

NXS level shifters are switch-type translators suitable for open-drain application. They are FET based devices that use an N-channel pass-gate transistor that ties two ports together (Figure1.) and do not need an input signal to change the direction from port A to B or from Port B to A.

The combination of an N-channel pass FET, integrated with 10 kΩ pull-up resistors, and edge-rate acceleration circuits makes NXS translators ideal for interfacing devices or systems operating at disparate voltage levels, while also allowing for simple interfacing with open-drain drivers, as is required in I²C, 1-wire, and SD/MMC-card interface applications.

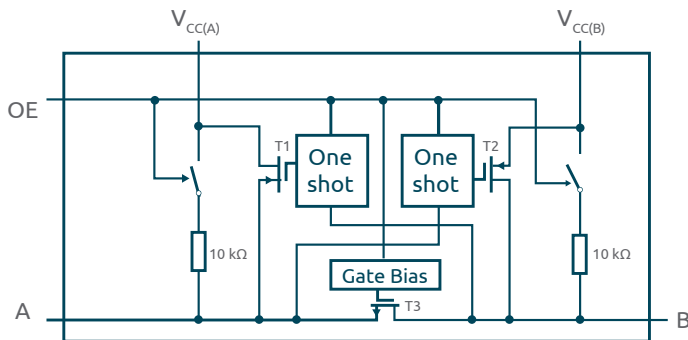


Figure 1 Open-drain based NXS Autosense Translation

NXB level shifters (Figure2.) are ideal for use as push-pull or CMOS-type drivers that drive long traces, capacitive, or high-impedance loads in applications that use SPI and UART interfaces.

The architecture of one I/O channel of an NXB level translator incorporates a weak buffer with one-shot circuitry to improve the transition speeds of rising and falling edges. As an example, when the A port is connected to a system driver and driven high, the one-shot will trigger when it senses the rising edge and the high-drive buffer drives the B port high. The weaker 4 kΩ will hold B high once the one-shot pulse is complete. Similarly the same is true for driving low.

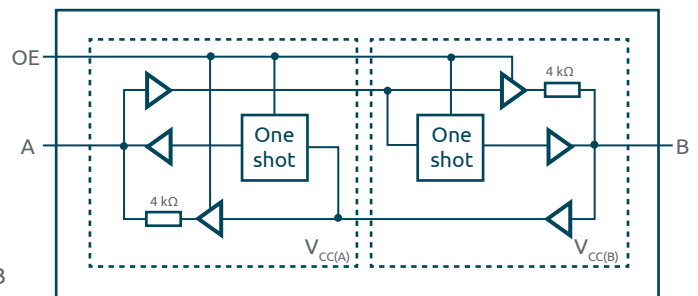


Figure 2 Push-pull based, NXB Autosense Translation

Output edge-rate accelerator

The addition of one-shot circuitry, provides the NXB / NXS family with output edge-rate accelerators to improve LOW-to-HIGH transition time (NXS devices) or both HIGH-to-LOW and LOW-to-HIGH (NXB devices). During a transition the output one-shot switches on the NMOS transistor (HIGH-to-LOW transitions) or the PMOS transistor (LOW-to-HIGH transitions). This lowers the output impedance increasing current drive and reducing the output transition time. The one-shot is activated once the input transition reaches half of its reference supply voltage and a low ohmic pulse is generated producing a fast transient on the output.

Autosense Voltage level Translator Families

Product	Description	V _{CC(A)} (V)	V _{CC(B)} (V)	T _{amb} (°C)	Product type
NXS0101	Switch based, 1-bit dual supply translating transceiver with auto-direction sensing	1.65 - 3.6	2.3 - 5.5	-40 °C to +125 °C	NXS0101GM, NXS0101GS
NXB0101	Push-Pull, 1-bit dual supply translating transceiver with auto-direction sensing	1.2 - 3.6	1.65 - 5.5	-40 °C to +125 °C	NXB0101GM, NXB0101GS
NXS0102	Switch based, 2-bit dual supply translating transceiver with auto-direction sensing	1.65 - 3.6	2.3 - 5.5	-40 °C to +125 °C	NXS0102GT, NXS0102GX, NXS0102DC
NXB0102	Push-Pull, 2-bit dual supply translating transceiver with auto-direction sensing	1.2 - 3.6	1.65 - 5.5	-40 °C to +125 °C	NXB0102GT*, NXB0102DC
NXS0104	Switch based, 1-bit dual supply translating transceiver with auto-direction sensing	1.65 - 3.6	2.3 - 5.5	-40 °C to +125 °C	NXS0104BQ, NXS0104BQ-Q100, NXS0104PW, NXS0104PW-Q100
NXB0104	Push-Pull, 1-bit dual supply translating transceiver with auto-direction sensing	1.2 - 3.6	1.65 - 5.5	-40 °C to +125 °C	NXB0104BQ, NXB0104PW, NXB0104BQ-Q100, NXB0104PW-Q100
NXS0108*	Switch based, 8-bit dual supply translating transceiver with auto-direction sensing	1.65 - 3.6	2.3 - 5.5	-40 °C to +125 °C	NXS0108BQ, NXS0108BQ-Q100, NXS0108PW, NXS0108PW-Q100
NXB0108*	Push-Pull, 8-bit dual supply translating transceiver with auto-direction sensing	1.2 - 3.6	1.65 - 5.5	-40 °C to +125 °C	NXB0108BQ, NXB0108BQ-Q100, NXB0108PW, NXB0108PW-Q100

* In Development

Packages

SOT	Package Suffix	Package Name	No of pins	Package dimensions L x W x H (mm)	Lead pitch (mm)	Package
SOT1202	GS	XSON6	6	1 x 1 x 0.35	0.35	
SOT886	GM	XSON6	6	1.45 x 1 x 0.5	0.5	
SOT1174-1	GU12	XQFN12	12	1.7 x 2 x 0.5	0.4	
SOT833-1	GT	XSON8	8	1.95 x 1 x 0.5	0.5	
SOT363	GW	TSSOP6	6	2.1 x 2 x 0.95	0.65	
SOT765-1	DC	VSSOP8	8	2 x 3.1 x 1	0.5	
SOT762-1	BQ	DHVQFN14	14	3 x 2.5 x 1	0.5	
SOT764-1	BQ	DHVQFN20	20	4.5 x 2.5 x 1	0.5	
SOT402-1	PW	TSSOP14	14	5 x 6.4 x 1.1	0.65	
SOT360-1	PW	TSSOP20	20	6.5 x 6.4 x 1.1	0.65	

© 2020 Nexperia B.V.

All rights reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

nexperia.com

Date of release:

June 2020

Printed:

In the Netherlands

