National Semiconductor

DS1691A/DS3691 (RS-422/RS-423) Line Drivers with TRI-STATE® Outputs

General Description

The DS1691A/DS3691 are low power Schottky TTL line drivers designed to meet the requirements of EIA standards RS-422 and RS-423. They feature 4 buffered outputs with high source and sink current capability with internal short circuit protection. A mode control input provides a choice of operation either as 4 independent line drivers or 2 differential line drivers. A rise time control pin allows the use of an external capacitor to reduce rise time for suppression of near end crosstalk to other receivers in the cable.
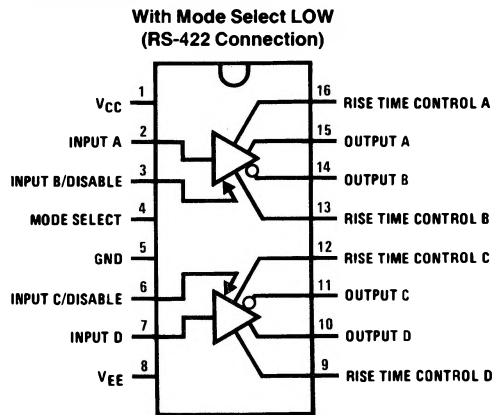
With the mode select pin low, the DS1691A/DS3691 are dual-differential line drivers with TRI-STATE outputs. They feature ±10V output common-mode range in TRI-STATE mode and 0V output unbalance when operated with ±5V supply.

Features

- Dual RS-422 line driver with mode pin low, or quad RS-423 line driver with mode pin high
- TRI-STATE control for individual outputs
- Short circuit protection for both source and sink outputs
- Outputs will not clamp line with power off or in TRI-STATE
- Individual rise mode time control for each output
- 100Ω transmission line drive capability
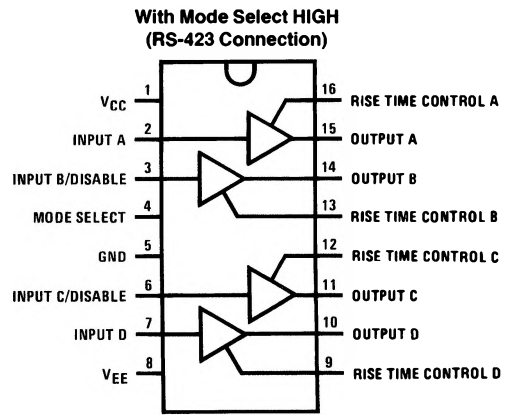- Low I_{CC} and I_{EE} power consumption
  - RS-422   35 mW/driver typ
  - RS-423   26 mW/driver typ
- Low current PNP inputs compatible with TTL, MOS and CMOS
- Pin compatible with AM26LS30

Connection Diagram

With Mode Select LOW (RS-422 Connection)

Top View

TL/F/5783-1

With Mode Select HIGH (RS-423 Connection)

Top View

TL/F/5783-2

Truth Table

Operation	Inputs			Outputs	
	Mode	A (D)	B (C)	A (D)	B (C)
RS-422	0	0	0	0	1
	0	0	1	TRI-STATE	TRI-STATE
	0	1	0	1	0
	0	1	1	TRI-STATE	TRI-STATE
RS-423	1	0	0	0	0
	1	0	1	0	1
	1	1	0	1	0
	1	1	1	1	1

Order Number DS1691AJ, DS3691J, DS3691M or DS3691N
See NS Package Number J16A, M16A or N16A