

SERIES 2980

MIL-STD-883 COMPLIANT

HIGH-VOLTAGE, HIGH-CURRENT SOURCE DRIVERS

Series UDS2980H and UDS2980R hermetically sealed source drivers link standard low-power digital logic and relays, solenoids, magnetic print hammers, stepping motors, LEDs, and lamps in applications requiring separate logic and load grounds, load supply voltages to +80 V, and load currents to 500 mA.

Types UDS2981H/R and UDS2983H/R are intended for use with 5 V logic systems (TTL, Schottky TTL, DTL and 5 V CMOS). UDS2982H/R and UDS2984H/R integrated circuits are intended for MOS interface (PMOS and CMOS) operating from supply voltages of from 6 to 16 V.

Types UDS2981H/R and UDS2982H/R will withstand an output OFF voltage of 50 V. UDS2983H/R and UDS2984H/R drivers will withstand a maximum output OFF voltage of 80 V.

Under normal operating conditions, the devices will sustain 50 mA continuously on each of the eight outputs at an ambient temperature of +85°C and with a supply voltage of 15 V. All types include input current-limiting resistors and output transient-suppression diodes. In all cases, outputs are switched ON by an active high input level.

Note that the maximum current rating may not be obtained at -55°C because of reduced beta, or at +125°C because of package power limitations.

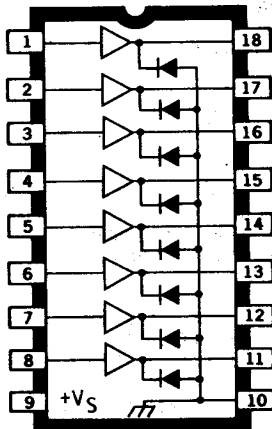
Series UDS2980H drivers are furnished in 18-pin ceramic/metal (side-brazed) hermetic dual in-line packages. Series UDS2980R drivers are supplied in ceramic/glass (cer-DIP) hermetic packages. Both are processed to the requirements of MIL-STD-883, Class B.

The same circuits are also available in 18-pin plastic dual in-line packages (Series UDN2980A) for operation over a limited temperature range, or where higher package power dissipation is needed.

FEATURES

- TTL, DTL, PMOS, or CMOS Compatible Inputs
- 500 mA Output Source Current Capability
- Transient-Protected Outputs
- High-Reliability Screening to MIL-STD-883, Class B
- Operating Temperature -55°C to +125°C

Always order by complete part number, e.g., **UDS2981H883**. See table on next page for differences between devices.



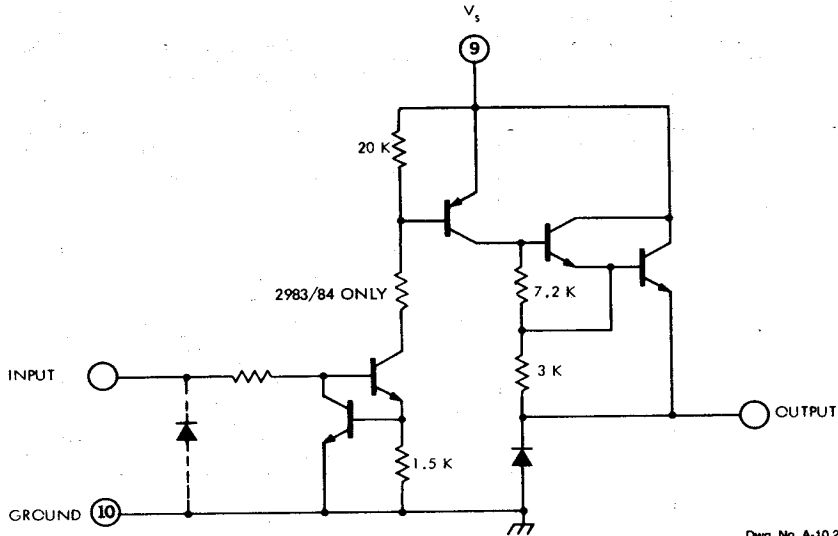
Dwg. No. A-10,243

ABSOLUTE MAXIMUM RATINGS at +25°C Free-Air Temperature

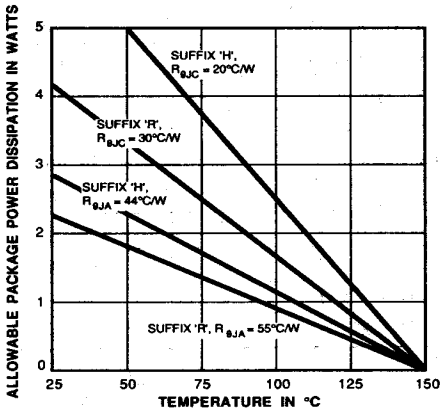
| | |
|--|-----------------|
| Output Voltage Range, V_{CE} (UDS2981 and UDS2982H/R) | 5 V to 50 V |
| (UDS2983 and UDS2984H/R) | 35 V to 80 V |
| Input Voltage, V_{IN} (UDS2981 and UDS2983H/R) | 15 V |
| (UDS2982 and UDS2984H/R) | 30 V |
| Output Current, I_{OUT} | 500 mA |
| Ground Terminal Current, I_{GND} | 3.0 A |
| Power Dissipation, P_D (any one driver) | 1.1 W |
| (total package) | See Graph |
| Operating Temperature Range, T_A | -55°C to +125°C |
| Storage Temperature Range, T_S | -65°C to +150°C |

SERIES 2980 HIGH-VOLTAGE HIGH-CURRENT SOURCE DRIVERS

ONE OF EIGHT DRIVERS



Dwg. No. A-10,242B



Dwg. GM-003

| Device Type | V _{CE(MAX)} | V _{IN(MAX)} | Applications |
|-------------|----------------------|----------------------|--------------------|
| UDS2981H/R | 50 V | 15 V | TTL, DTL, 5 V CMOS |
| UDS2982H/R | 50 V | 30 V | 6-15 V CMOS/PMOS |
| UDS2983H/R | 80 V | 15 V | TTL, DTL, 5 V CMOS |
| UDS2984H/R | 80 V | 30 V | 6-15 V CMOS/PMOS |

SERIES 2980

HIGH-VOLTAGE, HIGH-CURRENT SOURCE DRIVERS

ELECTRICAL CHARACTERISTICS from -55°C to +125°C (unless otherwise specified).

| Characteristic | Symbol | Applicable Devices† | Temp. | Test Conditions | Fig. | Limit | | |
|--|---------------|--|---|---|--|---|------------------|------------------|
| Maximum Output Leakage Current | I_{CEX} | UDS2981/82 | | $V_{IN} = 0.25 \text{ V}^*$, $V_S = 50 \text{ V}$ | 1 | 200 μA | | |
| | | UDS2983/84 | | $V_{IN} = 0.25 \text{ V}^*$, $V_S = 80 \text{ V}$ | 1 | 200 μA | | |
| Maximum Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | UDS2981/83 | -55°C | $V_{IN} = 2.4 \text{ V}$, $I_{OUT} = -100 \text{ mA}$ | 2 | 2.0 V | | |
| | | | | $V_{IN} = 2.4 \text{ V}$, $I_{OUT} = -200 \text{ mA}$ | 2 | 2.1 V | | |
| | | | +25°C | $V_{IN} = 2.4 \text{ V}$, $I_{OUT} = -350 \text{ mA}$ | 2 | 2.0 V | | |
| | | | +125°C | $V_{IN} = 2.4 \text{ V}$, $I_{OUT} = -100 \text{ mA}$ | 2 | 1.8 V | | |
| | | | | $V_{IN} = 2.4 \text{ V}$, $I_{OUT} = -200 \text{ mA}^{**}$ | 2 | 1.9 V | | |
| | | | UDS2982/84 | -55°C | $V_{IN} = 5.0 \text{ V}$, $I_{OUT} = -100 \text{ mA}$ | 2 | 2.0 V | |
| | | $V_{IN} = 5.0 \text{ V}$, $I_{OUT} = -200 \text{ mA}$ | | | 2 | 2.1 V | | |
| | | +25°C | | $V_{IN} = 5.0 \text{ V}$, $I_{OUT} = -350 \text{ mA}$ | 2 | 2.0 V | | |
| | | +125°C | | $V_{IN} = 5.0 \text{ V}$, $I_{OUT} = -100 \text{ mA}$ | 2 | 1.8 V | | |
| | | | $V_{IN} = 5.0 \text{ V}$, $I_{OUT} = -200 \text{ mA}^{**}$ | 2 | 1.9 V | | | |
| Maximum Input Current | $I_{IN(ON)}$ | All | | $V_{IN} = 2.4 \text{ V}$ | 3 | 295 μA | | |
| | | | | $V_{IN} = 3.85 \text{ V}$ | 3 | 600 μA | | |
| | | | | $V_{IN} = 12 \text{ V}$ | 3 | 2.3 mA | | |
| | $I_{IN(OFF)}$ | UDS2981/82 | | | $V_{IN} = 0 \text{ V}$, $V_S = 50 \text{ V}$ | 3 | 10 μA | |
| | | | | | UDS2983/84 | $V_{IN} = 0 \text{ V}$, $V_S = 80 \text{ V}$ | 3 | 10 μA |
| | | | | | | | | |
| Minimum Output Source Current | I_{OUT} | UDS2981/83 | | $V_{IN} = 2.4 \text{ V}$, $V_{CE} = 2.2 \text{ V}$ | 2 | -200 mA | | |
| | | UDS2982/84 | | $V_{IN} = 5.0 \text{ V}$, $V_{CE} = 2.2 \text{ V}$ | 2 | -200 mA | | |
| Maximum Supply Current (Outputs Open) | I_S | UDS2981 | +25°C | $V_{IN} = 2.4 \text{ V}^*$, $V_S = 50 \text{ V}$ | 4 | 10 mA | | |
| | | UDS2982 | | $V_{IN} = 5.0 \text{ V}^*$, $V_S = 50 \text{ V}$ | 4 | 10 mA | | |
| | | UDS2983 | | $V_{IN} = 2.4 \text{ V}^*$, $V_S = 80 \text{ V}$ | 4 | 10 mA | | |
| | | UDS2984 | | $V_{IN} = 5.0 \text{ V}^*$, $V_S = 80 \text{ V}$ | 4 | 10 mA | | |
| Maximum Turn-ON Delay Time | t_{pHL} | UDS2981/82 | +25°C | $V_S = 35 \text{ V}$, $R_L = 175 \Omega$ | 7 | 2.0 μs | | |
| | | UDS2983/84 | | $V_S = 50 \text{ V}$, $R_L = 250 \Omega$ | 7 | 2.0 μs | | |
| Maximum Turn-OFF Delay Time | t_{pLH} | UDS2981/82 | +25°C | $V_S = 35 \text{ V}$, $R_L = 175 \Omega$ | 7 | 10 μs | | |
| | | UDS2983/84 | | $V_S = 50 \text{ V}$, $R_L = 250 \Omega$ | 7 | 10 μs | | |
| Maximum Clamp Diode Leakage Current | I_R | UDS2981/82 | | $V_{IN} = 0.25 \text{ V}^*$, $V_S = 50 \text{ V}$ | 5 | 50 μA | | |
| | | UDS2983/84 | | $V_{IN} = 0.25 \text{ V}^*$, $V_S = 80 \text{ V}$ | 5 | 50 μA | | |
| Maximum Clamp Diode Forward Voltage | V_F | ALL | | $I_F = 200 \text{ mA}$ | 6 | 1.75 V | | |

*All inputs simultaneously.

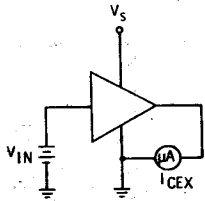
**Pulsed test.

†Complete part number includes a terminal letter that indicates package (H = ceramic/metal side-brazed, R = ceramic/glass cer-DIP).

SERIES 2080 HIGH-VOLTAGE, HIGH-CURRENT SOURCE DRIVERS

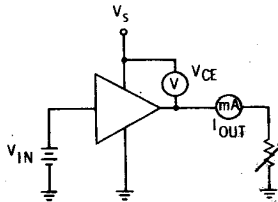
TEST FIGURES

Figure 1



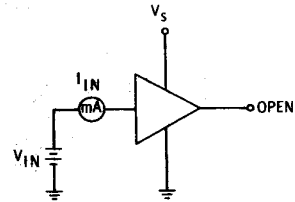
Dwg. No. A-11,083

Figure 2



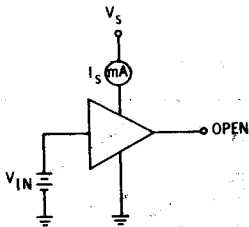
Dwg. No. A-11,084

Figure 3



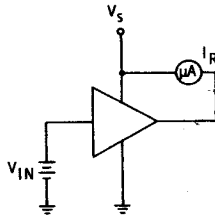
Dwg. No. A-11,085

Figure 4



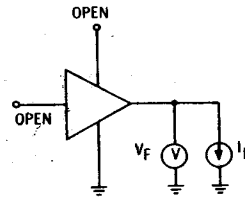
Dwg. No. A-11,086

Figure 5



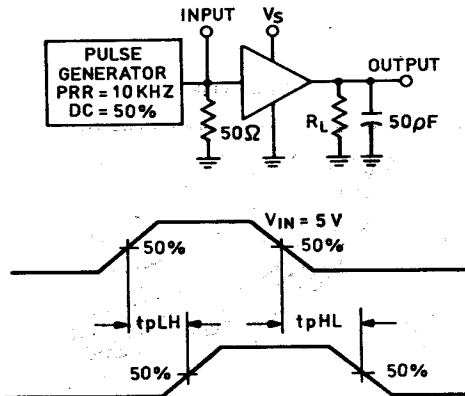
Dwg. No. A-11,087

Figure 6



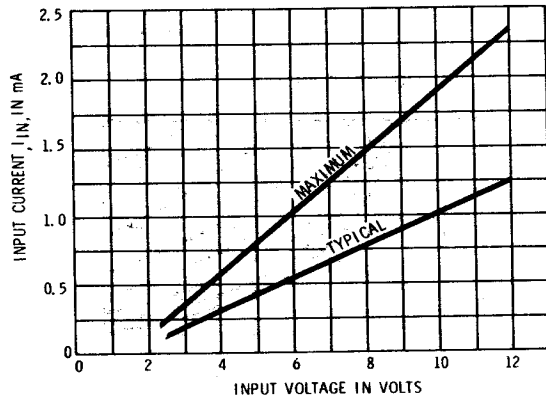
Dwg. No. A-11,088

Figure 7



Dwg. No. A-13,26A

INPUT CURRENT AS A FUNCTION OF INPUT VOLTAGE

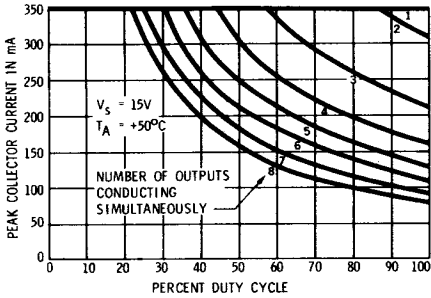


Dwg. No. A-11,115B

SERIES 2980
HIGH-VOLTAGE, HIGH-CURRENT, SOI BUDDY

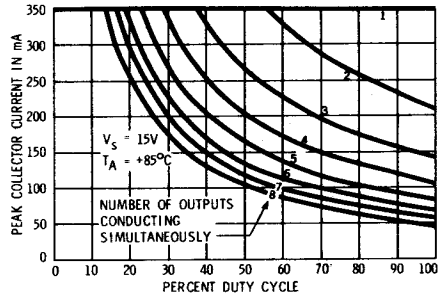
**RECOMMENDED PEAK COLLECTOR CURRENT
AS A FUNCTION OF DUTY CYCLE
SERIES UDS2980H**

UDS2981/82H



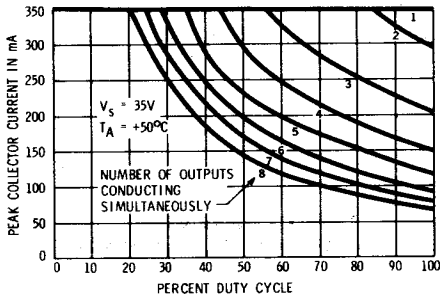
Dwg. No. A-11,078B

UDS2981/82H



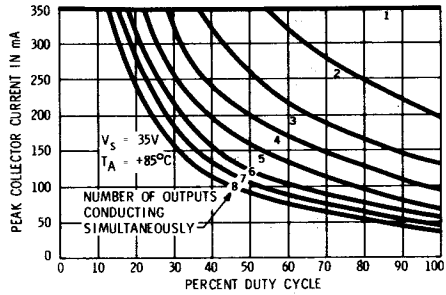
Dwg. No. A-11,076B

ALL DEVICES



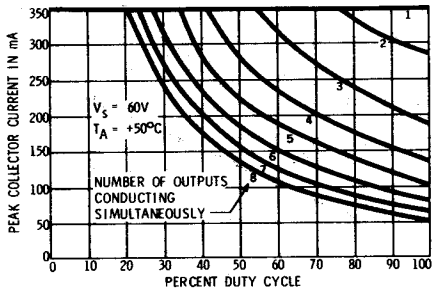
Dwg. No. A-11,079B

ALL DEVICES



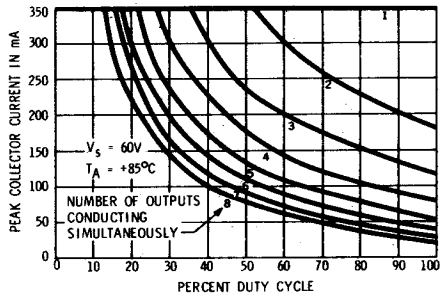
Dwg. No. A-11,080B

UDS2983/84H



Dwg. No. A-11,077A

UDS2983/84H

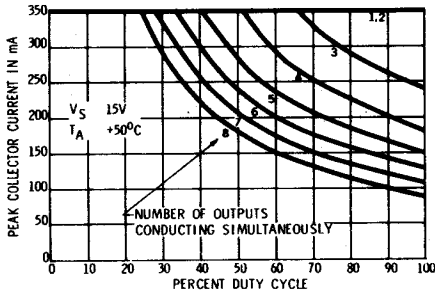


Dwg. No. A-11,081A

SERIES 2980
HIGH-VOLTAGE, HIGH-CURRENT SOURCE DRIVERS
MIL-STD-883 COMPLIANT

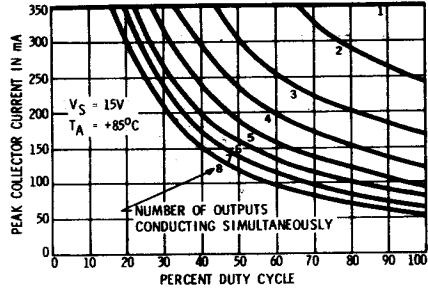
**RECOMMENDED PEAK COLLECTOR CURRENT
AS A FUNCTION OF DUTY CYCLE**
SERIES UDS2980R

UDS2981/82R



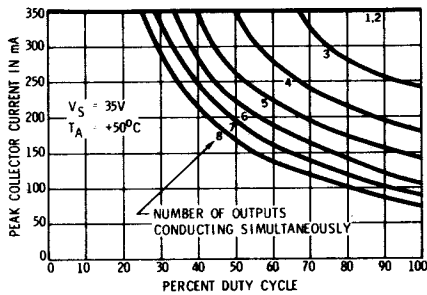
Dwg. No. A-12,401

UDS2981/82R



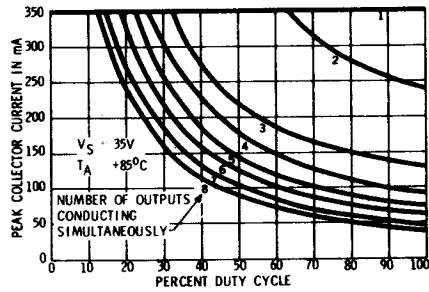
Dwg. No. A-12,402

ALL DEVICES



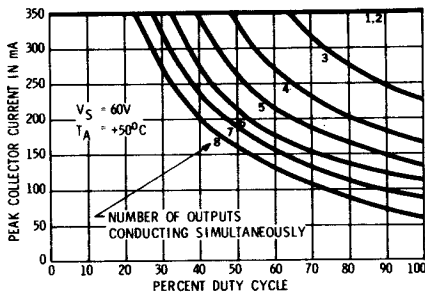
Dwg. No. A-12,403

ALL DEVICES



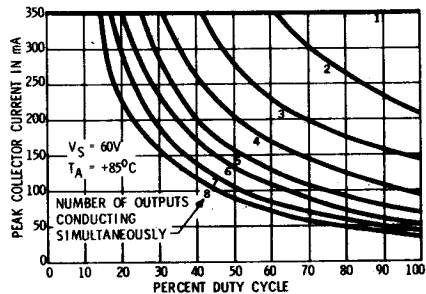
Dwg. No. A-12,404

UDS2983/84R



Dwg. No. A-12,405

UDS2983/84R



Dwg. No. A-12,406