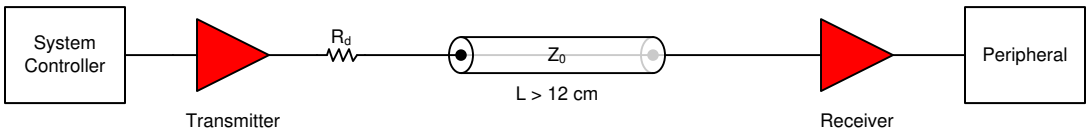
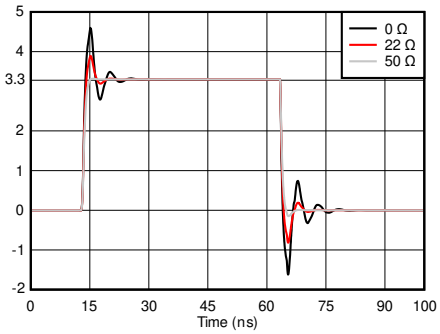
Product Overview

Drive Transmission Lines With Logic

When a CMOS driver sends a signal over a relatively long transmission line, there is typically a great deal of ringing at the destination due to impedance mismatches and transmission line effects. Adding a series resistor near the transmitter can significantly improve the signal integrity at the distant end without the need for an impedance matching termination.



Example System Diagram With Damping Resistor (R_d)



Simulated Signal Received From an HCS Family Logic Buffer With Series-Damping Resistor

Design Considerations

- Most logic devices cannot support enough current for a direct termination at 50 Ω
- The damping resistor, R_d, can be increased to reduce overshoot at the receiver
- *[FAQ] What happens when I connect a logic device's output to a 50 ohm transmission line?*
- Ask a question on our *Engineer-to-Engineer forum*

Recommended Parts

Part Number	Automotive Qualified	V_{CC} Range	Channels	Features
SN74LVC1G34		1.65 V–5.5 V	1	Available in very small packages
SN74LVC1G125-Q1	✓	1.65 V–5.5 V	1	Available in very small packages 3-State outputs
SN74HCS244-Q1	✓	2 V–6 V	8	Schmitt-trigger inputs 3-State outputs
SN74ALVCH162827		1.65 V–3.6 V	20	Output damping resistors Bus-hold inputs 3-State outputs

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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