

DATA SHEET

TSIC™ Digital semiconductor temperature sensor TSIC 506



Description



Technical data

Digital temperature sensor	
Measuring range	-10°C ... +60 °C
Connection	Digital connection, 11 Bit
Accuracy (at 40 °C)	TSic 506 $\pm 0.1^\circ\text{C}$
Resolution	0.034°C
Measuring rate	10 Hz
Operating voltage	2,97 ... 5,5 V
Operating current (at 3,3 V)	Typ. 30 μA at 25 °C
Load at output	RL > 47 k Ω < 15 nF
VDD Capacitor	80 ... 470 nF
Housing	3-pin TO92 (wire terminals)
Rights reserved for change in technical data due to technological advancements	

Characteristic features

- Temperature range -10 - +60 °C
- Highly precise accuracy $\pm 0.1^\circ\text{C}$
- High-resolution
- TO92-Housing
- Fast response behaviour
- Excellent long term stability
- Minimum development cost and time
- Simple integration

Typical areas of application

- Measuring and control systems
- Medical applications
- Temperature monitoring
- Battery operated systems
- Industrial measuring systems

Features

TSIC™ temperature sensors are known for its high accuracy, fast response behaviour and also its special long term stability. Different than the 206 and 306 models this model offers a highly precise accuracy of $\pm 0.1^\circ\text{C}$ at 40°C. And this sensor is more accurate than a 1/3 DIN B platinum-sensor.

Even if the cable is longer (>10m) the accuracy stays in between the specialised accuracy limits. Through the digital interface, connection to a micro-controller is very simple, otherwise an additional analog-digital converter is required.

The sensors are calibrated, hence any further adjustment work by the device manufacturer or the customer is not necessary. These innovative semiconductor sensors are powerful and cost effective solution for temperature measurements in industrial measurement and regulation systems. This model allows the installation in stainless steel and other probe tubes and is advisably used in highly precise applications.

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Digital temperature value

Measuring range -10 ... +60 °C / 14 ... 140 °F		
Temp(°C)	Temp (°F)	digital
≤-10	≤ 14	0x000
0	32	0x124
25	77	0x3FF
≥ 60	≥ 140	0x7FF

Absolute Limits

Parameter	Min	Max	Einheit
Operating voltage(V+)	-0,3	6,0	V
Voltage at analogue output I/O –Pins (VINA, VOUTA)	-0,3	VDDA+ 0,3	V
Storage temperature range	-50	150	°C

Operating data

Parameter	Min	Typ	Max	Einheit
Operating voltage *1	2,97	5,0	5,5	V
Supply current (IV+) @ V+ = 3,3 V, RT	25	30	60	µA
Ambient temperature tange (Tamb)	-10	--	60	°C
Output capacitance (CL)	--	--	15	nF
External capacitance between V+ and Gnd*2 (CV+)	80	100	470	nF
Output load resistance between signal and Gnd (or V+)	47	--	--	kW

1 Operation in voltage range of 2.97 ... 4.5 V is possible with reduced accuracy.

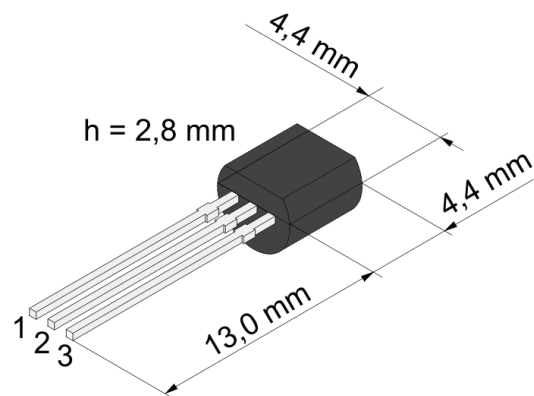
3 The connection of the blocking capacitor must be done as near as possible to the connection pins of the component.

Temperature accuracy TSIC 506

Parameter	Min	Typ	Max	Einheit
T1: +5 ... +45 °C	-0,1	±0,07	0,1	°C
T2: -5 ... +5 °C	-0,2	0,1	0,2	°C
T3: +45 ... +55 °C	-0,2	0,1	0,2	°C

Genauigkeitsangabe als 2σ Wert zuzüglich 1 digit Quantisierungsfehler

TO92-Housing



Small THT Housing, TO92 type

Pin Nr.	Name	Description
1	V+	Operating voltage (3 ... 5,5 V)
2	Signal	Temperature output signal
3	Gnd	Ground