

# GD75188

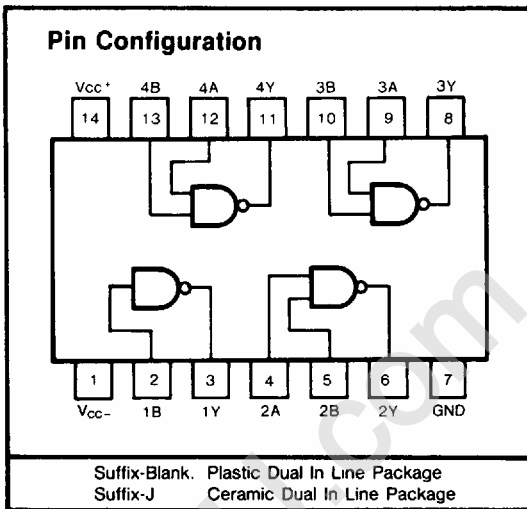
## QUADRUPLE LINE DRIVERS

### Feature

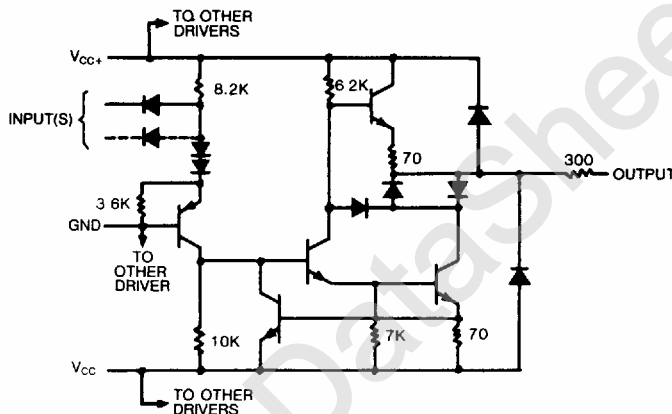
- Meets Specifications of EIA RS-232C
- Designed to be Interchangeable with SN75188
- Current Limited Output ... 10mA Typical
- Power-Off Output Impedance ... 300Ω Min
- Slow Rate Control by Load Capacitor
- Flexible Supply Voltage Range
- Input Compatible with Most TTL and DTL Circuits

### 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 EIA standard 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	$V_{IL}=0.8V$ $R_L=3k\Omega$	$V_{CC+}=9V$ , $V_{CC-}=-9V$	6	7		V
			$V_{CC+}=13.2V$ $V_{CC-}=-13.2V$	9	10.5		
$V_{OL}$	Low-level output voltage	$V_{IH}=1.9V$ $R_L=3k\Omega$	$V_{CC+}=9V$ $V_{CC-}=-9V$		-7	-6	V
			$V_{CC+}=13.2V$ $V_{CC-}=-13.2V$	-10	5	-9	
$I_{IH}$	High-level input current	$V_i=5V$				10	$\mu A$
$I_{IL}$	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			$\Omega$
$I_{CC+}$	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, $T_A=25^\circ C$	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, $T_A=25^\circ C$	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  $T_A=25^\circ C$

■ 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 Characteristics,  $V_{CC+}=9V$ ,  $V_{CC-}=-9V$ ,  $T_A=25^\circ C$**

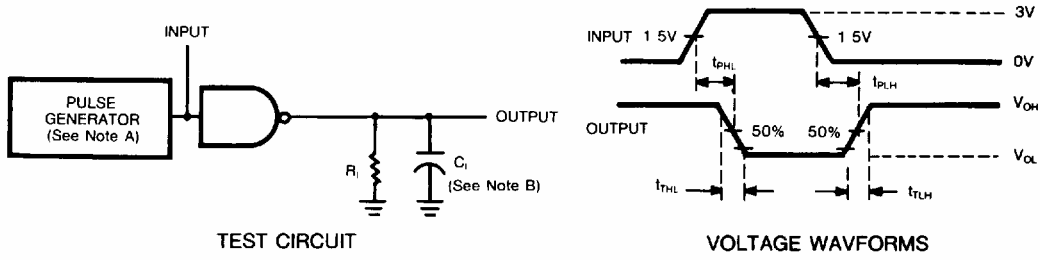
PARAMETER		TEST CONDITIONS	MIN	TYP.	MAX	UNIT
$t_{PLH}$	Propagation delay time, low-to-high-level output	$R_L=3k\Omega$ , See Figure 1 $C_L=15pF$		220	350	ns
$t_{PHL}$	Propagation delay time, high-to-low-level output			100	175	ns
$t_{TLH}$	Transition time, low-to-high-level output ‡			55	100	ns
$t_{THL}$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

‡ Measured between 10% and 90% points of output waveform

§ Measured between +3V and -3V points on the output waveform (EIA RS-232C conditions)

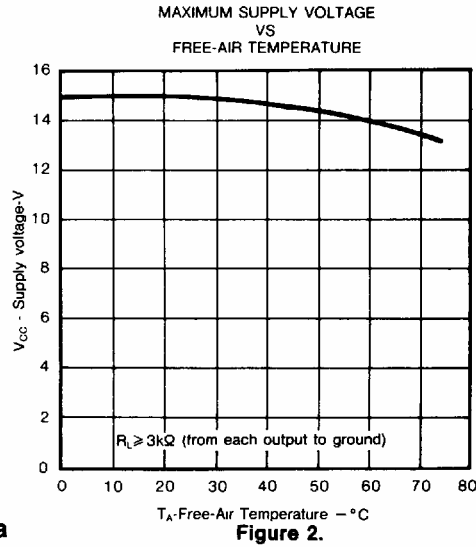
**Parameter Measurement Information**

NOTE A The pulse generator has the following characteristics,  $t_w=0.5\mu s$ , PRR=1 MHz,  $Z_o=50\Omega$   
 B  $C_i$  includes probe and  $\mu g$  capacitance

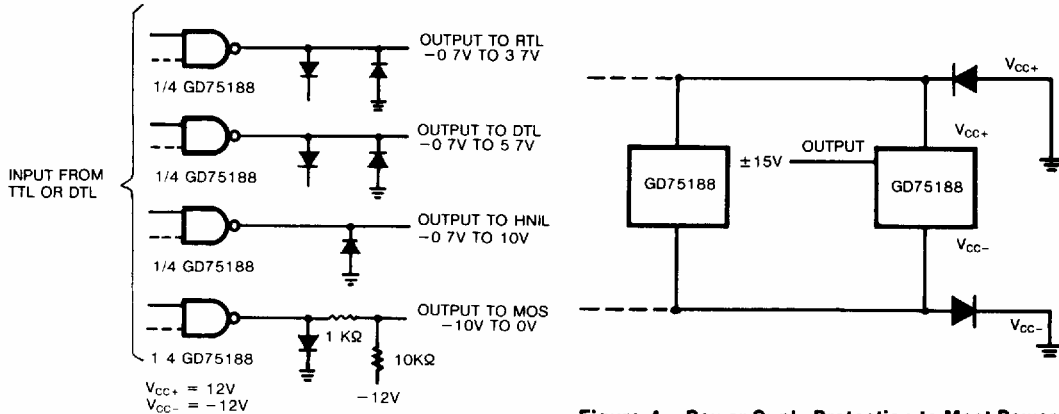


**Figure 1. Propagation and Transition Times**

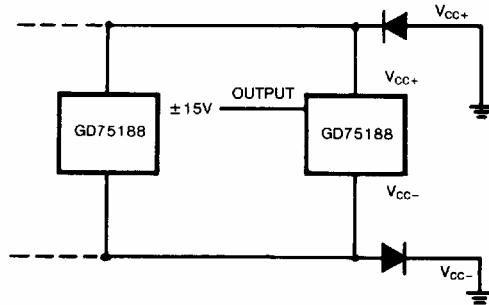
**Thermal Information**



**Typical Application Data**



**Figure 3 - Logic Translator Applications**



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