



Integrated Precision Battery Sensor for Automotive System

Silicon Anomaly

ADuC7036

This anomaly list describes the known bugs, anomalies, and workarounds for the ADuC7036 integrated precision battery sensor. The anomalies listed apply to all ADuC7036 packaged material branded as follows:

First Line ADuC7036
Second Line BCPZ or CCPZ

Analog Devices, Inc., is committed, through future silicon revisions, to continuously improving silicon functionality. Analog Devices tries to ensure that these future silicon revisions remain compatible with your present software/systems by implementing the recommended workarounds outlined here.

ADuC7036 FUNCTIONALITY ISSUES

Kernel Revision Identifier	Chip Marking	Silicon Status	Anomaly Sheet	No. of Reported Anomalies
A40	ADuC7036 BCPZ or ADuC7036 CCPZ	Release	Rev. A	2

ADuC7036 PERFORMANCE ISSUES

Kernel Revision Identifier	Chip Marking	Silicon Status	Anomaly Sheet	No. of Reported Anomalies
A40	ADuC7036 BCPZ or ADuC7036 CCPZ	Release	Rev. A	2

Rev. A

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One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106, U.S.A.
Tel: 781.329.4700 www.analog.com
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ANOMALIES

ADuC7036 Functionality Issues

1. Power-On Reset [er001]

Background: The ADuC7036 integrates a power-on reset (POR) circuit that holds the application-specific integrated circuit (ASIC) in reset for 20 ms typically after VDD reaches 3 V typically.

Issue: Under particular conditions, the POR does not release the reset signal (that is, the ASIC remains in reset) until a power cycle occurs. This POR error occurs only under three specific and coincident power-on conditions:

- Fast ramp on VDD, nominally faster than 100 μ s from initial value of VDD (V_{INIT}) to 12 V.
- $V_{INIT} = \sim 1.2$ V.
- Voltage on REG_DVDD at the time VDD ramp is reapplied = ~ 175 mV.

Workaround: A fast VDD ramp (that is, ramping from ~ 1.2 V to 12 V in less than 100 μ s) is required as one of the conditions to initiate the reported POR issue. Analog Devices recommends careful selection of external power supply decoupling components to ensure that the VDD supply ramp rate can always be guaranteed to be greater than 100 μ s under all VBAT power-on conditions. Specifically, Analog Devices recommends using a 10 Ω series resistor (1% tolerance maximum) and a 10 μ F decoupling capacitor (20% tolerance maximum) to ground on the VDD line between the reverse protection diode and VDD, as shown in Figure 1.

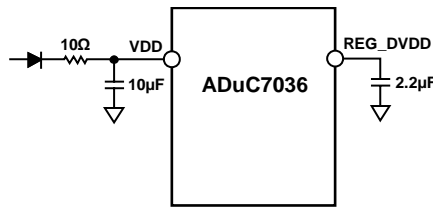


Figure 1. Series Resistor and Decoupling Capacitor to Ground on VDD Pin

Related Issues: None.

2. LIN Short-Circuit Protection [er002]

Background: The ADuC7036 integrates a short-circuit protection feature.

Issue: Under particular conditions, a LIN short-circuit event can damage the ADuC7036. This damage occurs only under three specific and coincident conditions:

- The ADuC7036 LIN/BSD pin is connected to the LIN bus only via a series inductor.
- VBAT is greater than or equal to 18 V.
- A LIN short circuit occurs while the LIN driver is driving the LIN bus low.

Workaround: Analog Devices recommends using a series resistor on the LIN/BSD pin to limit the amplitude voltage spike induced by the inductor when the short circuit to VBAT occurs. This voltage should not exceed the absolute maximum ratings of the LIN pin (40 V maximum).

In the case of a 33 μ H series inductor (10% tolerance), Analog Devices recommends using a 27.4 Ω series resistor (5% tolerance maximum), as shown in Figure 2.

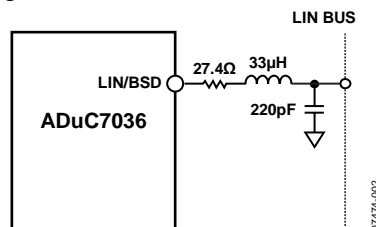


Figure 2. Series Inductor on LIN Pin

Related Issues: None.

ANOMALIES**ADuC7036 Performance Issues****1. ESD [pr001]**

Background: The ADuC7036 is intended to be classified for a human body model (HBM) ESD rating of 2 kV.

Issue: The ADuC7036 HBM ESD is specified to 1 kV.

Workaround: Pending.

Related Issues: None.

2. WU Pin Latch-Up [pr002]

Background: The operating voltage of the WU pin is -3 V to $+33\text{ V}$.

Issue: There is a latch-up condition on the WU pin if a voltage below -1 V is applied on this pin.

Workaround: It is recommended to use a protection diode such as a BAS52, as shown in Figure 3, to avoid destructive damage to the part.

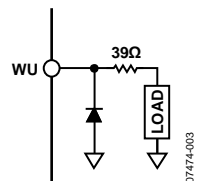


Figure 3. Protection Diode on WU Pin

Related Issues: None.

ANOMALY STATUS***ADuC7036 Functionality Issues***

Reference Number	Description	Status
er001	Power-on reset	Open
er002	LIN short-circuit protection	Open

ADuC7036 Performance Issues

Reference Number	Description	Status
pr001	ESD	Open
pr002	WU pin latch-up	Open