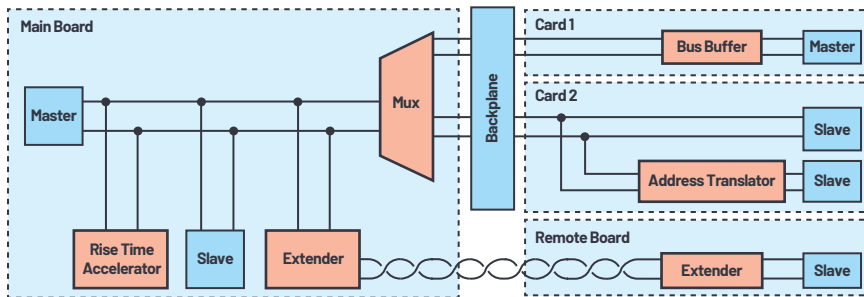


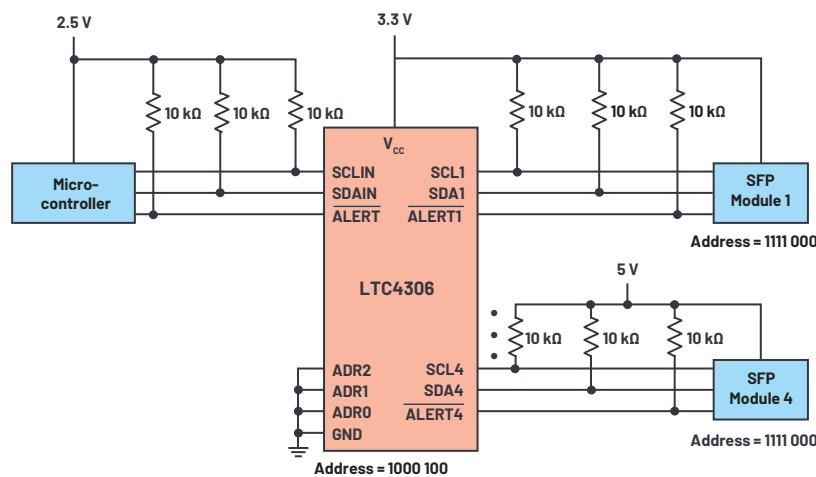


Serial Bus Buffers, Extenders, and Accelerators



I²C Multiplexers and Address Translators

Part Number	Description	Supply Voltage (V)	V _{BUS} (V)	Channel Select	Bus Buffer	Rise Time Acc. Options	GPIO	Stuck Bus Circuitry	HBM ESD (kV)	Packages
LTC4305	1:2 multiplexer	2.7 to 5.5	2.2 to 5.5	I ² C command	•	Strong/off		Disconnect	±10	16-lead, 4 mm × 5 mm DFN
LTC4306	1:4 multiplexer	2.7 to 5.5	2.2 to 5.5	I ² C command	•	Strong/off	×2	Disconnect	±10	24-lead, 4 mm × 5 mm QFN
LTC4312	1:2 multiplexer	2.9 to 5.5	1.5 to 5.5	Enable Pin	•	Strong/3 mA/off		Disconnect and recovery	±4	14-lead, 4 mm × 3 mm DFN, 16-lead MSOP
LTC4314	1:4 multiplexer	2.9 to 5.5	1.5 to 5.5	Enable Pin	•	Strong/3 mA/off		Disconnect and recovery	±4	20-lead, 3 mm × 4 mm QFN, 20-lead SSOP
LTC4316	1:1 translator	2.25 to 5.5	2.5 to 5.5					Timeout	±4	10-lead, 3 mm × 3 mm DFN, 10-lead MSOP
LTC4317	1:2 translator	2.25 to 5.5	2.5 to 5.5					Timeout	±4	16-lead, 5 mm × 3 mm DFN
LTC4318	2:2 translator	2.25 to 5.5	2.5 to 5.5					Timeout	±4	20-lead, 4 mm × 4 mm QFN



Features:

- ▶ 2-wire 1:4 multiplexer/switch
- ▶ Connect SDA and SCL lines with 2-wire bus commands
- ▶ Supply independent bidirectional buffer for SDA and SCL lines increases fanout
- ▶ Programmable disconnect from stuck bus
- ▶ Compatible with I²C and SMBus standards

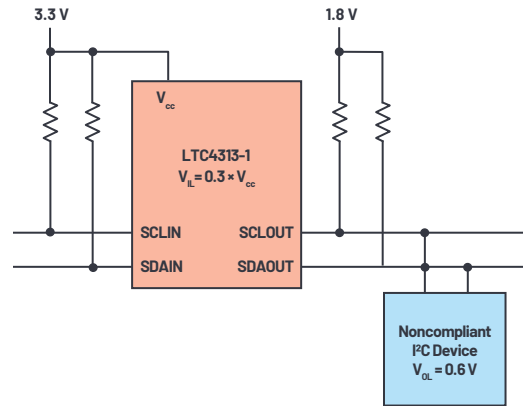
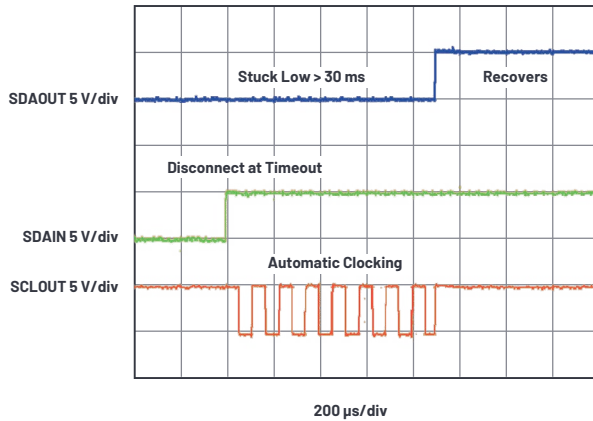
LTC4313/LTC4315: I²C Bus Buffers with High Noise Margin and Stuck Bus Recovery

Only Analog Devices bus buffers with stuck bus recovery and disconnect allow users to attempt recovery from an I²C bus that's stuck low. If SDAOUT or SCLOUT is low for 30 ms, the connection between SDAIN and SDAOUT, and SCLIN and SCLOUT, is broken. After a delay, the bus buffer automatically generates up to 16 clock pulses on SCLOUT in an attempt to unstick the bus. When SDAOUT and SCLOUT go high, reconnection occurs when I²C transactions on both buses are complete.

Features:

- ▶ Prevents SDA and SCL corruption during live board insertion and removal
- ▶ High noise margin with $V_{IL} = 0.3 \times V_{CC}$
- ▶ Compatible with noncompliant I²C devices that drive a high V_{OL}
- ▶ Fixed (LTC4313) or adjustable (LTC4315) rise time accelerator current
- ▶ Level shift 1.5 V, 1.8 V, 2.5 V, 3.3 V, and 5 V buses

Stuck Bus Resolved with Automatic Clocking



I²C Buffers, Rise Time Accelerators, and I²C/SPI Extenders

Part Number	Hot Swappable	Rise Time Acc.	Bidirectional Level Translation (V)	Stuck Bus Disconnect/ Recovery	Enable	GPIO	Ready ⁵	HBM ESD (kV)	Comments	Packages
LTC4300A-1	•	•			•		•	±2	Low power bus disconnect	8-lead MSOP
LTC4300A-2	•	• ¹	2.7 to 5.5					±2	RTA enable	8-lead MSOP
LTC4300A-3	•	•	2.7 to 5.5		•			±2	Low power bus disconnect	8-lead MSOP, 8-lead, 3 mm × 3 mm DFN
LTC4301	•		2.7 to 5.5		•		•	±10	Supply independent	8-lead MSOP, 8-lead, 3 mm × 3 mm DFN
LTC4301L	•		1 to 2.7/5.5 ²		•		•	±10	Supply independent, level translates from 1 V	8-lead MSOP, 8-lead, 3 mm × 3 mm DFN
LTC4302-1	•	•				•		±2	Addressable, two GPIOs	10-lead MSOP
LTC4302-2	•	• ¹	2.7 to 5.5		•	•		±2	Addressable, one GPIO	10-lead MSOP
LTC4303	•	•	2.7 to 5.5	•			•	±15	Full feature set, rugged ESD	8-lead MSOP, 8-lead, 3 mm × 3 mm DFN
LTC4304	•	• ¹	2.7 to 5.5	•	•		•	±15	RTA enable	10-lead MSOP, 10-lead, 3 mm × 3 mm DFN
LTC4307	•	•	2.3 to 5.5	•			•	±5	60 mV offset voltage	8-lead MSOP, 8-lead, 3 mm × 3 mm DFN
LTC4307-1	•		2.3 to 5.5		•		•	±5	60 mV offset voltage, HDMI compliant	8-lead MSOP, 8-lead, 3 mm × 3 mm DFN
LTC4308	•	•	1 to 2.3/5.5 ³	•			•	±6	-200 mV V_{OS} I-to-O, +300 mV V_{OS} O-to-I	8-lead MSOP, 8-lead, 3 mm × 3 mm DFN
LTC4309	•	• ¹	1.8 to 2.3/5.5 ⁴	•	•		•	±6	60 mV offset voltage, RTA enable, stuck bus disable	16-lead SSOP, 12-lead, 4 mm × 3 mm DFN
LTC4310	•	•	3 to 5.5	•	•		•	±5	Full I ² C isolation	10-lead, 3 mm × 3 mm DFN, 10-lead MSOP
LTC4311	•	•			•			±8	Rise time accelerator only	6-lead, 2 mm × 2 mm DFN, 6-lead SC70
LTC4313	•	•	1.5 to 5.5	•	•		•	±4	$V_{IL} = 0.3 V_{CC}$, fixed adjustable or with RTA	8-lead MSOP, 8-lead, 3 mm × 3 mm DFN
LTC4315	•	• ¹	1.5 to 5.5	•	•		•	±4	$V_{IL} = 0.3 V_{CC}$, selectable RTA, stuck bus disable	12-lead MSOP, 12-lead, 4 mm × 3 mm DFN
LTC4331			1.62 to 5.5	•	•		•	±40	I ² C operation up to 1200 m	20-lead QFN
LTC4332			1.62 to 5.5	•	•		•	±40	SPI operation up to 1200 m	20-lead QFN

¹ Rise time accelerator circuitry can be disabled.

² SCLIN and SDAIN down to 1 V, SDAOUT and SCLOUT from 2.7 V to 5.5 V.

³ SCLIN and SDAIN down to 1 V, SDAOUT and SCLOUT from 2.3 V to 5.5 V.

⁴ SCLIN and SDAIN down to 1.8 V, SDAOUT and SCLOUT from 2.3 V to 5.5 V.

⁵ Downstream connection indicator.



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