

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

SERIES UDN-5700A
QUAD PERIPHERAL/POWER DRIVERS

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

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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		μA	2
"1" Input Current	$I_{in(1)}$		MAX	30 V	0 V			10		μA	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_{pd0}	$V_S = 70V$, $R_L = 465\Omega$ (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:

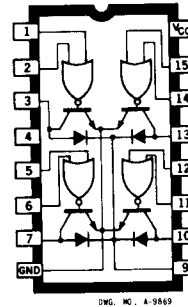
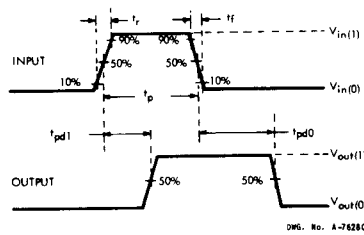
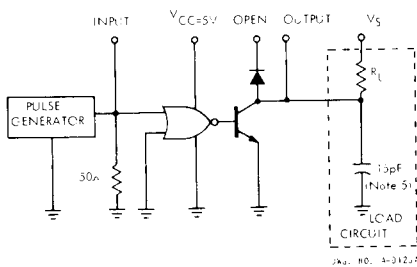
1. Typical values are at $V_{CC} = 5.0V$, $T_A = 25^\circ C$.
2. Each input tested separately.
3. Voltage values shown in the test circuit waveforms are with respect to network ground terminal.
4. Capacitance values specified include probe and test fixture capacitance.

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

Type UDN-5703A Quad OR Driver

ELECTRICAL CHARACTERISTICS over operating temperature range (unless otherwise noted)

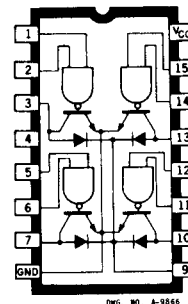
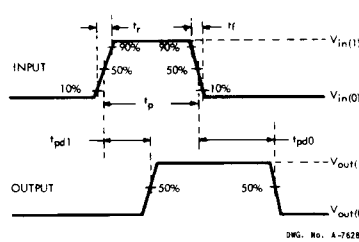
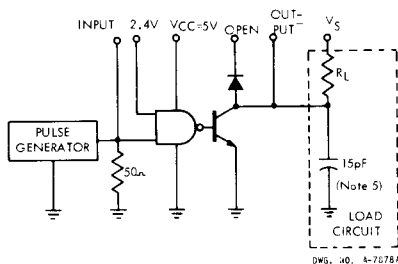
Characteristic	Symbol	Test Conditions					Limits			Units	Notes
		Temp.	V _{CC}	Driven Input	Other Input	Output	Min.	Typ.	Max.		
"1" Output Reverse Current	I _{off}		MIN	2.0 V	0 V	80 V			100	μA	
			OPEN	2.0 V	0 V	80 V			100	μA	
"0" Output Voltage	V _{on}		MIN	0.8 V	0.8 V	150 mA	0.35	0.5		V	
			MIN	0.8 V	0.8 V	300 mA	0.5	0.7		V	
Diode Leakage Current	I _{LK}	NOM	NOM	0 V	0 V	OPEN			200	μA	3
Diode Forward Voltage Drop	V _D	NOM	NOM	V _{CC}	V _{CC}		1.5	1.75		V	4
"1" Level Supply Current	I _{CC(1)}	NOM	MAX	5.0 V	5.0 V		16	25		mA	1, 2
"0" Level Supply Current	I _{CC(0)}	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 _{CC}	Driven Input	Other Input	Output	Min.	Typ.	Max.		
"1" Output Reverse Current	I _{off}		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 _{on}		MIN	0.8 V	V _{CC}	150 mA	0.35	0.5		V	
			MIN	0.8 V	V _{CC}	300 mA	0.5	0.7		V	
Diode Leakage Current	I _{LK}	NOM	NOM	0 V	0 V	OPEN			200	μA	3
Diode Forward Voltage Drop	V _D	NOM	NOM	V _{CC}	V _{CC}		1.5	1.75		V	4
"1" Level Supply Current	I _{CC(1)}	NOM	MAX	5.0 V	5.0 V		16	24		mA	1, 2
"0" Level Supply Current	I _{CC(0)}	NOM	MAX	0 V	0 V		70	98		mA	1, 2



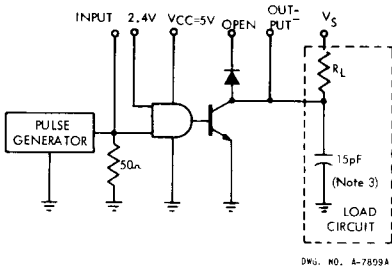
NOTES:

1. Typical values are at V_{CC} = 5.0 V, T_A = 25°C.
2. Per package.
3. Diode leakage current measured at V_R = V_{off(min)}.
4. Diode forward voltage drop measured at I_F = 300 mA.
5. Capacitance values specified include probe and test fixture capacitance.

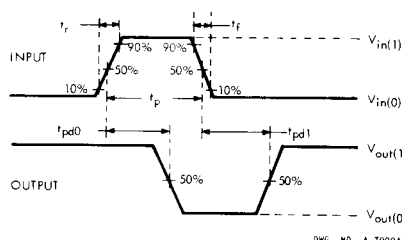
Type UDN-5707A Quad NAND Driver

ELECTRICAL CHARACTERISTICS over operating temperature range (unless otherwise noted)

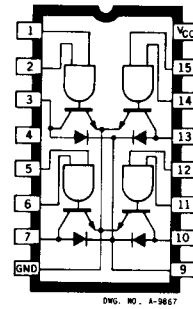
Characteristic	Symbol	Test Conditions					Limits				Notes
		Temp.	V _{CC}	Driven Input	Other Input	Output	Min.	Typ.	Max.	Units	
"1" Output Reverse Current	I _{off}		MIN	0.8 V	V _{CC}	80 V			100	μA	
			OPEN	0.8 V	V _{CC}	80 V			100	μA	
"0" Output Voltage	V _{on}		MIN	2.0 V	2.0 V	150 mA	0.35	0.5	V		
	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



DWG. NO. A-7899A



DWG. NO. A-7900A



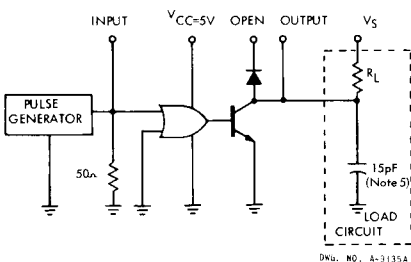
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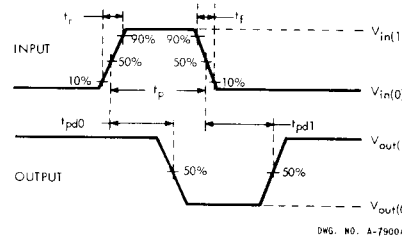
Type UDN-5733A Quad NOR Driver

ELECTRICAL CHARACTERISTICS over operating temperature range (unless otherwise noted)

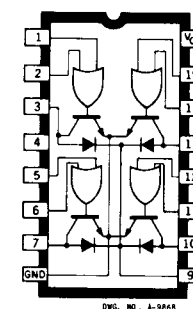
Characteristic	Symbol	Test Conditions					Limits				Notes
		Temp.	V _{CC}	Driven Input	Other Input	Output	Min.	Typ.	Max.	Units	
"1" Output Reverse Current	I _{off}		MIN	0.8 V	0.8 V	80 V			100	μA	
			OPEN	0.8 V	0.8 V	80 V			100	μA	
"0" Output Voltage	V _{on}		MIN	2.0 V	0 V	150 mA	0.35	0.5	V		
			MIN	2.0 V	0 V	300 mA	0.5	0.7	V		
Diode Leakage Current	I _{LK}	NOM	NOM	V _{CC}	V _{CC}	OPEN		200	μA	3	
Diode Forward Voltage Drop	V _D	NOM	NOM	0 V	0 V		1.5	1.75	V	4	
"1" Level Supply Current	I _{CC(1)}	NOM	MAX	0 V	0 V		24	30	mA	1, 2	
"0" Level Supply Current	I _{CC(0)}	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_{CC} = 5.0 V, T_A = 25°C.
2. Per package.
3. Diode leakage current measured at V_R = V_{off(min)}.
4. Diode forward voltage drop measured at I_F = 300 mA.
5. Capacitance values specified include probe and test fixture capacitance.