2596 AND 2597

8-CHANNEL SATURATED SINK DRIVERS

Dwg. No. W-100

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

ABSOLUTE MAXIMUM RATINGS
at T_A = + 25°C

OutputVoltage,V_{CE} .... 50 V
Output Current, I_{OUT}
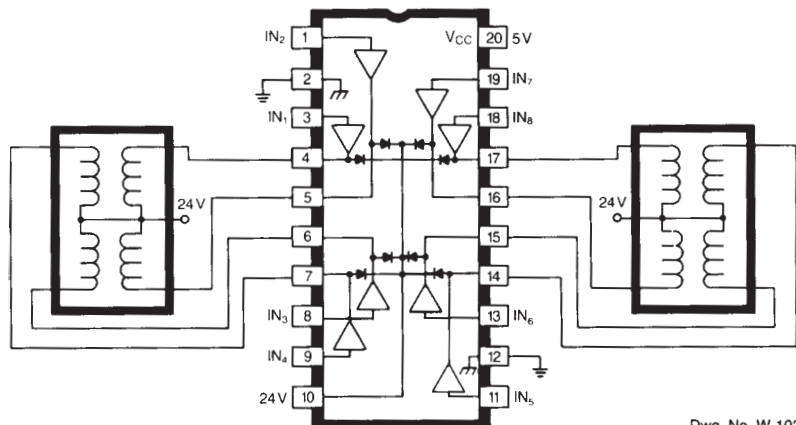   (UDN2596A) .... 500 mA
   (UDN2597A) .... 1.0 A
Supply Voltage, V_{CC} .... 7.0 V
Input Voltage, V_{IN} .... 7.0 V
Package Power Dissipation,
   P_D .... 2.27 W*
Operating Temperature Range,
   T_A .... -20°C to +85°C
Storage Temperature Range,
   T_S .... -65°C to +150°C
*Derate at the rate of 18.2 mW/°C above T_A = +25°C

ONE OF EIGHT DRIVERS
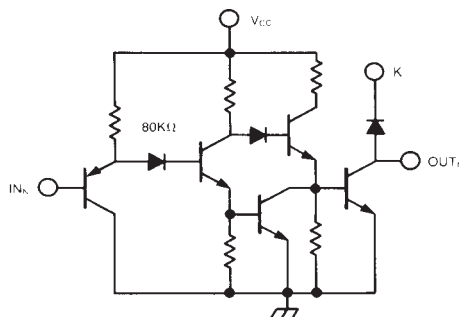
Dwg. No. W-101

ELECTRICAL CHARACTERISTICS at T_A = +25°C, V_{CC} = 5.0 V

Characteristics	Symbol	Applicable Devices	Test Conditions	Limits Min.	Limits Max.	Units
Output Leakage Current	I_{CEX}	Both	V_{OUT} = 50 V, V_{IN} = 2.4 V	—	10	μA
Output Sustaining Voltage	$V_{CE(sus)}$	UDN2596A	I_{OUT} = 300 mA, L = 2 mH	35	—	V
		UDN2597A	I_{OUT} = 750 mA, L = 2 mH	35	—	V
Output Saturation Voltage	$V_{CE(SAT)}$	UDN2596A	I_{OUT} = 300 mA	—	0.5	V
		UDN2597A	I_{OUT} = 750 mA	—	1.0	V
Clamp Diode Leakage Current	I_R	Both	V_R = 50 V	—	10	μA
Clamp Diode Forward Voltage	V_F	UDN2596A	I_F = 300 mA	—	1.8	V
		UDN2597A	I_F = 750 mA	—	1.8	V
Logic Input Current	$I_{IN(0)}$	UDN2956A	V_{IN} = 0.8 V	—	-15	μA
		UDN2597A	V_{IN} = 0.8 V	—	-50	μA
	$I_{IN(1)}$	Both	V_{IN} = 2.4 V	—	10	μA
Supply Current	$I_{CC(ON)}$	UDN2596A	any one driver V_{IN} = 0.8 V	—	6.0	mA
		UDN2597A	any one driver V_{IN} = 0.8 V	—	31	mA
	$I_{CC(OFF)}$	UDN2596A	all drivers V_{IN} = 2.4 V	0.75	1.3	mA
		UDN2597A	all drivers V_{IN} = 2.4 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

Dwg. No. W-102A

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.

Dimensions in Inches
(controlling dimensions)

0.014
0.008

0.430
MAX

0.300
BSC

20

11

0.280
0.240

1

0.070
0.045

0.100
BSC

10

0.005
MIN

1.060
0.980

0.210
MAX

0.015
MIN

0.150
0.115

0.022
0.014

Dwg. MA-001-20 in
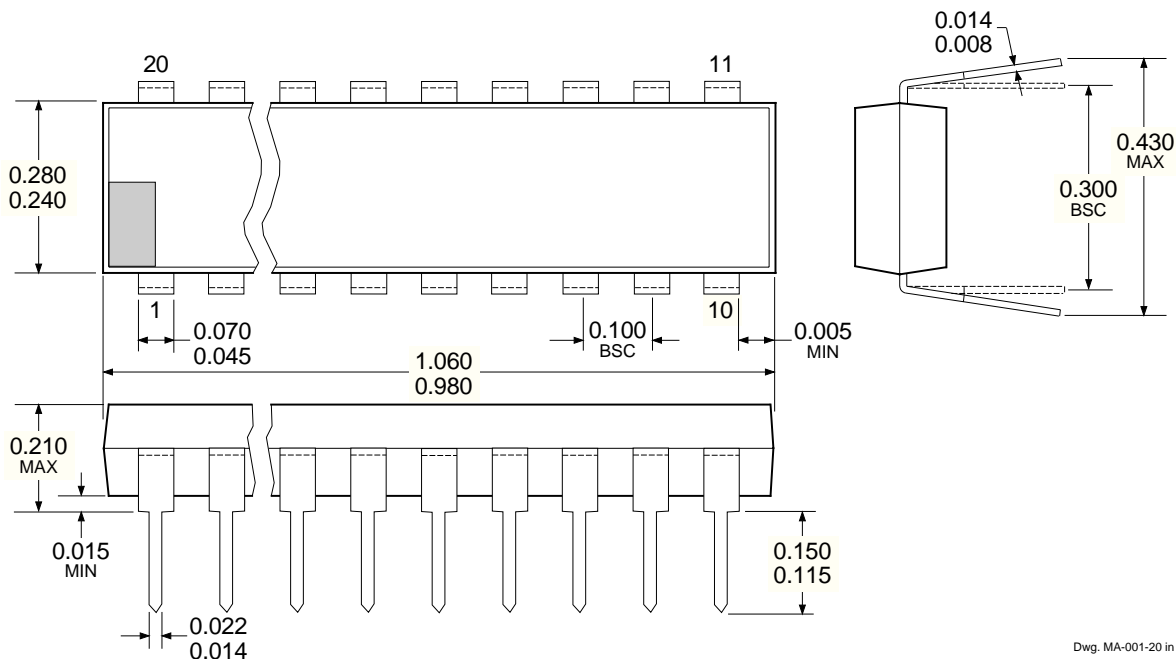
Dimensions in Millimeters
(for reference only)

0.355
0.204

10.92
MAX

7.62
BSC

20

11

7.11
6.10

1

1.77
1.15

2.54
BSC

10

0.13
MIN

26.92
24.89

5.33
MAX

0.39
MIN

3.81
2.93

0.558
0.356
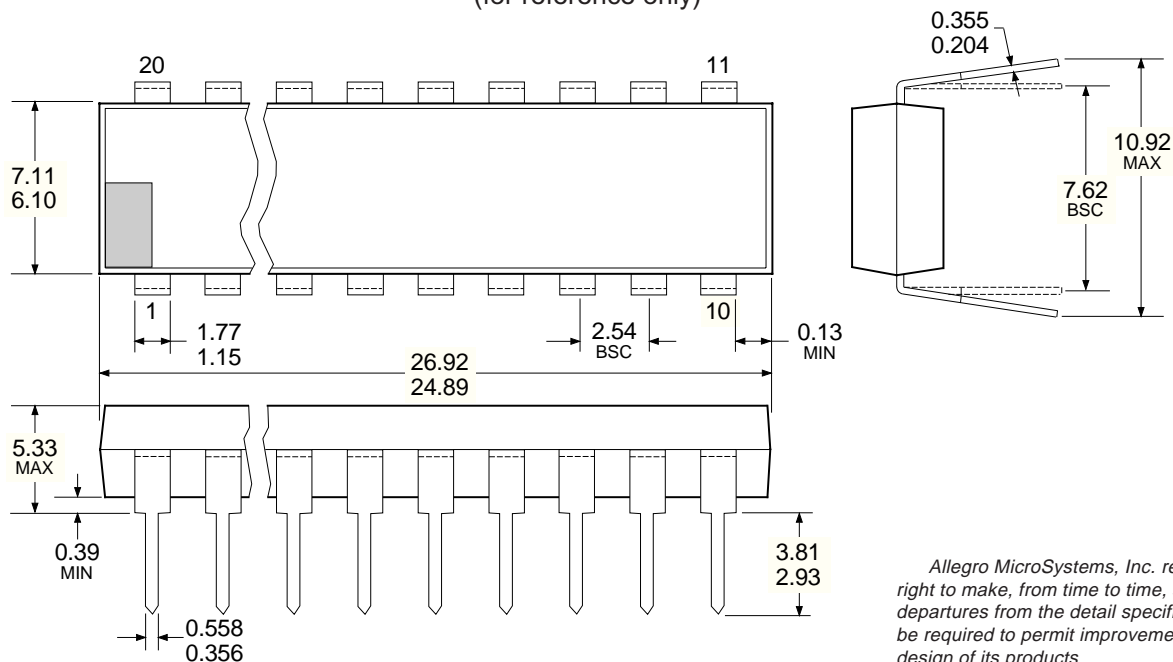
NOTES: 1. Exact body and lead configuration at vendor's option within limits shown.
2. Lead spacing tolerance is non-cumulative.
3. Lead thickness is measured at seating plane or below.

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.