SERTECH LABS
580 Pleasant Street
Watertown, MA 02172
(617) 924-9280

TSC390/391/392/393
394/395
Dual Interface Buffers

- **Dual 2-Input NAND/AND/OR/NOR**
- **Dual 4-Input AND/NAND with Expander**

Features

High Current Sink Capability – 250mA – Drives Relays, Lamps, Solenoids, Memories, Clock Lines

CMOS Compatible Inputs – $i_{IL} < 0.6mA$ at $V_{CC} = 10V$

Wide Operating Supply Range – 10 to 16V

High Noise Immunity – 3.5V Min at $V_{CC} = 11V$

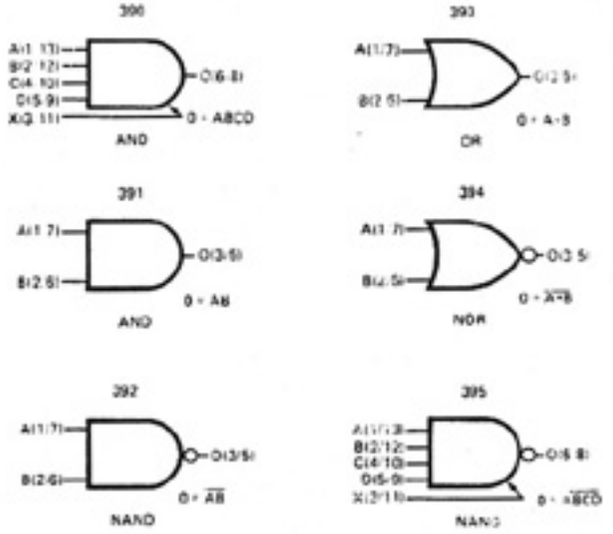
Full Range of Logic Functions Available

Dual Configuration – Saves Board Space, Package Count

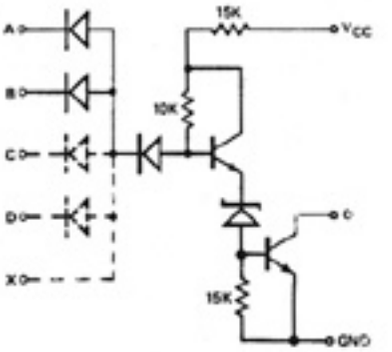
General Description

The HiNIL 390 to 395 Dual Interface Buffers offer open collector NPN transistor outputs with 20V sustaining voltage and high current sink capacity. Low input current and wide supply voltage range make these buffers ideal for interfacing with CMOS or with other HiNIL logic.

Logic Diagram (½ Circuit Shown)



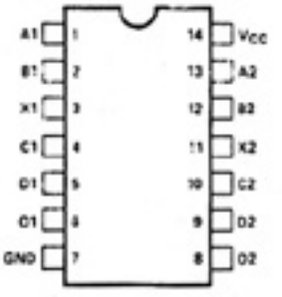
Equivalent Circuit



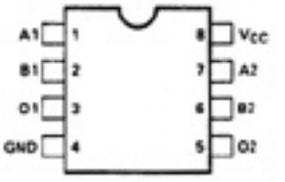
Connection Diagrams

Order Part Numbers:
390AL/CL, 395AL/CL
($-30°C \leq T_A \leq +70°C$)

L Package
14 Lead Ceramic DIP



L Package
8 Lead Ceramic DIP



Order Part Numbers:
391AL/CL, 392AL/CL
393AL/CL, 394AL/CL
($-30°C \leq T_A \leq +70°C$)

Absolute Maximum Ratings

Continuous Supply Voltage, V_{CC}	16.5V
Operating Supply Voltage Range, V_{CC}	10 to 16V
Pulsed Supply Voltage (less than 100ms)	18.0V
Output Voltage to GND (I_O less than 100μA)	30V
Input Voltage (any input)	−0.5 to +18V
Continuous Output Sink Current	250mA
Surge Output Sink Current (less than 100ms at 25°C T_A)	300mA
Storage Temperature Range	−65°C to +150°C
Operating Temperature Range	−30°C to +70°C

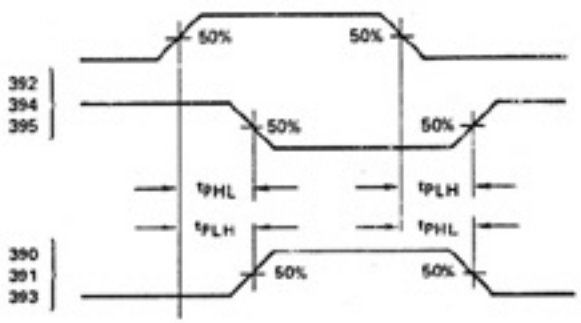
Electrical Characteristics (V_{CC} = 10 to 16V across applicable temperature range, unless otherwise specified)

Parameter	Definition	Limit	Conditions
V_{IH}	Input High Voltage	6.5V Max	V_{CC} = 10–16V
V_{IL}	Input Low Voltage	5V Min	V_{CC} = 10–16V
V_{OL}	Output Low Voltage	0.7V Max	I_{OL} = 250mA, V_{CC} = 10V, with V_{INH} = 6.5V and V_{INL} = 5.0V
I_{IH}	Input High Current	10μA Max	V_{CC} = 16V, V_{IN} = 16V
I_{IL}	Input Low Current	−1mA Max −0.6mA	V_{CC} = 16V, V_{IN} = 1.5V V_{CC} = 10V, V_{IN} = 1.5V
I_{CC}	Supply Current	40mA Max	V_{CC} = 16V
I_{CEX}	Open Collector Cutoff Current	100μA Max	V_{CC} = 16V, V_{CEX} = 30V
$V_{(BR)CER}$	Output Transistor Sustaining Voltage	20V Min	V_{CC} = 16V, I_{OH} = 10mA

AC Characteristics

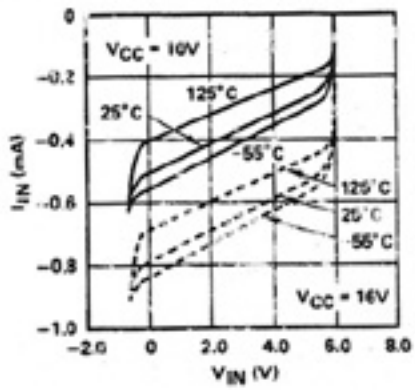
t_{PLH}	Propagation Delay, Output low to high	500ns Max	I_O = 200mA, R_L = 50Ω C_L = 15pF
t_{PHL}	Propagation Delay, Output high to low	200ns Max	I_O = 200mA, R_L = 50Ω C_L = 15pF

Switching Waveforms

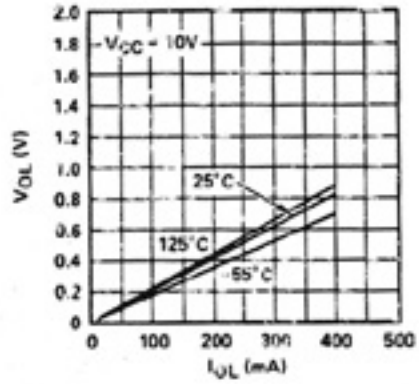


Typical Performance Characteristics

INPUT CURRENT
VS INPUT VOLTAGE



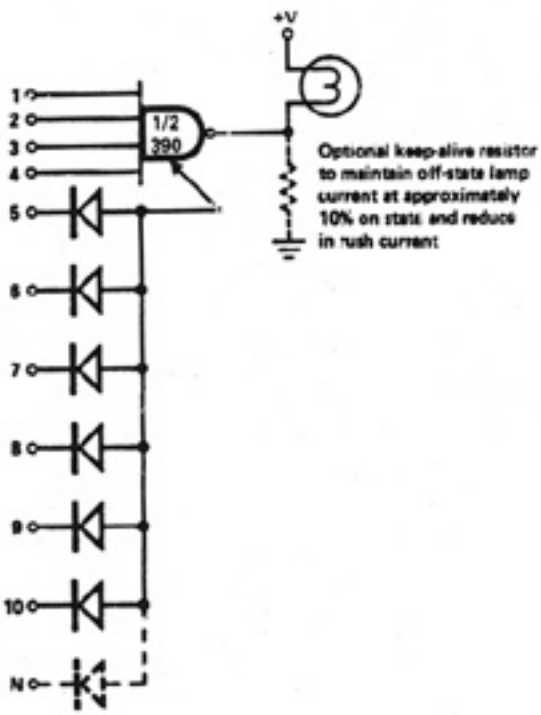
OUTPUT VOLTAGE LOW VS
OUTPUT CURRENT LOW



Typical Applications

Multi-Input Short Circuit Indicator

If any of the N inputs are short circuited to ground the indicator lamp will turn on.



CMOS Super Output Buffer

390 series devices can be used to add extra output drive to CMOS circuitry. With inductive loads a kickback diode is recommended to prevent high voltage surges from damaging the device when it switches high.

