

2596 AND 2597

Data Sheet
29320.2B

8-CHANNEL SATURATED SINK DRIVERS

Low output-saturation voltages at high load currents are provided by UDN2596A and UDN2597A sink driver ICs. These devices can be used as interface buffers between standard low-power digital logic (particularly MOS) and high-power loads such as relays, solenoids, stepping motors, and LED or incandescent displays. The eight saturated sink drivers in each device feature high-voltage, high-current open-collector outputs. Transient suppression clamp diodes and a minimum 35 V output sustaining voltage allow their use with many inductive loads.

The saturated (non-Darlington) NPN outputs provide low collector-emitter voltage drops as well as improved turn-off times due to an active pull-down function within the output predrive section. The UDN2596A is for use with output loads to 500 mA while the UDN2597A is for use with loads to 1 A. Adjacent outputs may be paralleled for higher load currents.

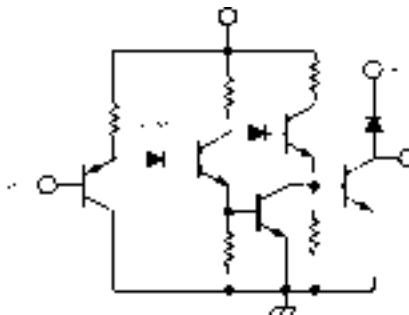
Inputs require very low input current and are activated by a low logic level consistent with the much greater sinking capability associated with NMOS, CMOS, and TTL logic. The UDN2596A and UDN2597A are rated for use with 5 V logic levels.

Both devices are furnished in 20-pin DIP packages with copper leadframes for improved thermal characteristics. The UDN2596A is also available for operation between -40°C and +85°C. To order, change the prefix from 'UDN' to 'UDQ'.

FEATURES

- Non-Inverting Function
- Low Output ON Voltages
- Up to 1.0 A Sink Capability
- 50 V Min. Output Breakdown
- Output Transient-Suppression Diodes
- Output Pull-Down for Fast Turn-Off
- TTL, CMOS Compatible Inputs
- Automotive Capable

ONE OF EIGHT DRIVERS



Dwg. No. W-101

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

Output Voltage, V_{CE}	50 V
Output Current, I_{OUT}	
(UDN2596A)	500 mA
(UDN2597A)	1.0 A
Supply Voltage, V_{CC}	7.0 V
Input Voltage, V_{IN}	7.0 V
Package Power Dissipation, P_D	2.27 W*
Operating Temperature Range, T_A	-20°C to +85°C
Storage Temperature Range, T_S	-65°C to +150°C

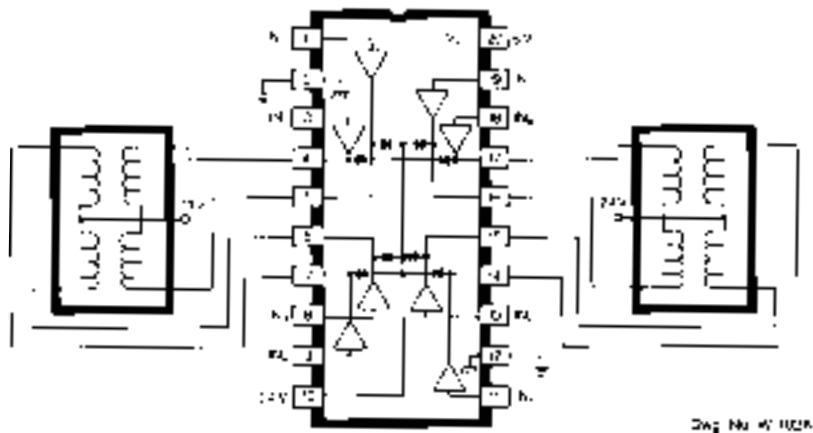
*Derate at the rate of 18.2 mW/°C above $T_A = +25^\circ\text{C}$

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ELECTRICAL CHARACTERISTICS at $T_A = +25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$

Characteristics	Symbol	Applicable Devices	Test Conditions	Limits		
				Min.	Max.	Units
Output Leakage Current	I_{CEX}	Both	$V_{OUT} = 50\text{ V}$, $V_{IN} = 2.4\text{ V}$	—	10	μA
Output Sustaining Voltage	$V_{CE(sus)}$	UDN2596A	$I_{OUT} = 300\text{ mA}$, $L = 2\text{ mH}$	35	—	V
		UDN2597A	$I_{OUT} = 750\text{ mA}$, $L = 2\text{ mH}$	35	—	V
Output Saturation Voltage	$V_{CE(SAT)}$	UDN2596A	$I_{OUT} = 300\text{ mA}$	—	0.5	V
		UDN2597A	$I_{OUT} = 750\text{ mA}$	—	1.0	V
Clamp Diode Leakage Current	I_R	Both	$V_R = 50\text{ V}$	—	10	μA
Clamp Diode Forward Voltage	V_F	UDN2596A	$I_F = 300\text{ mA}$	—	1.8	V
		UDN2597A	$I_F = 750\text{ mA}$	—	1.8	V
Logic Input Current	$I_{IN(0)}$	UDN2596A	$V_{IN} = 0.8\text{ V}$	—	-15	μA
		UDN2597A	$V_{IN} = 0.8\text{ V}$	—	-50	μA
	$I_{IN(1)}$	Both	$V_{IN} = 2.4\text{ V}$	—	10	μA
Supply Current	$I_{CC(ON)}$	UDN2596A	any one driver $V_{IN} = 0.8\text{ V}$	—	6.0	mA
		UDN2597A	any one driver $V_{IN} = 0.8\text{ V}$	—	31	mA
	$I_{CC(OFF)}$	UDN2596A	all drivers $V_{IN} = 2.4\text{ V}$	0.75	1.3	mA
		UDN2597A	all drivers $V_{IN} = 2.4\text{ V}$	0.75	15	mA
Turn-On Delay	t_{pd0}	Both	$0.5 E_{IN}$ to $0.5 E_{OUT}$	—	3.0	μs
Turn-Off Delay	t_{pd1}	Both	$0.5 E_{IN}$ to $0.5 E_{OUT}$	—	2.0	μs

TYPICAL APPLICATION DUAL STEPPER MOTOR DRIVE



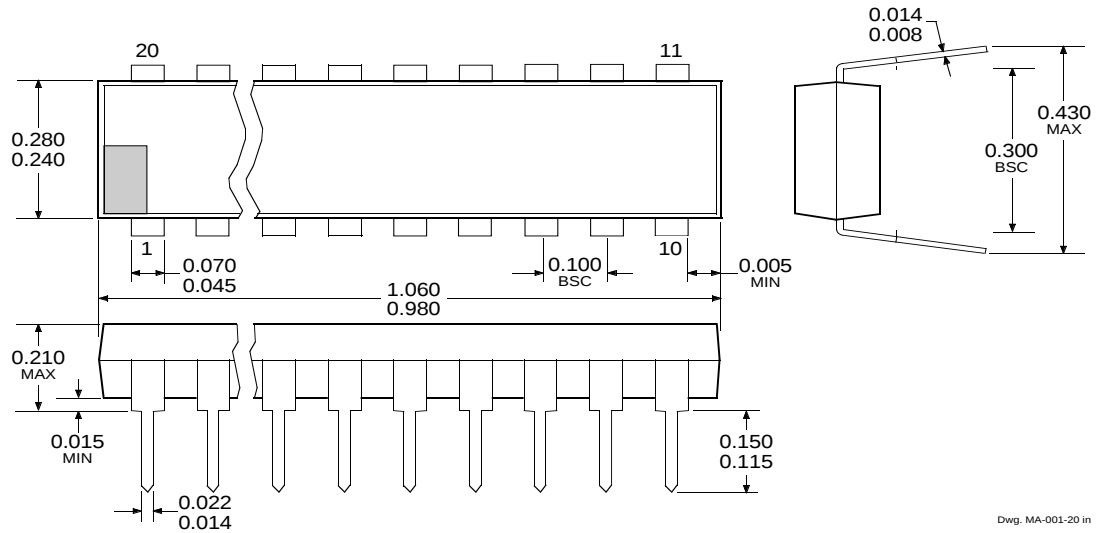
RECOMMENDED OPERATING CONDITIONS

Type Number	Logic	I_{OUT}
UDN2596A	5.0 V	300 mA
UDN2597A	5.0 V	750 mA

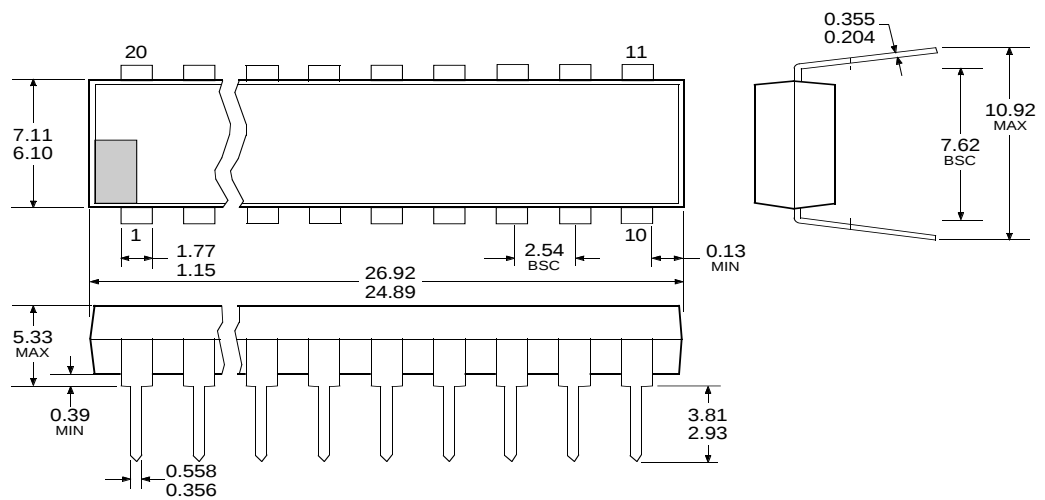
Note: Pins 2 and 12 must both be connected to power ground.

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Dimensions in Inches
(controlling dimensions)



Dimensions in Millimeters
(for reference only)



- NOTES: 1. Exact body and lead configuration at vendor's option within limits shown.
2. Lead spacing tolerance is non-cumulative.
3. Lead thickness is measured at seating plane or below.

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SATURATED SINK DRIVERS

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