Peripheral/Power Drivers

DH0011*(SH2001)
DH0011C*(SH2002)
DH0011CN*(SH2002P)

high voltage high current drivers

general description

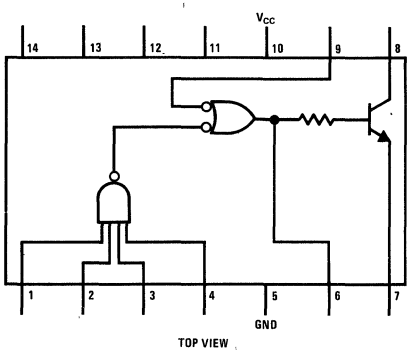
The DH0011 high voltage, high current driver family consists of hybrid integrated circuits which provide a wide range of variations in temperature range, package, and output current drive capability. A summary of the variations is listed below.

Applications include driving lamps, relays, cores, and other devices requiring several hundred milliamp 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.

*Previously called NH0011, NH0011C, NH0011CN

logic diagram

Dual-In-Line Package*



TOP VIEW

ordering information

NSC DESIGNATION	SH DESIGNATION	SEE PACKAGE	TEMPERATURE RANGE	OUTPUT CURRENT CAPABILITY
DH0011H	SH2001	12	–55°C to +125°C	250 mA
DH0011CH	SH2002	12	0°C to +70°C	150 mA
DH0011CN	SH2002P	22	0°C to +70°C	150 mA

*Metal can pin numbers are the same as the dual-in-line pin numbers.

absolute maximum ratings

V_{CC}		8V
Collector Voltage (Output)		40V
Input Reverse Current		1.0 mA
Power Dissipation		800 mW
Operating Temperature Range	DH0011H	−55°C to +125°C
	DH0011CH/DH0011CN	0°C to +70°C
Storage Temperature		−65°C to 150°C

electrical characteristics

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) DH0011

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) DH0011C, DH0011CN

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) DH0011

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

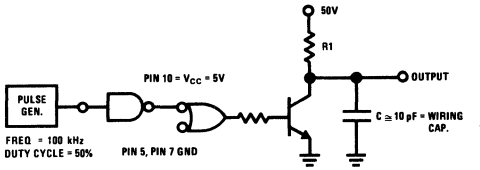
test limits (Note 2) DH0011C, DH0011CN

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

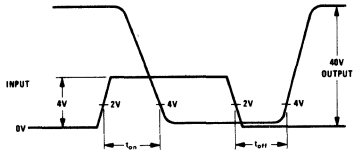
Note 1: Temperature Range −55°C to +125°C

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

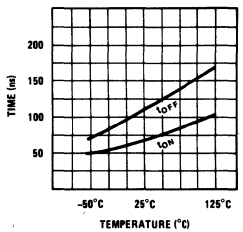
switching time test circuit



switching time waveforms



Typical Switching Times



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