

GD75188

QUADRUPLE LINE DRIVERS

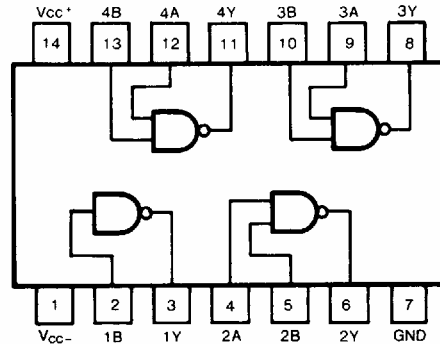
Feature

- 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

Description

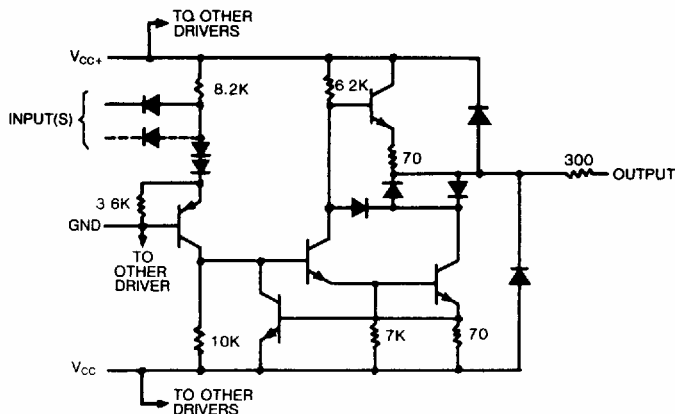
The GD75188 is a monolithic quadruple line driver designed to interface data terminal equipment with data communication equipment in conformance with the specifications of EIA standard RS-232C with a diode in series with each supply-voltage terminal as shown under typical applications. The device is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

Pin Configuration



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

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	-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, $T_A=25^\circ C$	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		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, $t_w=0.5\mu s$, $PRR=1\text{ MHz}$, $Z_o=50\Omega$
B C_i includes probe and μg capacitance

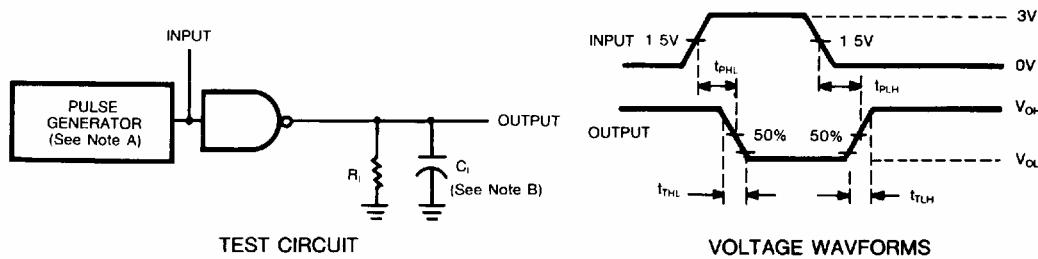
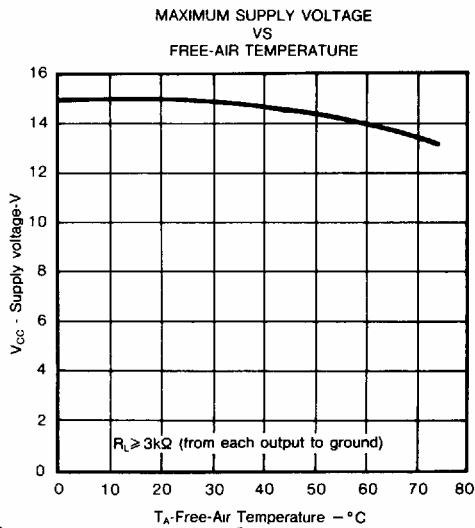


Figure 1. Propagation and Transition Times

Thermal Information



Typical Application Data

Figure 2.

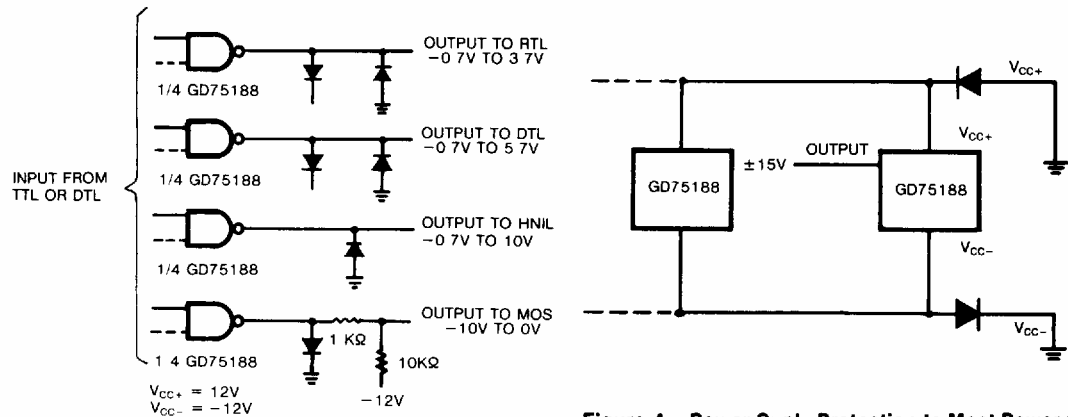


Figure 3 - Logic Translator Applications

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