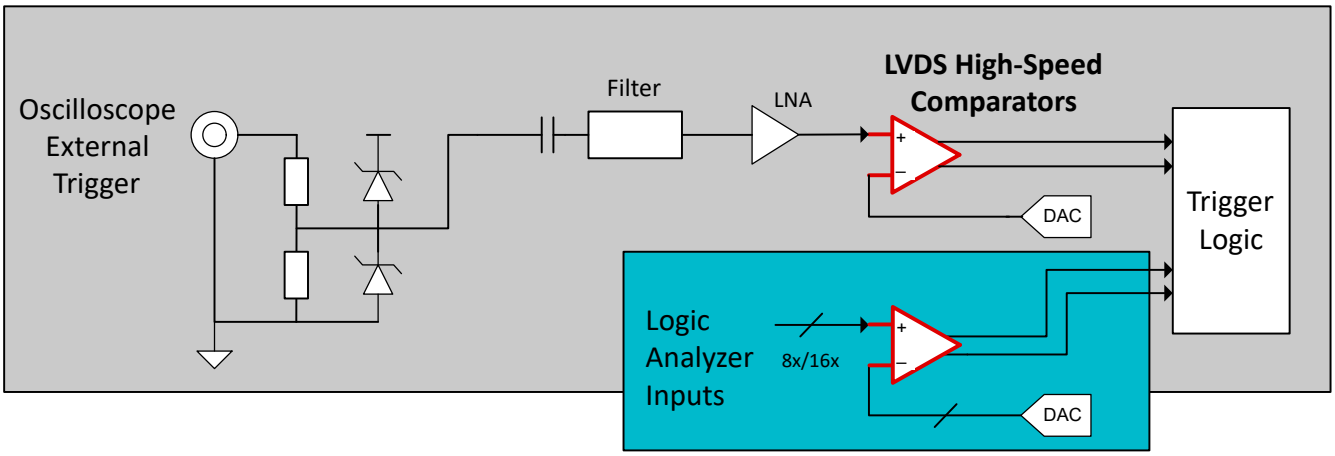
Product Overview

Improving the Performance of Test and Measurement Equipment with High-Speed Comparators



Concept Diagram for Test and Measurement Systems

See more about this use case in this video: High-Speed Comparators in Test and Measurement.

Design Challenges

- Input signals can be bipolar in nature (contains both positive and negative voltages) and often requires level shifting by the LNA.
- For high-speed waveform capturing, oscilloscopes need to be able to trigger on very narrow pulse widths while maintaining timing accuracy.
- A logic analyzer's speed rating depends on how fast a signal can be detected at the equipment's inputs.
- When high-speed signals need to span large trace lengths or cables, signal restoration is required to maintain signal integrity.

How High-Speed Comparators Benefit the Systems

- A comparator's ability to operate from split supplies eliminates the need to level shift input signals, greatly simplifying the input signal path.
- High-speed comparator's narrow pulse width *detection* capability with minimum overdrive dispersion enables the capture of events that occur for short periods of time of varying amplitudes with high accuracy.
- Comparators with high-speed front ends and LVDS output stages are well-suited to capture fast-toggling clocks and data lines.
- Input hysteresis and variable input thresholds allow high-speed comparators to restore signal integrity in the presence of noise and decreased signal strength.

Part Number	Output Type	Min Pulse Width	Overdrive Dispersion	Toggle Frequency	Supply Range
TLV3801 and TLV3811	LVDS	240 ps	5 ps	3 GHz	2.7 to 5.25 V
TLV3604 and TLV3605	LVDS	600 ps	350 ps	1.5 GHz	2.4 to 5.5 V
TLV3601 and TLV3603	Push-pull	1.25 ns	600 ps	325 MHz	2.4 to 5.5 V

If you have more questions please ask them on TI's E2E forum.

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265