ADS1263: Startup speed at cold

Tim Dito1

Prodigy 30 points
Community Member

Part Number: ADS1263

What parameters are expected to be out of spec if the chip were to startup at a cold temperature beyond the -40C rating.

1 month ago

Bryan Lizon86 *1 month ago*   TI__Mastermind 35881 points

Hi Tim Dito1,

We don't guarantee that the ADS1263 will startup beyond the absolute max temp ratings (< -40C in your case). so there's not much value in spec degradation when you need to consider if the device will even turn on

-Bryan

Tim Dito1 *1 month ago in reply to Bryan Lizon86*   Prodigy 30 points

I understand that you should not attempt to operate this device beyond their max temp ranges but lets say we have and generally find the chip works as expected with one exception only seen on 1 chip mind you. Specifically this is the power on reset timing given in section 9.4.10.1 of the datasheet. It states the ADC is in internal reset 65,536 periods of the internal frequency which is a 7.3728MHz so that timing is ~8.89ms.Our software is configured to give about 16ms of time from power on for the ADC to become operation before any serial commands are attempted so this should be an issue. During a cold soak, beyond the limit, we see an issue where the ADC appears to then not respond on the serial bus at all until we do a power cycle. I theorized the internal oscillator was actually too slow to start up and proved this using an external oscillator running at the same frequency. Is it known that the internal oscillator is a limiting factor for minimum temperature spec of this device?

Bryan Lizon86 *1 month ago in reply to Tim Dito1*   TI__Mastermind 35881 points

Hi Tim Dito1,

We don't test the device below -40C, so there is no data to share with respect to startup conditions, etc.

If I had to guess, I would say that there could be issues with the internal oscillator or POR circuit at low temp, but again, I don't have anything definitive to share and I will reiterate that you operate the device out of spec at your own risk

-Bryan