



## NXP WLCSP SIM card interface level translator and supply voltage LDO

# Smallest footprint and highest ESD performance

NXP NVT4555UK is the industry leading WLCSP SIM card to host processor interface level translator, which is ideally suited for feature and smart phone applications. It provides the smallest available footprint, robust performance and compliance with SIM power supply, EMI and ESD, as well as handling IOS7816 shutdown sequence.

### KEY FEATURES

- ▶ Support SIM card supply voltages: 1.8 V (Class C) and 2.95 V (Class B)
- ▶ Input voltage range to LDO: 2.5 V to 5.25 V
- ▶ Host microcontroller operating range: 1.1 V to 3.6 V
- ▶ Automatic level translation of I/O, RSTn and CLKn between SIM card and host side interface with capacitance isolation
- ▶ Low current shutdown (EN = 0) mode < 1 mA
- ▶ Supports clock speed beyond 5 MHz clock
- ▶ Incorporates shutdown feature for the SIM card signals according to ISO-7816-3
- ▶ +/- 8 kV IEC61000-4-2 ESD protected on all SIM pins
- ▶ Pb-free. Restriction of Hazardous Substances (RoHS) compliant and free of Halogen and Antimony (Dark Green compliant)
- ▶ Available in 12 pin WLCSP package (1.19 mm x 1.62 mm x 0.56 mm (nominal), 0.4 mm pitch)

### APPLICATIONS

- ▶ Mobile and personal phones
- ▶ Wireless modems
- ▶ SIM card terminals

The NVT4555 is superior Smart Identity Module (SIM) card solution for level interfacing a baseband host processor interface with a SIM/Smart card which stores user identity data for mobile handset applications. It contains an LDO that can provide either 1.8 V for Class C or 2.95 V for Class B SIM/Smart cards. The LDO input voltage range is from 2.5 V to 5.25 V; the output voltage is selected with a single pin (CTRL) and it can supply up to 50 mA of load current.

The NVT4555 incorporates the shutdown sequence for SIM card pins based on the ISO 7816-3 SIM card specification. It meets all ETSI, IMT-2000 and ISO7816-3 SIM/Smart card interface requirements.

The NVT4555 has greater than +/- 8kV contact IEC 61000-4-2 ESD protection for the SIM pins and standard +/- 2kV contact for all other pins.



## KEY FUNCTIONS

The application circuit for the NVT4555 shows the typical interface with a SIM card. The internal Low Drop Out (LDO) regulator is designed to supply the SIM card power with a high Power Supply Rejection Ratio (PSSR) at a very low drop-out voltage (VBAT –VSIM). The LDO regulator provides two levels of fixed voltage regulation at 1.8 V or 2.95V, which are selected with the CTL pin of the NVT4555.

The ISO 7816-3 specification specifies the shutdown sequence for the SIM card signals to ensure that the card is properly disabled. Also during the hot swap, the orderly shutdown of these signals helps to avoid any improper write and corruption of data.

When the enable, EN, is asserted LOW, the shutdown sequence is initiated by powering down the RST\_SIM channel. Once the RST\_SIM channel is powered down, CLK\_SIM, I/O\_SIM and VSIM are powered down sequentially one-by-one.

An internal pull-down resistor on the SIM pins is used to pull these channels LOW. The shutdown sequence is completed

in a few microseconds. It is important that that EN is pulled low before VBAT and VCC supplies go LOW to ensure that the shutdown sequence is proper initiated.

## DEMONSTRATION PLATFORMS

The OM13480 - NVT4555 evaluation board is provided to test all device functions including IEC 61000-4-2 system level ESD requirements. The user manual UM10707 provides operating instructions.

[http://www.nxp.com/documents/user\\_manual/UM10707.pdf](http://www.nxp.com/documents/user_manual/UM10707.pdf)

For demo board support contact your local NXP distributor.

## ADDITIONAL INFORMATION

For data sheet, see

[http://www.nxp.com/documents/data\\_sheet/NVT4555.pdf](http://www.nxp.com/documents/data_sheet/NVT4555.pdf)

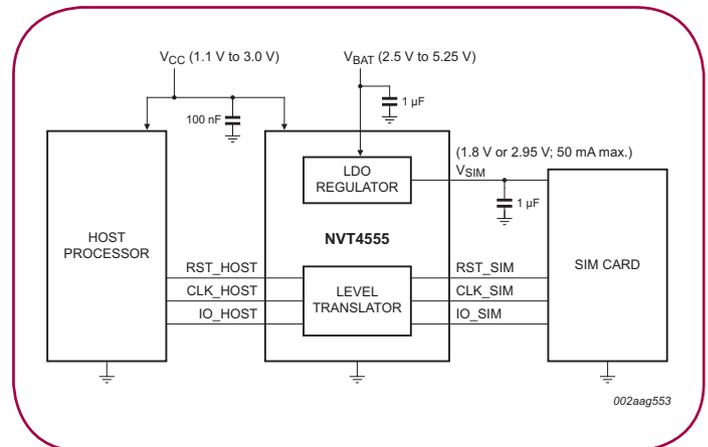
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OM13480 NVT4555 WLCSP Demo Board



NVT4555 application circuit interfacing with typical SIM card