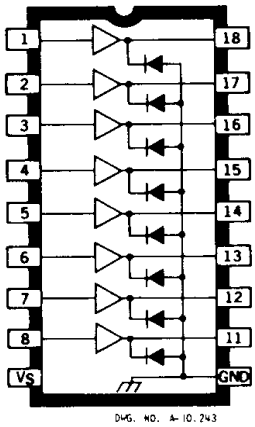
SERIES UDN-2980A
HIGH-VOLTAGE, HIGH-CURRENT SOURCE DRIVERS

FEATURES

- TTL, DTL, PMOS, or CMOS Compatible Inputs
- 500 mA Output Source Current Capability
- Transient-Protected Outputs
- Output Breakdown Voltage to 80 V



DWG. NO. A-10,243

RECOMMENDED for applications requiring separate logic and load grounds, load supply voltage to +80 V, and load currents to 500 mA, Series UDN-2980A source drivers are used as interfaces between standard low-power digital logic and relays, solenoids, stepping motors, and LEDs.

Under normal operating conditions, these devices will sustain 120 mA continuously for each of the eight outputs at an ambient temperature of +50°C and a supply of +15 V. All devices in this series incorporate input current limiting resistors and output transient suppression diodes.

Type UDN-2981A and UDN-2983A drivers are for use with +5 V logic systems — TTL, Schottky TTL, DTL, and 5 V CMOS. Type UDN-2982A and UDN-2984A drivers are intended for MOS interface (PMOS and CMOS) operating from supply voltages of 6 to 16 V. Types UDN-2981A and UDN-2982A will withstand a maximum output OFF voltage of +50 V, while Types UDN-2983A and UDN-2984A will withstand an output voltage of +80 V. In all cases, the output is switched ON by an active high input level.

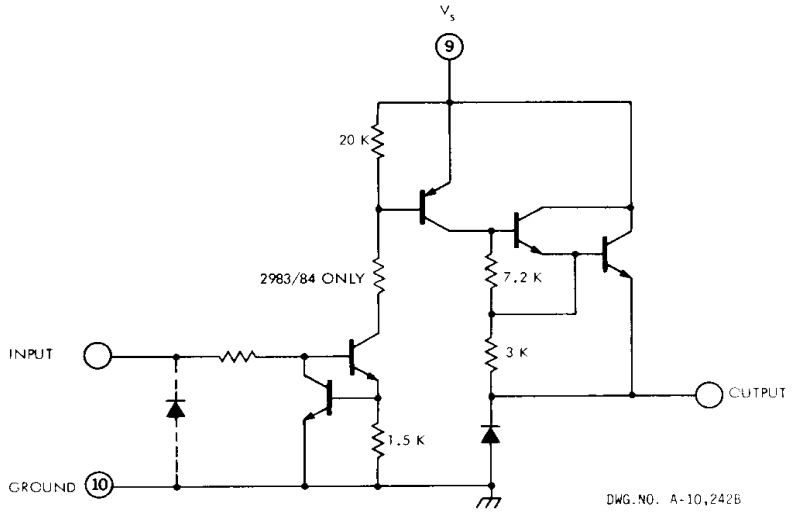
Series UDN-2980A high-voltage, high-current source drivers are supplied in 18-lead dual in-line packages. On special order, hermetically-sealed versions of these devices (with reduced package power dissipation capability) can also be furnished.

ABSOLUTE MAXIMUM RATINGS
at 25°C Free-Air Temperature

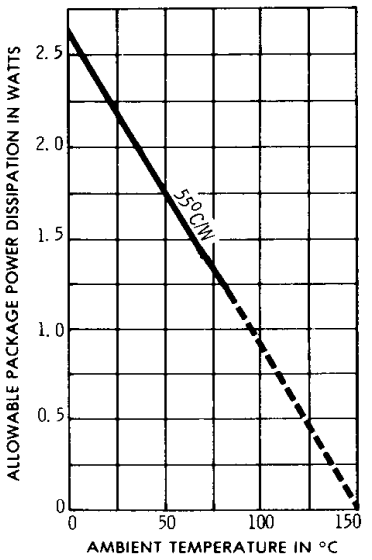
Output Voltage Range, V_{CE} (UDN-2981A & UDN-2982A)	+5 V to +50 V
(UDN-2983A & UDN-2984A)	+35 V to +80 V
Input Voltage, V_{IN} (UDN-2981A & UDN-2983A)	+15 V
(UDN-2982A & UDN-2984A)	+30 V
Output Current, I_{OUT}	−500 mA
Power Dissipation, P_D (any one driver)	1.1 W
(total package)	2.2 W*
Operating Temperature Range, T_A	−20°C to +85°C
Storage Temperature Range, T_S	−55°C to +150°C

*Derate at the rate of 18 mW/°C above +25°C.

ONE OF EIGHT DRIVERS



POWER DISSIPATION AS A FUNCTION OF AMBIENT TEMPERATURE



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ELECTRICAL CHARACTERISTICS at $T_A = +25°C$ (unless otherwise specified)

Characteristic	Symbol	Applicable Devices	Test Conditions	Test Fig.	Limit Min.	Limit Typ.	Limit Max.	Units
Output Leakage Current	I_{CEX}	UDN-2981/82A	V_{IN} = 0.4 V*, V_S = 50 V, T_A = +70°C	1	—	—	200	μA
		UDN-2983/84A	V_{IN} = 0.4 V*, V_S = 80 V, T_A = +70°C	1	—	—	200	μA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	All	V_{IN} = 2.4 V, I_{OUT} = −100 mA	2	—	1.6	1.8	V
			V_{IN} = 2.4 V, I_{OUT} = −225 mA	2	—	1.7	1.9	V
			V_{IN} = 2.4 V, I_{OUT} = −350 mA	2	—	1.8	2.0	V
Input Current	$I_{IN(ON)}$	UDN-2981/83A	V_{IN} = 2.4 V	3	—	140	200	μA
			V_{IN} = 3.85 V	3	—	310	450	μA
		UDN-2982/84A	V_{IN} = 2.4 V	3	—	140	200	μA
			V_{IN} = 12 V	3	—	1.25	1.93	mA
Output Source Current	I_{OUT}	UDN-2981/83A	V_{IN} = 2.4 V, V_{CE} = 2.0 V	2	−350	—	—	mA
		UDN-2982/84A	V_{IN} = 2.4 V, V_{CE} = 2.0 V	2	−350	—	—	mA
Supply Current (Outputs Open)	I_S	UDN-2981/82A	V_{IN} = 2.4 V*, V_S = 50 V	4	—	—	10	mA
		UDN-2983/84A	V_{IN} = 2.4 V*, V_S = 80 V	4	—	—	10	mA
Clamp Diode Leakage Current	I_R	UDN-2981/82A	V_R = 50 V, V_{IN} = 0.4 V*	5	—	—	50	μA
		UDN-2983/84A	V_R = 80 V, V_{IN} = 0.4 V*	5	—	—	50	μA
Clamp Diode Forward Voltage	V_f	All	I_F = 350 mA	6	—	1.5	2.0	V
Turn-On Delay	t_{ON}	All	0.5 E_{IN} to 0.5 E_{OUT}, R_L = 100Ω, V_S = 35 V	—	—	1.0	2.0	μs
Turn-Off Delay	t_{OFF}	All	0.5 E_{IN} to 0.5 E_{OUT}, R_L = 100Ω, V_S = 35 V	—	—	5.0	10	μs

*All Inputs Simultaneously

TEST FIGURES

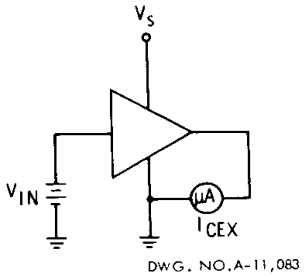


Figure 1

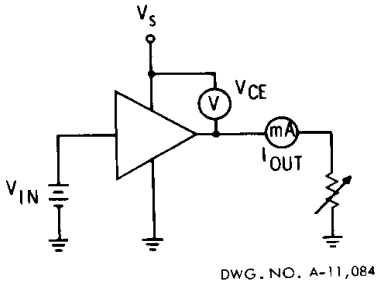


Figure 2

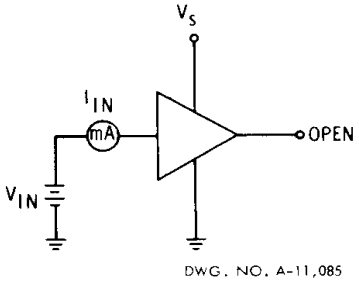


Figure 3

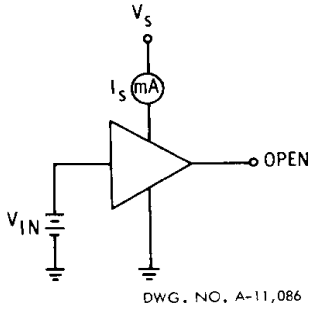


Figure 4

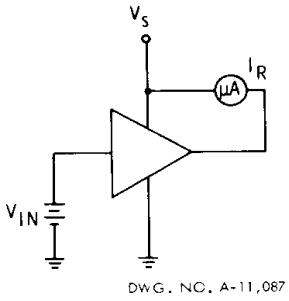


Figure 5

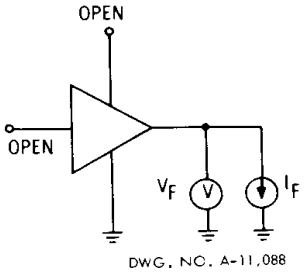
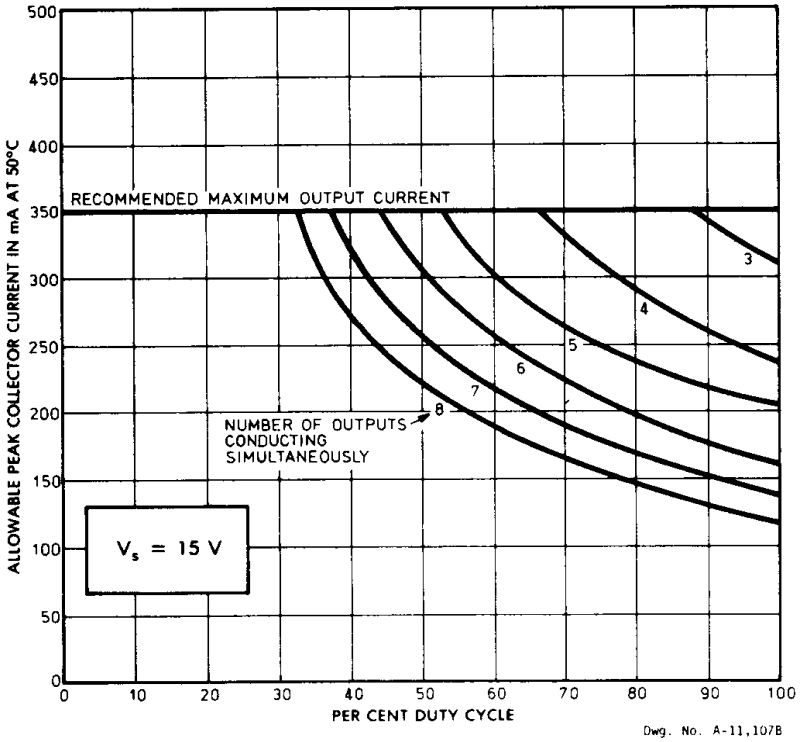
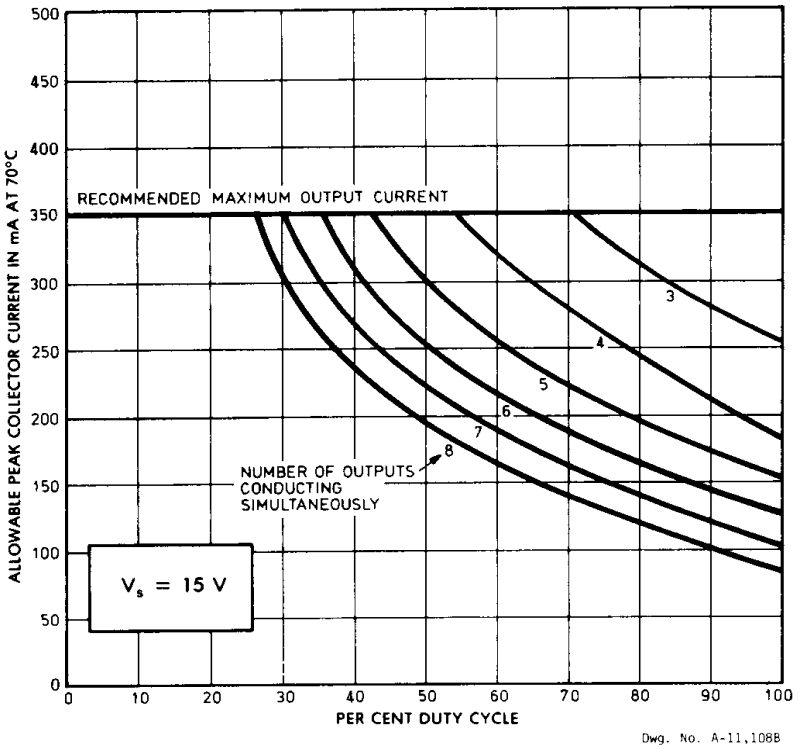


Figure 6

ALLOWABLE PEAK COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE TYPE UDN-2981A/82A

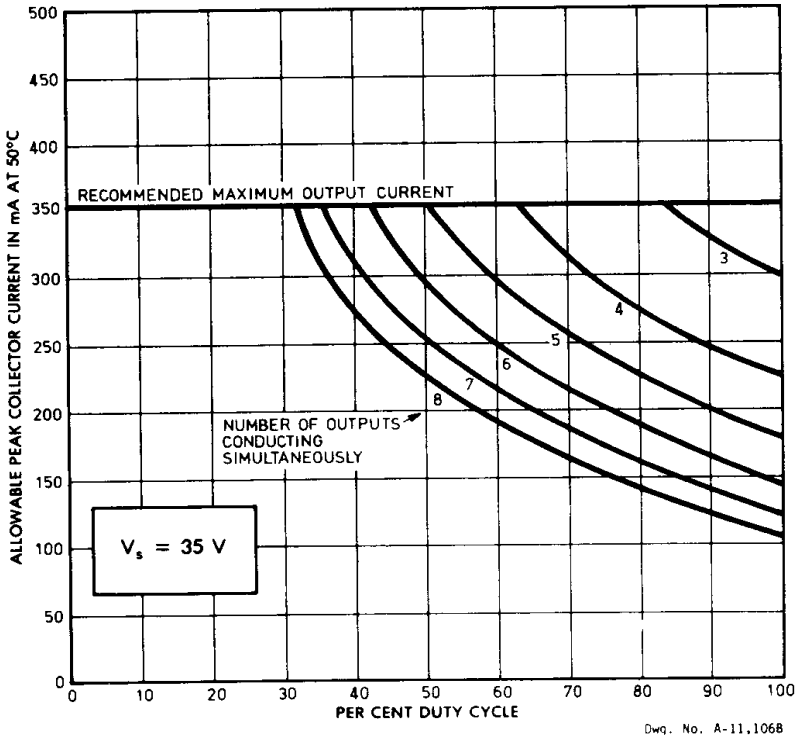


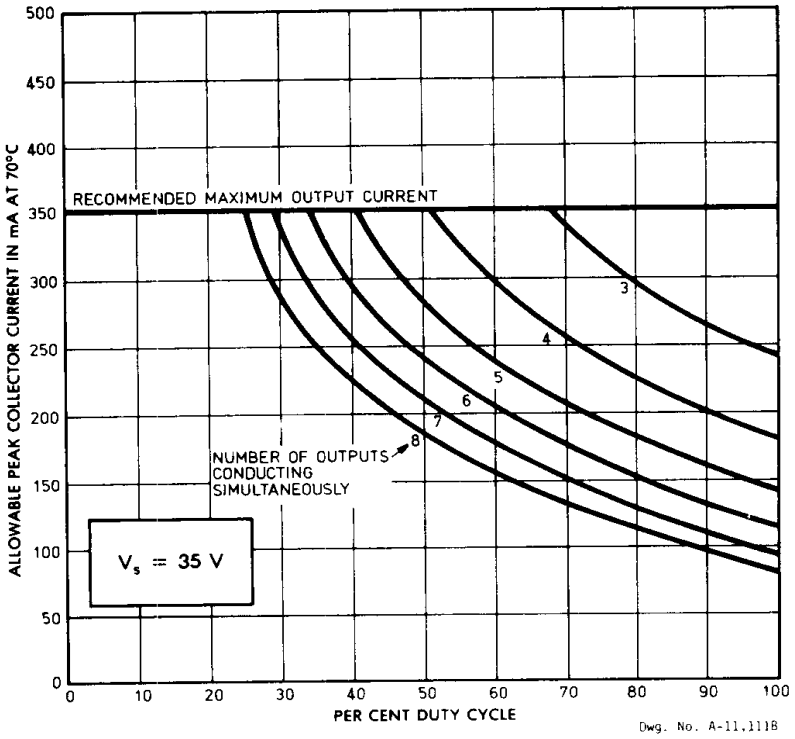
Dwg. No. A-11,107B



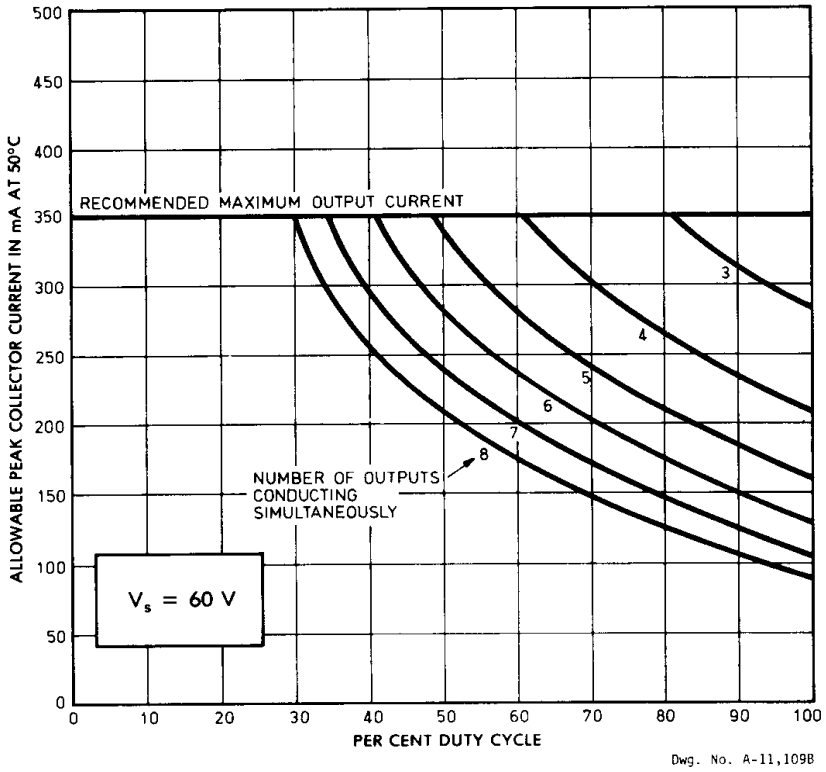
Dwg. No. A-11,108B

ALLOWABLE PEAK COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE SERIES UDN-2980A





ALLOWABLE PEAK COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE TYPES UDN-2983A/84A



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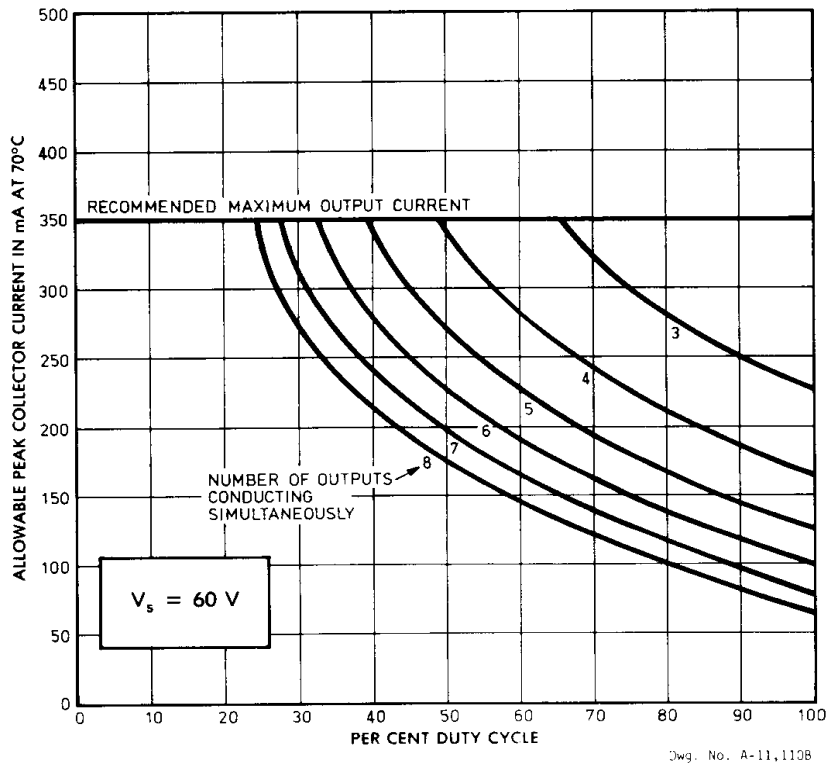

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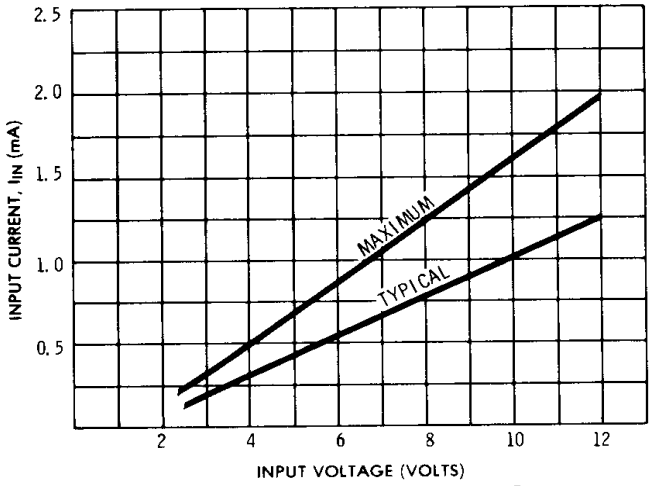
INPUT CURRENT AS A FUNCTION OF INPUT VOLTAGE



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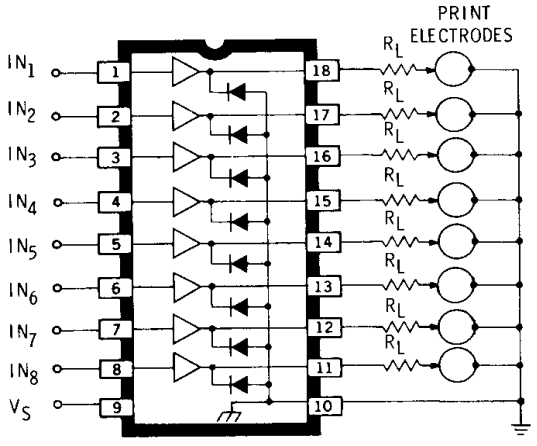
TYPICAL ELECTROSENSITIVE PRINTER APPLICATION



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TYPICAL VALUES: V_S = 50 V
I_{OUT} = 200-300 mA