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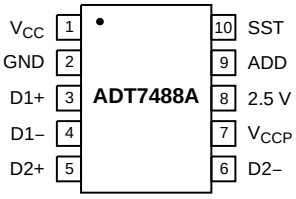
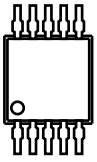
MSOP−10
CASE 846AC

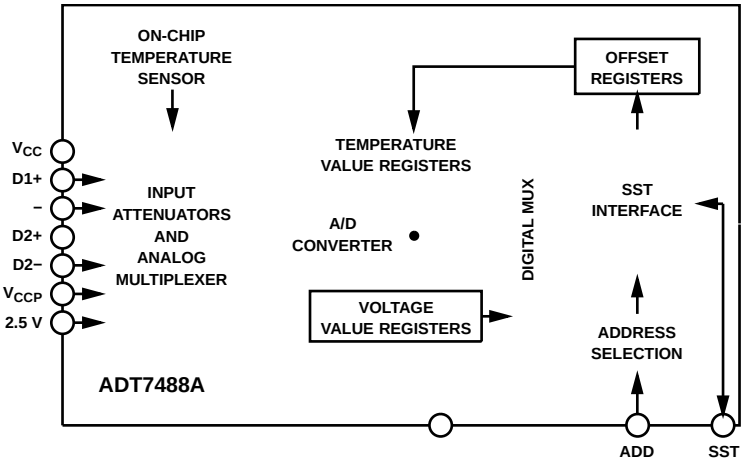
PIN ASSIGNMENT



(Top View)

MARKING DIAGRAM





ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 12 of this data sheet.

Table 1. PIN ASSIGNMENT

Pin No.	Mnemonic	Type	Description
1	V_{CC}	Power Supply	3.3 V ±10%. V_{CC} is also Monitored through this Pin
2	GND	Ground	Ground Pin
3	D1+	Analog Input	Positive Connection to Remote 1 Temperature Sensor
4	D1−	Analog Input	Negative Connection to Remote 1 Temperature Sensor
5	D2+	Analog Input	Positive Connection to Remote 2 Temperature Sensor
6	D2−	Analog Input	Negative Connection to Remote 2 Temperature Sensor
7	V_{CCP}	Analog Input	Processor Core Voltage Monitor
8	2.5 V	Analog Input	2.5 V Supply Monitor
9	ADD	Digital Input	SST Address Select
10	SST	Digital Input/Output	SST Bidirectional Data Line

Table 2. ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Unit
[redacted]	4.0	V
	3.6	V
	−0.3 to +3.6	V
	±5.0	mA
	±20	mA
	150	°C
	−65 to +150	°C
	260 300	°C
	1,500	V

stress ratings only. Functional operation above the

Table 4. ELECTRICAL CHARACTERISTICS

(T_A = T_{MIN} to T_{MAX}, V_{CC} = V_{MIN} to V_{MAX}, unless otherwise noted)

Parameter	Test Conditions/Comments	Min	Typ	Max	Unit
Power Supply					
Supply Voltage, V_{CC}		3.0	3.3	3.6	V
Undervoltage Lockout Threshold		–	2.8	–	

Table 4. ELECTRICAL CHARACTERISTICS (continued)
($T_A = T_{MIN}$ to T_{MAX}, $V_{CC} = V_{MIN}$ to V_{MAX}, unless otherwise noted)

Parameter	Test Conditions/Comments	Min	Typ	Max	Unit
SST Timing					
Bitwise Period, t_{BIT}		0.495	–	500	μs
High Level Time for Logic 1, t_{H1} (Note 2)	t_{BIT} Defined in Speed Negotiation	$0.6 \times t_{BIT}$	$0.75 \times t_{BIT}$	$0.8 \times t_{BIT}$	μs
High Level Time for Logic 0, t_{H0} (Note 2)		$0.2 \times t_{BIT}$	$0.25 \times t_{BIT}$	$0.4 \times t_{BIT}$	μs
Time to Assert SST High for Logic 1, $t_{SU, HIGH}$		–	–	$0.2 \times t_{BIT}$	μs
Hold Time, t_{HOLD} (Note 3)	See SST Specification Rev 1.0	–	–	$0.5 \times t_{BIT-M}$	μs
Stop Time, t_{STOP}	Device Responding to a Constant Low Level Driven by Originator	$1.25 \times t_{BIT}$	$2 \times t_{BIT}$	$2 \times t_{BIT}$	μs
Time to Respond After a Reset, t_{RESET}		–	–	0.4	ms
Response Time to Speed Negotiation After Powerup	Time after Powerup when Device Can Participate in Speed Negotiation	–	500	–	μs

1. Guaranteed by design, not production tested.
2. Minimum and maximum bit times are relative to t_{BIT} defined in the timing negotiation pulse.
3. Device is compatible with hold time specification as driven by SST originator.

TYPICAL PERFORMANCE CHARACTERISTICS

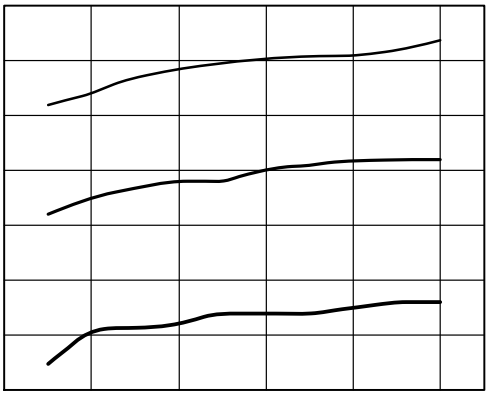


Figure 2. SST O/P Level vs. Supply Voltage

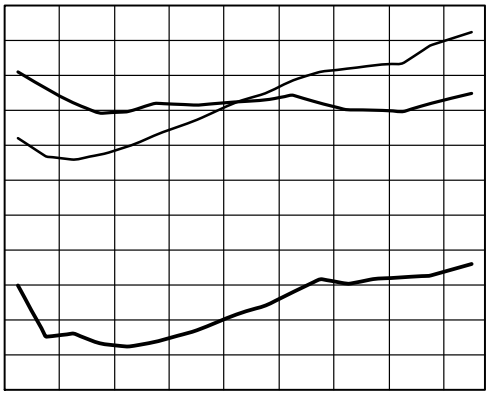


Figure 3. Supply Current vs. Temperature

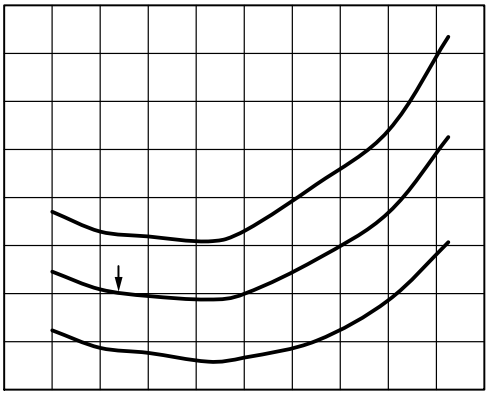


Figure 4. Local Temperature Error

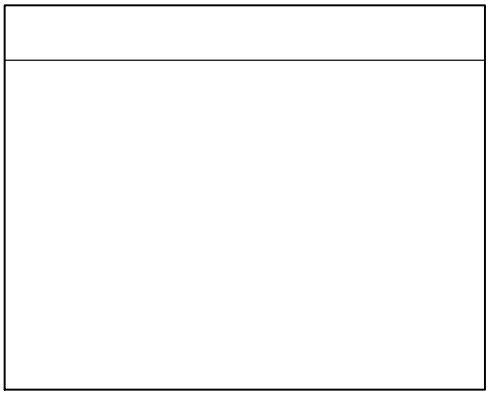


Figure 5. SST O/P Level vs. Temperature

Figure 6. Supply Current vs. Voltage

Figure 7. Remote Temperature Error

Product Description

The ADT7488A is a temperature- and voltage-monitoring device. The ADT7488A can monitor the temperature of two remote sensor diodes, plus its own internal temperature. It can

Table 7. 16-BYTE DIB DETAILS

Byte	Name	Value	Description
0	Device Capabilities	0xc0	Fixed Address Device
1	Version/Revision	0x10	Meets Version 1 of SST Specification
2, 3	Vendor ID	00x11d4	Contains Company ID Number in Little Endian Format
4, 5	Device ID	0x7488	Contains Device ID Number in Little Endian Format
6	Device Interface	0x01	SST Device
7	Function Interface	0x00	Reserved
8	Reserved	0x00	Reserved
9	Reserved	0x00	Reserved
10	Reserved	0x00	Reserved
11	Reserved	0x00	Reserved
12	Reserved	0x00	Reserved
13	Reserved	0x00	Reserved
14	Revision ID	0x05	Contains Revision ID
15	Client Device Address	0x48 to 0x4a	Dependent on the State of Address Pin

Ping()

The Ping() command verifies if a device is responding at a particular address. The ADT7488A shows a valid non-zero FCS in response to the Ping() command when correctly addressed.

12 V, and the processor core voltage (V_{CCP}) without any external components.

To allow for the tolerance of these supply voltages, the ADC produces a specific output for each nominal input voltage and therefore has adequate headroom to cope with overvoltage. The full-scale voltage that can be recorded for each channel is shown in Table 10.

Table 10. MAXIMUM REPORTED INPUT VOLTAGES

Voltage Channel	Full-scale Voltage

urrent I. The currents through the temperature diode are witched between I and N1 × I, giving ΔV_{BE1}, and then etween I and N2 × I, giving ΔV_{BE2}. The temperature can hen be calculated using the two ΔV_{BE} measurements. This ethod can also cancel the effect of series resistance on the mperature measurement. The resulting ΔV_{BE} waveforms e passed through a 65 kHz low-pass filter to remove noise nd then through a chopper-stabilized amplifier to amplify and rectify the waveform, producing a dc voltage proportional to ΔV_{BE}. The ADC digitizes this voltage, and a temperature measurement is produced. To reduce the effects of noise, digital filtering is performed by averaging the results of 16 measurement cycles for low conversion rates. Signal conditioning and measurement of the internal temperature sensor is performed in the same manner.

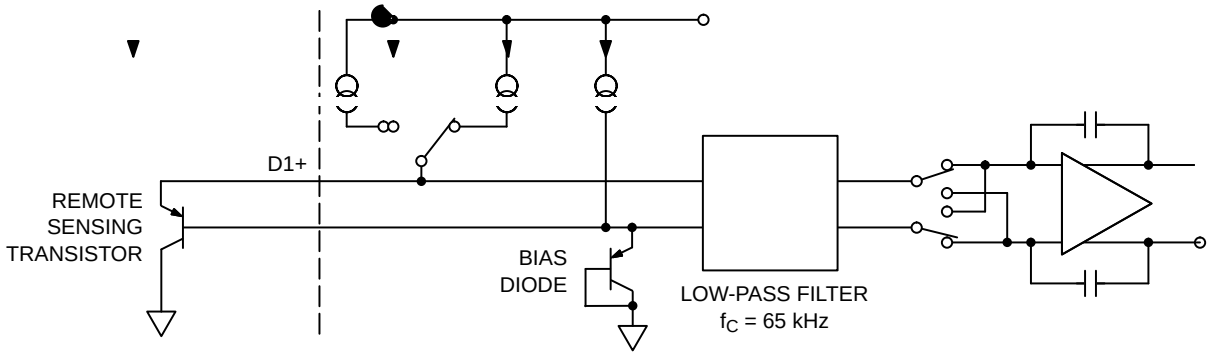


Figure 15. Signal Conditioning for Remote Diode Temperature Sensors

connected to the D+ input. If an NPN transistor is used, the emitter is connected to the Dǐ input and the base is connected to the D+ input.

Figure 16 shows how to connect the ADT7488A to an NPN or PNP transistor for temperature measurement. To prevent ground noise from interfering with the measurement, the more negative terminal of the sensor is not referenced to ground, but is biased above ground by an internal diode at the Dǐ input.

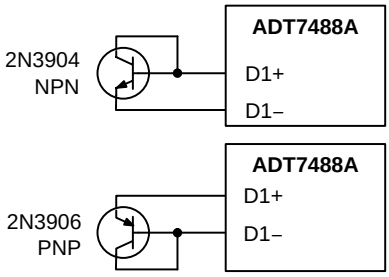


Figure 16. Connections for NPN and PNP Transistors

The ADT7488A shows an external temperature value of