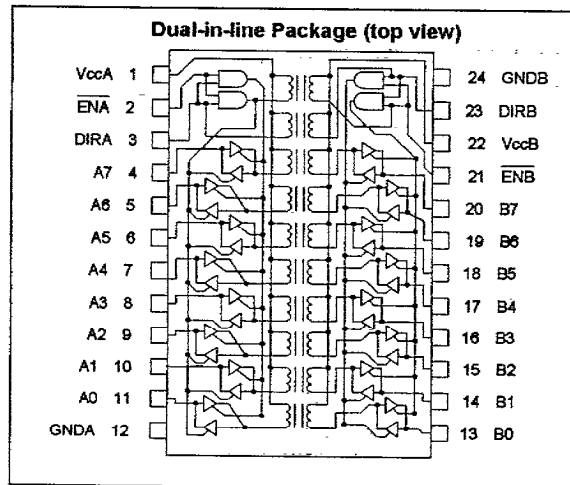


## Microprocessor Support Circuit Type NM1608 Octo-Isolator 8 bit Active Data-Bus Isolator

- 5 Volt only operation
- Standard 24 pin outline
- Low profile
- Bi-directional
- High isolation
- Low power consumption



### description

The NM1608 Octo-Isolator is an octal, bi-directional, active, data-bus isolator designed to provide isolation on 8-bit wide microprocessor data-buses and to operate at normal high speed processor rates. All data lines are bidirectional and LS TTL buffered having 3-state outputs controlled by a direction control input and an output enable. The direction and enable input lines can be driven from either side of the isolator providing a high degree of design flexibility. The device is housed in a low profile DIP style 24 pin package with standard 0.6 inch row spacing and 0.1 inch pin pitch. The operating temperature range is 0C to 70C and the typical total power consumption is 500mW at a 2Mbps data rate.

### absolute maximum ratings over operating free-air temperature range

Supply voltage Vcc	- 0.5V to +7.0V
Input voltage signal pins	- 0.5V to +5.5V
Input current signal pins	- 30mA to +5mA
Voltage applied to outputs when HIGH	- 0.5V to +10V
High level voltage applied to disable 3-state output	+7.0V
Isolation breakdown voltage V <sub>br</sub>	700VDC
Insulation resistance at 500V DC	>10 G Ω
Operating free-air temperature range	0C to 70C
Storage temperature range	- 55C to 125C
Lead temperature 1.5mm from case for 10 seconds	300C

## Octo-Isolator 8 bit Active Data-Bus Isolator

## electrical specifications over operating free-air temperature range

Parameter	Test Conditions <sup>2</sup>	Min	Typ	Max	Unit
V <sub>IH</sub> High-level input voltage <sup>1</sup>	V <sub>CC</sub> = 4.75 to 5.25V	2.0			V
V <sub>IL</sub> Low-level input voltage <sup>1</sup>	V <sub>CC</sub> = 4.75 to 5.25V			0.8	V
V <sub>OH</sub> High-level output voltage <sup>1</sup>	V <sub>CC</sub> = 4.75V, I <sub>O</sub> = -2.6mA	2.4			V
V <sub>OL</sub> Low-level output voltage <sup>1</sup>	V <sub>CC</sub> = 4.75V			0.4	V
				0.5	
I <sub>IL</sub> Low-level input current <sup>1</sup>	V <sub>CC</sub> = 5.25V			-0.2	mA
I <sub>OZ</sub> Off state current <sup>1</sup>	V <sub>CC</sub> = 5.25V			±20	µA
I <sub>IL</sub> Low-level input current <sup>3</sup>	V <sub>CC</sub> = 5.25V			15	mA
I <sub>CC</sub> Supply current <sup>4</sup>	V <sub>CC</sub> = 5.0V		100		mA

all typical values are at Ta=25C

1. Data lines only
2. V<sub>CC</sub> applied to both sides of isolator
3. DIR and EN lines only
4. Supply current for both sides of isolator, each side will be typically 1/2 I<sub>CC</sub>

switching characteristics V<sub>CC</sub>= 5V, Ta = 25C

Parameter	Test Conditions	Min	Typ	Max	Unit
t <sub>PHL</sub> t <sub>PLH</sub> Propagation delay An to Bn or Bn to An	V <sub>CC</sub> = 4.75V			60	ns
t <sub>THL</sub> t <sub>TLH</sub> Output transition time	V <sub>CC</sub> = 4.75V			15	ns
t <sub>PZH</sub> t <sub>PHZ</sub> Output enable time	V <sub>CC</sub> = 4.75V			30	ns
t <sub>PZH</sub> t <sub>PLZ</sub> Output disable time	V <sub>CC</sub> = 4.75V			25	ns
t <sub>PW</sub> Low-level pulse width at DIR and $\overline{\text{EN}}$ <sup>1</sup>	V <sub>CC</sub> = 5.25V			5.5	µs

all typical values are at Ta=25C

1. See repetition rate versus pulse width curve.

## Type NM1608

### Octo-Isolator 8 bit Active Data-Bus Isolator

#### pin description table

Pin No	Symbol	Name and Function
1	V <sub>CC</sub> A	Positive supply for side A
22	V <sub>CC</sub> B	Positive supply for side B
2	$\overline{\text{ENA}}$	Output enable input for side A or B (active low) internally pulled up
21	$\overline{\text{ENB}}$	Drive from either side, not both
3	DIRA	Direction control input for side A or B internally pulled up
23	DIRB	Drive from either side, not both
12	GNDA	Ground 0V for side A
24	GNDB	Ground 0V for side B
4 – 11	A0 – A7	Data inputs / outputs side A
13 – 20	B0 – B7	Data inputs / outputs side B

#### function table

Inputs		Inputs / Outputs	
$\overline{\text{ENA}}$ or $\overline{\text{ENB}}$	DIRA or DIRB	A <sub>n</sub>	B <sub>n</sub>
L	L	A = B	inputs
L	H	inputs	B = A
H	X	Hi Z	Hi Z

H = HIGH voltage

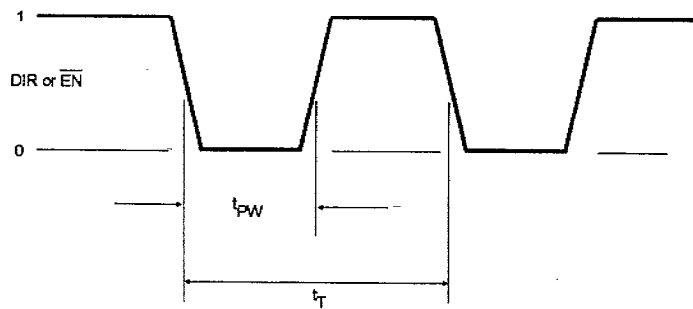
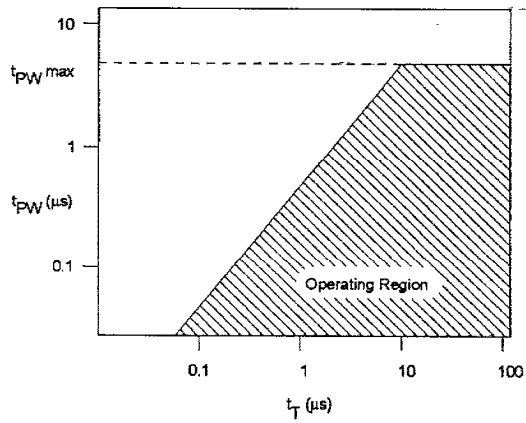
L = LOW voltage

X = Don't care

Hi Z = Off state

# Octo-Isolator 8 bit Active Data-Bus Isolator

## repetition rate versus pulse width curve

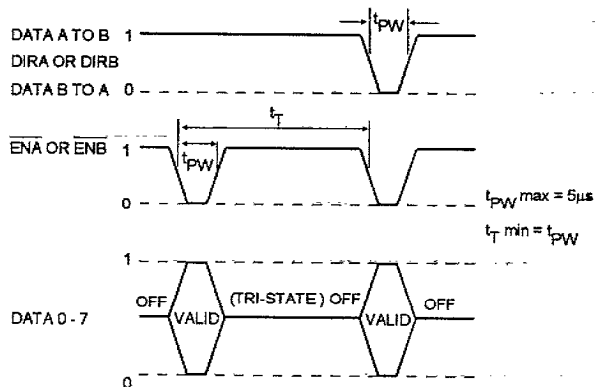


$t_T$  = Time between successive H to L transitions on DIR or EN.

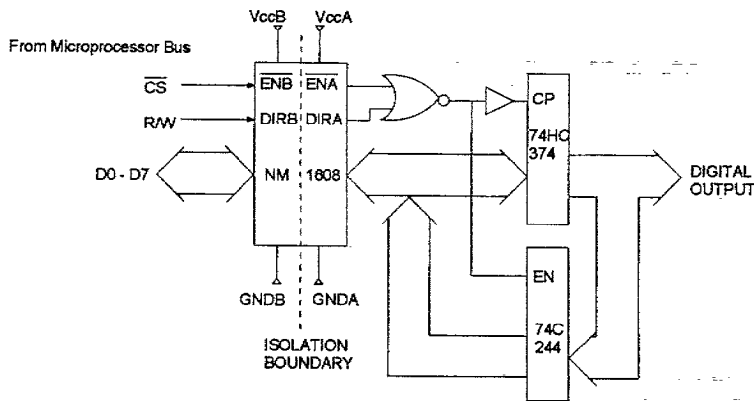
$t_{PW}$  = Low-level pulse width on DIR or EN.

## Type NM1608 Octo-Isolator 8 bit Active Data-Bus Isolator

### timing diagram



### typical application – isolated digital output with read-back



### ordering information

Part No.	Function	Package Style
NM1608	8-bit active bus isolator	1



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