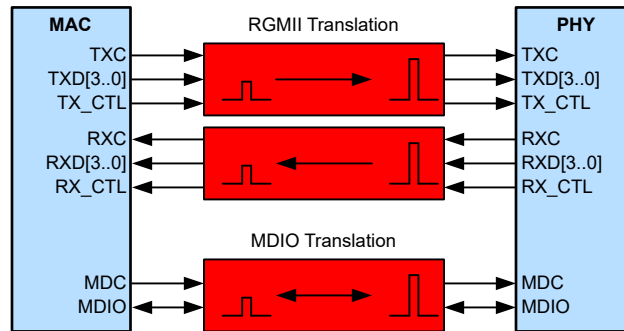


# Translate Voltages for RGMII



RGMII is a high-bandwidth data bus protocol with very strict timing considerations. The following device recommendations are provided as a suggested solution as they can support the data rates required for RGMII interfaces; however, because the RGMII specification is defined without consideration for voltage level translation, board-level assessment of key timing parameters and assessment of performance within the system is encouraged.



Example of Using Voltage Translation with RGMII

## Design Considerations

- Board layout is critical to the success of RGMII translation; we recommend using signal integrity simulations and prototyping for any design
- Use active translators for maximum data rate
- Use one device for all TX signals and one for all RX signals to minimize channel-to-channel skew
- See [Low Voltage Translation For SPI, UART, RGMII, JTAG Interfaces](#) for details regarding the performance of SN74AXC8T245 in RGMII applications
- Place translators closest to the low-voltage device, if possible, to improve signal integrity
- Consider source-terminating signals if sent over 12 cm (4700 mil) or longer traces
- Need additional assistance? Ask our engineers a question on the [TI E2E™ logic support forum](#)

## Recommended Parts

Part Number	Automotive Qualified	RGMII Voltage Translation Range	Device Maximum Data Rate (Mbps)	Features
<a href="#">SN74AXC8T245</a>		2.5 V to 3.3 V	380 Mbps	Glitch-free power supply sequencing Outputs are disabled when either supply is 0 V Active translation architecture
<a href="#">SN74AXC8T245-Q1</a>	✓			
<a href="#">SN74AVC8T245</a>		1.8 V to 3.3 V	320 Mbps	Active translation architecture
<a href="#">SN74AVC8T245-Q1</a>	✓			

For more devices, browse through the [online parametric tool](#) where you can sort by desired voltage, channel numbers, and other features.

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