UM10707

NVT4555 evaluation board OM13480

Rev. 1 — 10 July 2013 **User manual**

Document information

Info	Content
Keywords	NVT4555UK, OM13480, SIM card, voltage translator, level translator, ETSI, IMT-2000, ISO7816, evaluation board, demonstration board
Abstract	The NVT4555 is used in SIM card voltage level translation applications for SIM I/O buses with incompatible logic levels to the host processor.

Revision history

Rev	Date	Description
v.1	20130710	user manual; initial release

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1. Introduction

The NVT4555UK evaluation board (OM13480) is built for interfacing a SIM card socket to a single-voltage host-side interface. The NVT4555 contains one voltage select pin (CTRL) to select either 1.8 V or 2.95 V for SIM card power supply, and one active HIGH enable pin (EN) to enable normal operation. The data, clock and reset paths can operate beyond 5 MHz. The I/O channel is bidirectional, while the reset and clock are unidirectional. The NVT4555 is compliant with all ETSI, IMT-2000 and ISO-7816 SIM/Smart card interface requirements.

Refer to NVT4555 data sheet (Ref. 1) for more detailed information.

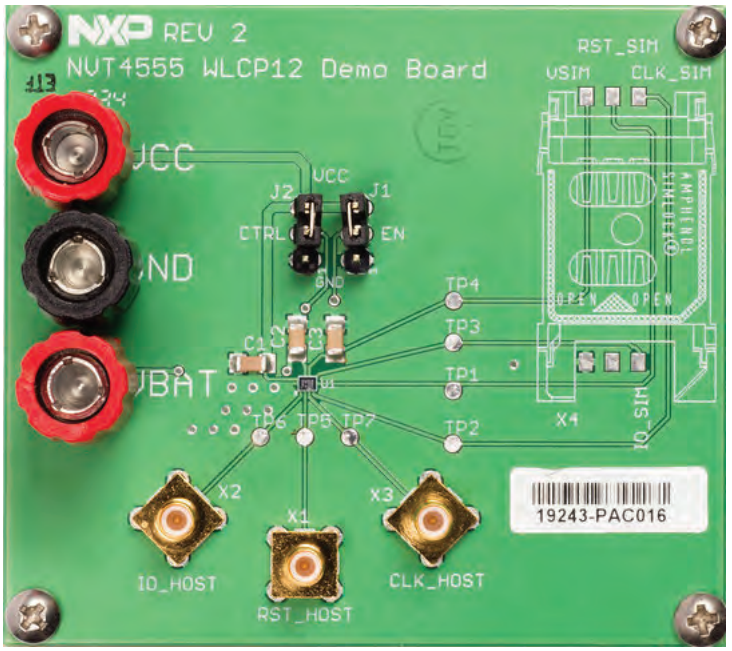


Fig 1. NVT4555UK SIM card voltage level translators evaluation board (OM13480)

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2. Hardware description

2.1 Schematic

The NVT4555UK evaluation board was intended for operation as a stand-alone part or as part of the system. Proper voltages must be supplied at the connectors for V_{CC}, V_{BAT} and GND. The following notes are comments generated so that a better understanding of the evaluation board can be achieved.

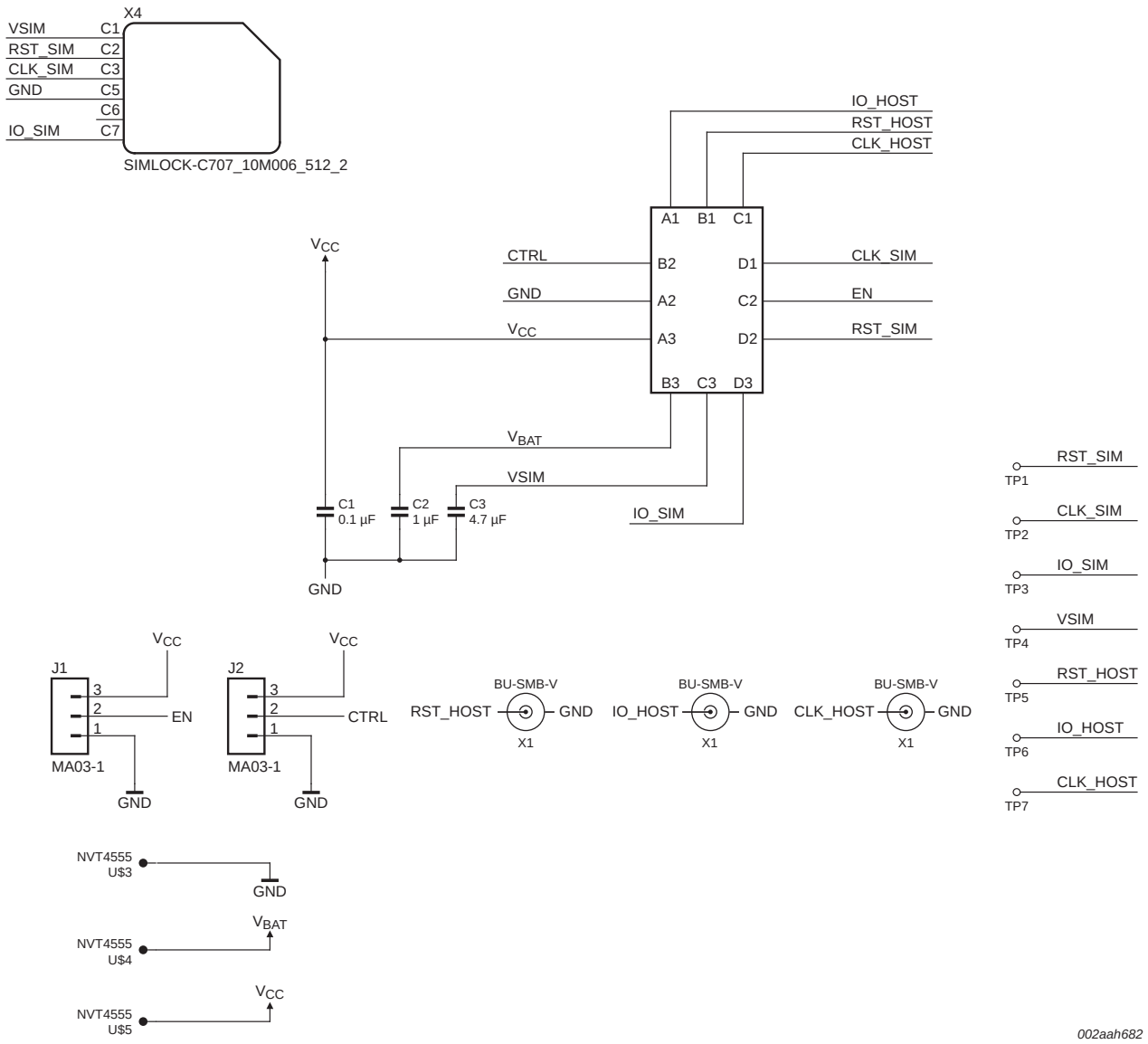


Fig 2. NVT4555UK evaluation board schematic

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2.2 Bill of materials

Table 1. NVT4555UK (OM13480) evaluation board bill of materials

Device	Component	Manufacturer	Notes
U1	NVT4555UK	NXP	Supply voltage for the host controller side input/output pins (CLK_HOST, RST_HOST, IO_HOST). This pin is bypassed with a 0.1 µF ceramic capacitor.
C1	GRM155R70J104KAO1D	Murata	Host voltage supply bypass capacitor, 0.1 µF ceramic capacitor.
C2	GRM155R70J105KA12D	Murata	Battery voltage supply bypass capacitor, 1.0 µF ceramic capacitor.
C3	GRM155R60J475ME47	Murata	SIM voltage supply bypass capacitor, 4.7 µF ceramic capacitor.

2.3 Jumper and header functions

The functions of the jumpers and headers on these evaluation boards are shown in Table 2.

Table 2. Header descriptions for NVT4555UK (OM13480) evaluation board

Jumper/header	Function	Notes
VCC	Host processor I/O supply voltage input	Supply voltage for the host controller side input/output pins (CLK_HOST, RST_HOST, IO_HOST). This pin is bypassed with a 0.1 µF ceramic capacitor.
GND	System GND	Ground for the SIM card and host controller.
VBAT	Battery input	Battery voltage supply for internal LDO. This pin is bypassed with a 1.0 µF ceramic capacitor.
J1 (3-pin)	Device switch enable or disable control	Pins 2-3 shorted: enables NVT4555 device (default). Pins 1-2 shorted: disables the device
J2 (2-pin)	Device switch 1.8 V or 2.95 V LDO output voltage control	Pins 2-3 shorted: 2.95 V to VSIM (default). Pins 1-2 shorted: 1.8 V to VSIM.
X1	SMC connector for RST_HOST	This connector can be used to connect a host processor to the evaluation board for use in translating the RST signal to the SIM card. This I/O can support speeds greater than 5 MHz.
X2	SMC connector for IO_HOST	This connector can be used to connect a host processor to the evaluation board for use in translating the I/O signal to and from the SIM card. This I/O can support speeds greater than 5 MHz.
X3	SMC connector for SIM_HOST	This connector can be used to connect a host processor to the evaluation board for use in translating the SIM signal to the SIM card. This I/O can support speeds greater than 5 MHz.
X4	SIM card slot	This adapter socket can be populated for a SIM card on the board for user evaluation.

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3. Abbreviations

Table 3. Abbreviations

Acronym	Description
I/O	Input/Output
LDO	Low-DropOut regulator

4. References

[1] **NVT4555, "**SIM card interface level translator and supply voltage LDO**" —** Product data sheet; NXP Semiconductors

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