

# Compatibility between LVDS (3.5mA) and LVDM (10mA) Devices

**Table 1: Cross Reference of Applicable Products**

Product Name:	Manufacturer Part Number	SMD #	Device Type	Internal PIC
3.3V Quad Driver	UT54LVDS031LV/E	5962-98651	02, 03, 04, 05	WD03, WD07, WD28, WD30
3.3V Quad Receiver	UT54LVDS032LV/E	5962-98652	02, 03, 04, 05	WD04, WD08, WD29, WD31
3.3V Quad Receiver with Termination Resistor	UT54LVDS032LVT	5962-04201	01, 02	WD06, WD10
3.3V Bus Quad Driver	UT54LVDM031LV	5962-06201	01	WD21
3.3V Dual Driver and Receiver	UT54LVDM055LV	5962-06202	01	WD22
5.0V Quad Driver	UT54LVDS031	5962-95833	02	JR05, JR08
5.0V Quad Receiver	UT54LVDS032	5962-95834	02	JR06, JR09
5.0V Quad Driver with Cold Spare	UT54LVDS031	5962-95833	03	JR10
5.0V Quad Receiver with Cold Spare	UT54LVDS032	5962-95834	03	JR11
3.3V Quad Bus LVDS Crosspoint Switch	UT54LVDM228	5962-01537	01	WD15, WD16
3.3V Octal Bus LVDS Repeater	UT54LVDM328	5962-01536	01	WD17, WD18
3.3V Serializer	UT54LVDS217	5962-01534	01, 02	WD11, WD13
3.3V Deserializer	UT54LVDS218	5962-01535	01, 02	WD12, WD14

## 1.0 Overview

CAES Colorado Springs currently offers Low Voltage Differential Signaling (LVDS) devices which are offered in two varieties of drive strength for the current source outputs. The first is a low drive constant current source with approximately 3.5mA drive (EIA/TIA-644) designed for point to point configurations. The second is a high drive constant current source with approximately 10mA drive (EIA/TIA-899) designed for multi-drop configurations. This application note demonstrates how these devices function properly together.

## 2.0 Device Compatibility

The EIA/TIA-644 compatible LVDS driver contains a constant current source that drives  $\pm 3.5\text{mA}$ . The nominal offset voltage set by the CAES LVDS driver is 1.2V and allows a differential swing from 0.2V to 2.2V. The driver output current travels across a  $100\Omega$  resistive load located through the receiver inputs. The current flow through the resistor results in a voltage across the differential terminals of  $\pm 350\text{mV}$ .

The EIA/TIA-899 compatible LVDM driver contains a constant current source that outputs  $\pm 10\text{mA}$ . The driver output current travels through a  $35\Omega$  resistive load located across the receiver(s). The current flow through the resistor results in a voltage across the differential terminals of  $\pm 350\text{mV}$ .

# Compatibility between LVDS (3.5mA) and LVDM (10mA) Devices

LVDS receivers are compatible with both EIA/TIA-644 and EIA/TIA-899. In order to use a LVDS receiver with a LVDM driving device, the termination resistor needs to be selected and placed across the input terminals such that  $\pm 350\text{mV}$  swing is created across the + and - terminals. See Figure 1.

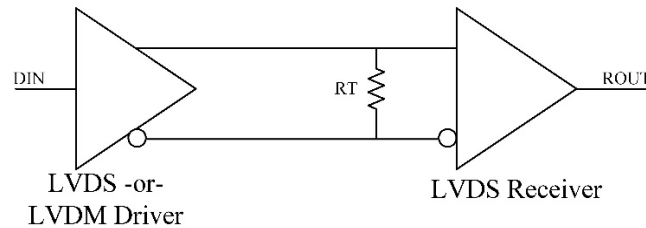


Figure 1. Notional Driver Receiver Connection Scheme.

## 3.0 Example

This example details termination resistor selection such that a LVDM driver can be interfaced to a LVDS receiver.

**Table 2. Termination Resistor Selection**

Driver Current	Termination Resistor
3.5 mA	100 $\Omega$
10 mA	35 $\Omega$

## 4.0 Conclusion

CAES Colorado Springs offers both LVDS 3.5mA (EIA/TIA-644) for point-to-point applications, and LVDM 10mA (EIA/TIA-899) for multi-drop configurations. This application note presented an example of how to properly interface an LVDM driver device with an LVDS receiver. LVDS and LVDM devices can function properly together when the termination resistor is properly selected.

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