Ultra High Accuracy Digital Temperature-to-Digital Converter

SE95

Archived

This page contains information on a product that is no longer manufactured (discontinued). Specifications and information herein are available for historical reference only.

Last Updated: Sep 13, 2024

SE95 device is "End of Life", please use the replacement part PCT2075D

The SE95 is a temperature-to-digital converter using an on-chip band gap temperature sensor and Sigma Delta analog-to-digital conversion technique. The device is also a thermal detector providing an overtemperature detection output.

The SE95 contains a number of data registers accessed by a controller via the 2-wire serial I²C-bus interface:

- Configuration register (Conf) to store the device settings such as sampling rate, device operation mode, OS operation mode, OS polarity, and OS fault queue
- Temperature register (Temp) to store the digital Temp reading
- Set-point registers (Tos and Thyst) to store programmable overtemperature shutdown and hysteresis limits
- Identification register (ID) to store manufacturer numbers

The device includes an open-drain output (pin OS) which becomes active when the temperature exceeds the programmed limits. There are three selectable logic address pins (pins A2 to A0) so that eight devices can be connected on the same bus without address conflict.

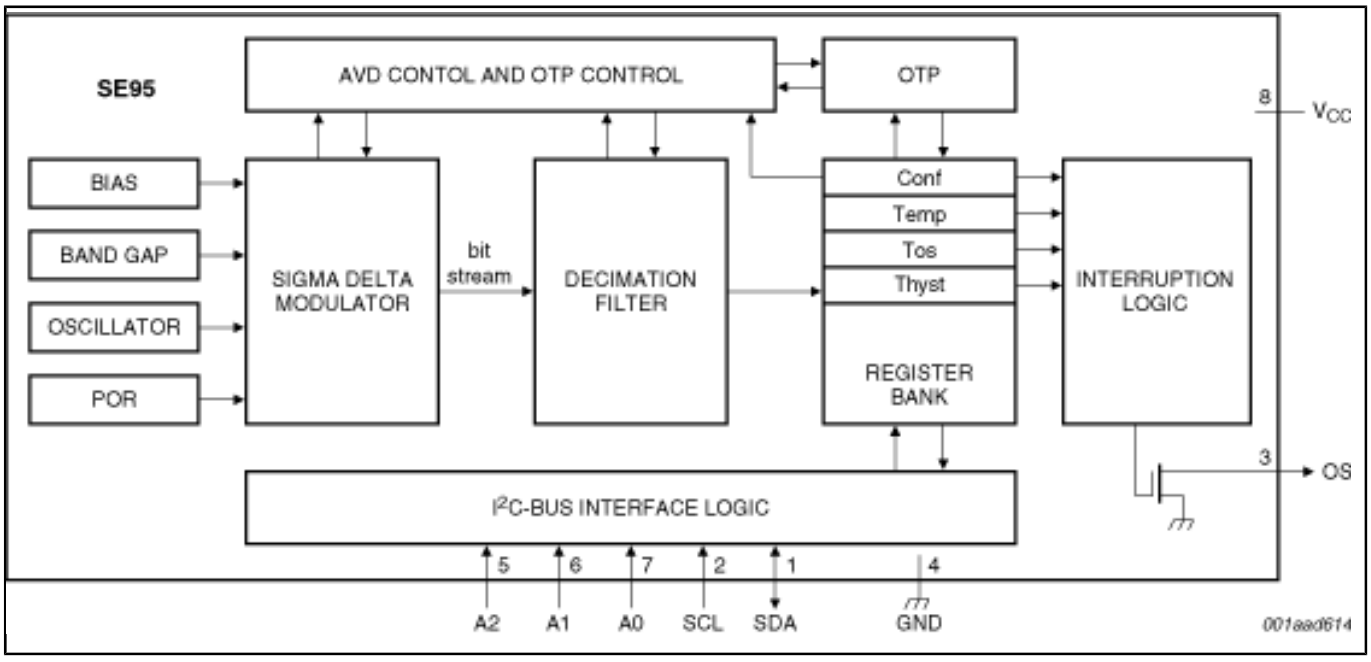
The SE95 can be configured for different operation conditions. It can be set in normal mode to periodically monitor the ambient temperature, or in shutdown mode to minimize power consumption. The OS output operates in either of two selectable modes: OS comparator mode

and OS interrupt mode. Its active state can be selected as either HIGH or LOW. The fault queue that defines the number of consecutive faults in order to activate the OS output is programmable as well as the set-point limits.

The temperature register always stores a 13-bit two's complement data giving a temperature resolution of 0.03125 Cel. This high temperature resolution is particularly useful in applications of measuring precisely the thermal drift or runaway. For normal operation and compatibility with the LM75A, only the 11 MSBs are read, with a resolution of 0.125 Cel to provide the accuracies specified. To be compatible with the LM75, read only the 9 MSBs.

The device is powered-up in normal operation mode with the OS in comparator mode, temperature threshold of 80 Cel and hysteresis of 75 Cel, so that it can be used as a stand-alone thermostat with those pre-defined temperature set points. The conversion rate is programmable, with a default of 10 conversions/s.

SE95D, SE95DP, SE95U Block Diagram



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Note: The information on this document is subject to change without notice.

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