

Typical Applications

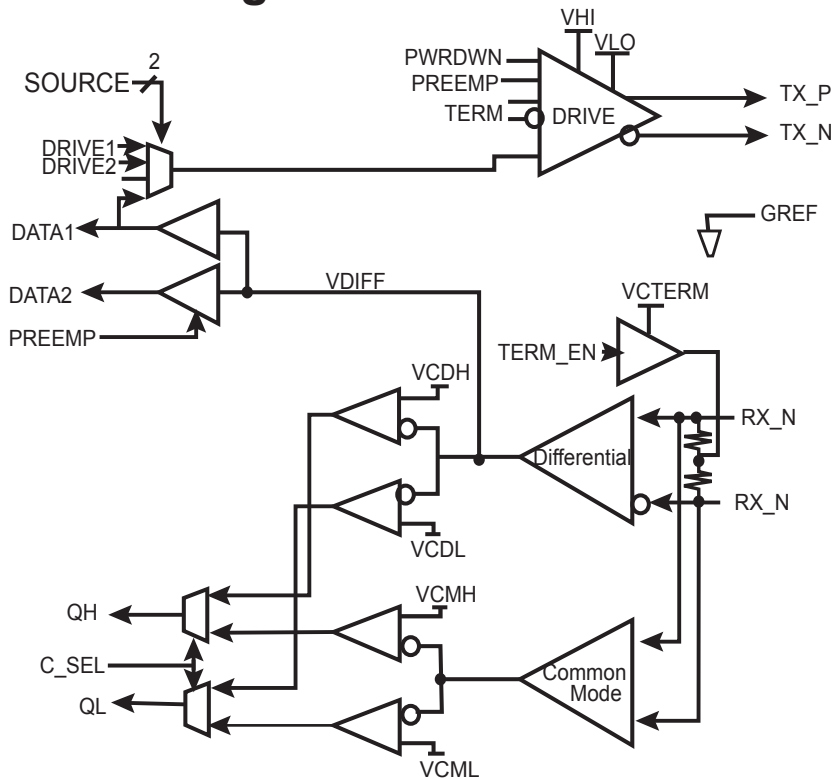
The TRFS-401 is Pin Electronics IP, designed for use in such applications as:

- Automatic Test Equipment
- Instrumentation

Product Overview

TRFS-401 is a pin electronics front-end consisting of a driver, dual differential comparator and dual common mode comparator integrated together for automatic test equipment and instrumentation applications. The chip has high-speed differential input and high-speed differential output for signals from DC to more than 5GHz, terminated at 50Ω (100Ω differential). The differential comparator has an input voltage range of ±2.5V with low dispersion and small equivalent input rise time of 65ps. The common mode comparator has input range of 0 to 2.5V with equivalent input rise time of 235ps. The driver has low offset and high linearity with programmable preemphasis up to 40% in 10% steps. This IP has been manufactured in the form of a test chip named Modesto. Please contact Tahoe RF for availability.

Block Diagram



Key Features

- Pin electronics driver, dual differential comparator and dual common mode comparator
- High-speed differential and common mode signals with 50Ω (100Ω differential) termination from DC to more than 5GHz
- Input voltage range of ±2.5V differential and 0 to 2.5V common mode
- Differential input equivalent rise time of 65ps
- Low dispersion of <5ps for differential comparator
- High linearity driver with preemphasis

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Performance Summary

Expected COMPARATOR Performance Summary

Item	Unit	Min	Typical	Max	Notes
Input Differential Voltage	V	-2.5		2.5	
Input Common Mode Voltage Range	V	0		2.5	
Common Mode Output Voltage	V	1.13	1.16	1.18	With 50Ω load
Differential Output Voltage (peak-peak)	mV	500	640	750	With 100Ω load
Equivalent Input Rise Time (Differential)	ps		65		
Maximum Toggle Rate	GHz	5			
Equivalent Input Rise Time (CM)	ps		235		
Differential Compare Propagation Delay					
Slew Rate	ps		4.9		
Overdrive	ps		3.5		
Pulse Width	ps		2.5		
CM Compare Propagation Delay					
Slew Rate	ps		50		
Overdrive	ps		45		

Expected DRIVER Performance Summary

Item	Unit	Min	Typ	Max	Notes
Vhigh/Vlow Offset	mV		5		preemphasis disabled, 0 -2.5V
Vhigh/Vlow Linearity	mV		2		preemphasis disabled, 0 -2.5V
Vhigh/Vlow Crosstalk	mV		4		Vlo=0V Vhi swept 0 -2.5V, or Vhi=2.5V Vlo swept
Propagation Delay	ps		60		Vhi=1V, Vlo=0.5V
Differential Rise/Fall Time	ps		40		400mVpp diff swing, Vlo=1V, Vhi=1.4V, outputs terminated
Maximum Toggle Rate	GHz		8		1 Vpp diff swing, Vlo=1V, Vhi=2V, outputs terminated, 3 dB bandwidth
Return Loss	dB		8		At 5GHz, each output

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