

## SERIES UDN-5700A

### QUAD 2-INPUT PERIPHERAL/POWER DRIVERS

#### —Transient-Protected Outputs

#### FEATURES:

- Four Logic Types
- DTL/TTL/PMOS/CMOS Compatible Inputs
- Low Input Current
- 300 mA Continuous Output Current
- Standoff Voltage of 80 V

#### Description

THESE 16-LEAD QUAD 2-input peripheral and power drivers are bipolar monolithic integrated circuits containing AND, NAND, OR, or NOR logic gates, high-current switching transistors, and transient-suppression diodes on the same chip. The four output transistors are capable of simultaneously sinking 300 mA continuously at ambient temperatures of up to +70°C. In the OFF state, these drivers will withstand at least 80 V.

#### Applications

Series UDN-5700A quad drivers are ideally suited for interface between low-level or high-level logic and high-current/high-voltage loads. Typical applications include driving peripheral loads such as incandescent lamps, light-emitting diodes, memories, and heaters.

The integral transient-suppression diodes allow their use with inductive loads such as relays, solenoids, or stepping motors without the need of discrete diodes. For non-inductive loads, the diode-common bus can be used for a convenient lamp test.

#### ABSOLUTE MAXIMUM RATINGS

Supply Voltage, $V_{CC}$ .....	7.0 V
Input Voltage, $V_{IN}$ .....	30 V
Output Off-State Voltage, $V_{OFF}$ .....	80 V
Output On-State Sink Current, $I_{ON}$ .....	600 mA
Suppression Diode Off-State Voltage, $V_{OFF}$ .....	80 V
Suppression Diode On-State Current, $I_{ON}$ .....	600 mA
Power Dissipation, $P_D$ .....	2.0 W
Each Driver .....	0.8 W
Derating Factor Above 25°C .....	16.7 mW/°C or 60°C/W
Operating Free-Air Temperature Range, $T_A$ .....	-20°C to +85°C
Storage Temperature Range, $T_S$ .....	-55°C to +150°C



**RECOMMENDED OPERATING CONDITIONS**

	Min.	Nom.	Max.	Units
Supply Voltage ( $V_{CC}$ ):	4.75	5.0	5.25	V
Operating Temperature Range	0	+25	+85	°C
Current into any output (ON state)			300	mA

**INPUT PULSE CHARACTERISTICS**

$V_{in(0)} = 0V$	$t_r = 7ns$	$t_p = 1\mu s$
$V_{in(1)} = 3.5V$	$t_f = 14ns$	PRR = 500kHz

**ELECTRICAL CHARACTERISTICS over operating temperature range (unless otherwise noted)**

Characteristic	Symbol	Test Conditions					Limits			Units	Notes
		Temp.	$V_{CC}$	Driven Input	Other Input	Output	Min.	Typ.	Max.		
"1" Input Voltage	$V_{in(1)}$		MIN				2.0			V	
"0" Input Voltage	$V_{in(0)}$		MIN					0.8		V	
"0" Input Current	$I_{in(0)}$		MAX	0.4 V	30 V			-50	-100	$\mu A$	2
"1" Input Current	$I_{in(1)}$		MAX	30 V	0 V				10	$\mu A$	2
Input Clamp Voltage	$V_I$		MIN	-12 mA					-1.5	V	

**SWITCHING CHARACTERISTICS at  $V_{CC} = 5.0V$ ,  $T_A = 25^\circ C$**

Characteristic	Symbol	Test Conditions	Limits			Units	Notes
			Min.	Typ.	Max.		
Turn-on Delay Time	$t_{pdo}$	$V_S = 70V$ , $R_L = 465\Omega$ (10 Watts) $C_L = 15pF$		200	500	ns	3
Turn-off Delay Time	$t_{pd1}$	$V_S = 70V$ , $R_L = 465\Omega$ (10 Watts) $C_L = 15pF$		300	750	ns	3

**NOTES:**

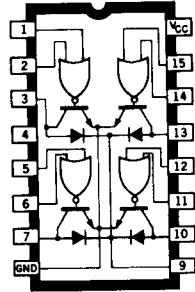
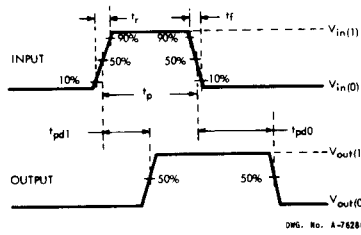
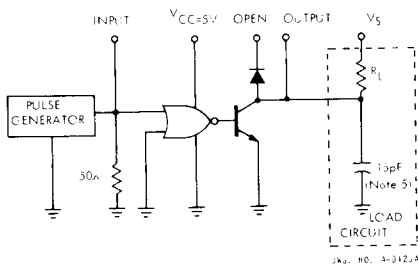
1. Typical values are at  $V_{CC} = 5.0V$ ,  $T_A = 25^\circ C$ .
2. Each input tested separately.
3. Voltage values shown in the test circuit waveforms are with respect to network ground terminal.
4. Capacitance values specified include probe and test fixture capacitance.

**SERIES UDN-5700A  
QUAD PERIPHERAL/POWER DRIVERS**

**Type UDN-5703A Quad OR Driver**

**ELECTRICAL CHARACTERISTICS over operating temperature range (unless otherwise noted)**

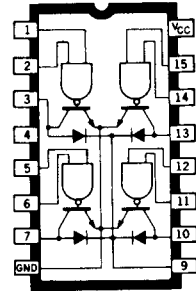
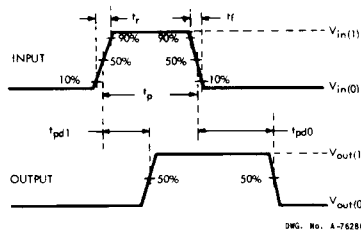
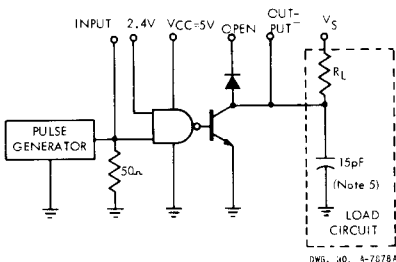
Characteristic	Symbol	Test Conditions					Limits			Notes	
		Temp.	V <sub>CC</sub>	Driven Input	Other Input	Output	Min.	Typ.	Max.		Units
"1" Output Reverse Current	I <sub>off</sub>		MIN	2.0 V	0 V	80 V			100	μA	
			OPEN	2.0 V	0 V	80 V			100	μA	
"0" Output Voltage	V <sub>on</sub>		MIN	0.8 V	0.8 V	150 mA	0.35	0.5	V		
			MIN	0.8 V	0.8 V	300 mA	0.5	0.7	V		
Diode Leakage Current	I <sub>LK</sub>	NOM	NOM	0 V	0 V	OPEN			200	μA	3
Diode Forward Voltage Drop	V <sub>D</sub>	NOM	NOM	V <sub>CC</sub>	V <sub>CC</sub>		1.5	1.75	V		4
"1" Level Supply Current	I <sub>CC(1)</sub>	NOM	MAX	5.0 V	5.0 V		16	25	mA		1, 2
"0" Level Supply Current	I <sub>CC(0)</sub>	NOM	MAX	0 V	0 V		72	100	mA		1, 2



**Type UDN-5706A Quad AND Driver**

**ELECTRICAL CHARACTERISTICS over operating temperature range (unless otherwise noted)**

Characteristic	Symbol	Test Conditions					Limits			Notes	
		Temp.	V <sub>CC</sub>	Driven Input	Other Input	Output	Min.	Typ.	Max.		Units
"1" Output Reverse Current	I <sub>off</sub>		MIN	2.0 V	2.0 V	80 V			100	μA	
			OPEN	2.0 V	2.0 V	80 V			100	μA	
"0" Output Voltage	V <sub>on</sub>		MIN	0.8 V	V <sub>CC</sub>	150 mA	0.35	0.5	V		
			MIN	0.8 V	V <sub>CC</sub>	300 mA	0.5	0.7	V		
Diode Leakage Current	I <sub>LK</sub>	NOM	NOM	0 V	0 V	OPEN			200	μA	3
Diode Forward Voltage Drop	V <sub>D</sub>	NOM	NOM	V <sub>CC</sub>	V <sub>CC</sub>		1.5	1.75	V		4
"1" Level Supply Current	I <sub>CC(1)</sub>	NOM	MAX	5.0 V	5.0 V		16	24	mA		1, 2
"0" Level Supply Current	I <sub>CC(0)</sub>	NOM	MAX	0 V	0 V		70	98	mA		1, 2



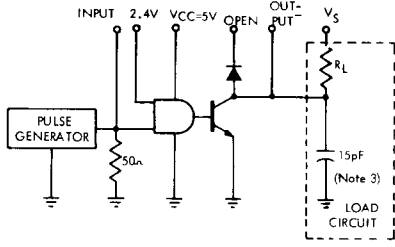
**NOTES:**

1. Typical values are at V<sub>CC</sub> = 5.0 V, T<sub>A</sub> = 25°C.
2. Per package.
3. Diode leakage current measured at V<sub>B</sub> = V<sub>off(min)</sub>.
4. Diode forward voltage drop measured at I<sub>F</sub> = 300 mA.

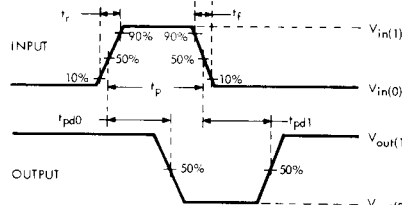
## Type UDN-5707A Quad NAND Driver

**ELECTRICAL CHARACTERISTICS** over operating temperature range (unless otherwise noted)

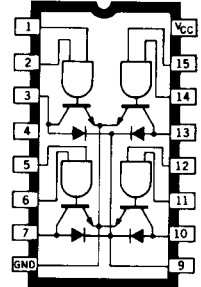
Characteristic	Symbol	Test Conditions					Limits			Notes	
		Temp.	V <sub>CC</sub>	Driven Input	Other Input	Output	Min.	Typ.	Max.		Units
"1" Output Reverse Current	I <sub>off</sub>		MIN	0.8 V	V <sub>CC</sub>	80 V			100	μA	
			OPEN	0.8 V	V <sub>CC</sub>	80 V			100	μA	
"0" Output Voltage	V <sub>on</sub>		MIN	2.0 V	2.0 V	150 mA	0.35	0.5		V	
			MIN	2.0 V	2.0 V	300 mA	0.5	0.7		V	
Diode Leakage Current	I <sub>LK</sub>	NOM	NOM	V <sub>CC</sub>	V <sub>CC</sub>	OPEN			200	μA	3
Diode Forward Voltage Drop	V <sub>D</sub>	NOM	NOM	0 V	0 V		1.5	1.75		V	4
"1" Level Supply Current	I <sub>CC(1)</sub>	NOM	MAX	0 V	0 V		24	30		mA	1, 2
"0" Level Supply Current	I <sub>CC(0)</sub>	NOM	MAX	5.0 V	5.0 V		80	106		mA	1, 2



DWG. NO. A-7809A



DWG. NO. A-7900A

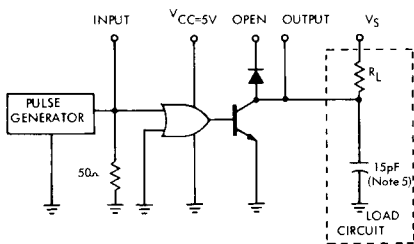


DWG. NO. A-9867

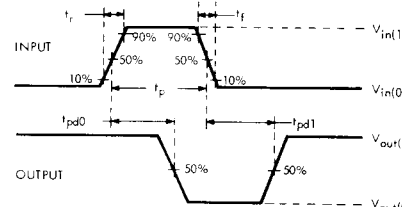
## Type UDN-5733A Quad NOR Driver

**ELECTRICAL CHARACTERISTICS** over operating temperature range (unless otherwise noted)

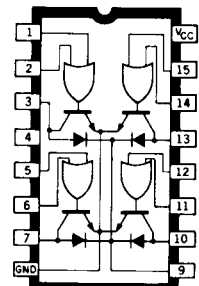
Characteristic	Symbol	Test Conditions					Limits			Notes	
		Temp.	V <sub>CC</sub>	Driven Input	Other Input	Output	Min.	Typ.	Max.		Units
"1" Output Reverse Current	I <sub>off</sub>		MIN	0.8 V	0.8 V	80 V			100	μA	
			OPEN	0.8 V	0.8 V	80 V			100	μA	
"0" Output Voltage	V <sub>on</sub>		MIN	2.0 V	0 V	150 mA	0.35	0.5		V	
			MIN	2.0 V	0 V	300 mA	0.5	0.7		V	
Diode Leakage Current	I <sub>LK</sub>	NOM	NOM	V <sub>CC</sub>	V <sub>CC</sub>	OPEN			200	μA	3
Diode Forward Voltage Drop	V <sub>D</sub>	NOM	NOM	0 V	0 V		1.5	1.75		V	4
"1" Level Supply Current	I <sub>CC(1)</sub>	NOM	MAX	0 V	0 V		24	30		mA	1, 2
"0" Level Supply Current	I <sub>CC(0)</sub>	NOM	MAX	5.0 V	5.0 V		80	100		mA	1, 2



DWG. NO. A-3135A



DWG. NO. A-7900A



DWG. NO. A-9868

**NOTES:**

1. Typical values are at V<sub>CC</sub> = 5.0 V, T<sub>A</sub> = 25°C.
2. Per package.
3. Diode leakage current measured at V<sub>R</sub> = V<sub>off(min)</sub>.
4. Diode forward voltage drop measured at I<sub>f</sub> = 300 mA.