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.

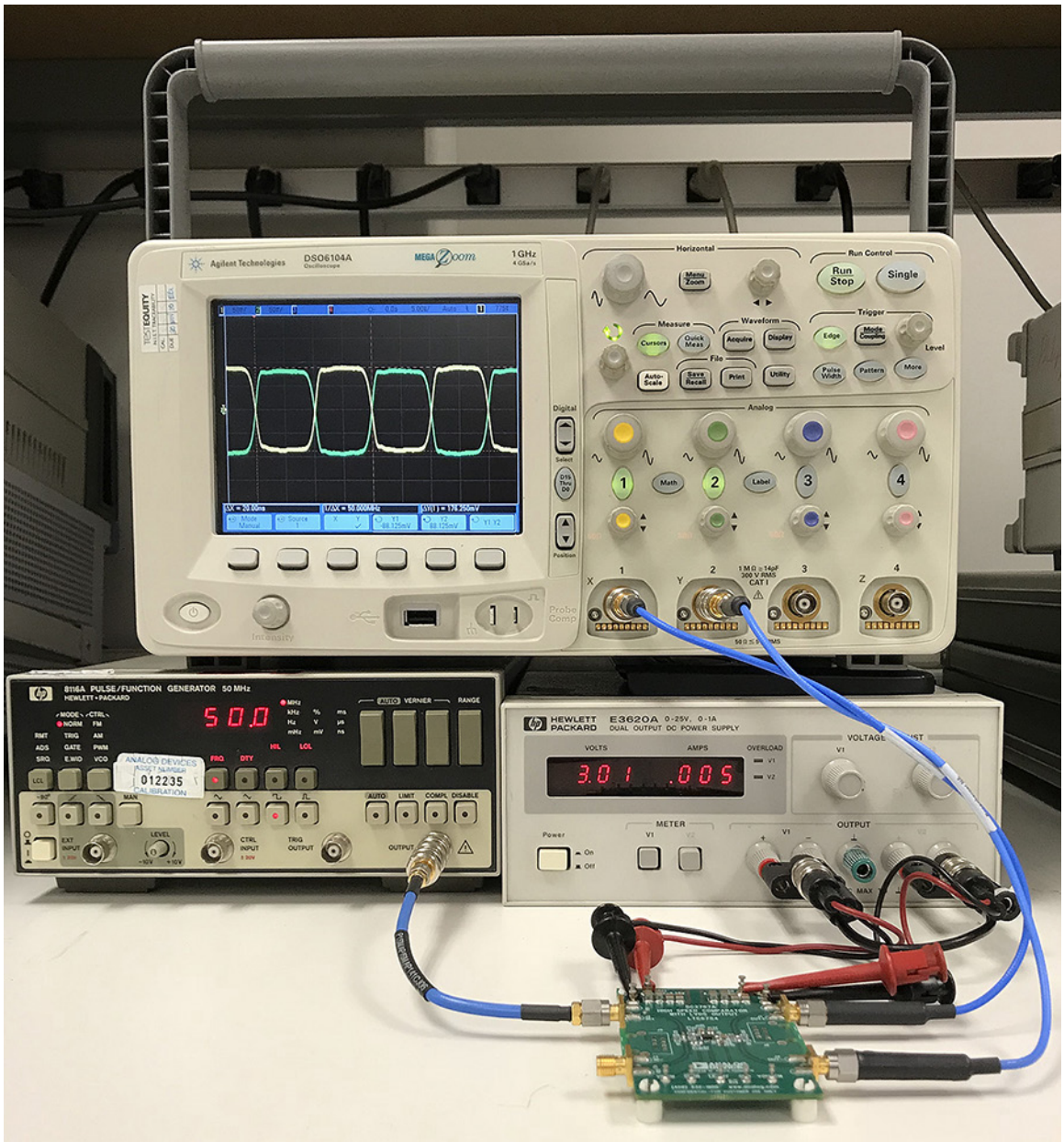
PERFORMANCE SUMMARY

Specifications are at T_A = 25°C. Differential R_L = 100Ω, $V_{OVERDRIVE}$ = 50mV, $\overline{LE}$/HYST and $\overline{SHDN}$ 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	±0.75	4	mV
Input Hysteresis Voltage	HYST Pin Floating		4.5		mV
Input Bias Current	$V_{CM} = V_{EE}$ + 0.3V	–3.8	–1.8		µA
Input Bias Current	$V_{CM} = V_{CC}$ – 0.3V		0.6	1.5	µA
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	$V_{OVERDRIVE}$ = 50mV		1.8	2.8	ns
Toggle Rate	V_{IN} = 200mV_{P-P}, Sine Wave		445		MHz

QUICK TEST SETUP

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



TEST PROCEDURE

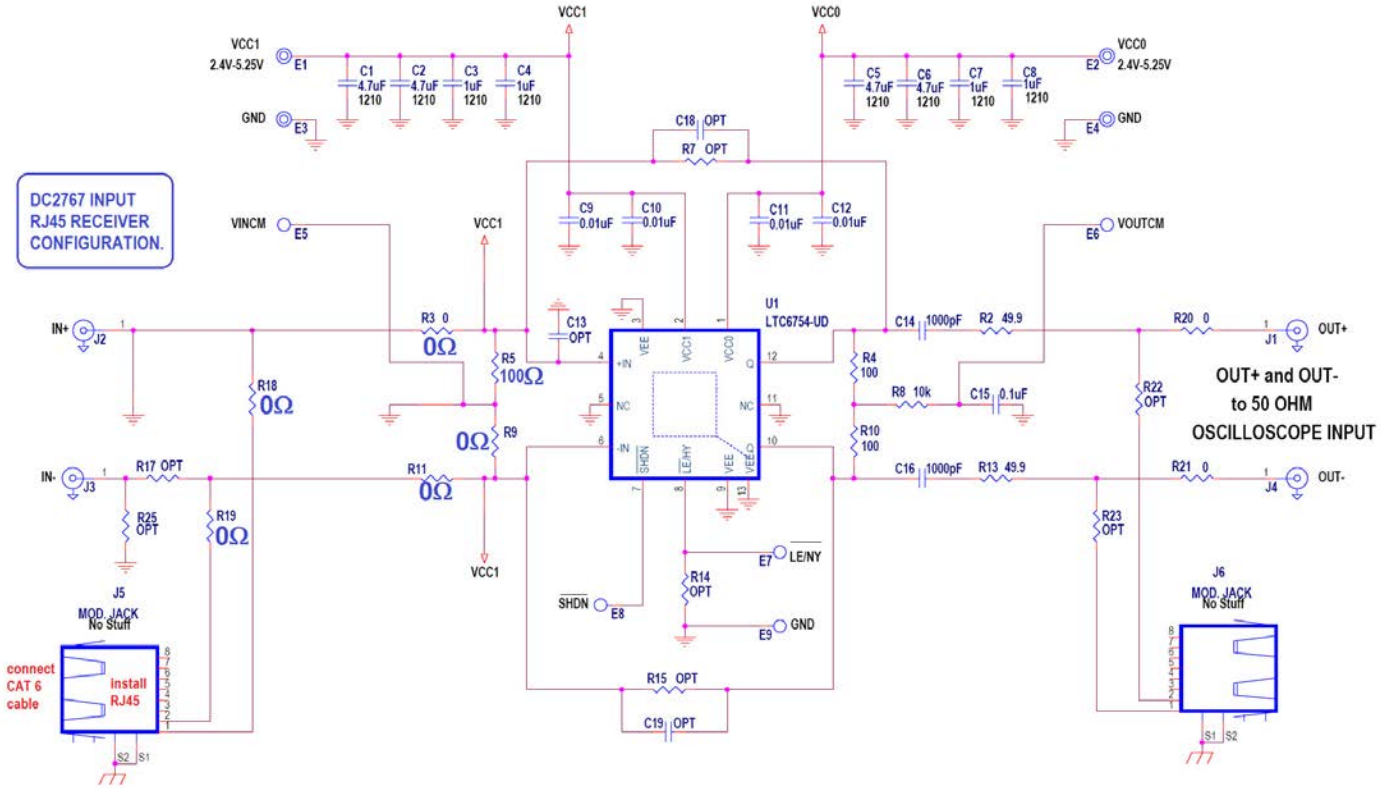
1. Connect a 3V supply to the input (V_{CCI}) and output (V_{CCO}) turrets.
2. Connect a 50 MHz, 100mV$_{P-P}$ square wave to the IN$^+$ SMA connector.
3. Connect the OUT$^+$ and OUT$^-$ SMAs to two channels of a 1GHz or higher oscilloscope

   (the oscilloscope's channel impedance must be 50Ω).

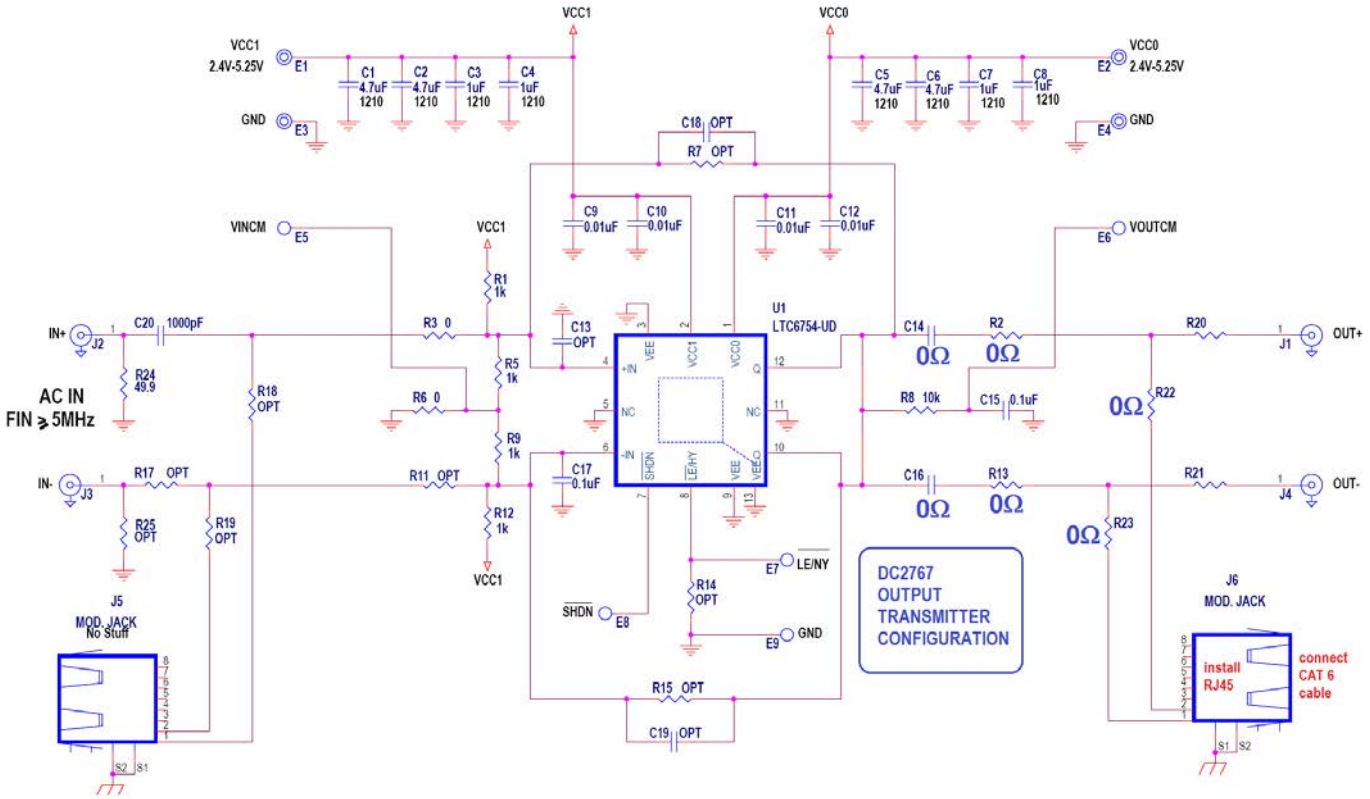
4. Turn on the dual supply and the oscilloscope shows a 175mV, ±50mV.

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).

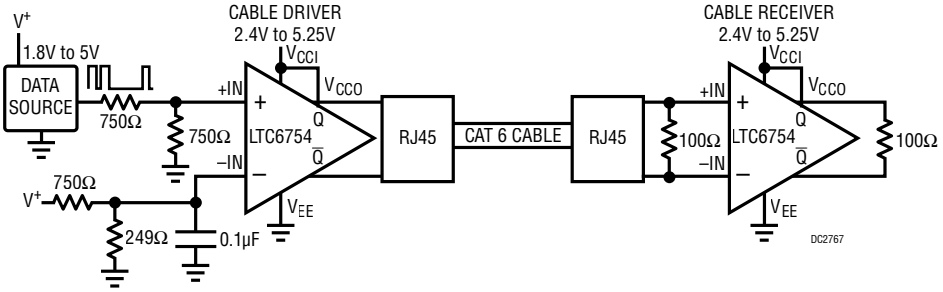
DC2767 RJ45 RECEIVER CONFIGURATION



DC2767 RJ45 TRANSMITTER CONFIGURATION

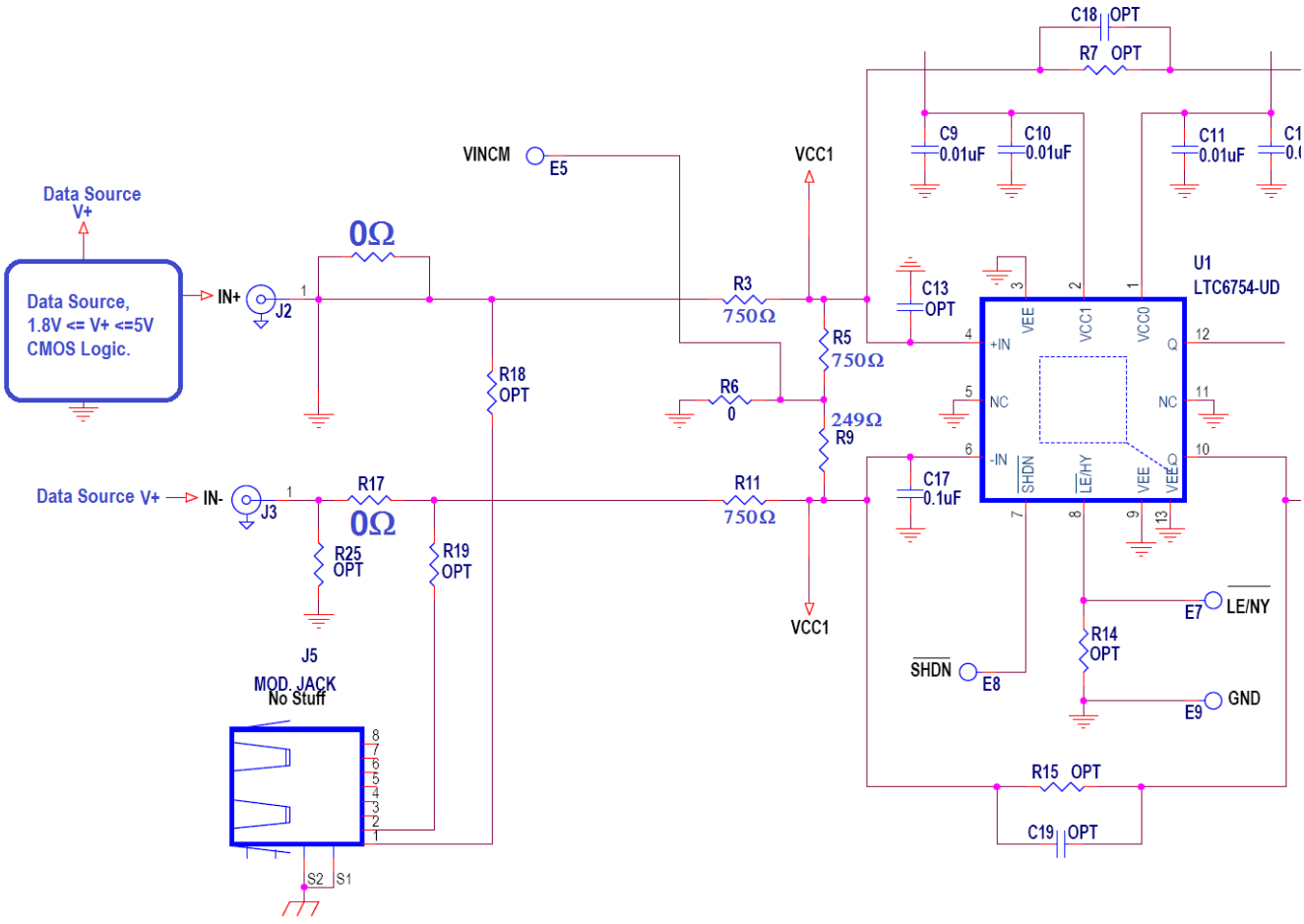


TYPICAL APPLICATION



LVDS Data Transmitter and Receiver

DC2767 INPUT CONFIGURATION FOR A CMOS LOGIC DATA SOURCE



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.

Legal Terms and Conditions

By using the evaluation board discussed herein (together with any tools, components documentation or support materials, the "Evaluation Board"), you are agreeing to be bound by the terms and conditions set forth below ("Agreement") unless you have purchased the Evaluation Board, in which case the Analog Devices Standard Terms and Conditions of Sale shall govern. Do not use the Evaluation Board until you have read and agreed to the Agreement. Your use of the Evaluation Board shall signify your acceptance of the Agreement. This Agreement is made by and between you ("Customer") and Analog Devices, Inc. ("ADI"), with its principal place of business at One Technology Way, Norwood, MA 02062, USA. Subject to the terms and conditions of the Agreement, ADI hereby grants to Customer a free, limited, personal, temporary, non-exclusive, non-sublicensable, non-transferable license to use the Evaluation Board FOR EVALUATION PURPOSES ONLY. Customer understands and agrees that the Evaluation Board is provided for the sole and exclusive purpose referenced above, and agrees not to use the Evaluation Board for any other purpose. Furthermore, the license granted is expressly made subject to the following additional limitations: Customer shall not (i) rent, lease, display, sell, transfer, assign, sublicense, or distribute the Evaluation Board; and (ii) permit any Third Party to access the Evaluation Board. As used herein, the term "Third Party" includes any entity other than ADI, Customer, their employees, affiliates and in-house consultants. The Evaluation Board is NOT sold to Customer; all rights not expressly granted herein, including ownership of the Evaluation Board, are reserved by ADI. CONFIDENTIALITY. This Agreement and the Evaluation Board shall all be considered the confidential and proprietary information of ADI. Customer may not disclose or transfer any portion of the Evaluation Board to any other party for any reason. Upon discontinuation of use of the Evaluation Board or termination of this Agreement, Customer agrees to promptly return the Evaluation Board to ADI. ADDITIONAL RESTRICTIONS. Customer may not disassemble, decompile or reverse engineer chips on the Evaluation Board. Customer shall inform ADI of any occurred damages or any modifications or alterations it makes to the Evaluation Board, including but not limited to soldering or any other activity that affects the material content of the Evaluation Board. Modifications to the Evaluation Board must comply with applicable law, including but not limited to the RoHS Directive. TERMINATION. ADI may terminate this Agreement at any time upon giving written notice to Customer. Customer agrees to return to ADI the Evaluation Board at that time. LIMITATION OF LIABILITY. THE EVALUATION BOARD PROVIDED HEREUNDER IS PROVIDED "AS IS" AND ADI MAKES NO WARRANTIES OR REPRESENTATIONS OF ANY KIND WITH RESPECT TO IT. ADI SPECIFICALLY DISCLAIMS ANY REPRESENTATIONS, ENDORSEMENTS, GUARANTEES, OR WARRANTIES, EXPRESS OR IMPLIED, RELATED TO THE EVALUATION BOARD INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, TITLE, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. IN NO EVENT WILL ADI AND ITS LICENSORS BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES RESULTING FROM CUSTOMER'S POSSESSION OR USE OF THE EVALUATION BOARD, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DELAY COSTS, LABOR COSTS OR LOSS OF GOODWILL. ADI'S TOTAL LIABILITY FROM ANY AND ALL CAUSES SHALL BE LIMITED TO THE AMOUNT OF ONE HUNDRED US DOLLARS ($100.00). EXPORT. Customer agrees that it will not directly or indirectly export the Evaluation Board to another country, and that it will comply with all applicable United States federal laws and regulations relating to exports. GOVERNING LAW. This Agreement shall be governed by and construed in accordance with the substantive laws of the Commonwealth of Massachusetts (excluding conflict of law rules). Any legal action regarding this Agreement will be heard in the state or federal courts having jurisdiction in Suffolk County, Massachusetts, and Customer hereby submits to the personal jurisdiction and venue of such courts. The United Nations Convention on Contracts for the International Sale of Goods shall not apply to this Agreement and is expressly disclaimed.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Analog Devices Inc.:

DC2767A