



# Integrated Precision Battery Sensor for Automotive System

## Silicon Anomaly List

## ADuC7034

This anomaly list describes the known bugs, anomalies, and workarounds for the ADuC7034 integrated precision battery sensor. The anomalies listed apply to all ADuC7034 packaged material branded as follows:

First Line ADuC7034

Second Line BCPZ

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.

### ADuC7034 FUNCTIONALITY ISSUES

Kernel Revision Identifier	Chip Marking	Silicon Status	Anomaly Sheet	No. of Reported Anomalies
A40	ADuC7034 BCPZ	Release	Rev. A	2

### ADuC7034 PERFORMANCE ISSUES

Kernel Revision Identifier	Chip Marking	Silicon Status	Anomaly Sheet	No. of Reported Anomalies
A40	ADuC7034 BCPZ	Release	Rev. A	2

#### Rev. A

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# ADuC7034

## ANOMALIES

### ADuC7034 Functionality Issues

#### 1. Power-On-Reset [er001]:

**Background:** The ADuC7034 integrates a power-on reset (POR) circuit holding the ASIC in reset for 20 ms typically, after VDD reaches 3.0 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 issue only occurs under three specific and coincident power-on conditions:

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

**Workaround:** As previously noted, a fast VDD ramp (that is, ramping from  $\sim$ 1.2 V to 12 V in  $<$ 100  $\mu$ 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  $>$ 100  $\mu$ s under all VBAT power-on conditions. Specifically, Analog Devices recommends using a 10  $\Omega$  series resistor (1% tolerance maximum) and a 10  $\mu$ F decoupling capacitor (20% tolerance maximum) to ground on the VDD line between the reverse protection diode and the VDD, as shown in Figure 1.

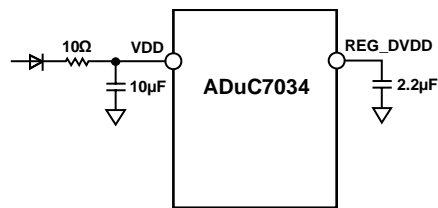


Figure 1. External Power Supply Decoupling Components

**Related Issues:** None.

#### 2. LIN Short-Circuit Protection [er002]:

**Background:** The ADuC7034 integrates a short-circuit protection feature.

**Issue:** Under particular conditions, a LIN short-circuit event can damage the ADuC7034. This damage only occurs under three specific and coincident conditions:

- The ADuC7034 LIN pin is only connected to the LIN bus 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 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  $\mu$ H series inductor (10% tolerance), Analog Devices recommends using a 27.4  $\Omega$  series resistor (5% tolerance maximum), as shown in Figure 2.

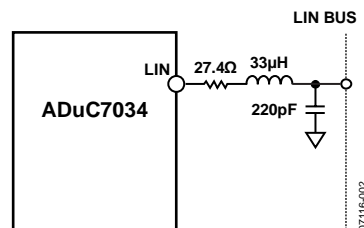


Figure 2. External LIN Components

**Related Issues:** None.

**ANOMALIES****ADuC7034 Performance Issues****1. ESD [pr001]:**

**Background:** The ADuC7034 is intended to be classified for HBM ESD rating of 2 kV.

**Issue:** The ADuC7034 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  $-3\text{ V}$  to  $+33\text{ V}$ .

**Issue:** There is a latch-up condition on the WU pin if a voltage below  $-1\text{ V}$  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.

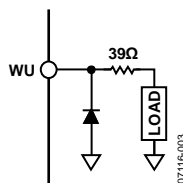


Figure 3. Protection Diode on WU Pin

**Related Issues:** None.

# ADuC7034

## SECTION 1. ADuC7034 FUNCTIONALITY ISSUES

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

## SECTION 2. ADuC7034 PERFORMANCE ISSUES

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