

GD75232/GD75323

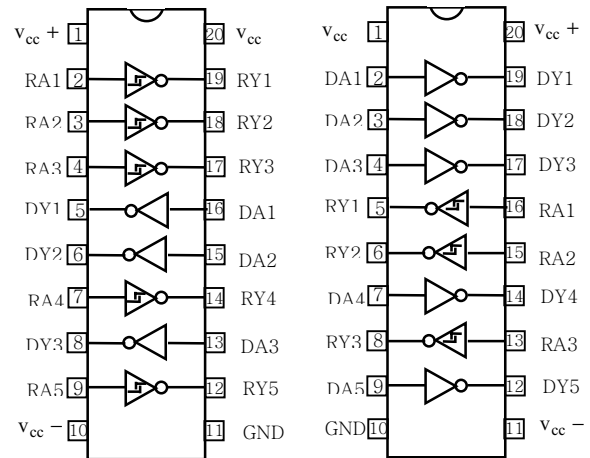
EIA RS-232-D INTERFACE 1 CHIP IC

Description

The GD75232 is a monolithic device containing 3 independent drivers and 5 receivers, and the GD75323 is a monolithic device containing 5 independent drivers and 3 receivers. These are designed to interface between data terminal equipment and data communication equipment as designed by EIA-232-D.

Features

- Meets standard EIA-232-D (Revision of RS-232-C)
- Drivers
 - Current Limited Output ... 10 mA Typical
 - Power-off Output Impedance ... 300 Ω Min
 - Slew Rate Control by Load Capacitor
 - Flexible Supply Voltage Range
 - Input Compatible with Most TTL and DTL Circuits
- Receivers
 - Input Resistance3 K Ω to 7 K Ω
 - Input Signal Range \pm 30V
 - Built-in Input Hysteresis (Double Threshold)
- 20 DIP/SOP

Block Diagram

GD75232

GD75323

Pin Description

NAME	Pin No.		Function	NAME	Pin No.		Function
	GD75232	GD75323			GD75232	GD75323	
V _{CC} +	1	20	Driver Section Supply +	V _{CC} -	10	11	Driver Section Supply -
DA1	16	2	Driver Input	DY1	5	19	Driver Output
DA2	15	3		DY2	6	18	
DA3	13	4		DY3	8	17	
DA4	-	7		DY4	-	14	
DA5	-	9		DY5	-	12	
V _{CC}	20	1	Receiver Section Supply	GND	11	10	Ground
RA1	2	16	Receiver Input	RY1	19	5	Receiver Output
RA2	3	15		RY2	18	6	
RA3	4	13		RY3	17	8	
RA4	7	-		RY4	14	-	
RA5	9	-		RY5	12	-	

Electrical Characteristics**Supply Current**

$V_{CC} = 5V \quad T_a = 25^\circ C$

Symbol	Parameter	Test Conditions		GD75232			GD75323			Unit
				Min	Typ	Max	Min	Typ	Max	
I_{CC+}	Supply Current From V_{CC+}	$V_{CC+} = 9V$ No Load	$V_{IN} = 1.9V$ $V_{IN} = 0.8V$		11.3 3.4	15 4.5		18.8 5.6	25 7.5	mA
		$V_{CC+} = 12V$ No Load	$V_{IN} = 1.9V$ $V_{IN} = 0.8V$		14.3 4.1	19 5.5		23.8 6.9	31.3 8.8	
		$V_{CC+} = 15V$ No Load	$V_{IN} = 1.9V$ $V_{IN} = 0.8V$			25 9			42 15	
I_{CC-}	Supply Current From V_{CC-}	$V_{CC-} = -9V$ No Load	$V_{IN} = 1.9V$ $V_{IN} = 0.8V$		-12 -16	-15 -19		-20 -26.7	-24 -32	mA
		$V_{CC-} = -12V$ No Load	$V_{IN} = 1.9V$ $V_{IN} = 0.8V$			-3.2 -3.2			-2.5 -2.5	
		$V_{CC-} = -15V$ No Load	$V_{IN} = 1.9V$ $V_{IN} = 0.8V$			-25 -3.2			-40 -4.0	
I_{CC}	Supply Current From V_{CC}	$V_{CC} = 5V$ $V_{CC} = 5V$ O/P Open	$V_{IN} = 5.0V$		20	30		15	19.5	mA

Driver Section

Symbol	Parameter	Test Conditions		Min	Typ	Max	Unit
V_{IH}	High Level Input Voltage	$V_{CC+} = +9V$ $V_{CC-} = -9V$		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	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	$V_{CC+} = 0, V_{CC-} = 0$ $V_O = -2V$ to $2V$		300			Ω

Driver Switching Characteristics**V_{cc+}=9V, V_{cc-}=-9V, T_A=25°C**

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit	
t _{PLH}	Propagation Delay Time, Low-To-High-Level Output	R _L = 3kΩ C _L = 15pF See Figure 1		400	500	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†				45	75	ns
t _{TLH}	Transition Time, Low-To-High-Level Output‡	R _L = 3kΩ to 7 kΩ C _L = 2500pF See Figure 1		2.5		μs	
t _{THL}	Transition Time, High-To-Low-Level Output‡				3.0		μs

† Measured between 10% and 70% Points of Output Waveform

‡ Measured between +3V and -3V Points on the Output Waveform (EIA-232-D Condition)

Receiver Section

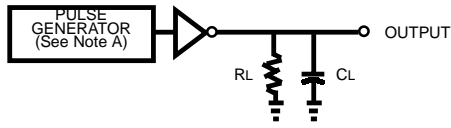
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V _{T+}	Positive-Going Threshold Voltage		1.75	1.9	2.25	V
V _{T-}	Negative-Going Threshold Voltage		0.75	0.97	1.25	V
V _{OH}	High Level Output Voltage	V _I = 0.75V , I _{OL} = -0.5mA	2.6	4	5	V
		Input Open , I _{OL} = -0.5mA	2.6	4	5	
V _{OL}	Low Level Output Voltage	V _I = 3V , I _{OL} = 10mA		0.2	0.45	V
I _{IH}	High-Level Input Current	V _I = 25V	3.6		8.3	mA
		V _I = 3V	0.43			
I _{IL}	Low-Level Input Current	V _I = -25V	-3.6		-8.3	mA
		V _I = -3V	-0.43			
I _{OS}	Short-Circuit Output Current			-3		mA

Receiver Switching Characteristics

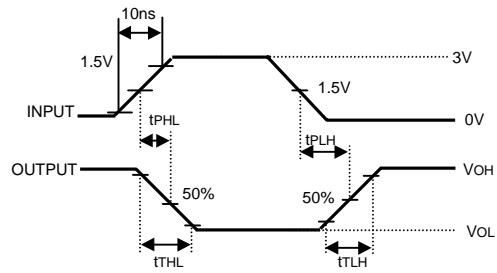
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
t _{PLH}	Propagation Delay Time, Low-To-High Level Output	C _L = 15pF R _L = 3.9kΩ		100	150	ns
t _{PHL}	Propagation Delay Time, High-To-Low Level Output	C _L = 15pF R _L = 390kΩ		25	50	ns
t _{TLH}	Transition Time, Low-To-High Level Output	C _L = 15pF R _L = 3.9kΩ		120	175	ns
t _{THL}	Transition Time, High-To-Low Level Output	C _L = 15pF R _L = 390kΩ		10	20	ns

Parameter Measurement Information

• DRIVER

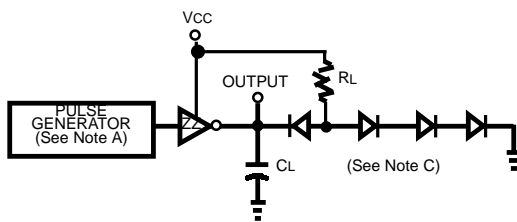


Test Circuit

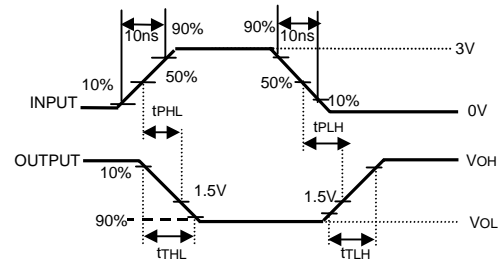


Voltage Wave form

• RECEIVER



Test Circuit



Voltage Waveform

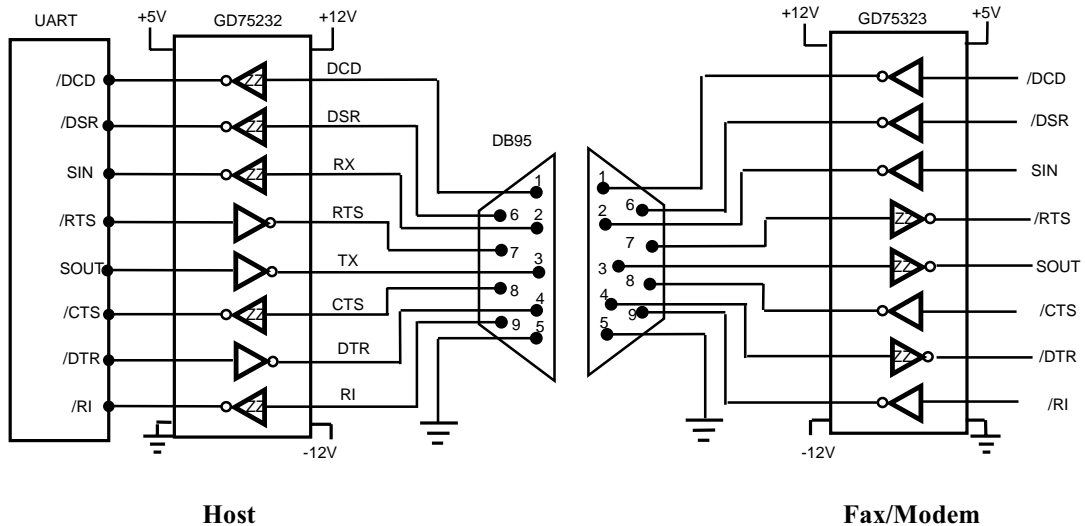
NOTE A. The pulse generator has the following characteristics. $t_w = 25\mu s$, $f = 200KHz$, $Z_0 = 50\Omega$

B. C includes probe and jig capacitance

C. All diodes are 1N3064 or equivalent.

Fig 1. Propagation and Transition Times

Typical Application



Host

Fax/Modem