HL5301

SIM Card Interface Level Translator

Description

The HL5301FN01/FN03 and HL5301WL01 subscriber identity module (SIM) / smart card level translators provides level shifting and IEC61000-4-2 electrostatic discharge (ESD) protection for SIM card ports.

These devices integrate two unidirectional level shifters for the RST and CLK signals, a bidirectional level shifter for IO, and ±8kV ESD protection on all card contacts.

The HL5301FN01 and HL5301FN03 include a EN control input to aid insertion and removal of SIM and smart cards. HL5301 follows deactivation sequence specified in ISO/IEC 7816-3 when EN is pulled low. The logic supply voltage range is +0.9V to +2.0V for VCCA, “System side” and +1.5V to +3.6V for VCCB, the “SIM card side”. Total supply current is 0.3µA. The device automatically shut down when either power supply is removed.

HL5301FN04 is general purpose 3 channel level translator with one channel unidirectional and two channel bidirectional level translator with auto direction control.

The HL5301 is available in 10-pin STSLP, 1.40mm x 1.80mm x 0.55mm packages and 0.35mm pitch WLCSP 9, 1.12mm x 1.12mm.

Features

- SIM Card interface Level translator
  - Host side (VCCA): 0.9V ~ 2.0V
  - SIM Card side (VCCB): 1.5V ~ 3.6V
- Low quiescent current = 0.3uA
- Level translation of RST, CLK and IO between SIM card and host side interface with capacitance isolation
  - RST, CLK – Unidirectional Channel
  - IO – Bidirectional Channel with auto-direction detection
- Advanced one-shot circuit to accelerate rising time on IO Channels
- Built-in pull-up resistor in IO channels
- Built-in pull-down resistor in SIM card side
- Built-in series resistance in SIM side pins for short protection and EMI reduction
- Supports clock speed up to 10MHz
- Incorporates shutdown feature for the SIM card signals according to ISO-7816-3
- HL5301FN04 – General purpose 3 channel Level translator
  - RST – Unidirectional Channel
  - CLK, IO – Bidirectional Channel with auto-direction detection
- IEC61000-4-2 ESD protection on SIM card interface side (RST_SIM, CLK_SIM, IO_SIM, VCCB)
  - Contact discharge: ±8kV
  - Air discharge: ±15kV
- Two Packages are available
- 10 pin STSLP, 1.40mm x 1.80mm x 0.55mm
- WLCSP-9, 0.35mm pitch, 1.12mm x 1.12mm

Applications

- Smartphones
- Table PC
- Wireless Modem

Typical Application Diagram

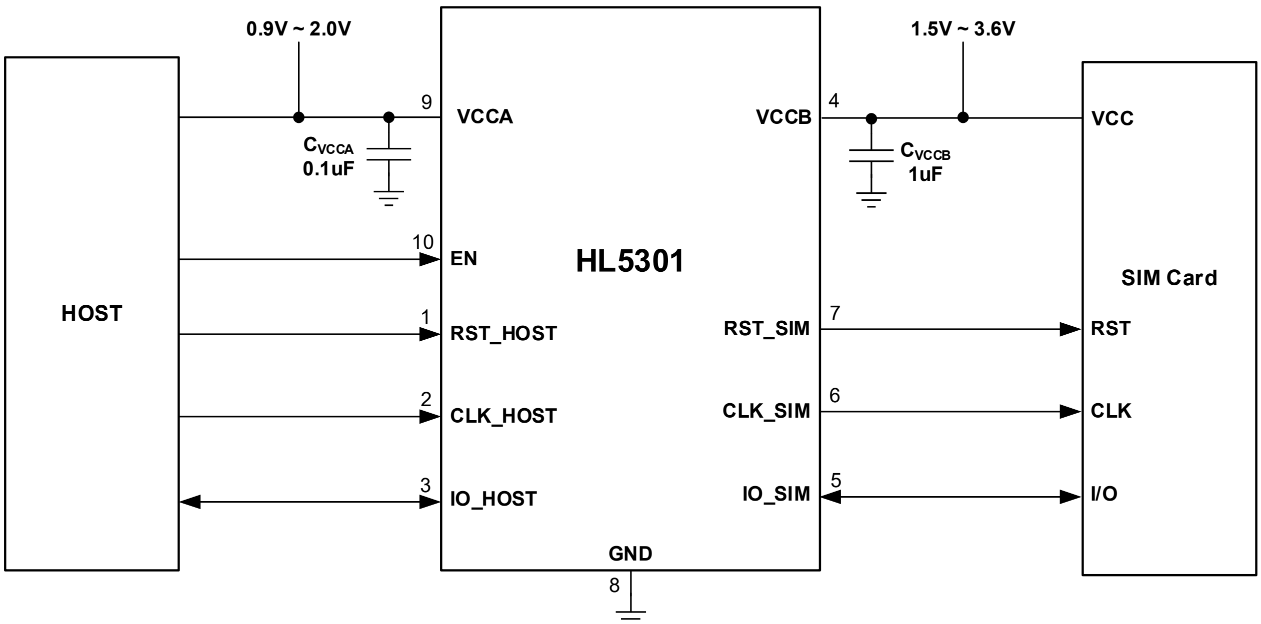

Figure 1. Typical Application Diagram

Order Information

Part Number	Rs on IO/CLK_SIM	Application	Package	Packing Method
HL5301FN01	75 Ω	SIM Level translator	10pin STSLP, 1.4mm x 1.8mm x 0.55mm	Tape & Reel
HL5301FN03	33 Ω	SIM Level translator	10pin STSLP, 1.4mm x 1.8mm x 0.55mm	Tape & Reel
HL5301FN04	33 Ω	General level translator	10pin STSLP, 1.4mm x 1.8mm x 0.55mm	Tape & Reel
HL5301WL01	33 Ω	SIM Level translator	WLCSP-9, 0.35mm pitch, 1.12 mm x 1.12 mm	Tape & Reel

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