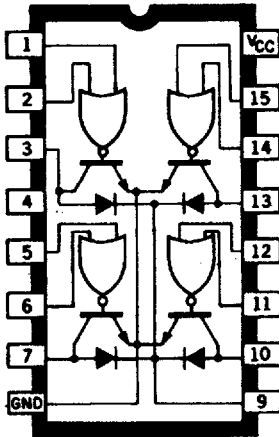


# 5703 AND 5706

29306.1B

## QUAD 2-INPUT PERIPHERAL/POWER DRIVERS —TRANSIENT-PROTECTED OUTPUTS

UDQ5703A



Dwg. No. A-9869

### ABSOLUTE MAXIMUM RATINGS at $T_A = +25^\circ\text{C}$

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
Operating Free-Air Temperature Range, $T_A$ .....	$-40^\circ\text{C}$ to $+85^\circ\text{C}$
Storage Temperature Range, $T_S$ .....	$-55^\circ\text{C}$ to $+150^\circ\text{C}$

\*Derate at the rate of 16.7 mW/°C above  
 $T_A = +25^\circ\text{C}$

These 16-lead quad 2-input peripheral/power drivers are bipolar monolithic integrated circuits containing AND or OR 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  $+70^\circ\text{C}$ . In the OFF state, these drivers will withstand at least 80 V.

Series UDQ5700A 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.

Both devices are furnished in 16-pin DIP packages with copper leadframes for improved thermal characteristics.

### FEATURES

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

Always order by complete part number:

Part Number	Description
UDQ5703A	Quad OR Driver
UDQ5706A	Quad AND Driver

# 5703 AND 5706 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	-40	+25	+85	°C
Current into any output (ON state)	—	—	300	mA

## 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" 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	$V_{LK}$	—	MIN	-12 mA	—	—	—	—	-1.5	V	—

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

Characteristic	Symbol	Test Conditions	Limits				Notes
			Min.	Typ.	Max.	Units	
Turn-on Delay Time	$t_{pd0}$	$V_S = 70$ V, $R_L = 465$ $\Omega$ (10 Watts), $C_I = 15$ pF	—	200	—	ns	3
Turn-off Delay Time	$t_{pd1}$	$V_S = 70$ V, $R_L = 465$ $\Omega$ (10 Watts), $C_L = 15$ pF	—	300	—	ns	3

- NOTES: 1. Typical values are at  $V_{CC} = 5.0$  V,  $T_A = 25^\circ$  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.

## INPUT PULSE CHARACTERISTICS

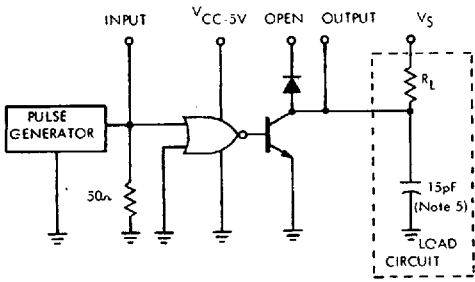
$V_{IN(0)} = 0$ V	$t_f = 7$ ns	$t_p = 1$ $\mu$ s
$V_{IN(1)} = 3.5$ V	$t_r = 14$ ns	PRR = 500 kHz

# 5703 AND 5706 QUAD PERIPHERAL/POWER DRIVERS

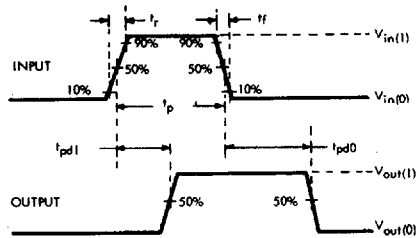
## UDQ5703A QUAD OR DRIVER ELECTRICAL CHARACTERISTICS over operating temperature range (unless otherwise noted).

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	0.8V	150 mA	—	0.35	0.5	V	—
		—	MIN	0.8 V	0.8V	300 mA	—	0.5	0.7	V	—
Diode Leakage Current	I <sub>R</sub>	NOM	NOM	0 V	0 V	OPEN	—	—	200	μA	3
Diode Forward Voltage Drop	V <sub>F</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

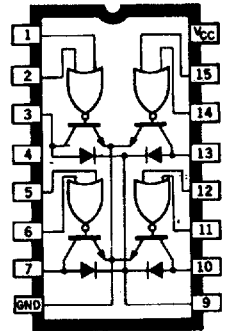
- NOTES: 1. Typical values are at V<sub>CC</sub> = 5.0 V, T<sub>A</sub> = 25°C.  
 2. Per package  
 3. Diode leakage current measured at V<sub>R</sub> = V<sub>off (min)</sub>.  
 4. Diode forward voltage drop measured at I<sub>F</sub> = 300 mA.  
 5. Capacitance values specified include probe and test fixture capacitance.



Dwg. No. A-9123A



Dwg. No. A-7628C



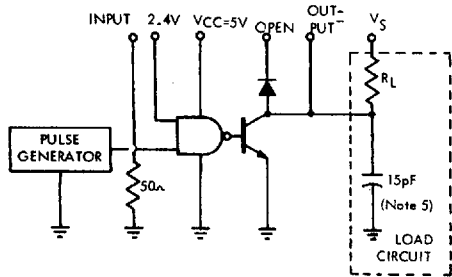
Dwg. No. A-9869

# 5703 AND 5706 QUAD PERIPHERAL/POWER DRIVERS

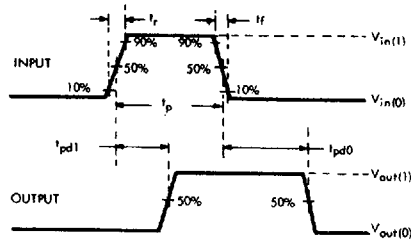
## UDQ5706A QUAD AND DRIVER ELECTRICAL CHARACTERISTICS over operating temperature range (unless otherwise noted).

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>R</sub>	NOM	NOM	0 V	0 V	OPEN	—	—	200	μA	3
Diode Forward Voltage Drop	V <sub>F</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

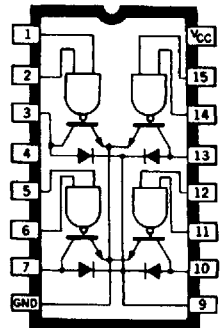
- NOTES: 1. Typical values are at V<sub>CC</sub> = 5.0 V, T<sub>A</sub> = 25°C.  
 2. Per package  
 3. Diode leakage current measured at V<sub>R</sub> = V<sub>off(min)</sub>.  
 4. Diode forward voltage drop measured at I<sub>f</sub> = 300 mA.  
 5. Capacitance values specified include probe and test fixture capacitance.



Dwg. No. A-7878A



Dwg. No. A-7628C



Dwg. No. A-9866