



1.62V to 3.6V, 8-Channel, High-Speed LLT

MAX13055E-MAX13058E

General Description

The MAX13055E-MAX13058E 8-channel, bidirectional level translators provide the level shifting necessary for 100Mbps data transfer in multivoltage systems. The MAX13055E-MAX13058E are ideal for level translation in systems with 8 channels. Externally applied voltages, V_{CC} and V_L , set the logic levels on either side of the device. Logic-high signals presented on the V_L side of the device appear as a logic-high signal on the V_{CC} side of the device and vice versa.

The MAX13055E-MAX13058E operate at full speed with external drivers that source as little as 4mA output current or larger. Each input/output (I/O) channel is pulled up to V_{CC} or V_L by an internal 40 μ A current source, allowing the MAX13055E-MAX13058E to be driven by either push-pull or open-drain drivers.

The MAX13055E-MAX13058E feature an enable (EN) input to place the device into a low-power shutdown mode when driven low. In addition, the MAX13055E-MAX13058E feature an automatic shutdown mode that disables the part when V_{CC} is less than V_L . Each device has a different I/O V_L and I/O V_{CC} state during shutdown mode (see the *Ordering Information/Selector Guide*).

The MAX13055E-MAX13058E operate with V_{CC} voltages from +2.2V to +3.6V and V_L voltages from +1.62V to +3.2V, making them ideal for data transfer between low-voltage ASIC/PLDs and higher voltage systems. The MAX13055E-MAX13058E are available in 0.4mm pitch, 24-bump WLP and 28-pin TQFN (3.5mm x 5.5mm) packages. The MAX13055E-MAX13058E operate over the extended -40°C to +85°C temperature range.

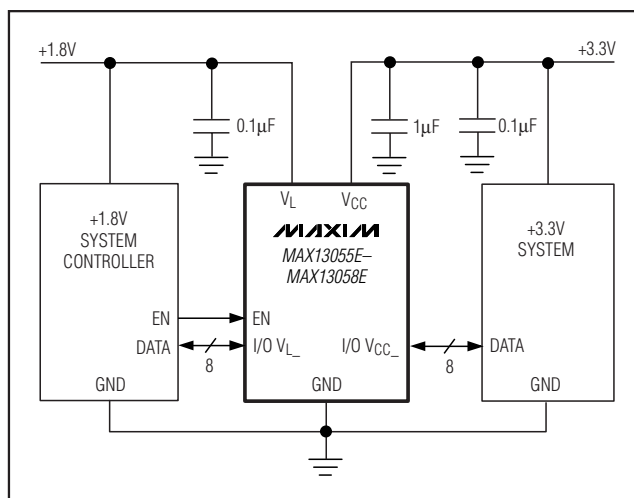
Applications

- | | |
|------------------------------------|--------------------------------|
| Low-Voltage ASIC Level Translation | Portable Communication Devices |
| Smart Card Readers | Cell Phones |
| Camera Modules | GPS |
| Portable POS Systems | Telecomm Equipment |

Features

- ◆ Compatible with 4mA Input Drivers or Larger
- ◆ 100Mbps Guaranteed Data Rate
- ◆ 8 Bidirectional Channels
- ◆ +1.62V $\leq V_L \leq$ +3.2V and +2.2V $\leq V_{CC} \leq$ +3.6V Supply Voltage Range
- ◆ 24-Bump WLP (0.4mm Pitch) Lead-Free Package
- ◆ 28-Pin TQFN (3.5mm x 5.5mm) Lead-Free Package
- ◆ Extended ESD Protection on I/O V_{CC} Lines
 - ±15kV per Human Body Model
 - ±15kV IEC 61000-4-2 Air Discharge
 - ±8kV IEC 61000-4-2 Contact Discharge

Typical Operating Circuit



Pin Configurations appear at end of data sheet.

Ordering Information/Selector Guide

PART	I/O V_L STATE DURING SHUTDOWN	I/O V_{CC} STATE DURING SHUTDOWN	TEMP RANGE	PIN-PACKAGE
MAX13055E ^{EWG+}	Open Drain	Open Drain	-40°C to +85°C	24 WLP
MAX13055E ^{EETI+}	Open Drain	Open Drain	-40°C to +85°C	28 TQFN-EP*

Ordering Information/Selector Guide continued at end of data sheet.

+Denotes a lead(Pb)-free/RoHS-compliant package.

*EP = Exposed pad.



For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim's website at www.maxim-ic.com.

1.62V to 3.6V, 8-Channel, High-Speed LLT

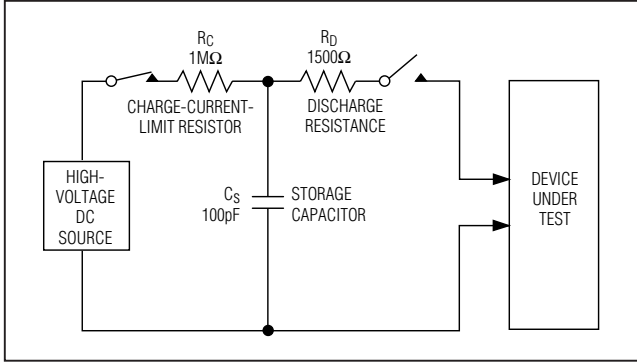


Figure 5a. Human Body ESD Test Model

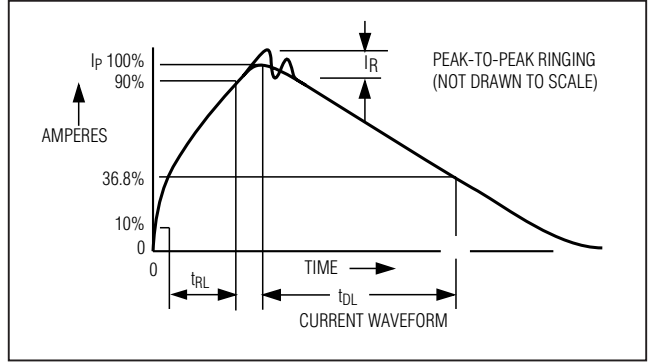


Figure 5b. Human Body Current Waveform

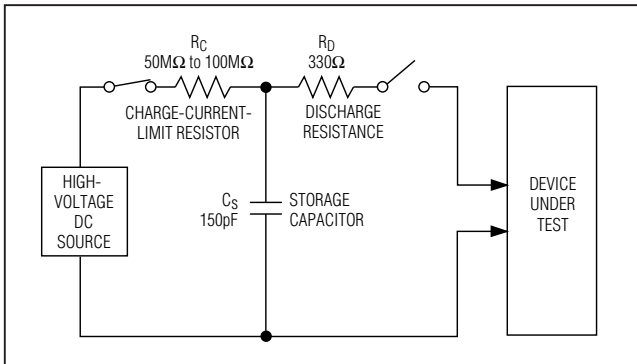


Figure 6a. IEC 61000-4-2 ESD Test Model

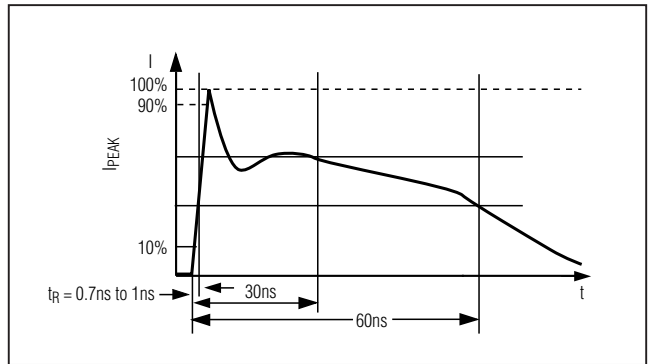


Figure 6b. IEC 61000-4-2 ESD Generator Current Waveform

Ordering Information/Selector Guide (continued)

PART	I/O V _L _ STATE DURING SHUTDOWN	I/O V _{CC} _ STATE DURING SHUTDOWN	TEMP RANGE	PIN-PACKAGE
MAX13056 EWG+**	Open Drain	10kΩ to GND	-40°C to +85°C	24 WLP
MAX13056EETI+**	Open Drain	10kΩ to GND	-40°C to +85°C	28 TQFN-EP*
MAX13057 EWG+**	10kΩ to GND	Open Drain	-40°C to +85°C	24 WLP
MAX13057EETI+**	10kΩ to GND	Open Drain	-40°C to +85°C	28 TQFN-EP*
MAX13058 EWG+	10kΩ to GND	10kΩ to GND	-40°C to +85°C	24 WLP
MAX13058EETI+	10kΩ to GND	10kΩ to GND	-40°C to +85°C	28 TQFN-EP*

+Denotes a lead(Pb)-free/RoHS-compliant package.

*EP = Exposed pad.

**Future product—contact factory for availability.

Maxim cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim product. No circuit patent licenses are implied. Maxim reserves the right to change the circuitry and specifications without notice at any time.

2 Maxim Integrated Products, 120 San Gabriel Drive, Sunnyvale, CA 94086 408-737-7600