

2596 AND 2597

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.

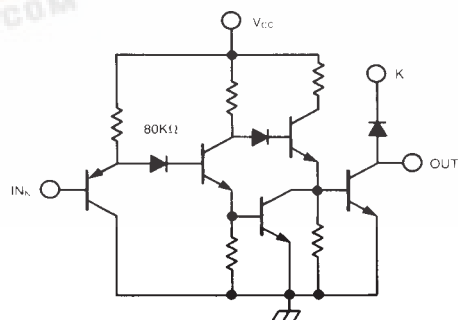
Inputs require very low input current and are activated by a low logic level consistent with the much greater sinking capability associated with NMOS, CMOS, and TTL logic. The UDN2596A and UDN2597A are rated for use with 5 V logic levels.

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 $+85^{\circ}\text{C}$. 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 $+85^{\circ}\text{C}$
Storage Temperature Range, T_S	-65°C to $+150^{\circ}\text{C}$

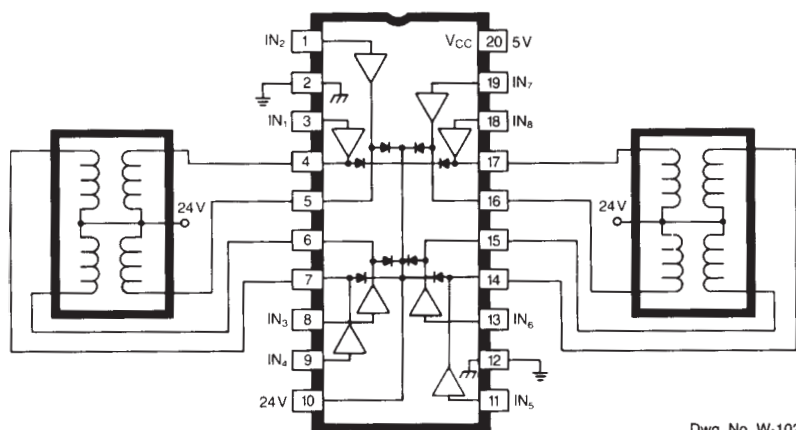
*Derate at the rate of 18.2 mW/ $^{\circ}\text{C}$ above
 $T_A = +25^{\circ}\text{C}$

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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



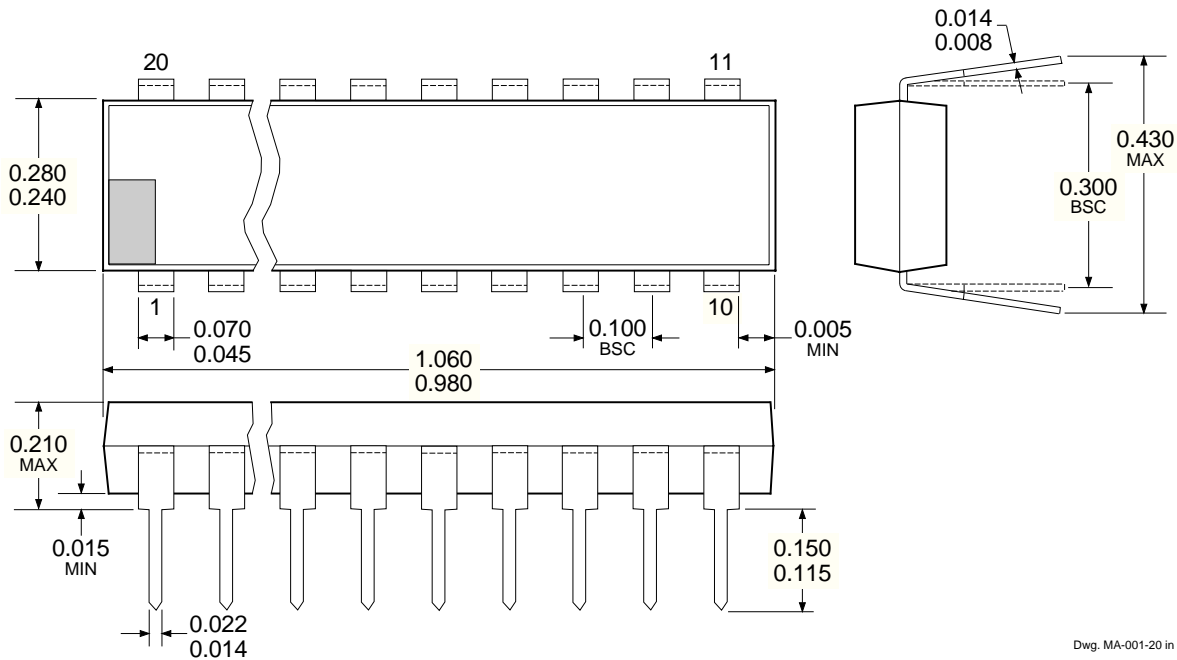
RECOMMENDED OPERATING CONDITIONS

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

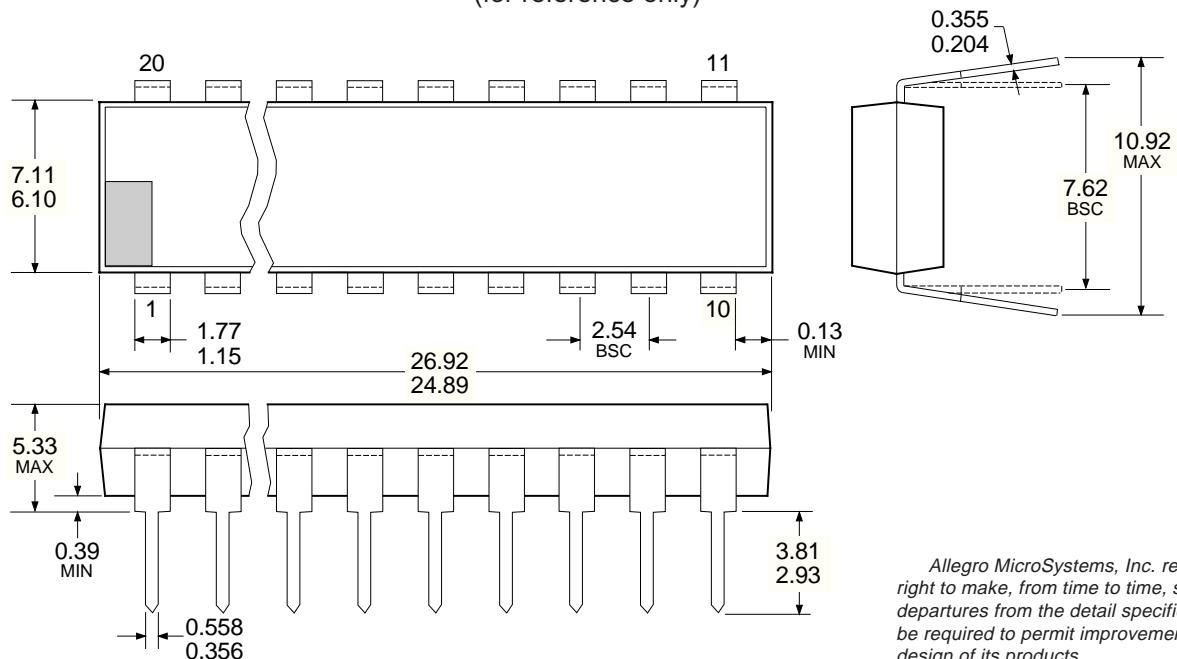
Note: Pins 2 and 12 must both be connected to power ground.

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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.

Allegro MicroSystems, Inc. reserves the right to make, from time to time, such departures from the detail specifications as may be required to permit improvements in the design of its products.

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POWER SINK DRIVERS SELECTION GUIDE

IN ORDER OF 1) OUTPUT CURRENT, 2) OUTPUT VOLTAGE, 3) NUMBER OF DRIVERS

Output Ratings *			Features					Part Number [†]
mA	V	#	Serial Input	Latched Drivers	Diode Clamp	Saturated Outputs	Internal Protection	
100	20	8	—	—	—	X	—	2595
	30	32	X	X	—	—	—	5833
	40	32	X	X	—	X	—	5832
250	135	7	—	—	X	—	—	7003
300	45	1	Hall Sensor/Driver		X	—	X	5140
	50	7	—	—	X	—	—	2003
	50	8	—	—	X	—	—	2803
	50	8	—	—	X	X	—	2596
	60	2	Hall Sensor/Driver		—	X	—	5275
	60	4	—	—	X	X	X	2557
	95	7	—	—	X	—	—	2023
	95	8	—	—	X	—	—	2823
350	50	4	—	X	X	—	—	5800
	50	7	—	—	X	—	—	2004
	50	8	—	—	X	—	—	2804
	50	8	—	X	X	—	—	5801
	50	8	X	X	—	—	—	5821
	80	8	X	X	—	—	—	5822
	50	8	X	X	X	—	—	5841
	80	8	X	X	X	—	—	5842
	95	7	—	—	X	—	—	2024
	95	8	—	—	X	—	—	2824
450	30	28	Dual 4 to 14-Line Decoder/Driver			—	—	6817
600	60	4	—	—	—	X	X	2547
	60	4	—	—	X	X	X	2549
700	60	4	—	—	X	X	X	2543 and 2559
750	50	8	—	—	X	X	—	2597
900	14	2	Hall Sensor/Driver		X	X	X	3625
	26	2	Hall Sensor/Driver		X	X	X	3626
1000	46	4	Stepper Motor Controller/Driver			MOS	—	7024 and 7029
1200	46	4	Microstepping Controller/Driver			MOS	—	7042
1250	50	4	Stepper Motor Translator/Driver			—	X	5804
	50	4	—	—	X	—	—	2064 and 2068
1500	80	4	—	—	X	—	—	2065 and 2069
1600	50	9	X	X	—	—	X	5829
1800	50	4	—	—	X	—	—	2544
	50	4	—	—	X	—	—	2540
3000	46	4	Stepper Motor Controller/Driver			MOS	—	7026
	46	4	Microstepping Controller/Driver			MOS	—	7044
4000	50	4	—	—	X	—	—	2878
	80	4	—	—	X	—	—	2879

* Current is maximum specified test condition, voltage is maximum rating. See specification for sustaining voltage limits or over-current protection voltage limits.

† Complete part number includes additional characters to indicate operating temperature range and package style.