



# Line Drivers /Receivers

DM7838/DM8838

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## DM7838/DM8838 quad unified bus transceiver

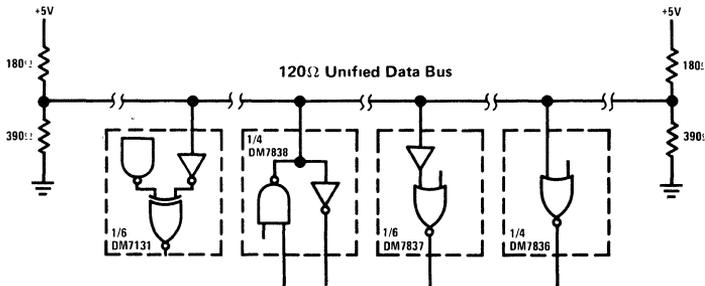
### general description

The DM7838/DM8838 are quad high speed drivers/receivers designed for use in bus organized data transmission systems interconnected by terminated 120Ω impedance lines. The external termination is intended to be a 180Ω resistor from the bus to the +5V logic supply together with a 390Ω resistor from the bus to ground. The bus can be terminated at one or both ends. Low bus pin current allows up to 27 driver/receiver pairs to utilize a common bus. The bus loading is unchanged when  $V_{CC} = 0V$ . The receivers incorporate hysteresis to greatly enhance bus noise immunity. One two-input NOR gate is included to disable all drivers in a package simultaneously. Receiver performance is optimized for systems with bus rise and fall times  $\leq 10\mu s$ .

### features

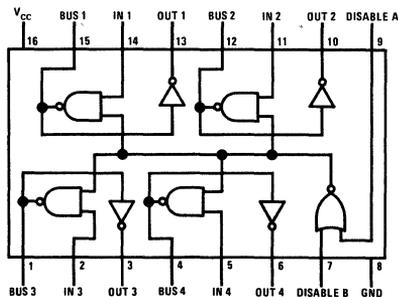
- 4 totally separate driver/receiver pairs per package
- 1V typical receiver input hysteresis
- Receiver hysteresis independent of receiver output load
- Guaranteed minimum bus noise immunity of 1.3V, 2V typ.
- Temperature-insensitive receiver thresholds track bus logic levels
- 20μA typical bus terminal current with normal  $V_{CC}$  or with  $V_{CC} = 0V$
- Open collector driver output allows wire-OR connection
- High speed
- Series 74 TTL compatible driver and disable inputs and receiver outputs

### typical application



### connection diagram

Dual In-Line and Flat Package



TOP VIEW

Order Number DM7838J  
or DM8838J  
See Package 17

Order Number DM7838W  
or DM8838W  
See Package 28

Order Number DM8838N  
See Package 23

## absolute maximum ratings

Supply Voltage	7V	Operating Temperature Range	-55 C to +125 C
Input and Output Voltage	5.5V	DM7838	0 C to +70 C
Power Dissipation	600 mW	DM8838	-65 C to +150 C
		Storage Temperature Range	300 C
		Lead Temperature (Soldering, 10 sec)	

## electrical characteristics

DM7838/DM8838 The following apply for  $V_L \leq V_{CC} \leq V_H$ ,  $T_L \leq T_A \leq T_H$  unless otherwise specified (Note 2)

PARAMETER	DISABLE INPUT	DRIVER INPUT	BUS PIN	RECEIVER OUTPUT	COMMENTS	MIN	TYP	MAX	UNIT
Logic "1" Input Voltage Disable	$V_{IN}$	2V	4V		Bus < 100 $\mu$ A	2.0			V
Logic "0" Input Voltage Disable	$V_{IN}$	2V	50 mA		Bus < 0.7V			0.8	V
Logic "1" Input Voltage Driver	0.8V	$V_{IN}$	50 mA		Bus < 0.7V	2.0			V
Logic "0" Input Voltage Driver	0.8V	$V_{IN}$	4V		Bus < 100 $\mu$ A			0.8	V
High Level Receiver Threshold DM7838		0.8V	$V_{TH}$	16 mA	Receiver output < 0.4V	1.65	2.25	2.65	V
High Level Receiver Threshold DM8838		0.8V	$V_{TH}$	16 mA	Receiver output < 0.4V	1.80	2.25	2.50	V
Low Level Receiver Threshold DM7838		0.8V	$V_{TH}$	-400 $\mu$ A	Receiver output > 2.4V	0.97	1.30	1.63	V
Low Level Receiver Threshold DM8838		0.8V	$V_{TH}$	-400 $\mu$ A	Receiver output > 2.4V	1.05	1.30	1.55	V
Logic "1" Input Current Disable and Driver	5.5V	5.5V						1	mA
Logic "1" Input Current Disable and Driver	2.4V	2.4V						40	$\mu$ A
Logic "0" Input Current Disable and Driver	0.4V	0.4V						-1.6	mA
Maximum Bus Current	0.8V	0.8V	4V		$V_{CC} = V_H$	20	100		$\mu$ A
Maximum Bus Current	0.8V	0.8V	4V		$V_{CC} = 0V$	2	100		$\mu$ A
Low Level Bus Voltage	0.8V	2V	50 mA				0.4	0.7	V
Logic "1" Output Voltage Receiver	0.8V	0.8V	0.5V	-400 $\mu$ A		2.4			V
Logic "0" Output Voltage Receiver	0.8V	0.8V	4V	16 mA			0.25	0.4	V
Output Short Circuit Current Receiver	0.8V	0.8V	0.5V	0V	$V_{CC} = V_H$	-18		-55	mA
Supply Current	0V	2V			Per Package	50	70		mA
Input Diode Clamp Voltage	-12 mA	-12 mA	-12 mA		$T_A = 25^\circ C$	-1	-1.5		V
The following apply for $V_{CC} = 5V$ , $T_A = 25^\circ C$ unless otherwise specified									
Propagation Delays									
Disable to Bus "1"					Note 3	19	30		ns
Disable to Bus "0"					Note 3	15	23		ns
Driver Input to Bus "1"					Note 3	17	25		ns
Driver Input to Bus "0"					Note 3	9	15		ns
Bus to Logic "1" Receiver Output					Note 4	20	30		ns
Bus to Logic "0" Receiver Output					Note 5	18	30		ns

**Note 1:** Voltage values are with respect to network ground terminal. Positive current is defined as current into the referenced pin.

**Note 2:** For DM7838:  $V_L = 4.5V$ ,  $V_H = 5.5V$ ,  $T_L = -55^\circ C$ ,  $T_H = +125^\circ C$   
For DM8838:  $V_L = 4.75V$ ,  $V_H = 5.25V$ ,  $T_L = 0^\circ C$ ,  $T_H = +70^\circ C$

**Note 3:**  $91\ \Omega$  from bus pin to  $V_{CC}$  and  $200\ \Omega$  from bus pin to ground,  $C_{LOAD} = 15\ pF$  total. Measured from  $V_{IN} = 1.5V$  to  $V_{BUS} = 1.5V$ ,  $V_{IN} = 0V$  to  $3.0V$  pulse.

**Note 4:** Fan-out of 10 load,  $C_{LOAD} = 15\ pF$  total. Measured from  $V_{IN} = 1.3V$  to  $V_{OUT} = 1.5V$ ,  $V_{IN} = 0V$  to  $3.0V$  pulse

**Note 5:** Fan-out of 10 load,  $C_{LOAD} = 15\ pF$  total. Measured from  $V_{IN} = 2.3V$  to  $V_{OUT} = 1.5V$ ,  $V_{IN} = 0V$  to  $3.0V$  pulse.