DESCRIPTION

The UDN 5711 series of dual peripheral drivers have high voltage (80V) and high current (300mA) NPN output transistors. In addition an overshoot clamp diode is provided for each output collector for use when switching inductive loads.

A choice of AND, NAND, OR and NOR logic functions comprise the four device types in the series.

In use care must be taken to insure that the absolute maximum junction temperature rating is not exceeded due to excessive power dissipation; particularly when switching capacitive or inductive loads at high frequencies.

FEATURES

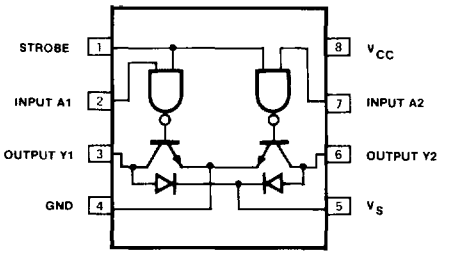
- **Four logic functions**
- **DTL/TTL/PMOS/CMOS compatible inputs**
- **Low input current loading**
- **80V output breakdown**

APPLICATIONS

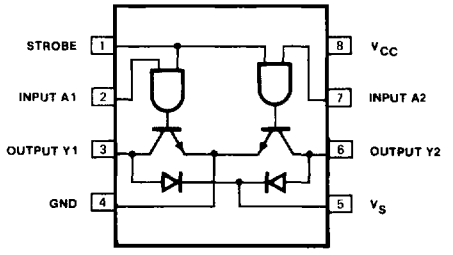
- **Relay drivers**
- ***Lamp drivers***
- **LED drivers**
- **High current triac trigger**

PIN CONFIGURATIONS

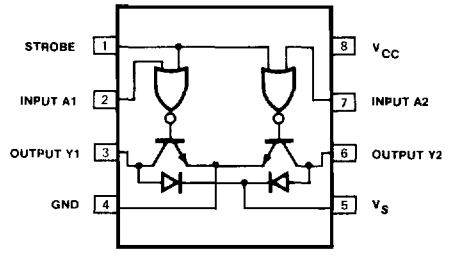
DUAL AND DRIVER
UDN 5711



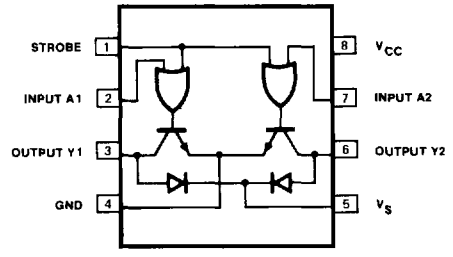
DUAL NAND DRIVER
UDN 5712



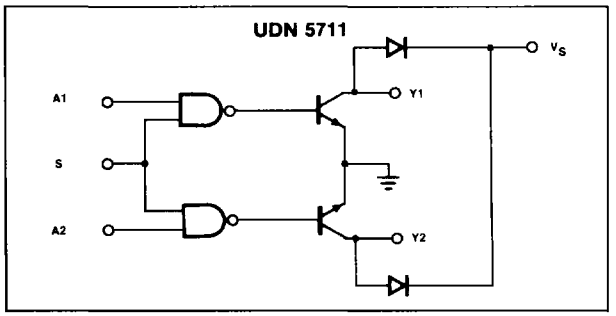
DUAL OR DRIVER
UDN 5713

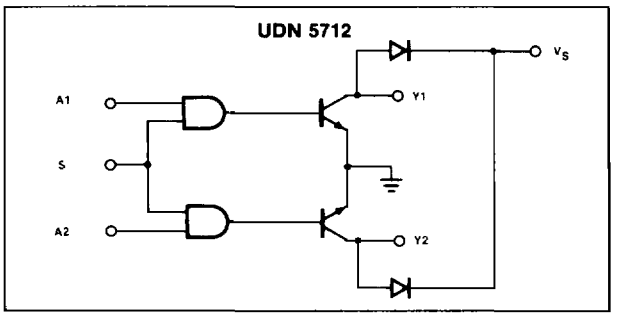


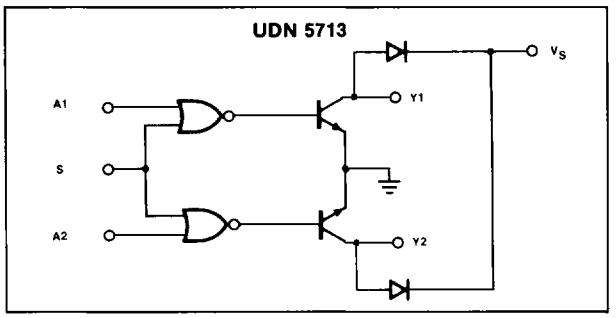
DUAL NOR DRIVER
UDN 5714

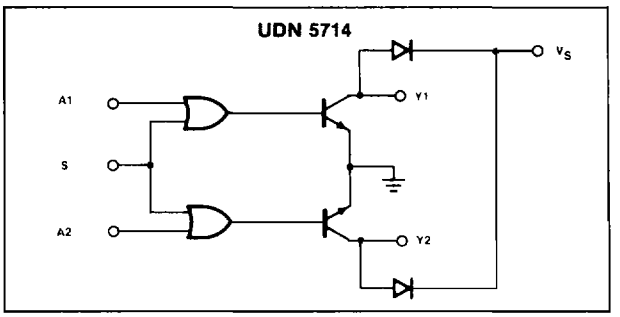


BLOCK DIAGRAMS

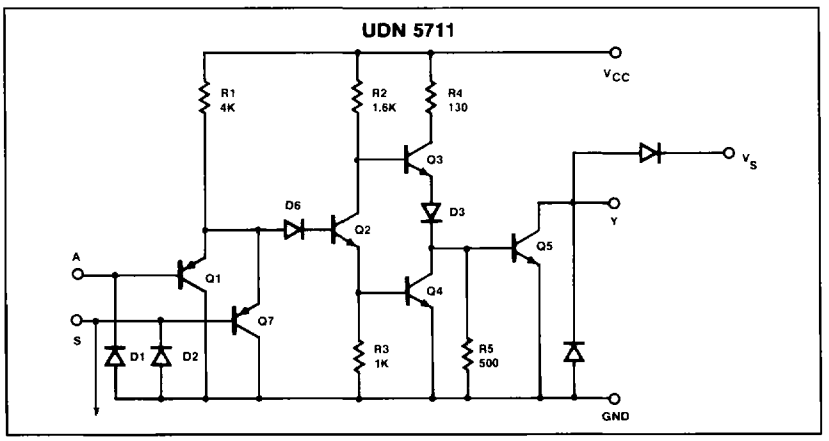


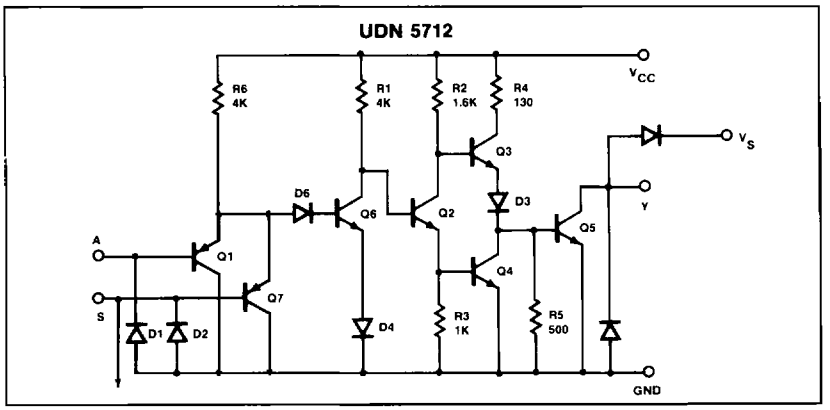






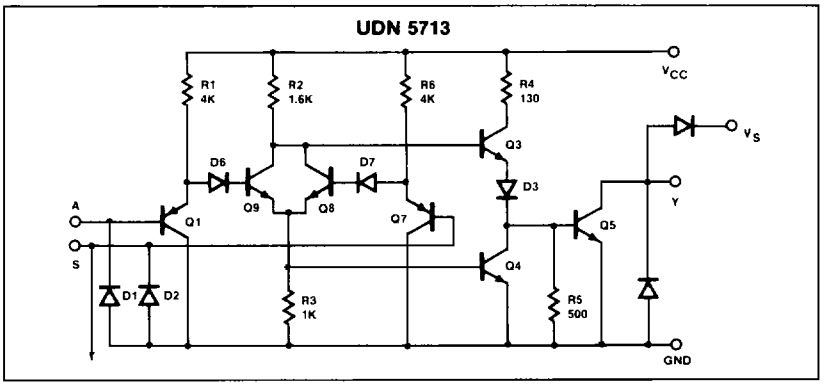
EQUIVALENT CIRCUIT

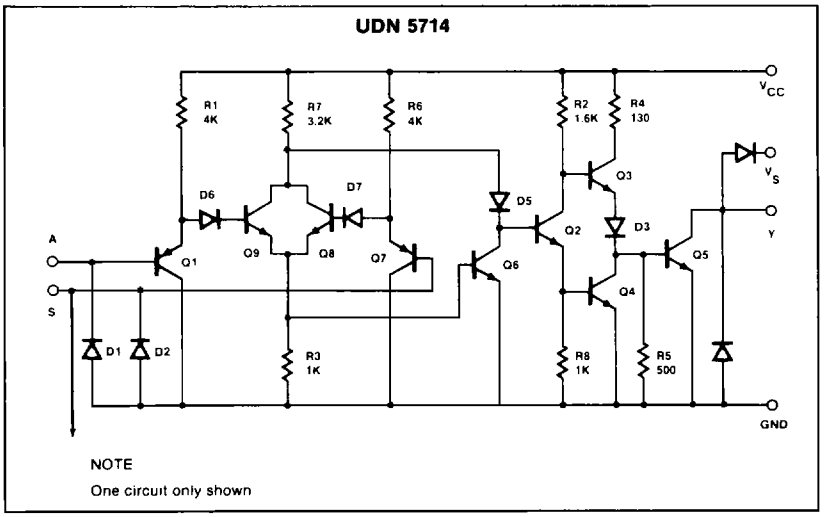




7

EQUIVALENT CIRCUIT (Cont'd)





NOTE
One circuit only shown

ABSOLUTE MAXIMUM RATINGS at 25°C unless otherwise stated.

	PARAMETER	RATING	UNIT
V_{CC}	Supply voltage		
	Continuous	7	V
	Momentary (1 second)	15	V
V_{IN}	Input voltage	30	V
V_{OUT}	Output voltage (off state)	80	V
I_{OUT}	Output current	600	mA
V_S	Suppression diode reverse voltage	80	V
I_S	Suppression diode forward current	600	mA
P_D	Power dissipation*	750	mW
T_A	Operating temperature range	0 to 70	°C
T_{stg}	Storage temperature range	-65 to 150	°C
	Lead soldering temperature (10 seconds)	300	°C

NOTE
*The maximum junction is 150°C. Derate at 162°C/watt above 25°C.

DC ELECTRICAL CHARACTERISTICS $0°C \le T_A \le 85°C$ unless otherwise specified.

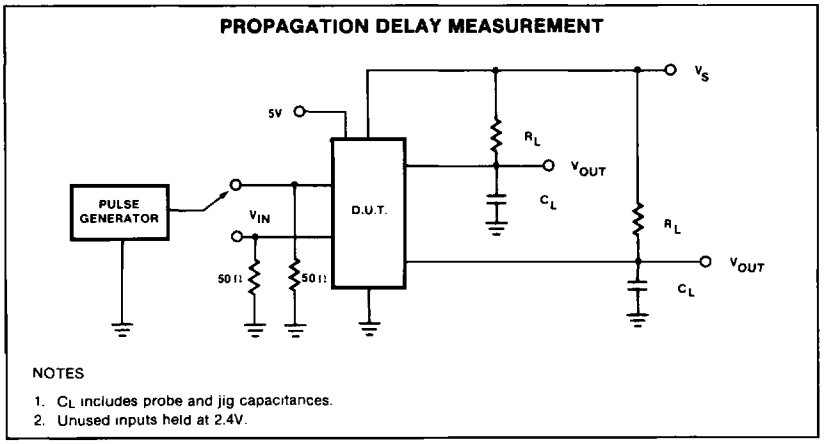
PARAMETER		TEST CONDITIONS	LIMITS			UNIT
			Min	Typ	Max	
V_{CC}	Supply voltage range		4.75	5.00	5.25	V
V_{IH}	Logical "1" input voltage	V_{CC} = 4.75V	2.0			V
V_{IL}	Logical "0" input voltage	V_{CC} = 4.75V			0.8	V
V_I	Input clamp voltage	V_{CC} = 4.75V, T_A = 25°C, I_I = -12mA		-1.2	-1.5	V
I_{IH}	Logical "1" input current except stobe	V_{CC} = 5.25V, V_{IN} = 30V, V_{strobe} = 0V		1	10	μA
I_{IH}	Logical "1" input current at strobe	V_{CC} = 5.25V, V_{strobe} = 30V, V_{IN} = 0V		2	20	μA
I_{IL}	Logical "0" input current except strobe	V_{CC} = 5.25V, V_{IN} = 0.4V, V_{strobe} = 30V		-50	-100	μA
I_{IL}	Logical "0" input current at strobe	V_{CC} = 5.25V, V_{strobe} = 0.4V, V_{IN} = 30V		-100	-200	μA
I_{OUT}	Output current	UDN 5711/5713 - V_{IN} = 0.8V UDN 5712/5714 - V_{IN} = 2.0V			300	mA
I_{OH}	Output leakage current	V_{IN} = 2.0V (UDN 5711/5713) V_{IN} = 0.8V (UDN 5712/5714) V_{OH} = 80V, V_{CC} = 5.25V V_{CC} = open			100 100	μA μA
V_{OL}	Output low voltage	V_{IN} = 0.8V (UDN 5711/5713) V_{IN} = 2.0V (UDN 5712/5714) V_{CC} = 4.75V, I_{OL} = 150mA I_{OL} = 300mA		0.35 0.50	0.50 0.70	V V
I_{LD}	Diode leakage current	V_{IN} = 0V (UDN 5711/5713) V_{IN} = 5V (UDN 5712/5714) V_{CC} = 5V, V_{LD} = 80V, T_A = 25°C			200	μA
V_{FD}	Diode forward voltage	I_{FD} = 300mA, T_A = 25°C		1.5	1.75	V
I_{CCH}	Supply current with outputs high	V_{CC} = 5.25V, T_A = 25°C UDN 5711 V_{IN} = 5V UDN 5712 V_{IN} = 0V UDN 5713 V_{IN} = 5V UDN 5714 V_{IN} = 0V		8 12 8 12	12 15 13 15	mA mA mA mA
I_{CCL}	Supply current with outputs low	V_{CC} = 5.25V, T_A = 25°C UDN 5711 V_{IN} = 0V UDN 5712 V_{IN} = 5V UDN 5713 V_{IN} = 0V UDN 5714 V_{IN} = 5V		35 40 36 40	49 53 50 50	mA mA mA mA

AC ELECTRICAL CHARACTERISTICS

PARAMETER		TEST CONDITIONS	LIMITS			UNIT
			Min	Typ	Max	
T_{PLH}	Propagation delay time, low-to-high output	V_S = 70V, R_L = 465Ω, C_L = 15pF			500	ns
T_{PHL}	Propagation delay time, high-to-low output	V_S = 70V, R_L = 465Ω, C_L = 15pF			750	ns

7

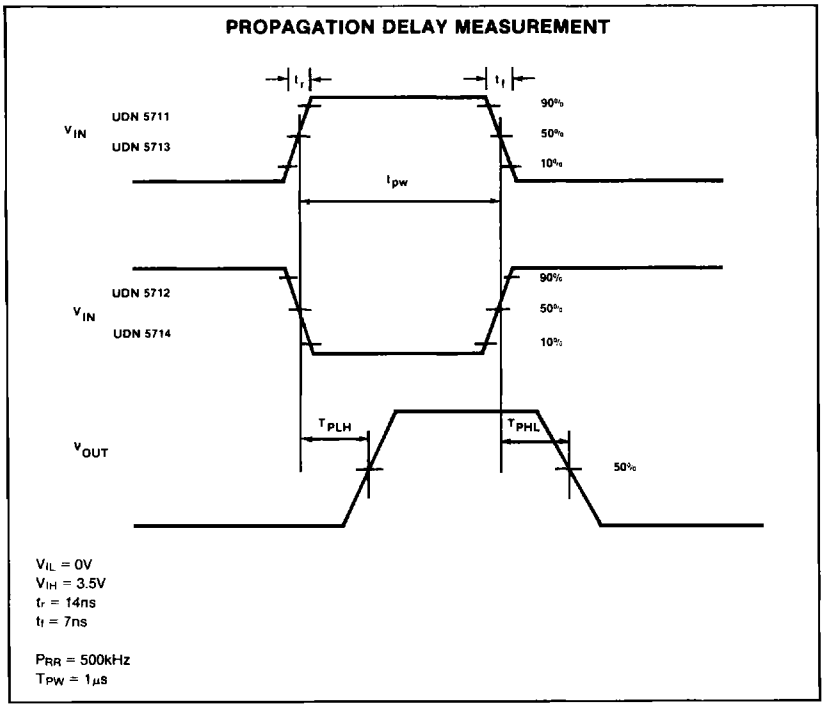
TEST LOAD CIRCUITS



NOTES

1. C_L includes probe and jig capacitances.
2. Unused inputs held at 2.4V.

VOLTAGE WAVEFORMS



V_{IL} = 0V
V_{IH} = 3.5V
t_r = 14ns
t_f = 7ns

P_{RR} = 500kHz
T_{PW} = 1μs