



# Current Drivers

## NH0008/NH0008C high voltage, high current driver

### general description

The NH0008/NH0008C is an integrated high voltage, high current driver, designed to accept standard DTL or TTL input levels and provide a pulsed load of up to 3A from a continuous supply voltage up to 45V. AND inputs are provided with an EXPANDER connection, should additional gating be required.

Since one side of the load is normally grounded, there is less likelihood of false turn-on due to an inadvertent short in the drive line.

The high pulse current capability makes the NH0008/NH0008C ideal for driving nonlinear resistive loads such as incandescent lamps. The

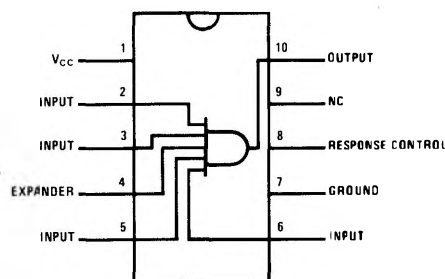
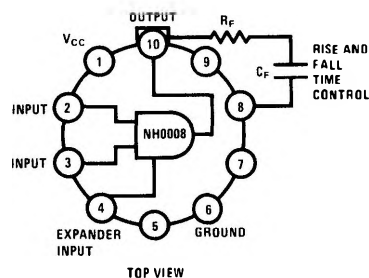
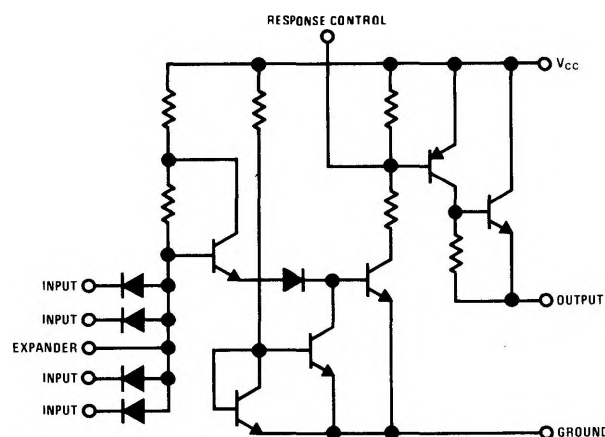
circuit also requires only one power supply for circuit functional operation.

The NH0008 is available in a 10-pin TO-5 package; the NH0008C is also available in a 10-pin TO-5, in addition to a 10-lead molded dual-in-line package.

Some important design features include:

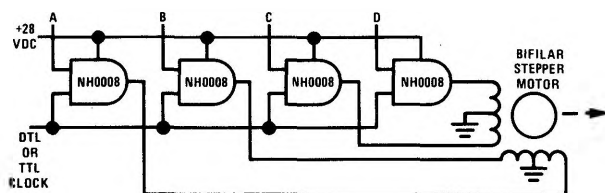
- Operation from a Single +10V to +45V Power Supply.
- Low Standby Power Dissipation of only 35 mW for 28V Power Supply.
- 3.0A, 50 ms, Pulse Current Capability.

### schematic and connection diagrams



### typical application

#### Controller for Closed Loop Stepper Motor



#### Switching Sequence

Step	A	B	C	D
1	1	0	1	0
2	1	0	0	1
3	0	1	0	1
4	0	1	1	0
1	1	0	1	0

To reverse the direction use a 4, 3, 2, 1 sequence

**absolute maximum ratings**

Peak Power Supply Voltage (for 0.1 sec)	60V
Continuous Supply Voltage	45V
Input Voltage	5.5V
Input Extender Current	5.0 mA
Peak Output Current (50 msec On/1 sec Off)	3.0 Amp
Continuous Output Current (See continuous operating curves.)	
Operating Temperature	
NH0008	-55°C to +125°C
NH0008C, NH0008CN	0°C to +70°C
Storage Temperature	-65°C to +150°C

**electrical characteristics** (Note 1)

PARAMETER	CONDITIONS	MIN	TYP (Note 2)	MAX	UNITS
Logical "1" Input Voltage	$V_{CC} = 45V$ to 10V	2.0			V
Logical "0" Input Voltage	$V_{CC} = 45V$ to 10V			0.8	V
Logical "1" Output Voltage	$V_{CC} = 45V$ , $V_{IN} = 2.0V$ , $I_{OUT} = 1.6A$ 50 ms On/1 sec Off	43	43.5		V
Logical "0" Output Voltage	$V_{CC} = 45V$ , $V_{IN} = 0.8V$ , $R_L = 1K$		0.02	0.1	V
Logical "1" Output Voltage	$V_{CC} = 28V$ , $V_{IN} = 2.0V$ , $I_{OUT} = 0.8A$ 50 ms On/1 sec Off	26.5	27.1		V
Logical "0" Input Current	$V_{CC} = 45V$ , $V_{IN} = 0.4V$		0.8	1.0	mA
Logical "1" Input Current	$V_{CC} = 45V$ , $V_{IN} = 2.4V$		0.5	5.0	$\mu A$
	$V_{CC} = 45V$ , $V_{IN} = 5.5V$			100	$\mu A$
"Off" Power Supply Current	$V_{CC} = 45V$ , $V_{IN} = 0V$		1.6	2.0	mA
Rise Time	$V_{CC} = 28V$ , $R_L = 39\Omega$ , $V_{IN} = 5.0V$		0.2		$\mu s$
Fall Time	$V_{CC} = 28V$ , $R_L = 39\Omega$ , $V_{IN} = 5.0V$		3.0		$\mu s$
$T_{ON}$	$V_{CC} = 28V$ , $R_L = 39\Omega$ , $V_{IN} = 5.0V$		0.4		$\mu s$
$T_{OFF}$	$V_{CC} = 28V$ , $R_L = 39\Omega$ , $V_{IN} = 5.0V$		7.0		$\mu s$

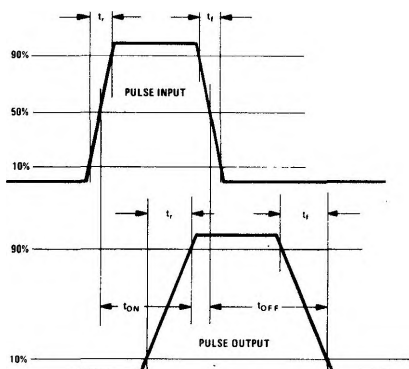
**Note 1:** Unless otherwise specified limits shown apply from -55°C to 125°C for NH0008 and 0°C to 70°C for NH0008C/NH0008CN.

**Note 2:** Typical values are 25°C ambient.

**Note 3:** Power ratings for the TO-5 based on a maximum junction temperature of +175°C and a  $\phi_{JA}$  of 210°C/w.

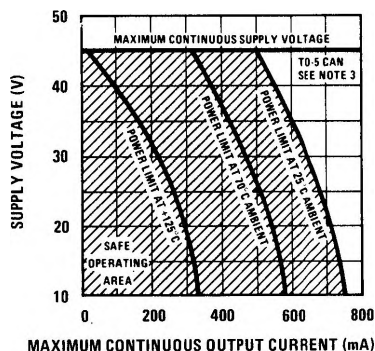
**Note 4:** Power ratings for the NH0008CN Molded DIP based on a maximum junction temperature of 150°C and a thermal resistance of 150°C/w when mounted in a standard DIP socket.

**Note 5:** Power ratings for the NH0008CN Molded DIP based on a maximum junction temperature of 150°C and a thermal resistance of 115°C/w when mounted on a 1/16 inch thick, epoxy-glass board with ten 0.03 inch wide 2 ounce copper conductors.

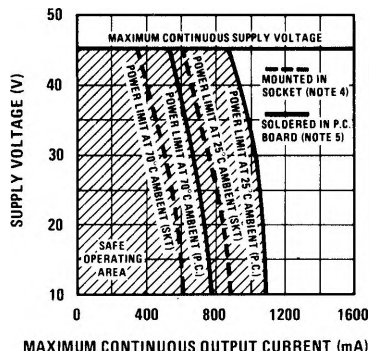
**switching time waveforms**

# typical performance

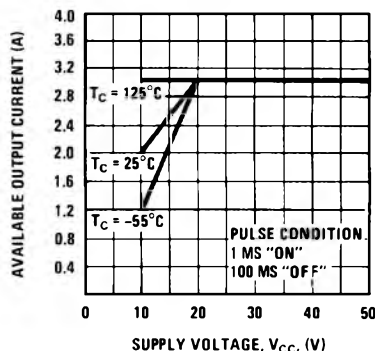
Maximum Continuous Output Current for TO-5 Package



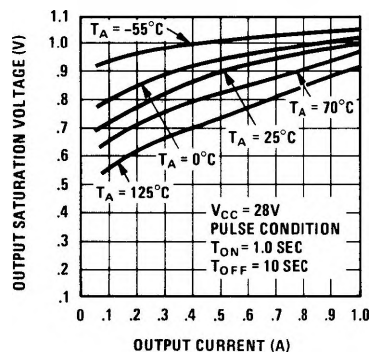
Maximum Continuous Output Current for Molded DIP



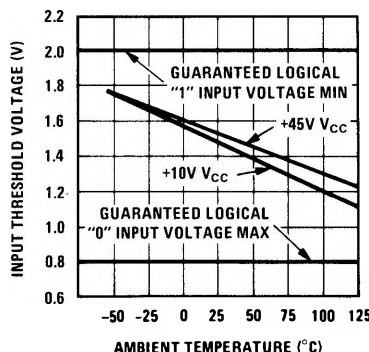
Available Output Current



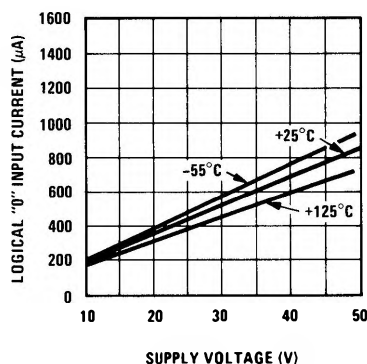
Output Saturation Voltage



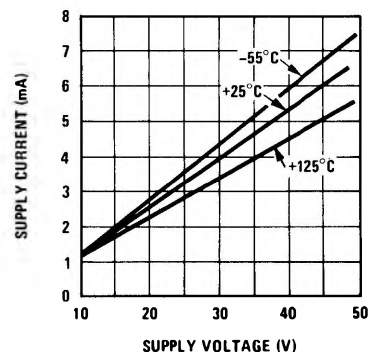
Input Threshold Voltage vs Temperature



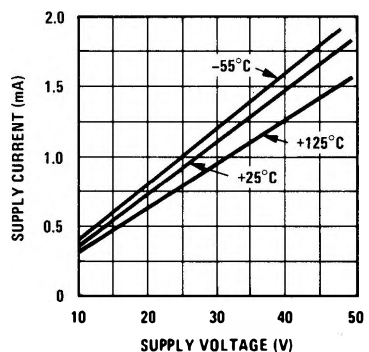
Logical "0" Input Current



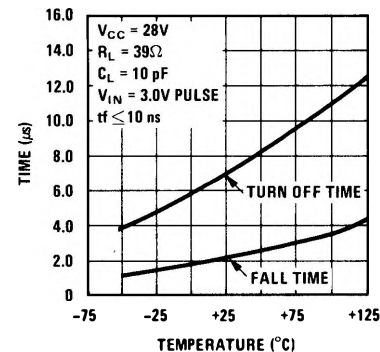
ON Supply Current Drain



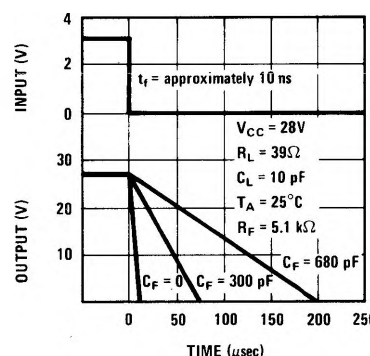
OFF Supply Current Drain



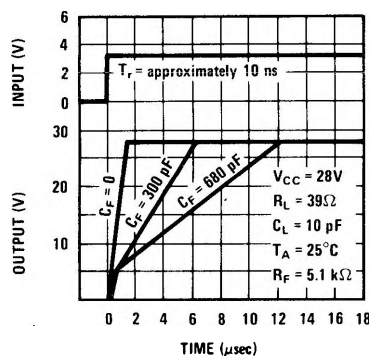
Turn OFF and Fall Times



Turn ON Control



Turn OFF Control



Turn ON and Rise Time

