UDN-2956A AND UDN-2957A
HIGH-VOLTAGE, HIGH-CURRENT SOURCE DRIVERS

FEATURES

- 500 mA Output Source Current
- 50 V Output Sustaining Voltage
- Output Transient Protection
- 6-16 V PMOS,CMOS Input—UDN-2956A
- TTL, DTL, 5 V CMOS Input—UDN-2957A
- Plastic or Cer-DIP Package

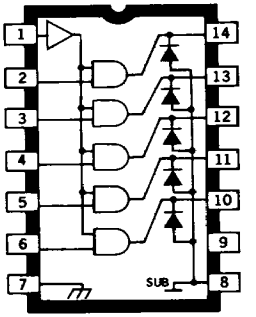
COMPRISED of five common-collector NPN Darlington output stages, associated common-base PNP input stages, and a common ENABLE stage, the UDN-2956A and UDN-2957A high-voltage, high-current source drivers are used to switch the ground end of loads that are directly connected to a negative supply. Typical loads include telephone relays, PIN diodes, and LEDs.

Both devices will sustain output OFF voltages of −80 V and will source currents to −500 mA per driver. Under normal operating conditions, these units will sustain load currents of −200 mA on each of the five drivers simultaneously at ambient temperatures up to +70°C.

The UDN-2956A driver is intended for use with MOS (PMOS or CMOS) logic input levels operating with supply voltages from 6 V to 16 V. The UDN-2957A driver has appropriate input-current limiting resistors for operation from TTL, Schottky TTL, DTL, and 5 V CMOS. With either device, the input and ENABLE levels must both be biased towards the positive supply to activate the output load.

Integral transient-suppression diodes allow these devices to be used with inductive loads without adding discrete diodes. In order to maintain isolation between drivers, the substrate should be connected to the most negative supply.

Input connections are on one side of the dual in-line package, output connections on the other side to simplify printed wiring board layout.



Dwg. No. A-10,229A

The UDN-2956A and UDN-2957A high-voltage, high-current drivers are supplied in 14-lead dual in-line packages conforming to JEDEC outline TO-116 (MO-001AA). These devices can also be ordered in ceramic/glass (cer-DIP) hermetic packages by changing the last character of the part number from 'A' to 'R.' Except for slightly reduced package power dissipation capability, devices in cer-DIP hermetic packages have electrical ratings ide. .cal to those in plastic packages and are pin compatible with them.

ABSOLUTE MAXIMUM RATINGS
at +25°C Free-Air Temperature
(Reference Pin 7)

Supply Voltage, V_{EE}	−80 V
Input Voltage, V_{IN} (UDN-2956A)	+20 V
(UDN-2957A)	+10 V
Output Current, I_{OUT}	−500 mA
Power Dissipation, P_D (any one driver)	1.0 W
(total package)	2.0 W*
Operating Temperature Range, T_A	−20°C to +85°C
Storage Temperature Range, T_S	−55°C to +150°C

*Derate at the rate of 16.67 mW °C above 25°C.

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ELECTRICAL CHARACTERISTICS at $T_A = +25°C$, $V_{ENABLE} = V_{IN}$ (unless otherwise specified)

Characteristic	Symbol	Applicable Devices	Test Conditions	Limit
Output Leakage Current	I_{CEX}	UDN-2956A	$V_{IN} = V_{ENABLE} = 0.4$ V, $V_{OUT} = -80$ V, $T_A = +70°C$	$-200\ \mu$A Max.
			$V_{IN} = 0.4$ V, $V_{ENABLE} = 15$ V, $V_{OUT} = -80$ V, $T_A = +70°C$	$-200\ \mu$A Max.
			$V_{IN} = 15$ V, $V_{ENABLE} = 0.4$ V, $V_{OUT} = -80$ V, $T_A = +70°C$	$-200\ \mu$A Max.
		UDN-2957A	$V_{IN} = V_{ENABLE} = 0.4$ V, $V_{OUT} = -80$ V, $T_A = +70°C$	$-200\ \mu$A Max.
			$V_{IN} = 0.4$ V, $V_{ENABLE} = 3.85$ V, $V_{OUT} = -80$ V, $T_A = +70°C$	$-200\ \mu$A Max.
			$V_{IN} = 3.85$ V, $V_{ENABLE} = 0.4$ V, $V_{OUT} = -80$ V, $T_A = 70°C$	$-200\ \mu$A Max.
Colfector-Emitter Saturation Voltage	$V_{CE(SAT)}$	UDN-2956A	$V_{IN} = 6.0$ V, $I_{OUT} = -100$ mA	$-$ 1.20 V Max.
			$V_{IN} = 7.0$ V, $I_{OUT} = -175$ mA	$-$ 1.35 V Max.
			$V_{IN} = 10$ V, $I_{OUT} = -350$ mA	$-$ 1.70 V Max.
		UDN-2957A	$V_{IN} = 2.4$ V, $I_{OUT} = -100$ mA	$-$ 1.20 V Max.
			$V_{IN} = 2.7$ V, $I_{OUT} = -175$ mA	$-$ 1.35 V Max.
			$V_{IN} = 3.9$ V, $I_{OUT} = -350$ mA	$-$ 1.70 V Max.
Input Current	$I_{IN(ON)}$	UDN-2956A	$V_{IN} = 6.0$ V, $V_{OUT} = -2.0$ V	650 μA Max.
			$V_{IN} = 15$ V, $V_{OUT} = -2.0$ V	1.85 mA Max.
		UDN-2957A	$V_{IN} = 2.4$ V, $V_{OUT} = -2.0$ V	675 μA Max.
			$V_{IN} = 3.85$ V, $V_{OUT} = -2.0$ V	1.40 mA Max.
	$I_{IN(OFF)}$	ALL	$I_{OUT} = -500\ \mu$A, $T_A = +70°C$	50 μA Min.
Output Source Current	I_{OUT}	UDN-2956A	$V_{IN} = 5.0$ V, $V_{OUT} = -2.0$ V	-125 mA Min.
			$V_{IN} = 6.0$ V, $V_{OUT} = -2.0$ V	-200 mA Min.
			$V_{IN} = 7.0$ V, $V_{OUT} = -2.0$ V	-250 mA Min.
			$V_{IN} = 8.0$ V, $V_{OUT} = -2.0$ V	-300 mA Min.
			$V_{IN} = 9.0$ V, $V_{OUT} = -2.0$ V	-350 mA Min.
		UDN-2957A	$V_{IN} = 2.4$ V, $V_{OUT} = -2.0$ V	-125 mA Min.
			$V_{IN} = 2.7$ V, $V_{OUT} = -2.0$ V	-200 mA Min.
			$V_{IN} = 3.0$ V, $V_{OUT} = -2.0$ V	-250 mA Min.
			$V_{IN} = 3.3$ V, $V_{OUT} = -2.0$ V	-300 mA Min.
			$V_{IN} = 3.6$ V, $V_{OUT} = -2.0$ V	-350 mA Min.
Output Sustaining Voltage	$V_{CE(SUS)}$	UDN-2956A	$V_{IN} = 0.4$ V, $I_{OUT} = -25$ mA	50 V Min.
		UDN-2957A	$V_{IN} = 0.4$ V, $I_{OUT} = -25$ mA	50 V Min.
Clamp Diode Leakage Current	I_R	ALL	$V_R = 80$ V	50 μA Max.
Clamp Diode Forward Voltage	V_F	ALL	$I_F = 350$ mA	2.0 V Max.
Turn-On Delay	t_{ON}	ALL	0.5 E_{in} to 0.5 E_{out}, $R_L = 400\ \Omega$ $C_T = 25$ pF	4.0 μs Max.
Turn-Off Delay	t_{OFF}	ALL	0.5 E_{in} to 0.5 E_{out}, $R_L = 400\ \Omega$ $C_T = 25$ pF	10 μs Max.

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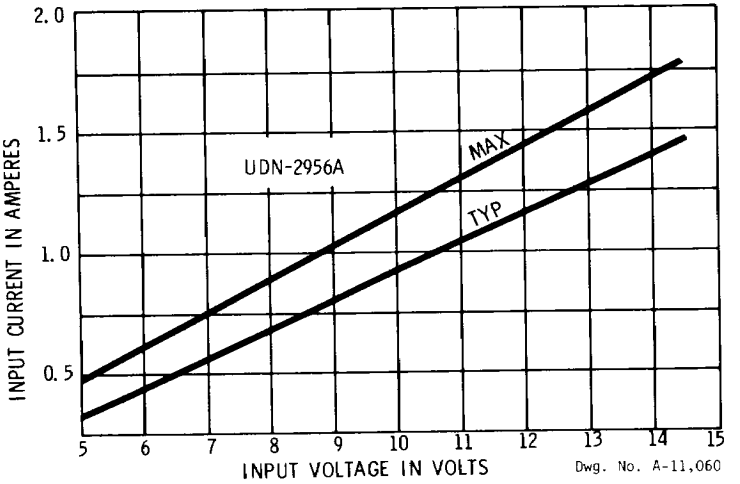
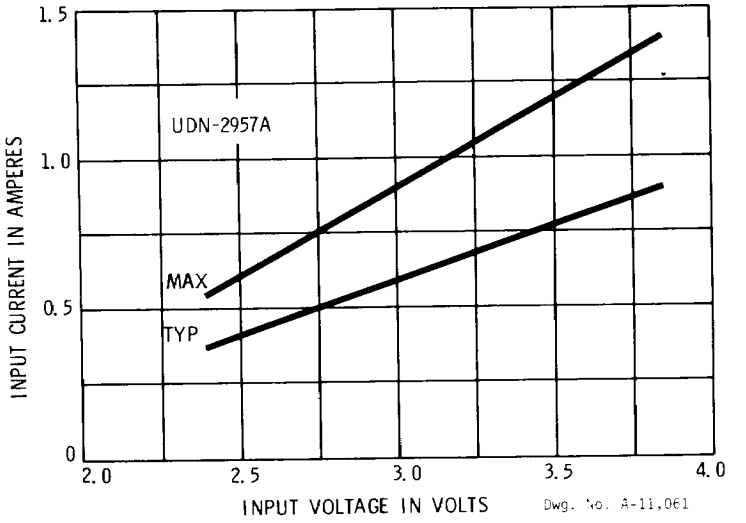
INPUT CURRENT AS A FUNCTION OF INPUT VOLTAGE





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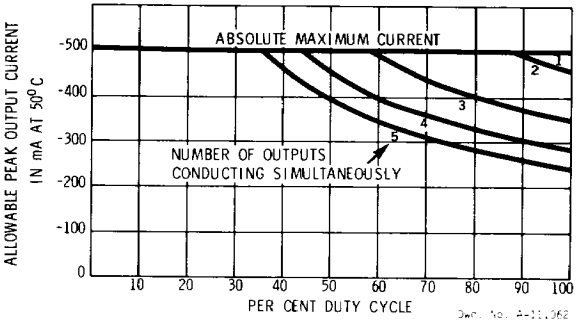
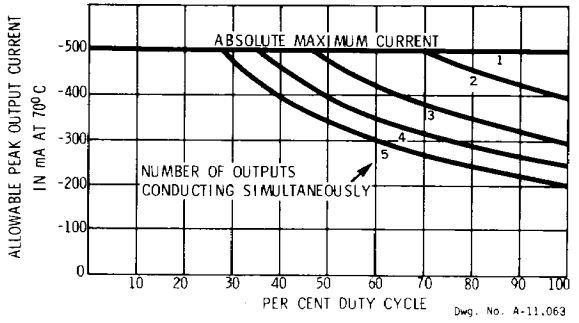
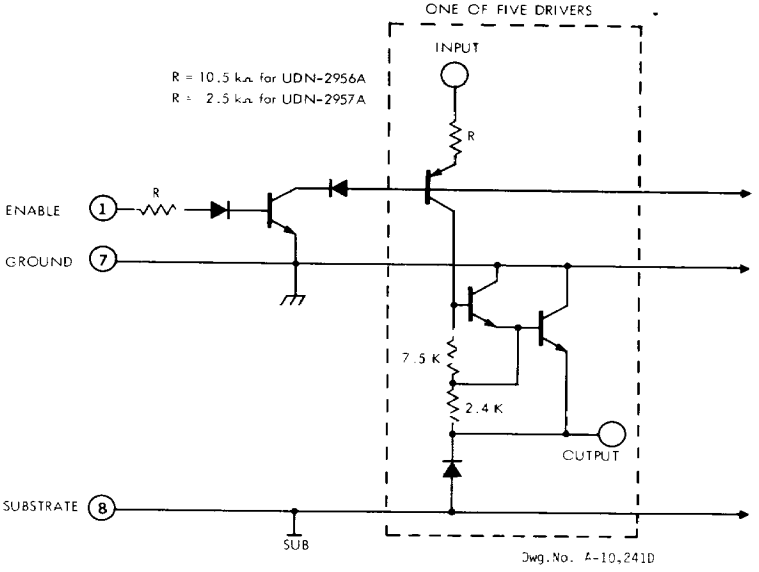
ALLOWABLE PEAK OUTPUT CURRENT AS A FUNCTION OF DUTY CYCLE







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