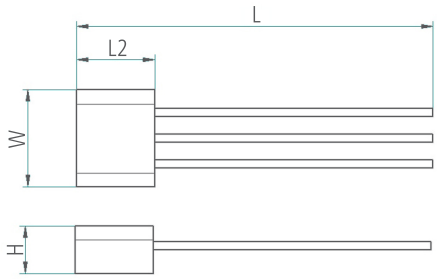
Temperature Sensor IC

For a fully calibrated and extremely accurate low power temperature measurement

Benefits & Characteristics

- Easy to integrate (digital output signal)
- Outstanding accuracy of ±0.07 K
- Very low power consumption
- Excellent long-term stability
- Accuracy range of 20 K can be shifted (default: +25 °C to +45 °C)
- Fully calibrated (custom calibration and assembly available)
- Capable of communicating over a distance of > 10 m

Illustration[1)]



1) For actual size, see dimensions

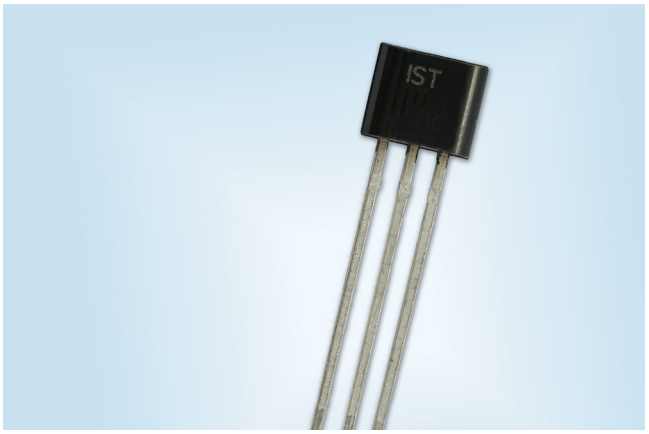
Technical Data

Dimensions (L / L2 x W x H in mm): [2)]	17.30 / 3.81 x 4.57 x 2.3
Operating temperature range:*	-10 °C to +60 °C (-7 °C to +57 °C guaranteed)
Accuracy:*	±0.07 K in the range of +25 °C to +45 °C (other ranges upon request)
Resolution:*	4 mK
Sampling rate:*	1 Hz
Supply voltage:*	4.5 V to 5.5 V
Supply current:	typ. 45 µA at 25 °C and 5 V for minimal self-heating
Digital signal output:	14 bit ZACWire, see application note ATTSic_E
Packaging:*	TO92

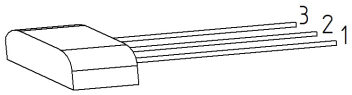
* Customer-specific alternatives available

2) For tolerances, see Application Note

Product image



Pin Assignment



	Pin 1	Pin 2	Pin 3
TO92	GND	Signal	V_{dd}, Supply voltage (3 V to 5.5 V)

Absolute maximal ratings

	Min	Max
Supply voltage (V_{dd})	-0.3 V	6 V
Voltages to analog I/O – Pins (V_{SIG}, V_{GND})	-0.3 V	V_{dd}+0.3 V
Storage temperature range (T_{STOR})	-10 °C	+60 °C
Non-operating temperature range		

Operating conditions

	Min	Typ	Max
Supply voltage to GND (V^+)	2.97 V	5 V	5.5 V
Supply current (I_{Vdd}) at V_{dd} = 3.3 V, RT	30 µA	45 µA	80 µA
Operating temperature range (T_{amb})	-10 °C		+60 °C
Output load capacitance (C_L)			15 nF
External capacitance between V_{dd} and GND[1)]	100 nF (recommended)		
Output load resistance between signal and GND (or V_{dd})	47 kΩ		

[1)] Recommended as close to TSic V_{dd} and GND-Pins as possible

Temperature accuracies[2)]

T1: +25 °C to +45 °C	±0.07 K
T2: -10 °C to +60 °C	±0.2 K

[2)] The sensor is calibrated at 5 V. The provided accuracy is applicable for a supply voltage between 4.5 V and 5.5 V. The accuracy is smaller with a supply voltage between 2.97 V and 4.5 V. For applications where the best accuracy at 3 V is requested, ask for a custom specific, 3 V calibrated device. Other TSic products with custom specific calibrations are available upon request e.g. other temperature range for high accuracy. Accuracy at delivery; the assembly method can influence the accuracy!

Order Information - TO92

Output signal	Digital, ZACWire
716	TSic 716 TO92
Order code	103493
Former order code	*030.00048*

Additional Electronics

	Document name:
LabKit	DTTSicLabKit_E

Additional Documents

	Document name:
Application Note:	ATTSic_E

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Order Information
Temperature Sensor IC
Secondary reference

TSic

Accuracy

2	=	±0.5 °C at +80 °C range
3	=	±0.3 °C at +80 °C range
4	=	not defined
5	=	±0.1 °C at +40 °C range (limited measuring range from -10 °C to +60 °C)
6	=	not defined
7	=	±0.07 °C at +20 °C range (limited measuring range from -10 °C to +60 °C)

Bit size

0	=	11 bit
1	=	14 bit

Output signal

1	=	analog 0 V to 1 V
3	=	ratiometric 10 % to 90 % V_{dd}
6	=	digital ZACWire

Housing

TO92

Special

E.g. „250 Hz“ for a high sampling rate or „-30/70“ for temperature and tolerance range

TSIC 3 0 6 TO92 -30/70

RoHS

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