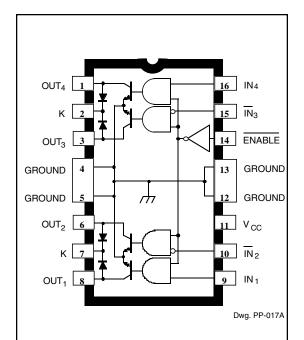
QUAD DARLINGTON POWER DRIVER



Combining logic gates and high-current bipolar outputs, the UDN2544B quad Darlington power driver provides an interface between low-level logic circuitry and high-power loads. Each of the four outputs can sink up to 1.8 A in the on state with peak inrush currents to 2.5 A. The four power outputs are each comprised of an opencollector Darlington driver and an internal flyback/clamp diode for switching inductive loads. They feature a minimum breakdown and sustaining voltage of 50 V. The logic inputs are compatible with TTL and 5 V CMOS logic systems.

This device is particularly well-suited for unipolar stepper motor drive applications. With complementary control inputs and an activelow ENABLE, the UDN2544B makes it easy to implement full stepping of a stepper motor with only two microcontroller/microprocessor control lines. Other typical applications include relay or solenoid driving and incandescent or LED lamp driving.

The UDN2544B is supplied in a 16-pin batwing power DIP. The batwing construction provides for maximum package power dissipation in a standard DIP construction. At 25°C, and with only 1 sq. in. of copper foil at the ground tabs, the package is capable of safely dissipating 3.8 W.

FEATURES

- 1.8 A Continuous Output Current
- Output Voltage to 50 V
- Inputs Configured for Unipolar Stepper Motors
- Active-Low Output Enable
- TTL and 5 V CMOS Compatible Inputs
- Integral Transient-Suppression Diodes

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

Output Voltage, V _{OUT} 50 V
Output Current, I _{OUT}
(Peak) 2.5 A
(Continuous) 1.8 A
Logic Supply Voltage, V _{CC} 7.0 V
Input Voltage, V _{IN} 7.0 V
Package Power Dissipation,
P _D See Graph
Operating Temperature Range,
T _A
Storage Temperature Range,
T _55°C to 1150°C

Always order by complete part number: | UDN2544B



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ELECTRICAL CHARACTERISTICS at T_A = +25°C, $T_J \le 150$ °C, V_{CC} = 4.75 V to 5.25 V.

			Limits			
Characteristic	Symbol	Test Conditions	Min.	Тур.	Max.	Units
Output Leakage Current	I _{CEX}	V _{OUT} = 50 V	_	<1.0	100	μΑ
Output Sustaining Voltage	V _{CE(sus)}	I _{OUT} = 1.8 A, L = 3.0 mH	50	_	_	V
Output Saturation Voltage	V _{CE(SAT)}	I _{OUT} = 600 mA	_	0.9	1.0	V
		I _{OUT} = 1.0 A	_	1.0	1.2	V
		I _{OUT} = 1.8 A	_	1.3	1.6	V
Input Voltage	Logic 1	$V_{IN(1) \text{ or }} V_{EN(1)}$	2.4	_	_	V
	Logic 0	V _{IN(0)} or V _{EN(0)}	_	_	0.8	V
Input Current	Logic 1	$V_{IN(1) \text{ or }} V_{EN(1)} = 2.4 \text{ V}$	_	_	10	μΑ
	Logic 0	$V_{IN(0) \text{ or }} V_{EN(0)} = 0.8 \text{ V}$	_	_	-100	μΑ
Total Supply Current	I _{cc}	All Outputs ON, Outputs Open	_	14	20	mA
		All Outputs OFF	_	0.4	2.0	mA
Clamp Diode Forward Voltage	V _F	I _F = 1.0 A	_	1.3	1.6	V
		I _F = 1.8 A	_	1.6	2.0	V
Clamp Diode Leakage Current	I _R	V _R = 50 V	_	< 1.0	100	μΑ

Typical Data is for design information only.

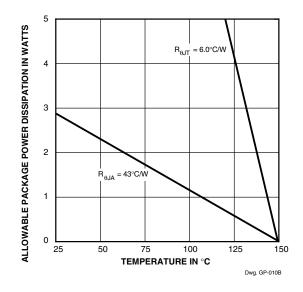
Negative current is defined as coming out of (sourcing) the specified terminal.

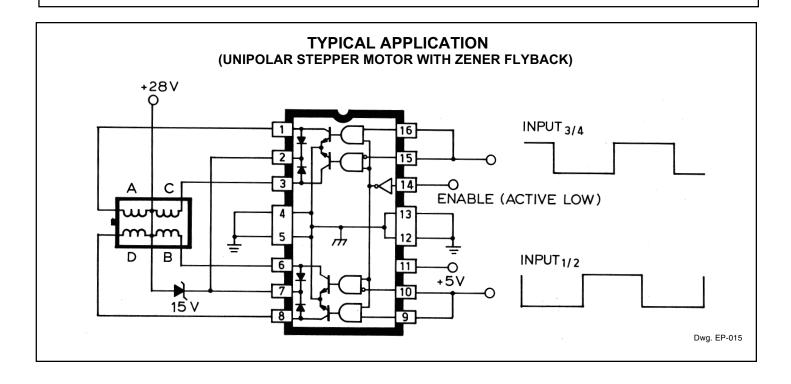
As used here, -100 is defined as greater than +10 (absolute magnitude convention) and the minimum is implicitly zero.

TRUTH TABLE

ENABLE	IN ₁	OUT ₁	IN ₂	OUT ₂	IN ₃	OUT ₃	IN ₄	OUT ₄
L	Н	ON	Н	OFF	Н	OFF ON	Н	ON
	L	OFF	L	ON	L	ON	L	OFF
Н	Х	OFF	Х	OFF	Х	OFF	Х	OFF

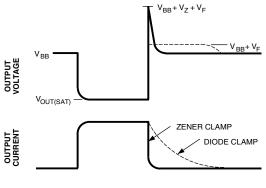
X = Don't care





TRUTH TABLE

INP	UTS		WIN	DINGS	
1/2	3/4	Α	В	С	D
L	Н	ON	ON	OFF	OFF
L	L	OFF	ON	ON	OFF
Н	L	OFF	OFF	ON	ON
Н	Н	ON	OFF	OFF	ON



Dwg. WP-001

APPLICATIONS INFORMATION

A typical application is shown driving a four-phase unipolar stepper motor. Note that with the complimentary control inputs, only two logic signals are needed to drive the motor in the two-phase format. The two phase drive format illustrated, energizes two adjacent phases in each detent position (AB, BC, CD, DA) to provide an improved torque-speed product and greater detent torque.

A Zener diode can be used to increase the flyback voltage. The increased flyback voltage gives a much faster inductive load turn-OFF current decay resulting in improved motor performance. The maximum Zener voltage, plus the load supply voltage, plus the flyback diode forward voltage must not exceed the device's rated sustaining voltage.

With external control circuitry, the ENABLE input (active low) can be used for chopper (PWM) applications. If the ENABLE input is not used, it should be tied low.

All inputs will float high if open circuited.

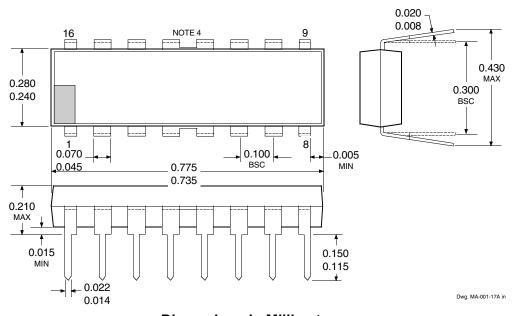
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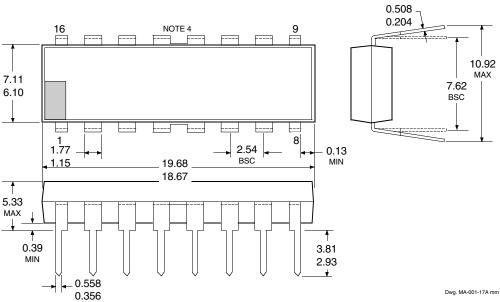
Dimensions in Inches

(controlling dimensions)



Dimensions in Millimeters

(for reference only)



- NOTES: 1. Leads 1, 8, 9, and 16 may be half leads at vendor's option.
 - 2. Lead thickness is measured at seating plane or below.
 - 3. Lead spacing tolerance is non-cumulative.
 - 4. Webbed lead frame. Leads indicated are internally one piece.
 - 5. Exact body and lead configuration at vendor's option within limits shown.

