

## Temp Sensor Analog 8-Pin WSON EP T/R

|                      |  |  |
|----------------------|--|--|
| <b>Manufacturer:</b> | <u>Texas Instruments, Inc</u>  | <input type="text" value="LM57CISD-5/NOPB Image"/>   |
| <b>Package/Case:</b> | WSON-8   | Images are for reference only  |
| <b>Product Type:</b> | Sensors, Transducers   | <a href="#" style="background-color: #f96; color: white; padding: 5px 15px; border-radius: 3px;">Inquiry</a> |
| <b>RoHS:</b>         | RoHS Compliant/Lead free  |  |
| <b>Lifecycle:</b>    | Active   |  |

### General Description

The LM57 device is a precision, dual-output, temperature switch with analog temperature sensor output for wide temperature industrial applications. The trip temperature ( $T_{TRIP}$ ) is selected from 256 possible values in the range of  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$ . The  $V_{TEMP}$  is a class AB analog voltage output that is proportional to temperature with a programmable negative temperature coefficient (NTC). Two external 1% resistors set the  $T_{TRIP}$  and  $V_{TEMP}$  slope. The digital and analog outputs enable protection and monitoring of system thermal events.

Built-in thermal hysteresis ( $T_{HYST}$ ) prevents the digital outputs from oscillating. The  $T_{OVER}$  and  $\overline{T_{OVER}}$  digital outputs will assert when the die temperature exceeds  $T_{TRIP}$  and will de-assert when the temperature falls below a temperature equal to  $T_{TRIP}$  minus  $T_{HYST}$ .

$T_{OVER}$  is active-high with a push-pull structure.  $\overline{T_{OVER}}$  is active-low with an open-drain structure. Tying  $T_{OVER}$  to TRIP-TEST will latch the output after it trips. The output can be cleared by forcing TRIP-TEST low. Driving the TRIP-TEST high will assert the digital outputs. A processor can check the state of  $T_{OVER}$  or  $\overline{T_{OVER}}$ , confirming they changed to an active state. This allows for in-situ verification that the comparator and output circuitry are functional after system assembly. When TRIP-TEST is high, the trip-level reference voltage appears at the  $V_{TEMP}$  pin. The system could then use this voltage to calculate the threshold of the LM57.

### Key Features

See LM57-Q1 datasheet for AEC-Q100 Grade 1/Grade 0/Grade 0 Extended (Qualified and Manufactured on an Automotive Grade Flow)

Trip Temperature Set by External Resistors with Accuracy of  $\pm 1.7^{\circ}\text{C}$  or  $\pm 2.3^{\circ}\text{C}$  from  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$

Resistor Tolerance Contributes Zero Error

Push-Pull and Open-Drain Switch Outputs

Wide Operating Temperature and Trip-Temperature Range of  $50^{\circ}\text{C}$  to  $150^{\circ}\text{C}$ ,

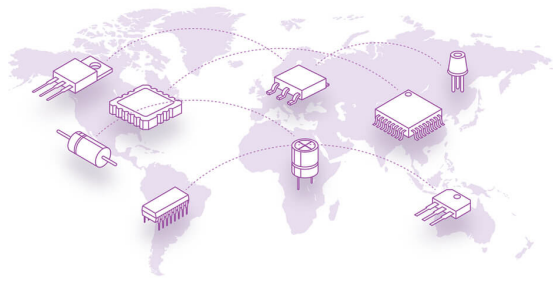
Very Linear Analog  $V_{TEMP}$  Temp Sensor Output with  $\pm 0.8^{\circ}\text{C}$  or  $\pm 1.3^{\circ}\text{C}$  Accuracy from  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$

Short-Circuit Protected Analog and Digital Outputs

Latching Function for Digital Outputs

TRIP-TEST Pin Allows In-System Testing

Low Power Minimizes Self-Heating to Under  $0.02^{\circ}\text{C}$



## Recommended For You

---

### **LM186QDCKRQ1**

Texas Instruments, Inc  
SC70-5

### **LM50CIMB**

Texas Instruments, Inc  
SOT23

### **LM50BIMB/NOPB**

Texas Instruments, Inc  
SOT23

### **LM74CIM-3**

Texas Instruments, Inc  
SOP-8

### **LM94021BIMG/NOPB**

Texas Instruments, Inc  
SC70-5

### **LM187QDCKRQ1**

Texas Instruments, Inc  
SC70-5

### **LM77CIM-3/NOPB**

Texas Instruments, Inc  
SOP8

### **LM74CIMX-3/NOPB**

Texas Instruments, Inc  
SOP8

### **LM101LPG**

Texas Instruments, Inc  
TO-92

### **LM101DQXT**

Texas Instruments, Inc  
WSO-2

### **LM101LPGM**

Texas Instruments, Inc  
TO-92-2

### **LM101DQXR**

Texas Instruments, Inc  
WSO-2

### **LM186QDCKTQ1**

Texas Instruments, Inc  
SC70-5

### **LM71CIMF**

Texas Instruments, Inc  
SOT23-5

### **LM95235CIMM/NOPB**

Texas Instruments, Inc  
VSSOP8