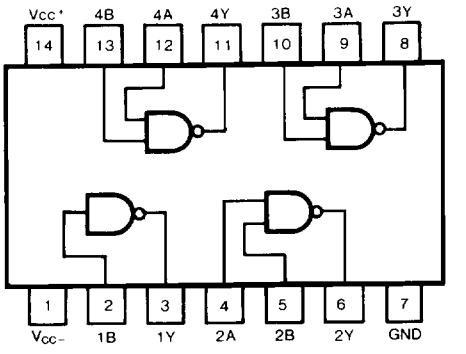
GD75188

QUADRUPLE LINE DRIVERS

Feature

- Meets Specifications of EIA RS-232C
- Designed to be Interchangeable with SN75188
- Current Limited Output .. 10mA Typical
- Power-Off Output Impedance ... 300Ω Min
- Slew Rate Control by Load Capacitor
- Flexible Supply Voltage Range
- Input Compatible with Most TTL and DTL Circuits

Pin Configuration

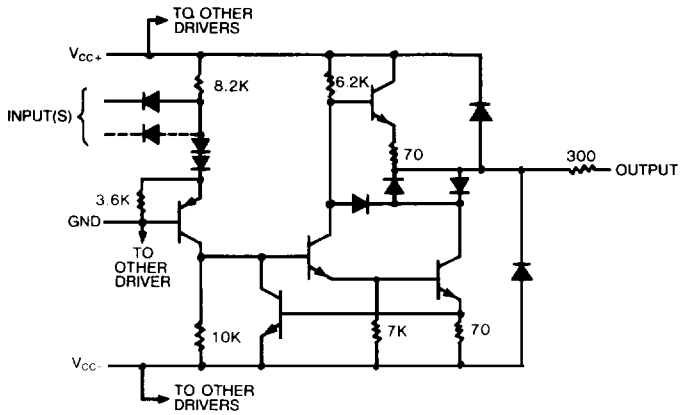


Suffix-Blank: Plastic Dual In Line Package
Suffix-J : Ceramic Dual In Line Package

Description

The GD75188 is a monolithic quadruple line driver designed to interface data terminal equipment with data communication equipment in conformance with the specifications of EIAstandard RS-232C with a diode in series with each supply-voltage terminal as shown under typical applications. The device is characterized for operation from 0°C to 75°C

Schematic (each driver)



Function Table

A	B	Y
H	H	L
L	X	H
X	L	H

Absolute Maximum Ratings

• Supply voltage	V_{CC+}	15V
• Supply voltage	V_{CC-}	−15V
• Input voltage range	V_I	−15V∼+7V
• Output voltage range	V_O	−15V∼+15V
• Continuous total dissipation at (or below) 25°C	P_T	1W
• Operating free-air temperature range	T_A	0∼+75°C
• Storage temperature range	T_{STG}	−65∼+175°C
• Lead temperature 1/16 inch from case for 60 seconds, P Package		300°C
seconds, J Package		260°C

Electrical Characteristics over recommended operating free-air temperature range (unless otherwise noted)

SYMBOL	PARAMETER	TEST CONDITIONS		MIN	TYP	MAX	UNIT
V_{IH}	High-level input voltage			1.9			V
V_{IL}	Low-level input voltage					0.8	V
V_{OH}	High-level output voltage	V_{IL}=0.8V, R_L=3kΩ	$V_{CC}+$=9V, $V_{CC}-$=−9V	6	7		V
			$V_{CC}+$=13.2V, $V_{CC}-$=−13.2V	9	10.5		
V_{OL}	Low-level output voltage	V_{IH}=1.9V, R_L=3kΩ	$V_{CC}+$=9V, $V_{CC}-$=−9V		−7	−6	V
			$V_{CC}+$=13.2V, $V_{CC}-$=−13.2V		−10.5	−9	
I_{IH}	High-level input current	V_I=5V				10	μA
I_{IL}	Low-level input current	V_I=0			−1	−1.6	mA
I_{OS}(H)	Short-circuit output current at high level■	V_I=0.8V	V_O=0	−6	−10	−12	mA
I_{OS}(L)	Short-circuit output current at low level■	V_I=1.9V	V_O=0	6	10	12	mA
r_o	Output resistance, power off	$V_{CC}+$=0, V_O=−2V to 2V	$V_{CC}-$=0	300			Ω
$I_{CC}+$	Supply current from $V_{CC}+$	$V_{CC}+$=9V, No load	All inputs at 1.9V		15	20	mA
			All inputs at 0.8V		4.5	6	
		$V_{CC}+$=12V, No load	All inputs at 1.9V		19	25	
			All inputs at 0.8V		5.5	7	
		$V_{CC}+$=15V, No load, T_A=25°C	All inputs at 1.9V			34	
			All inputs at 0.8V			12	
$I_{CC}-$	Supply current from $V_{CC}-$	$V_{CC}-$=−9V, No load	All inputs at 1.9v		−13	−17	mA
			All inputs at 0.8V			−0.015	
		$V_{CC}-$=−12V, No load	All inputs at 1.9V		−18	−23	
			All inputs at 0.8V			−0.015	
		$V_{CC}-$=−15V, No load, T_A=25°C	All inputs at 1.9V			−34	
			All inputs at 0.8V			−2.5	
P_D	Total power dissipation	$V_{CC}+$=9V, No load	$V_{CC}-$=−9V			333	mW
		$V_{CC}+$=12V, No load	$V_{CC}-$=−12V			576	

□ All typical values are at T_A=25°C
■ Not more than one output should be shorted at a time.
NOTE: The algebraic convention where the more positive (less negative) limit is designated as maximum is used in this data sheet for logic voltage levels only, e.g., if −6V is a maximum, the typical value is a more negative voltage.

Switching Characteristcs, $V_{CC}+$ = 9V, $V_{CC}-$ = −9V, T_A = 25°C

PARAMETER		TEST CONDITIONS	MIN	TYP.	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output	R_L=3kΩ, See Figure 1 C_L=15pF		220	350	ns
t_{PHL}	Propagation delay time, high-to-low-level output			100	175	ns
t_{TLH}	Transition time, low-to-high-level output‡			55	100	ns
t_{THL}	Transition time, high-to-low-level output‡	R_L=3kΩ to 7kΩ, See Figure 1		45	75	ns
t_{TLH}	Transition time, low-to-high-level outputs§			2.5		μs
t_{THL}	Transition time, high-to-low-level outputs§			3.0		μs

‡ Measured between 10% and 90% points of output waveform.
§ Measured between +3V and −3V points on the output waveform (EIA RS-232C conditions)

Parameter Measurement Information

NOTE: A. The pulse generator has the following characteristics; t_w=0.5μs, PRR=1 MHz, Z_O=50Ω
B. C_l includes probe and jig capacitance.

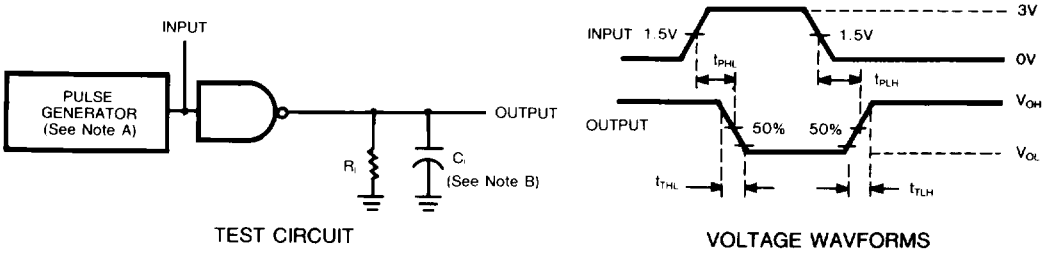


Figure 1. Propagation and Transition Times

Thermal Information

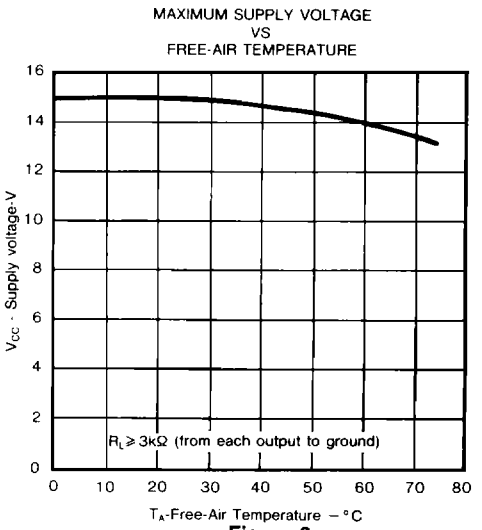


Figure 2.

Typical Application Data

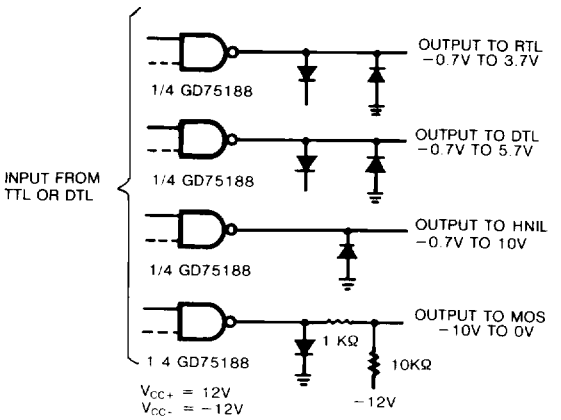


Figure 3 - Logic Translator Applications

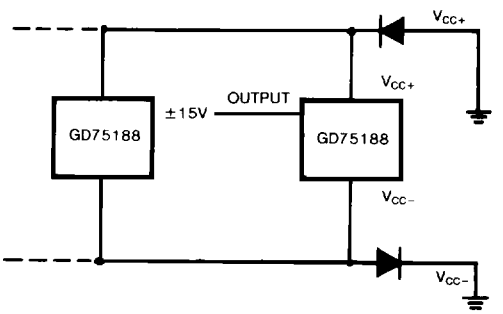


Figure 4 - Power Suply Protection to Meet Power-Off Fault Conditions of Eia Standard RS-232C