



# Line Receivers/Drivers

## DM7830/DM8830 dual differential line driver

### general description

The DM7830/DM8830 is a dual differential line driver that also performs the dual four-input NAND or dual four-input AND function.

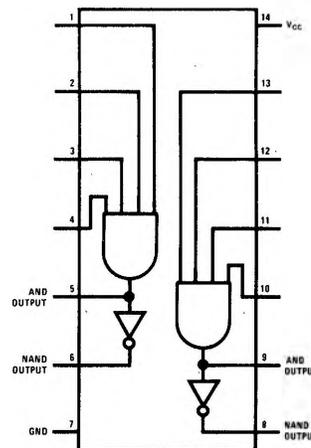
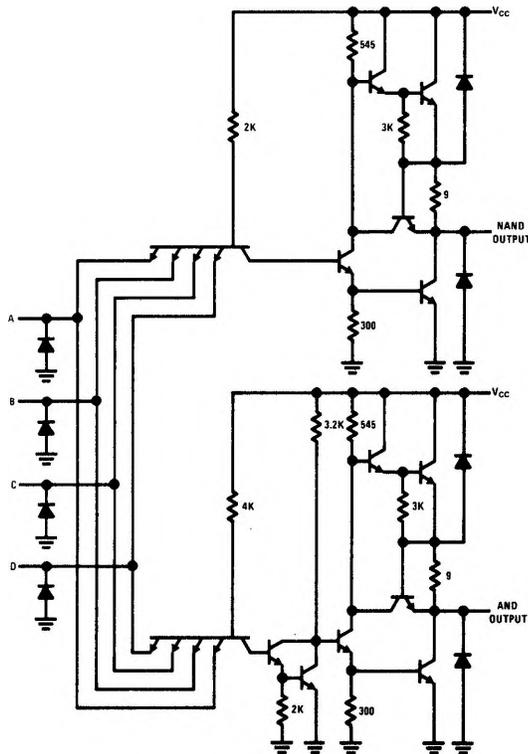
TTL (Transistor-Transistor-Logic) multiple emitter inputs allow this line driver to interface with standard TTL or DTL systems. The differential outputs are balanced and are designed to drive long lengths of coaxial cable, strip line, or twisted pair transmission lines with characteristic impedances of  $50\Omega$  to  $500\Omega$ . The differential feature of the output eliminates troublesome ground-loop errors

normally associated with single-wire transmissions.

### Key Features:

- Single 5 volt power supply
- Diode protected outputs for termination of positive and negative voltage transients
- Diode protected inputs to prevent line ringing
- High Speed
- Short Circuit Protection

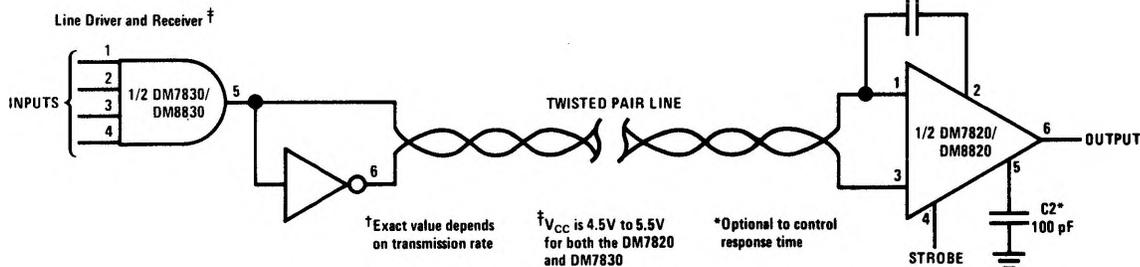
### schematic\* and connection diagram



### typical application

#### Digital Data Transmission

\*2 per package



**absolute maximum ratings**

$V_{CC}$		7.0V
Input Voltage		5.5V
Operating Temperature	DM7830	-55°C to +125°C
	DM8830	0°C to 70°C
Storage Temperature		-65°C to +150°C
Lead Temperature (soldering, 60 sec)		300°C
Output Short Circuit Duration (125°C)		1 second

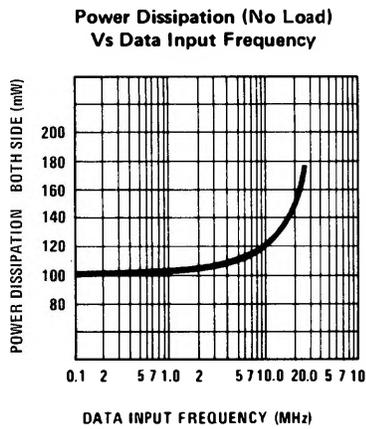
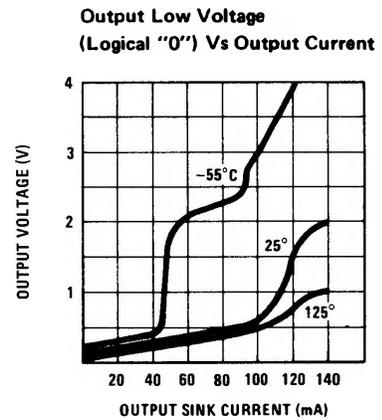
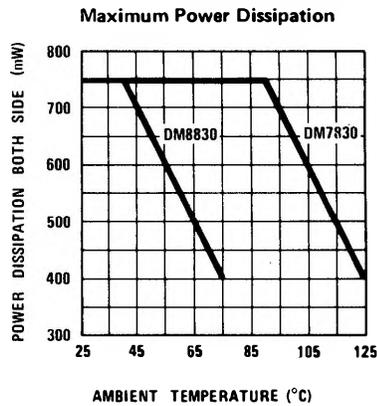
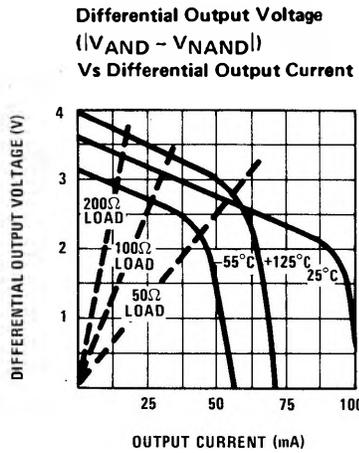
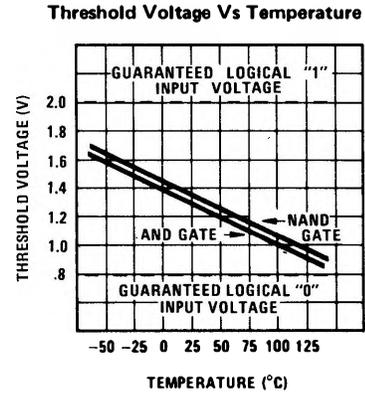
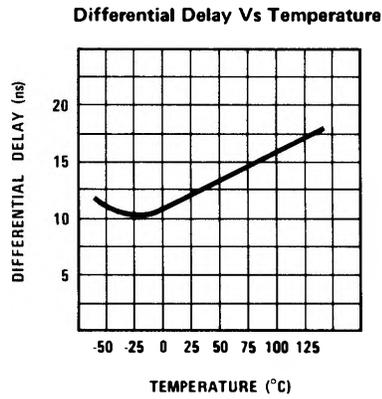
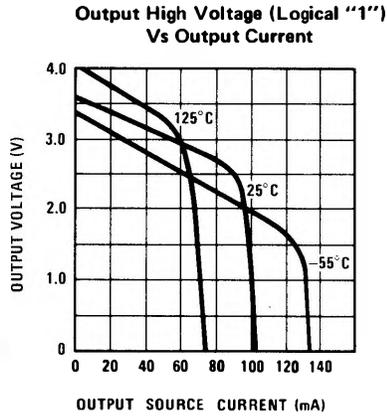
**electrical characteristics** (Note 1)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Logical "1" Input Voltage		2.0			V
Logical "0" Input Voltage				0.8	V
Logical "1" Output Voltage	$V_{IN} = 0.8V$ $I_{OUT} = -0.8$ mA	2.4			V
Logical "1" Output Voltage	$V_{IN} = 0.8V$ $I_{OUT} = 40$ mA	1.8	3.3		V
Logical "0" Output Voltage	$V_{IN} = 2.0V$ $I_{OUT} = +32$ mA		0.2	0.4	V
Logical "0" Output Voltage	$V_{IN} = 2.0V$ $I_{OUT} = +40$ mA		0.22	0.5	V
Logical "1" Input Current	$V_{IN} = +2.4V$			120	$\mu$ A
Logical "1" Input Current	$V_{IN} = 5.5V$			2	mA
Logical "0" Input Current	$V_{IN} = 0.4V$			4.8	mA
Output Short Circuit Current	$V_{CC} = 5.0V$	Note 2 40	100	Note 2 120	mA
Supply Current	$V_{CC} = 5.0V$ $V_{IN} = 5.0V$ (Each Driver)		11	18	mA
Propagation Delay AND Gate $t_{pd1}$	$T_A = 25^\circ C$ $V_{CC} = 5.0V$ $C_L = 15$ pF See Figure 1		8	12	ns
$t_{pd0}$			11	18	ns
Propagation Delay NAND Gate $t_{pd1}$			8	12	ns
$t_{pd0}$			5	8	ns
Differential Delay $t_1$	$t_1$ Load, 100 $\Omega$ and 5000 pF $t_2$ See Figure 2		12	16	ns
Differential Delay $t_2$			12	16	ns

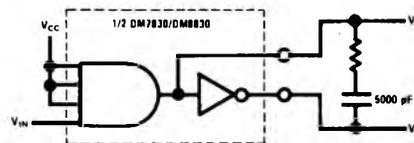
**Note 1:** Specifications apply for DM7830  $-55^\circ C \leq T_A \leq +125^\circ C$ ,  $V_{CC} = +5V \pm 10\%$ , DM8830  $0^\circ C \leq T_A \leq 70^\circ C$ ,  $V_{CC} = +5V \pm 5\%$  unless otherwise stated. Typical values given are for  $T_A = 25^\circ C$ ,  $V_{CC} = 5.0V$ .

**Note 2:** Applies for  $T_A = +125^\circ C$  only.

typical performance characteristics



ac test circuit



switching time waveforms

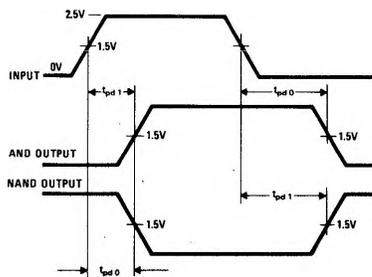


FIGURE 1

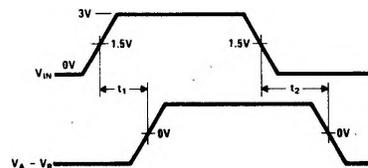


FIGURE 2