TSYS03 DIGITAL TEMPERATURE SENSOR
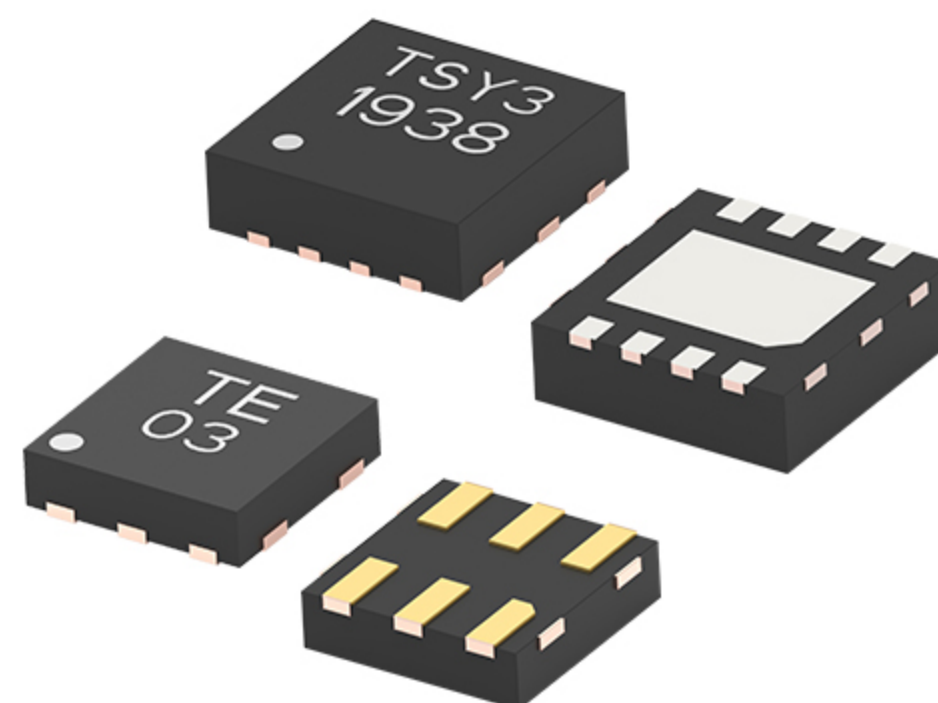
MEAS | MEAS TSYS
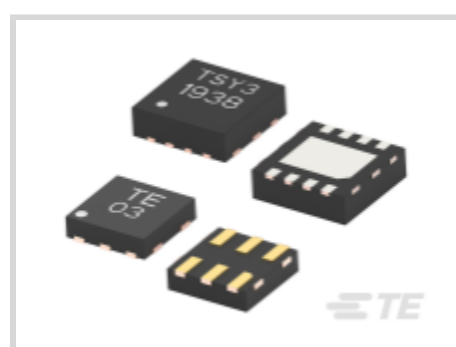
View on TE.com >

TSYS03 ultra-compact, precise digital temperature sensor is available in TDFN8 and XDFN6 packages.

Sensors > Temperature Sensors > Digital Temperature Sensors

The TSYS03 is a miniature digital temperature sensor that provides factory calibrated highly accurate temperature data.

Digital Temperature Sensor Type: Digital IC Temperature Sensor

Output/Span Resolution: 16 bit

Temperature Sensor Accuracy: ± .5 °C

Output Interface: I2C

Digital Temperature Sensor Supply Voltage: 2.4 - 5.5 V

The device contains a durable temperature sensor element, A/D converter, and microcontroller to manage data communications via an I2C interface.

TSYS03 is available in a TDFN8 or a XDFN6 package to easily adapt to the space available on a PC board. These packages are very small and have low thermal mass which provides a quick response to temperature changes. The operating and measurement temperature range is -40 to +125°C with a resolution of ±0.01°C. Operating and sleep currents are extremely low making this sensor ideal for mobile and battery power applications.

BENEFITS

- High Accuracy ±0.5°C @ Temp.: 0°C … +60°C
- Adjustment of high accuracy temperature range on request
- I ^{2}C Interface up to 1MHz

- Programmable I²C Address
- Available in two small sized IC-Packages: TDFN8 2.5mm x 2.5mm and XDFN6 1.5mm X 1.5mm
- Low Supply Current < 5 µA (standby < 0.3 µA)
- Operating Temperature Range: -40°C …+125°C

APPLICATIONS

- Consumer goods and appliances
- HVAC and weather stations
- Industrial Control and food monitoring
- Vehicle battery monitoring
- Medical probes and patient monitoring

Smarter with Sensors

In this episode of our SMARTER WITH SENSORS video series our technical sensor expert will introduce the TSYS03 digital temperature sensor. Watch this short video to learn about the range applications where the TSYS03 is used, technical details, how the digital temperature sensor works and more.

SOLUTION GUIDE

Digital Temperature Sensors for Precise Engineering (English)

Learn more about our solutions for digital temperature sensing in a variety of applications.

APPLICATION NOTE

Programming an Alternative I2C Adress: TSYS03 (English)

The TSYS03 digital temperature sensor offers the option to write an alternative I²C-address statically to the memory that will be used by the TSYS03 to communicate.

TREND PAPER

Seven Considerations Choosing Analog Over Digital (English)

Temperature sensing technology comparison and application considerations.

DEVELOPMENT BOARD

Thermo 20 Click Board™ from Mikroe™

The Thermo 20 Click (MIKROE-4316) from Mikroe features the TSYS03 digital temperature sensor and allows customers to evaluate the sensor and create reference designs easily. Click boards are plug-and-play modules designed to add extra functionality to existing development kits. These small, function-specific add-on modules all have a common interface to the mikroBUS™ adapter board. Reference design examples are provided to get the user started quickly.

Features

Product Type Features

Model Number	TSYS03, TSYS03-1
Digital Temperature Sensor Type	Digital IC Temperature Sensor

Electrical Characteristics

Digital Temperature Sensor Supply Voltage (V)	2.4 - 5.5
Supply Current (Max) (µA)	400

Termination Features

Wire/Cladding/Connection	SMD

Dimensions

Width (in)	.059, .098
Digital Temperature Sensor Length (mm)	1.5, 2.5
Digital Temperature Sensor Length (in)	.059, .098
Digital Temperature Sensor Width (mm)	1.5, 2.5
Digital Temperature Sensor Height (mm)	.38, .75
Digital Temperature Sensor Height (in)	.015, .03

Usage Conditions

Accuracy T_Range (°C)	-5 - 50
Operating Temperature Range (°C)	-40 - 125
Operating Temperature Range (°F)	-40 - 257

Operation/Application

Output/Span Resolution (bit)	16
Temperature Sensor Accuracy (°C)	± .5
Output Interface	I2C

Packaging Features

Digital Temperature Sensor Package	TDFN8, XDFN6

Reference Number

TE Internal Number	CAT-DTS0001

SEE PRODUCTS ON NEXT PAGE

Products (1 of 1)

	TSYS03 TEMP SENSOR TDFN8 2.5X2.5MM I2C	TSYS03 TEMP SENSOR XDFN6 1.5X1.5MM I2C
TE Part #	20011957-00	20011957-01
Model Number	TSYS03	TSYS03-1
Digital Temperature Sensor Package	TDFN8	XDFN6
Digital Temperature Sensor Length	2.5 mm	1.5 mm
Digital Temperature Sensor Width	2.5 mm	1.5 mm
Digital Temperature Sensor Height	.75 mm	.38 mm
EU RoHS Directive 2011/65/EU	EU RoHS Compliant	EU RoHS Compliant
EU ELV Directive 2000/53/EC	Not Yet Reviewed for EU ELV	Not Yet Reviewed for EU ELV
Product Families	MEAS	MEAS
Series	MEAS TSYS	MEAS TSYS
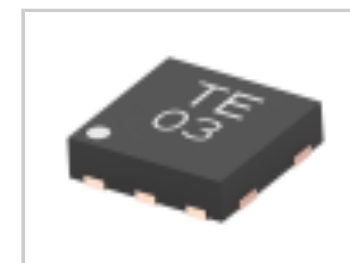
*EU RoHS Directive 2011/65/EU

These products comply with the substance restrictions of the Restriction on Hazardous Substances Directive 2011/65/EU (RoHS2). The RoHS2 Directive requires that certain electrical and electronic equipment products do not contain mercury, cadmium, hexavalent chromium, PBB, PBDE, lead, DEHP, BBP, DBP and DIBP above defined thresholds. Products indicated as 'Compliant' do not contain any of these substances above the prohibition thresholds. Finished electrical and electronic equipment products will be CE marked as required by the Directive. Components may not be CE marked.

**EU ELV Directive 2000/53/EC

These products comply with the substance restrictions of the End of Life Vehicles Directive 2000/53/EC (ELV). The ELV Directive requires that materials and components of vehicles do not contain mercury, cadmium, hexavalent chromium, and lead above defined thresholds. Products indicated as 'Compliant' do not contain any of these substances above the prohibition thresholds.

Related Materials

Catalog

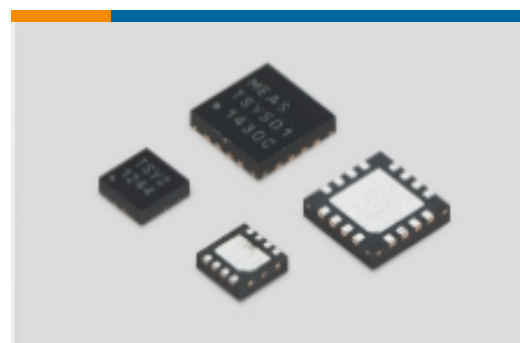Sensor Solutions (English)

English

Application Note

Programming an alternative I²C-address

English

Also in the Series | MEAS TSYS

Digital Component Sensors(4)

Digital Temperature Sensors(9)

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