

# TSic™ High Precision Temperature Sensor IC



## Features

- Best accuracy on the market ( $\pm 0.1^\circ\text{C}$ )
- Fast response
- Long-term stability
- Calibrated, ready to use
- Output: absolute analog voltage (0 to +1V) or digital one-wire (11bit)
- Supply voltage +2.97 to +5.5V for TSic 106, 206, 306; +4.5 to +5.5V for TSic 101, 201, 301, 506
- Low current consumption (typ. 45 $\mu\text{A}$ )
- Measurement range  $-50$  to  $+150^\circ\text{C}$
- Different accuracy classes available (with 100% upward compatibility)
- Available in different packages (TO92, SOP8, COF) or as bare die

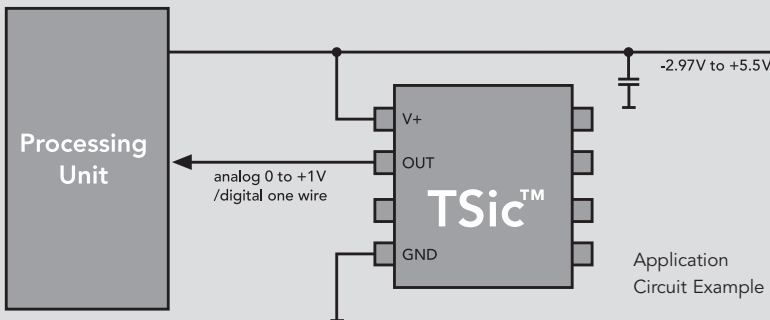
## Benefits

- No external trimming components needed
- No calibration by customer necessary
- Small, simple to integrate
- Ideal for portable and battery operated applications

## Brief Description

TSic™ is a leading-edge digital temperature sensor IC, combining outstanding accuracy with fast response and long-term stability. The device is very simple to use, fully tested and calibrated for accuracy on delivery – no further calibration is needed. TSic™ is available in different accuracy classes and provides an absolute analog voltage output (0 to +1V) or an 11bit digital output at the one-wire serial interface. TSic™ is specifically designed for high-performance, cost-effective temperature sensing in medical instruments, industrial process control, automobiles, building automation, white goods, office equipment and mobile measurement devices.

- Samples and TSic™ LABkit available
- Application support available
- Customized calibration possible



Based on Calibration Technology  
**INNOVATIVE SENSOR TECHNOLOGY**

Product Version	Resolution	T-Range 1		T-Range 2		T-Range 3	
		T-Range 1	Accuracy 1	T-Range 2	Accuracy 2	T-Range 3	Accuracy 3
TSic 101/106	0.1 $^\circ\text{C}$	+15 $^\circ\text{C}$ to +25 $^\circ\text{C}$	< $\pm 0.5^\circ\text{C}$	0 $^\circ\text{C}$ to +40 $^\circ\text{C}$	< $\pm 1.0^\circ\text{C}$	-50 $^\circ\text{C}$ to +150 $^\circ\text{C}$	no limits, typ. $\pm 1.5^\circ\text{C}$
TSic 201/206	0.1 $^\circ\text{C}$	+10 $^\circ\text{C}$ to +90 $^\circ\text{C}$	< $\pm 0.5^\circ\text{C}$	-20 $^\circ\text{C}$ to +110 $^\circ\text{C}$	< +0.95 $^\circ\text{C}$ > -0.5 $^\circ\text{C}$	-50 $^\circ\text{C}$ to +150 $^\circ\text{C}$	< +2.0 $^\circ\text{C}$ > -0.5 $^\circ\text{C}$
TSic 301/306	0.1 $^\circ\text{C}$	+10 $^\circ\text{C}$ to +90 $^\circ\text{C}$	< $\pm 0.3^\circ\text{C}$	-20 $^\circ\text{C}$ to +110 $^\circ\text{C}$	< +0.95 $^\circ\text{C}$ > -0.3 $^\circ\text{C}$	-50 $^\circ\text{C}$ to +150 $^\circ\text{C}$	< +2.0 $^\circ\text{C}$ > -0.3 $^\circ\text{C}$
TSic 506	0.034 $^\circ\text{C}$	+5 $^\circ\text{C}$ to +45 $^\circ\text{C}$	< $\pm 0.1^\circ\text{C}$	-5 $^\circ\text{C}$ to +55 $^\circ\text{C}$	< +0.2 $^\circ\text{C}$ > -0.1 $^\circ\text{C}$	-10 $^\circ\text{C}$ to +60 $^\circ\text{C}$	< +0.3 $^\circ\text{C}$ > -0.1 $^\circ\text{C}$

## TSic™ Applications

Application Fields	Application Examples	TSic Recommendations
Industrial process control	liquid- and gas monitoring	TSic 20X, 30X, 506
IT	processor chip and hard disk monitoring	TSic 106, 206
Consumer products	cellphones, PDAs, table weather stations	TSic 106, 206
White goods	refrigerators, washing machines, dish washers	TSic 10X, 20X, 30X
Food logistics	dataloggers, T-probes	TSic 10X, 20X, 30X
HVAC	thermostats	TSic 10X, 20X
Medical instrumentation	thermometers, respirators, incubators	TSic 306, 506
Automotive	climate control, engine control	TSic 10X, 20X



### TSic™ LABkit

- Provides fast TSic™ evaluation and demonstration
- PC-connectable via USB
- Contains USB module, 4 wired TSic™ devices, CD-ROM with software & documentation, USB cable
- Drives up to 4 TSic™ devices in parallel
- Displays actual temperatures, minima, maxima, averages
- Including TSic™ Recording Software for Microsoft Excel™

## TSic™ Ordering Code

### Example: TSic 506 FST

<b>Accuracy Code</b> (as shown in table on front side)		<b>Delivery Form</b> T ... Tube (only for SOP8) B ... Bulk (only for TO92 and COF) <u>On request</u> U ... Unsawn wafer (only for TSic 10X, 20X)	
<b>Output Type</b> 1 ... analog voltage 0 to +1V 6 ... 11bit digital serial interface		<b>Package Type</b> S ... SOP8 T ... TO92 C ... COF D ... Bare die	
<b>Operating Temperature Range</b> W ... wide (-50 to +150 °C) F ... focused (-10 to +60 °C)			

Not all possible ordering code combinations are available. Please ask ZMD Sales for availability.

For the latest revision of this document and for more information about this and other ZMD products please go to [www.zmd.biz](http://www.zmd.biz).

The information furnished hereby is believed to be correct and accurate. However, ZMD shall not be liable to any customer, licensee or any other third party for any damages in connection with or arising out of the furnishing, performance or use of this technical data. No obligation or liability to any customer, licensee or any other third party shall result from ZMD's rendering of technical or other services.

#### Application Support

**ZMD AG**  
 Grenzstrasse 28  
 01109 Dresden  
 Germany  
 Tel +49.351.8822-916  
 Fax +49.351.8822-606  
 TSic@zmd.de

#### Sales Offices

**ZMD AG**  
 Grenzstrasse 28  
 01109 Dresden  
 Germany  
 Tel +49.351.8822-366  
 Fax +49.351.8822-337  
 sales@zmd.de

**ZMD America, Inc.**  
 201 Old Country Road, Suite 204  
 Melville, NY 11747  
 USA  
 Tel +1.631.549.2666  
 Fax +1.631.549.2882  
 sales@zmda.com

**ZMD Far East**  
 1F, No. 14, Lane 268,  
 Sec. 1 Guangfu Rd.  
 HsinChu City 300  
 Taiwan  
 Tel +886.3.563.1388  
 Fax +886.3.563.6385  
 sales@zmd.de

[www.zmd.biz](http://www.zmd.biz)