National Semiconductor

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DP8481 TTL to 10k ECL Level Translator with Latch

General Description

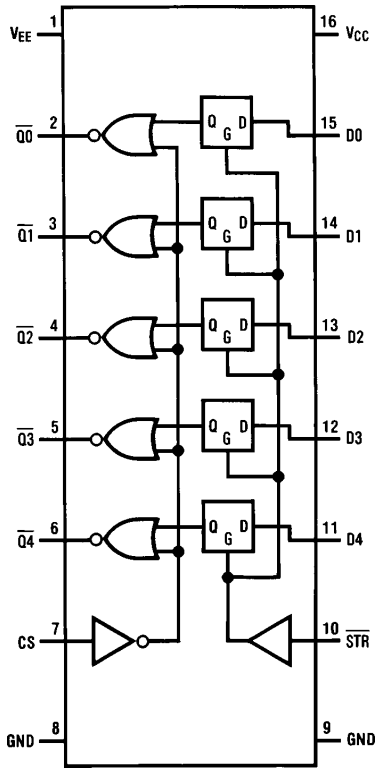
This circuit translates TTL input levels to ECL output levels and provides a fall-through latch. The outputs are gated with CS providing for wire ORing of outputs. The strobe and chip select inputs operate at ECL levels.

Features

- 16-pin flat-pack or DIP
- ECL control inputs
- CS provided for wire ORing of output bus
- 10k ECL I/O compatible
- 3.0 ns typical propagation delay

Logic and Connection Diagram

Dual-In-Line Package



TL/F/5862–1

Top View

Truth Table

D	$\overline{Q}$	$\overline{STR}$	CS
H	L	L	H
L	H	L	H
X	$\overline{Q}$	H	H
X	L	X	L

H = high level (most positive)
L = low level (most negative)
X = don't care

Order Number
DP8481F, DP8481J or DP8481N
See NS Package
F16B, J16A or N16A

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Absolute Maximum Ratings (Note 1)

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

V_{EE} Supply Voltage	−8V
V_{CC} Supply Voltage	7V
Input Voltage (ECL)	GND to V_{EE}
Input Voltage (TTL)	−1V to 5.5V
Output Current	50 mA
Maximum Power Dissipation* at 25°C Molded Package	1476 mW
Storage Temperature	−65°C to +150°C

*Derate molded package 11.8 mW/°C above 25°C.

Recommended Operating Conditions

V_{EE} Supply Voltage	−5.2V ±10%
V_{CC} Supply Voltage	5.0V ±10%
T_A, Ambient Temperature	0°C to 75°C

Electrical Characteristics (TTL Logic) (Notes 2 and 3)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{IL}	Input Low Voltage				0.8	V
V_{IH}	Input High Voltage		2.0			V
I_{IL}	Input Low Current	V_{IN} = 0.5V		−25	−200	μA
I_{IH}	Input High Current	V_{IN} = 2.5V		1.0	40	μA
V_{CLAMP}	Input Clamp Voltage	I_{IN} = −12 mA		−0.9	−1.2	V
I_{CC}	Supply Current	V_{CC} = 5.5V		10	20	mA

Electrical Characteristics (ECL Logic) (Notes 2 and 3)

Symbol	Parameter	Conditions	T_A	Min	Typ	Max	Units
V_{IL}	Input Low Voltage	V_{EE} = −5.2V	0°C 25°C 75°C	−1870 −1850 −1830		−1490 −1475 −1450	mV
V_{IH}	Input High Voltage	V_{EE} = −5.2V	0°C 25°C 75°C	−1145 −1105 −1045		−840 −810 −720	mV
I_{IL}	Input Low Current	V_{IN} = −1.8V			55	150	μA
I_{IH}	Input High Current	V_{IN} = −0.8V			85	200	μA
V_{OL}	Output Low Voltage	V_{EE} = −5.2V	0°C 25°C 75°C	−1870 −1850 −1830		−1665 −1650 −1625	mV
V_{OH}	Output High Voltage	V_{EE} = −5.2V	0°C 25°C 75°C	−1000 −960 −900		−840 −810 −720	mV
V_{OLC}	Output Low Voltage	V_{EE} = −5.2V	0°C 25°C 75°C			−1645 −1630 −1605	mV
V_{OHC}	Output High Voltage	V_{EE} = −5.2V	0°C 25°C 75°C	−1020 −980 −920			mV
I_{EE}	Supply Current	V_{EE} = −5.7V			−70	−90	mA

Switching Characteristics (Notes 2 and 4)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
t_{PD1}	Strobe To Output Delay		1.5	3.0	6.0	ns
t_{PD2}	Data To Output Delay		2.5	4.5	7.5	ns
t_S	Data Set-Up Time to Strobe		5.0	2.0		ns
t_H	Data Hold Time		1.0	0		ns
t_{PW}	Strobe Pulse Width		5.0	3.0		ns
t_{PD3}	Chip Select to Output Delay		1.0	2.5	4.0	ns
t_{SCS}	Data Set-Up Time to Chip Select		5.5	3.0		ns

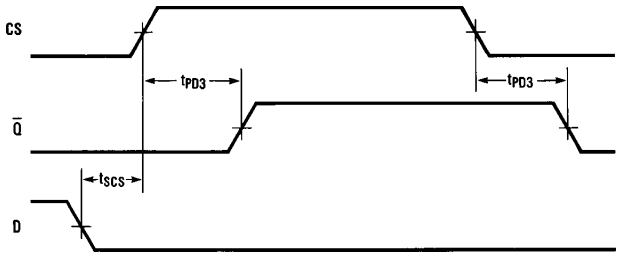
Note 1: ''Absolute Maximum Ratings'' are those values beyond which the safety of the device cannot be guaranteed. They are not meant to imply that the device should be operated at these limits. The table of ''Electrical Characteristics'' provides conditions for actual device operation.

Note 2: Unless otherwise specified, min/max limits apply across the 0°C to 75°C ambient temperature range in still air and across the specified supply variations. All typical values are for 25°C and nominal supply.

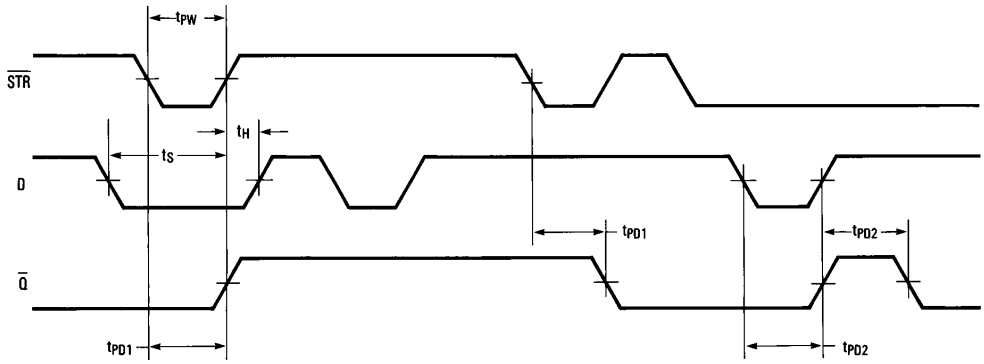
Note 3: All currents into device pins are shown as positive; all currents out of device pins are shown as negative. All voltages are referenced to ground, unless otherwise specified.

Note 4: Unless otherwise specified, all AC measurements are referenced from the 1.5V level of the TTL input and to/from the 50% point of the ECL signal and a 50Ω resistor to −2V is the load. ECL input rise and fall times are 2.0 ns ±0.2 ns from 20% to 80%. TTL input characteristic is 0V to 3V with $t_r = t_f \leq 3$ ns measured from 10% to 90%.

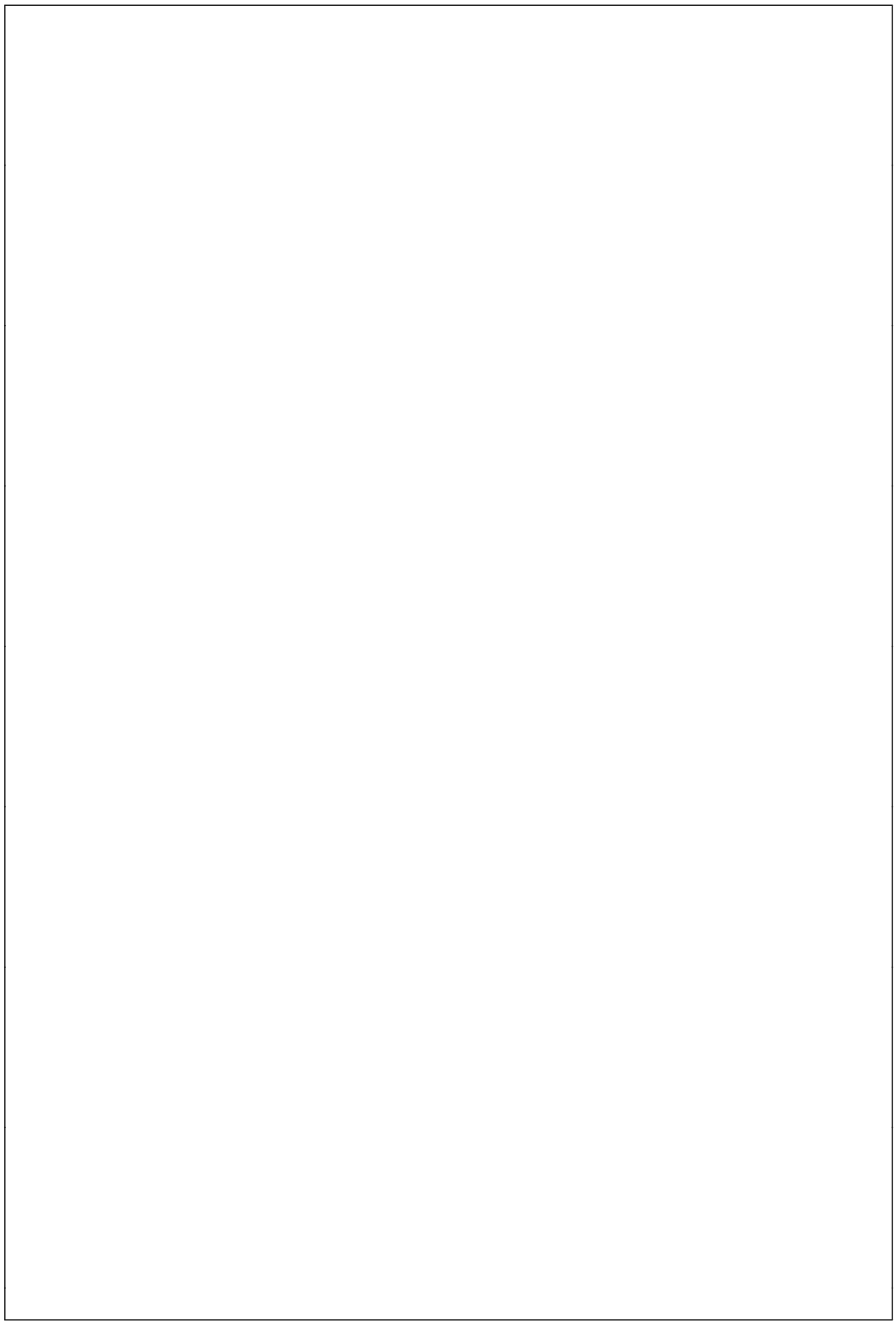
Switching Time Waveforms



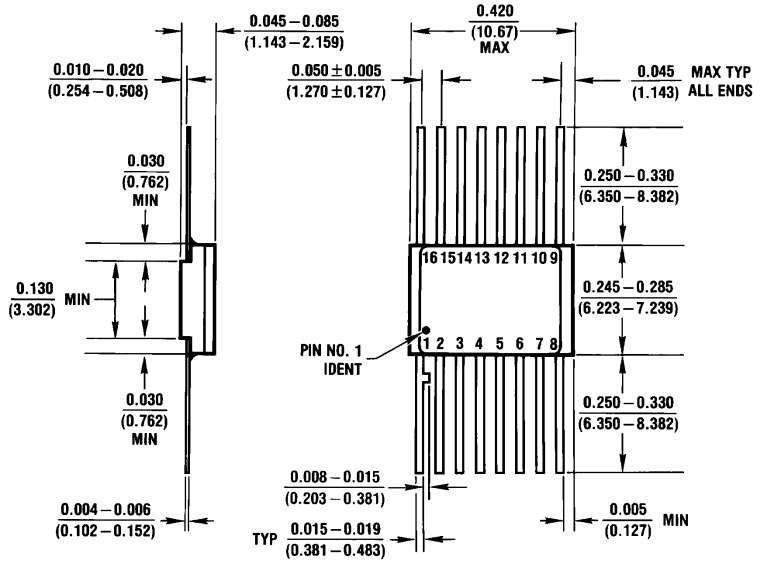
TL/F/5862–2



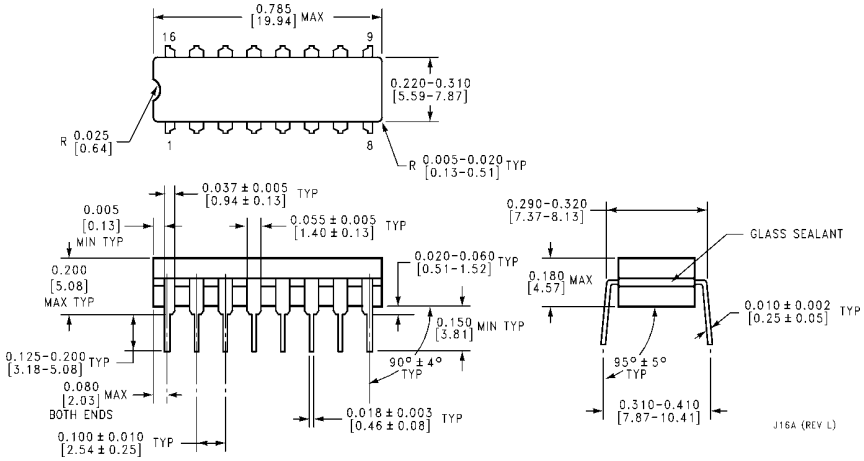
TL/F/5862–3



Physical Dimensions inches (millimeters)

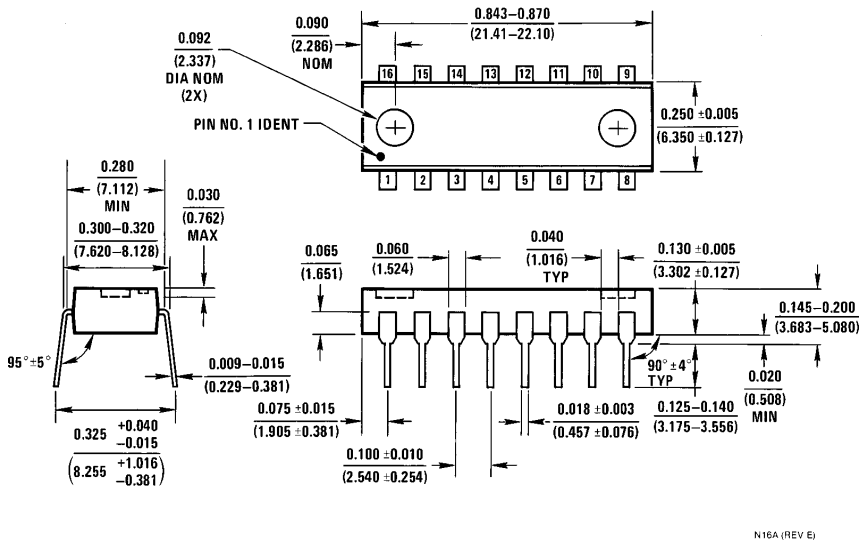


Ceramic Flat Package (F)
Order Number DP8481F
NS Package F16B



Ceramic Dual-In-Line Package (J)
Order Number DP8481J
NS Package J16A

Physical Dimensions inches (millimeters) (Continued)



Molded Dual-In-Line Package (N)
Order Number DP8481N
NS Package N16A

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