

## LTC6754 High Speed Comparator with LVDS

### DESCRIPTION

Demonstration circuit 2767A features the [LTC®6754](#) high-speed rail-to-rail comparator in a QFN package with LVDS compatible outputs. The DC2767 input is AC-coupled for single-ended signal greater than 5MHz and up to 445MHz. The DC2767 outputs are AC-coupled 50Ω source impedance for driving directly the 50Ω inputs of a 1GHz or higher oscilloscope. The DC2767 has a supply connection for the LTC6754 rail-to-rail inputs and a separate supply connection for the QFN LTC6754 LVDS outputs.

The LTC6754 includes 4.5mV of hysteresis to minimize instability. For the QFN package, a separate pin is available

to set the hysteresis from 0mV (off) up to 40mV. The QFN version also features output latching to provide the ability to capture the state of the comparator. The DC2767 provides a connection to set the hysteresis or for output latching.

LTC6754 is ideally suited for high frequency line driver and clock recovery circuits.

**Design files for this circuit board are available.**

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### PERFORMANCE SUMMARY

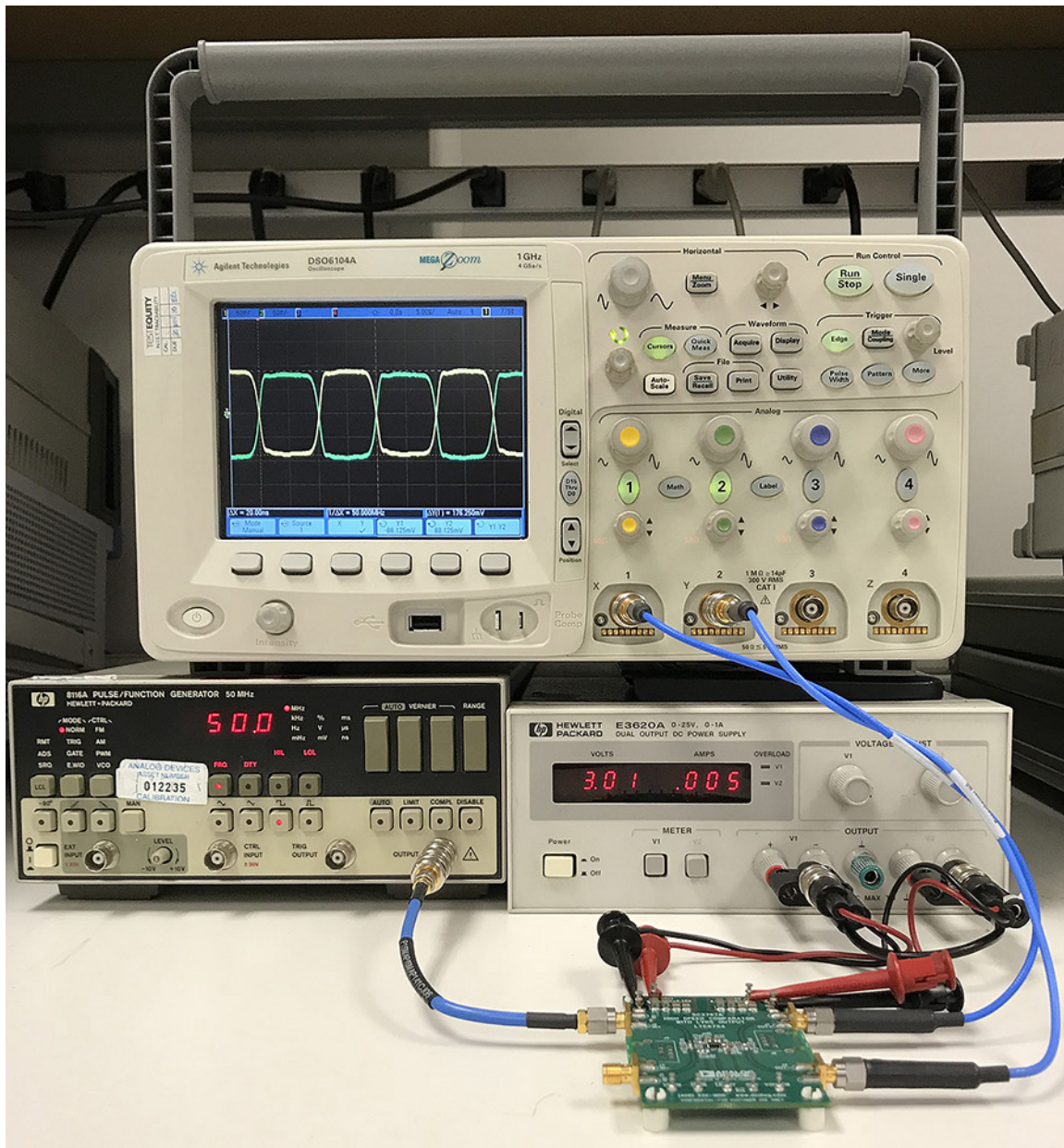
Specifications are at  $T_A = 25^\circ\text{C}$ . Differential  $R_L = 100\Omega$ ,  $V_{\text{OVERDRIVE}} = 50\text{mV}$ , LE/HYST and SHDN Pins Floating.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Supply		2.4		5.25	V
Output Supply		2.4		5.25	V
Input Voltage Range		$V_{EE}-0.2$		$V_{CC}+0.1$	V
Input Offset Voltage		-4	$\pm 0.75$	4	mV
Input Hysteresis Voltage	HYST Pin Floating		4.5		mV
Input Bias Current	$V_{CM} = V_{EE} + 0.3\text{V}$	-3.8	-1.8		$\mu\text{A}$
Input Bias Current	$V_{CM} = V_{CC} - 0.3\text{V}$		0.6	1.5	$\mu\text{A}$
Output Common Mode Voltage		1.18	1.26	1.31	V
Differential Output Voltage		260	362	420	mV
Input Supply Current			2.4	2.9	mA
Output Supply Current			11	11.8	mA
Propagation Delay	$V_{\text{OVERDRIVE}} = 50\text{mV}$		1.8	2.8	ns
Toggle Rate	$V_{IN} = 200\text{mV}_{P-P}$ , Sine Wave		445		MHz

# DEMO MANUAL DC2767A

## QUICK TEST SETUP

Test Equipment: Dual Supply 3V-5V, 50MHz Square Wave Generator Oscilloscope 1GHz or Higher

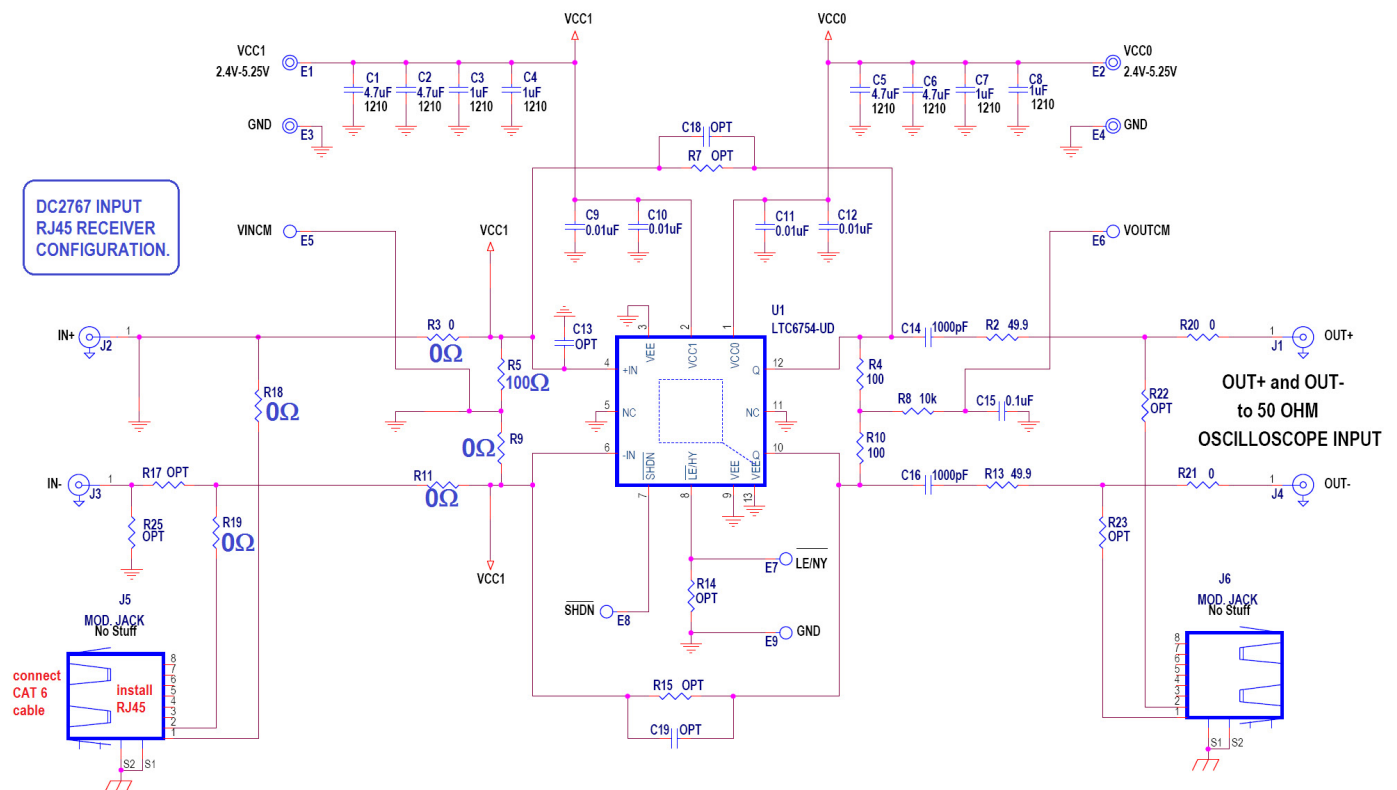


## TEST PROCEDURE

1. Connect a 3V supply to the input ( $V_{CC1}$ ) and output ( $V_{CC0}$ ) turrets.
2. Connect a 50 MHz, 100mV<sub>P-P</sub> square wave to the IN<sup>+</sup> SMA connector.
3. Connect the OUT<sup>+</sup> and OUT<sup>-</sup> SMAs to two channels of a 1GHz or higher oscilloscope  
(the oscilloscope's channel impedance must be 50Ω).
4. Turn on the dual supply and the oscilloscope shows a 175mV, ±50mV.

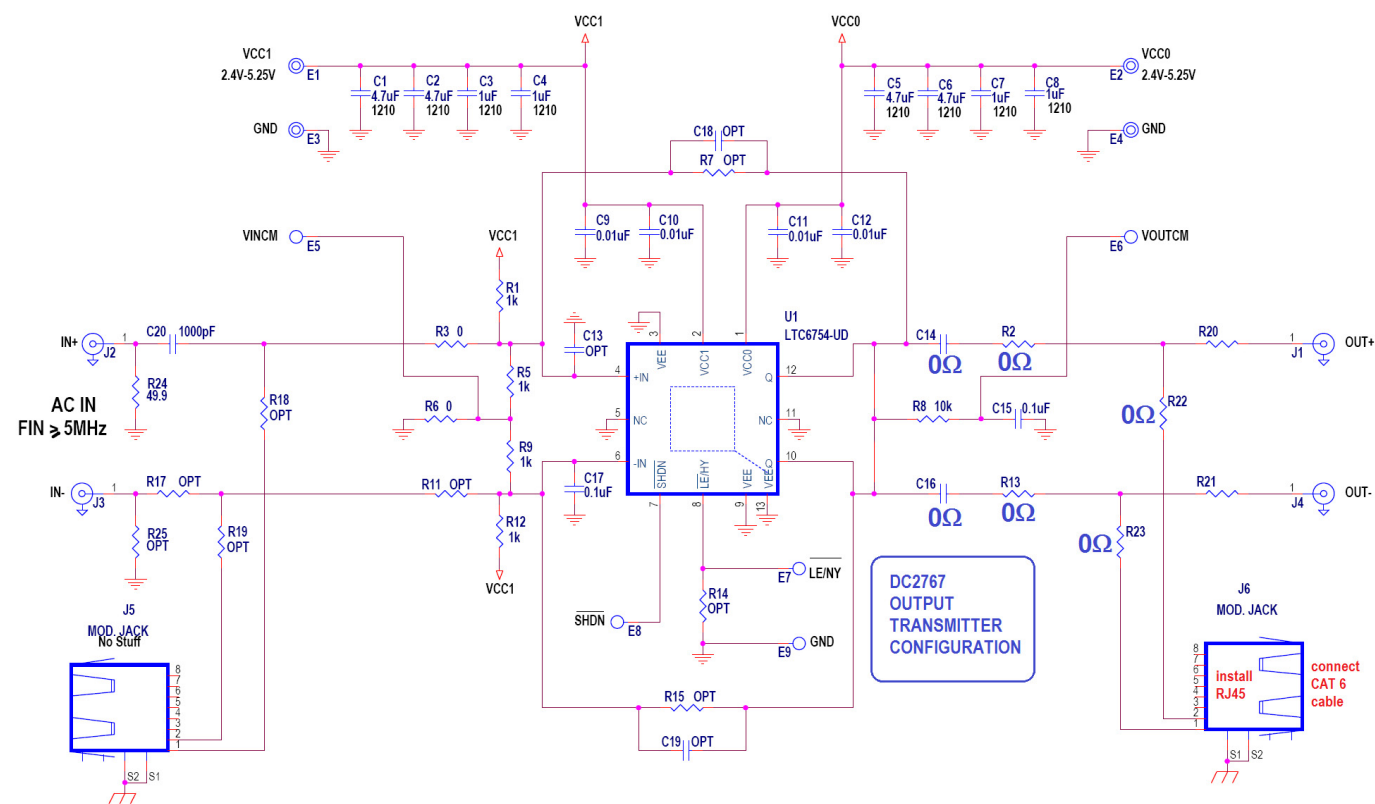
Note: The DC2767 differential output is an AC-coupled 100Ω differential voltage source (two 50Ω singled-ended outputs divided by two into a 50Ω load).

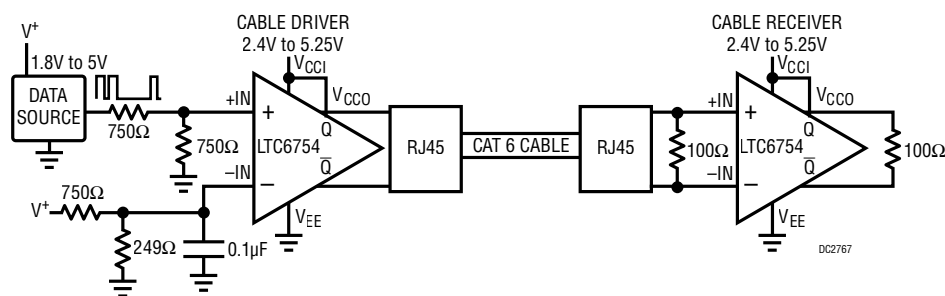
## DC2767 RJ45 RECEIVER CONFIGURATION



# DEMO MANUAL DC2767A

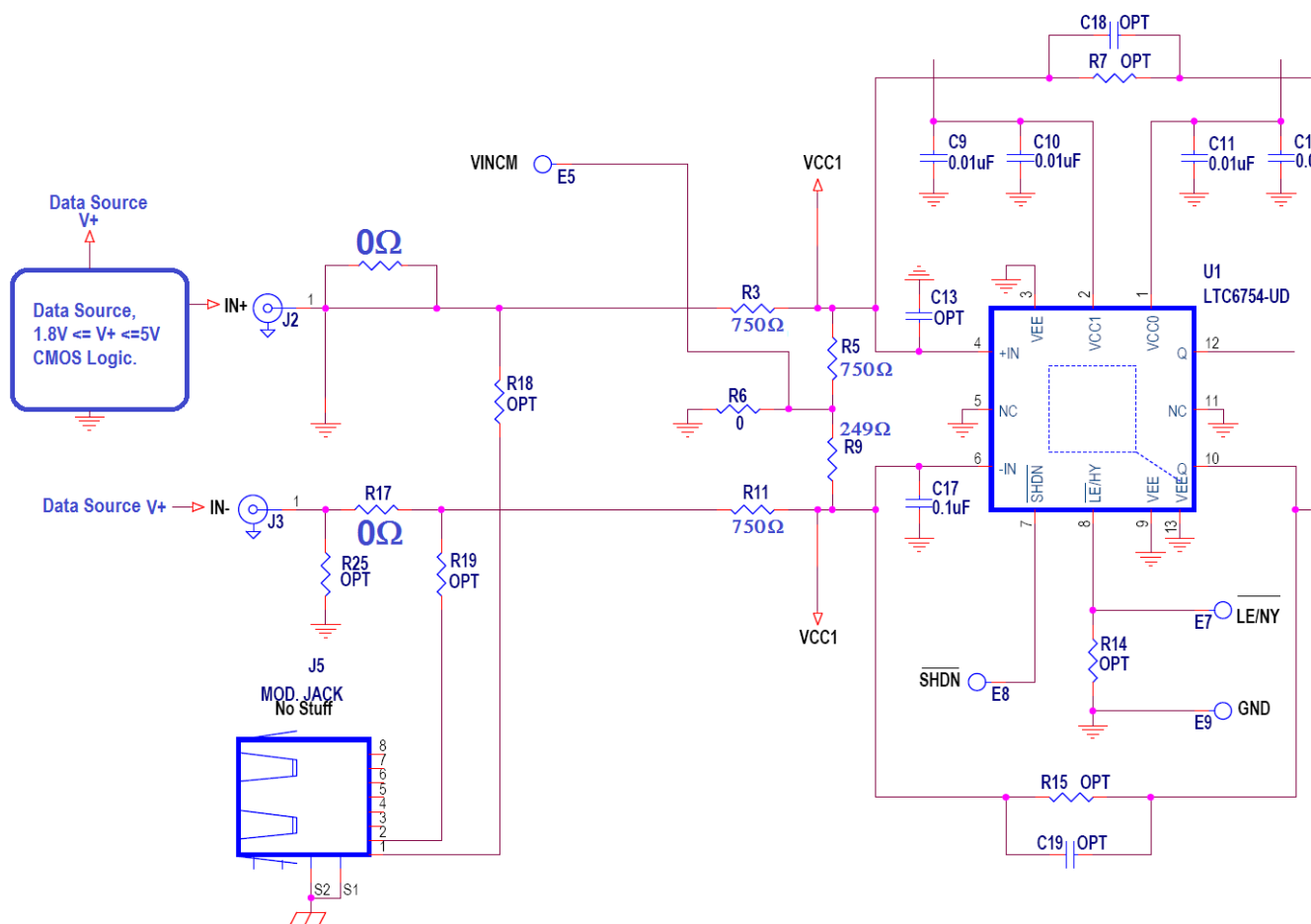
## DC2767 RJ45 TRANSMITTER CONFIGURATION





## LVDS Data Transmitter and Receiver

## DC2767 INPUT CONFIGURATION FOR A CMOS LOGIC DATA SOURCE



# DEMO MANUAL DC2767A

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## ESD Caution

**ESD (electrostatic discharge) sensitive device.** Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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