



Current Drivers

NH0011/NH0011C/NH0011CN

**NH0011 (SH2001)
NH0011C (SH2002)
NH0011CN (SH2002P)**

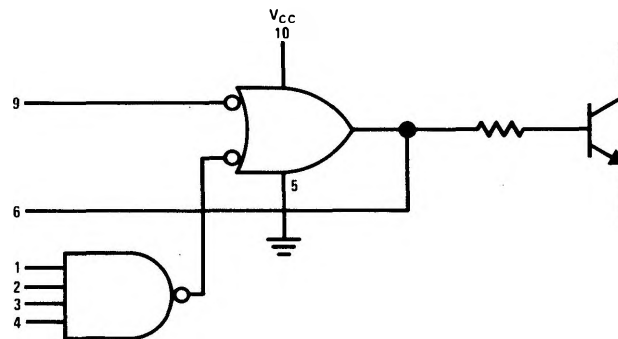
high voltage high current drivers

general description

The NH0011 high voltage, high current driver family consists of hybrid integrated circuits which provide a wide range of variations in temperature range, package, and output current drive capability. A summary of the variations is listed below.

Applications include driving lamps, relays, cores, and other devices requiring several hundred milli-amp currents at voltages up to 40V. Logic flexibility is provided through a 4-input NAND gate, a NOR input and an input which bypasses the gating and connects the base of the output transistor.

logic diagram



NSC DESIGNATION	SH DESIGNATION	PACKAGE	TEMPERATURE RANGE	OUTPUT CURRENT CAPABILITY
NH0011	SH2001	TO-100	-55°C to +125°C	250 mA
NH0011C	SH2002	TO-100	0°C to +70°C	150 mA
NH0011CN	SH2002 P	Silicone DIP	0°C to +70°C	150 mA

absolute maximum ratings

V_{CC}	8V
Collector Voltage (Output)	40V
Input Reverse Current	1.0 mA
Power Dissipation	800 mW
Operating Temperature Range NH0011	-55°C to +125°C
NH0011C, NH0011CN	0°C to +70°C
Storage Temperature	-65°C to 150°C

electrical characteristics NH0011, NH0011C, NH0011CN

TEST NO.	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	SENSE	MIN	MAX
1	V_{IH}	V_{IH}	V_{IH}	V_{IH}	GND		GND	I_{OL1}		V_{CCL}	V_8		V_{OL}
2	V_{IL}				GND		GND	I_{OL1}	V_{IL}	V_{CCL}	V_8		V_{OL}
3	V_{IL}				GND	I_{OL2}				V_{CCL}	V_6		V_{OL2}
4		V_{IL}			GND	I_{OL2}				V_{CCL}	V_6		V_{OL2}
5			V_{IL}		GND	I_{OL2}				V_{CCL}	V_6		V_{OL2}
6				V_{IL}	GND	I_{OL2}				V_{CCL}	V_6		V_{OL2}
7				GND	GND	I_{OL2}			V_{IH}	V_{CCL}	V_6		V_{OL2}
8	V_R	GND	GND	GND	GND					V_{CCH}	I_1		I_R
9	GND	V_R	GND	GND	GND					V_{CCH}	I_2		I_R
10	GND	GND	V_R	GND	GND					V_{CCH}	I_3		I_R
11	GND	GND	GND	V_R	GND					V_{CCH}	I_4		I_R
12					GND				V_R	V_{CCH}	I_9		I_R
13	V_F	V_R	V_R	V_R	GND					V_{CCH}	I_1		$-I_F$
14	V_R	V_F	V_R	V_R	GND					V_{CCH}	I_2		$-I_F$
15	V_R	V_R	V_F	V_R	GND					V_{CCH}	I_3		$-I_F$
16	V_R	V_R	V_R	V_F	GND					V_{CCH}	I_4		$-I_F$
17				GND	GND				V_F	V_{CCH}	I_9		$-I_F$
18					GND		GND			V_{CCL}	V_6	V_{OH}	
19	GND				GND		GND	V_{OX}		V_{CCL}	I_8		I_{OX}
20					GND		GND			V_{PD}	I_{10}		I_{PDH}
21	GND				GND					V_{MAX}	I_{10}		I_{MAX}
22*					GND					V_{PD}			t_{ON}
23*					GND					V_{PD}			t_{OFF}

*See Test Circuits and Waveforms on Page 4.

forcing functions (Note 1) NH0011

PARAMETER	-55°C	+25°C	+125°C	UNITS
V_{CCL}	4.5	4.5	4.5	V
V_{CCH}	5.5	5.5	5.5	V
V_{PD}		5.0		V
V_{MAX}		8.0		V
V_{IL}	1.4	1.1	0.8	V
V_{IH}	2.1	1.9	1.7	V
V_R	4.0	4.0	4.0	V
V_F	0.0	0.0	0.0	V
I_{OL1}	250	250	250	mA
I_{OL2}	8.0	8.0	7.5	mA
V_{OX}	40.0	40.0	40.0	V

Note 1: Temperature Range -55°C to +125°C

forcing functions (Note 2) NH0011C, NH0011CN

PARAMETER	0°C	+25°C	+70°C	UNITS
V _{CCL}	5.00	5.0	5.0	V
V _{CCH}	5.00	5.0	5.0	V
V _{PD}		5.0		V
V _{MAX}		8.0		V
V _{IL}	1.20	1.1	.95	V
V _{IH}	2.00	1.9	1.8	V
V _R	4.00	4.0	4.0	V
V _F	0.45	0.45	0.5	V
I _{OL1}	150	150	150	mA
I _{OL2}	8.0	8.0	7.5	mA
V _{OX}	40.00	40.0	40.0	V

test limits (Note 1) NH0011

PARAMETER	-55°C		+25°C		+125°C		UNITS
	MIN	MAX	MIN	MAX	MIN	MAX	
V _{OL1}		0.45		0.4		0.45	V
V _{OL2}		0.45		0.4		0.45	V
V _{OH}	2.20		2.00		1.80		V
I _R				2.0		5.0	μA
-I _F		1.60		1.6		1.5	mA
I _{OX}				5.0		200	μA
I _{PDH}				30.6			mA
I _{MAX}				29.6			mA
t _{ON}				160			ns
t _{OFF}				220			ns

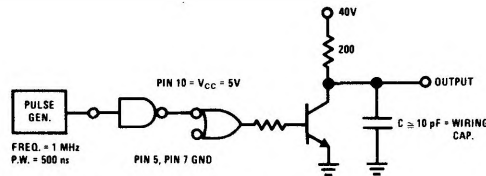
test limits (Note 2) NH0011C, NH0011CN

PARAMETER	0°C		+25°C		+70°C		UNITS
	MIN	MAX	MIN	MAX	MIN	MAX	
V _{OL1}		0.45		0.45		0.5	V
V _{OL2}		0.45		0.45		0.5	V
V _{OH}	2.05		1.95		1.85		V
I _R				5.0		10.0	μA
-I _F		1.40		1.4		1.35	mA
I _{OX}				5.0		200	μA
I _{PDH}				30.6			mA
I _{MAX}				34.0			mA

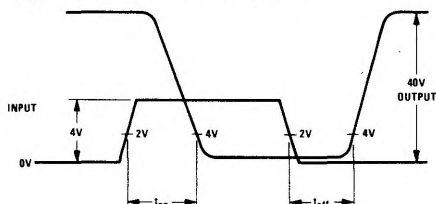
Note 1: Temperature Range -55°C to +125°C

Note 2: Temperature Range 0°C to +70°C

switching time test circuit



switching time waveform



Typical Switching Times

