

February 1996

## DS7836/DS8836 Quad NOR Unified Bus Receiver

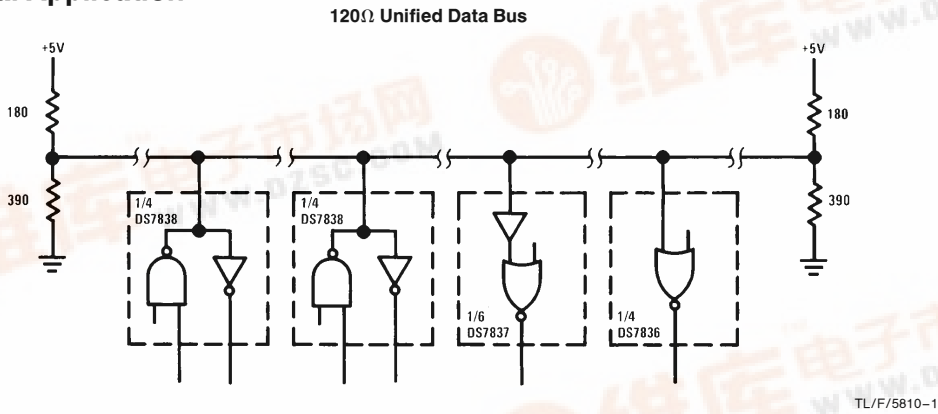
### General Description

The DS7836/DS8836 are quad 2-input receivers designed for use in bus organized data transmission systems interconnected by terminated 120Ω impedance lines. The external termination is intended to be 180Ω resistor from the bus to the +5V logic supply together with a 390Ω resistor from the bus to ground. The design employs a built-in input hysteresis providing substantial noise immunity. Low input current allows up to 27 driver/receiver pairs to utilize a common bus. Performance is optimized for systems with bus rise and fall times  $\leq 1.0 \mu\text{s}/\text{V}$ .

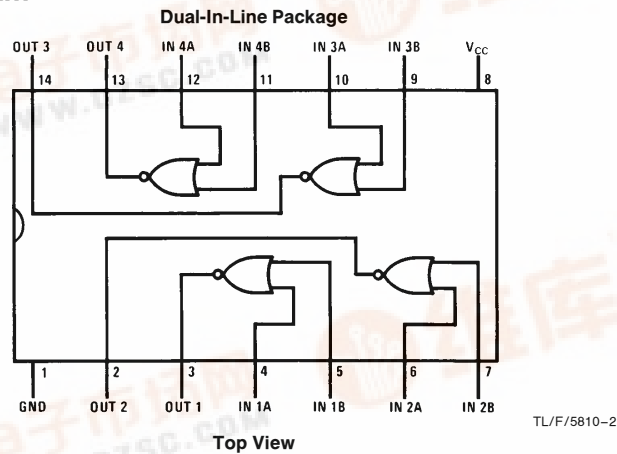
### Features

- Low input current with normal  $V_{CC}$  or  $V_{CC} = 0\text{V}$  (15  $\mu\text{A}$  typ)
- Built-in input hysteresis (1V typ)
- High noise immunity (2V typ)
- Temperature-insensitive input thresholds track bus logic levels
- TTL compatible output
- Matched, optimized noise immunity for "1" and "0" levels
- High speed (18 ns typ)

### Typical Application



### Connection Diagram



Order Number DS7836J or DS8836N  
See NS Package Number J14A or N14A

DS7836/DS8836 Quad NOR Unified Bus Receiver



## Absolute Maximum Ratings

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	7.0V
Current Voltage	5.5V
Storage Temperature Range	-65°C to +150°C
Maximum Power Dissipation* at 25°C	
Cavity Package	1308 mW
Molded Package	1207 mW
Lead Temperature (Soldering, 4 seconds)	260 °C

\*Derate cavity package 8.7 mW/°C above 25°C; derate molded package 9.7 mW/°C above 25°C.

## Operating Conditions

	Min	Max	Units
Supply Voltage ( $V_{CC}$ )			
DS7836	4.5	5.5	V
DS8836	4.75	5.25	V
Temperature ( $T_A$ )			
DS7836	-55	+125	°C
DS8836	0	+70	°C

## Electrical Characteristics

The following apply for  $V_{MIN} \leq V_{CC} \leq V_{MAX}$ ,  $T_{MIN} \leq T_A \leq T_{MAX}$ , unless otherwise specified (Notes 2 and 3)

Symbol	Parameter	Conditions	Min	Typ	Max	Units	
$V_{TH}$	High Level Input Threshold	$V_{CC} = \text{Max}$	DS7836	1.65	2.25	2.65	V
			DS8836	1.80	2.25	2.50	V
$V_{IL}$	Low Level Input Threshold	$V_{CC} = \text{Min}$	DS7836	0.97	1.30	1.63	V
			DS8836	1.05	1.30	1.55	V
$I_{IN}$	Maximum Input Current	$V_{IN} = 4V$	$V_{CC} = \text{Max}$		15	50	$\mu\text{A}$
			$V_{CC} = 0V$		1	50	$\mu\text{A}$
$V_{OH}$	Logical "1" Output Voltage	$V_{IN} = 0.5V$ , $I_{OUT} = -400 \mu\text{A}$	2.4			V	
$V_{OL}$	Logical "0" Output Voltage	$V_{IN} = 4V$ , $I_{OUT} = 16 \text{ mA}$		0.25	0.4	V	
$I_{SC}$	Output Short Circuit Current	$V_{IN} = 0.5V$ , $V_{OUT} = 0V$ , $V_{CC} = \text{Max}$ , (Note 4)	-18		-55	mA	
$I_{CC}$	Power Supply Current	$V_{IN} = 4V$ , (Per Package)		25	40	mA	
$V_{CL}$	Input Clamp Diode Voltage	$I_{IN} = -12 \text{ mA}$ , $T_A = 25^\circ\text{C}$		-1	-1.5	V	

## Switching Characteristics $V_{CC} = 5V$ , $T_A = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	Units	
$t_{pd}$	Propagation Delays	(Notes 4 and 5)	Input to Logical "1" Output		20	30	ns
			Input to Logical "0" Output		18	30	ns

**Note 1:** "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except for "Operating Temperature Range" they are not meant to imply that the devices should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

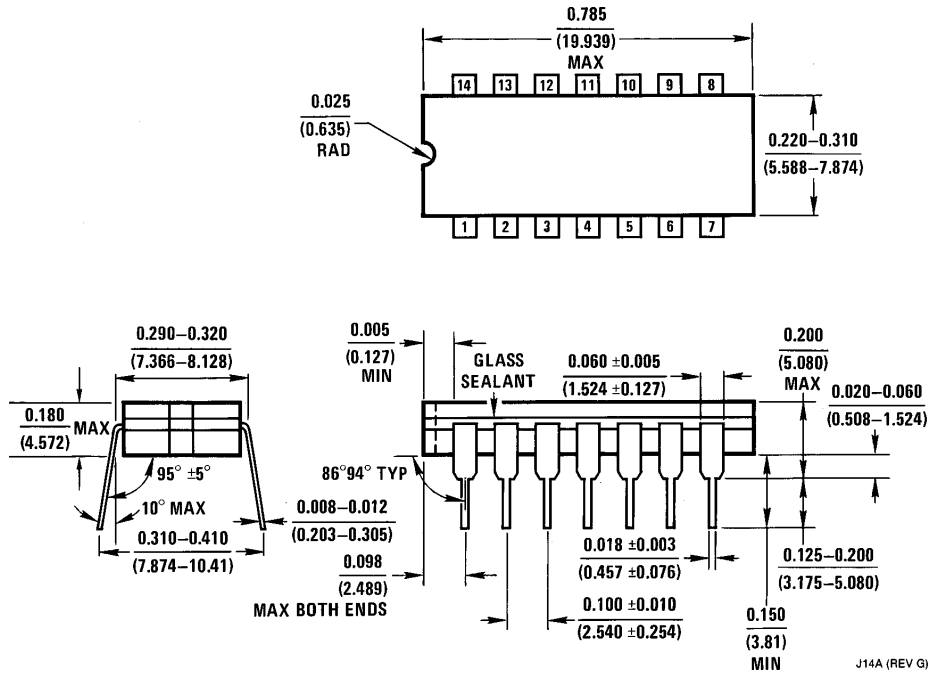
**Note 2:** Unless otherwise specified min/max limits apply across the -55°C to +125°C temperature range for the DS7836 and across the 0°C to +70°C range for the DS8836. All typical values are for  $T_A = 25^\circ\text{C}$  and  $V_{CC} = 5V$ .

**Note 3:** All currents into device pins shown as positive, out of device pins as negative, all voltages referenced to ground unless otherwise noted. All values shown as max or min on absolute value basis.

**Note 4:** Fan-out of 10 load,  $C_{LOAD} = 15 \text{ pF}$  total, measured from  $V_{IN} = 1.3V$  to  $V_{OUT} = 1.5V$ ,  $V_{IN} = 0V$  to 3V pulse.

**Note 5:** Fan-out of 10 load,  $C_{LOAD} = 15 \text{ pF}$  total, measured from  $V_{IN} = 2.3V$  to  $V_{OUT} = 1.5V$ ,  $V_{IN} = 0V$  to 3V pulse.

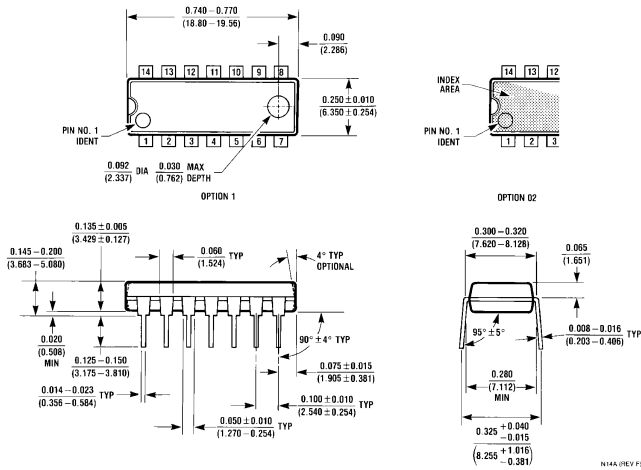
**Physical Dimensions** inches (millimeters)



**Ceramic Dual-In-Line Package (J)**  
**Order Number DS7836J**  
**NS Package Number J14A**

J14A (REV G)

**Physical Dimensions** inches (millimeters) (Continued)




**Molded Dual-In-Line Package (N)**  
**Order Number DS8836N**  
**NS Package Number N14A**

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