XD2981 DIP18 / XL2981 SOP18

Features and Benefits

- TTL, DTL, PMOS, or CMOS compatible inputs
- 500 mA output source current capability
- Transient-protected outputs
- Output breakdown voltage to 50 V
- DIP or SOIC packaging

Description

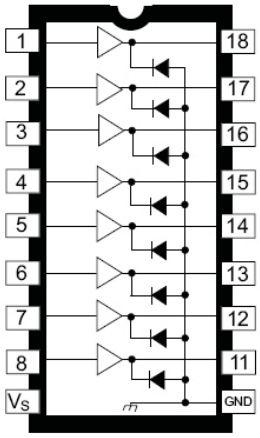
Recommended for high-side switching applications that benefit from separate logic and load grounds, these devices encompass load supply voltages to 50 V and output currents to -500 mA. These 8-channel source drivers are useful for interfacing between low-level logic and high-current loads. Typical loads include relays, solenoids, lamps, stepper and/or servo motors, print hammers, and LEDs.

All devices may be used with 5 V logic systems — TTL, Schottky TTL, DTL, and 5 V CMOS. The device packages offered are electrically interchangeable, and will withstand a maximum output off voltage of 50 V, and operate to a minimum of 5 V. All devices in this series integrate input current limiting resistors and output transient suppression diodes, and are activated by an active high input.

The suffix "A" indicates an 18-lead plastic dual in-line package with copper lead frame for optimum power dissipation. 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.

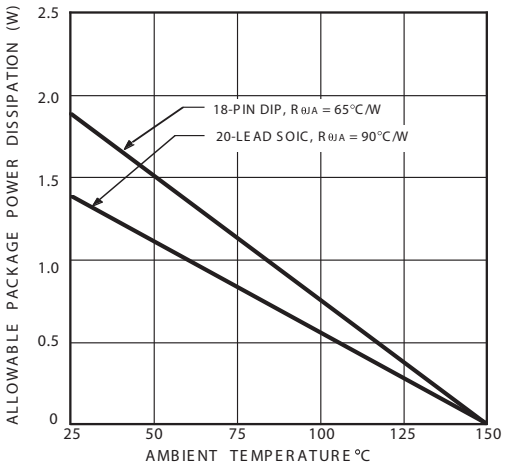
Simplified Block Diagrams

DIP18 and SOP18

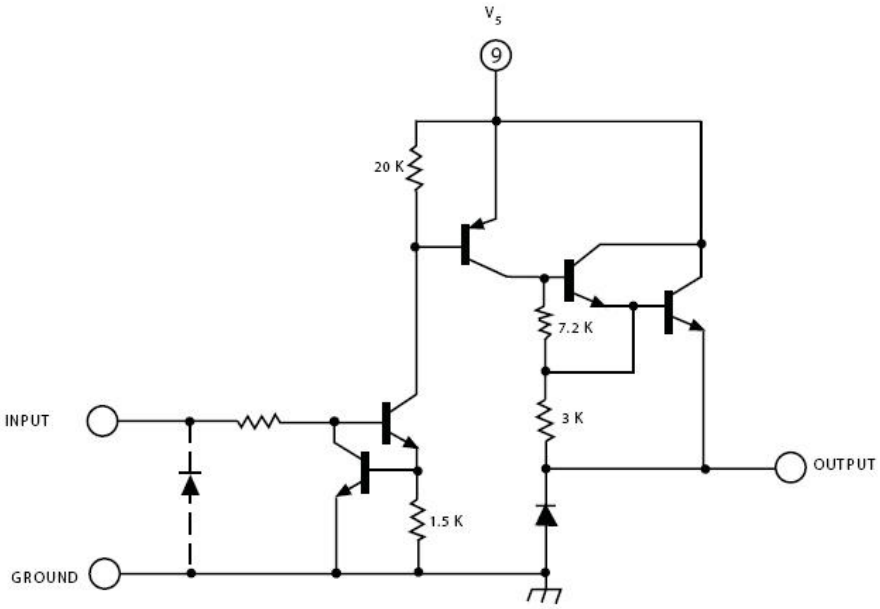


Absolute Maximum Ratings

Characteristic	Symbol	Notes	Rating	Units
Output Voltage Range	V_{CE}		5 to 50	V
Input Voltage	V_{IN}	2981	20	V
		XL2982SL,2981	20	V
Output Current	I_{OUT}		–500	mA
Package Power Dissipation	P_D	See graph	–	–
Operating Ambient Temperature	T_A	Range E	–40 to 85	ºC
		Range S	–20 to 85	ºC
Maximum Junction Temperature	T_J(max)		150	ºC
Storage Temperature	T_{stg}		–55 to 150	ºC

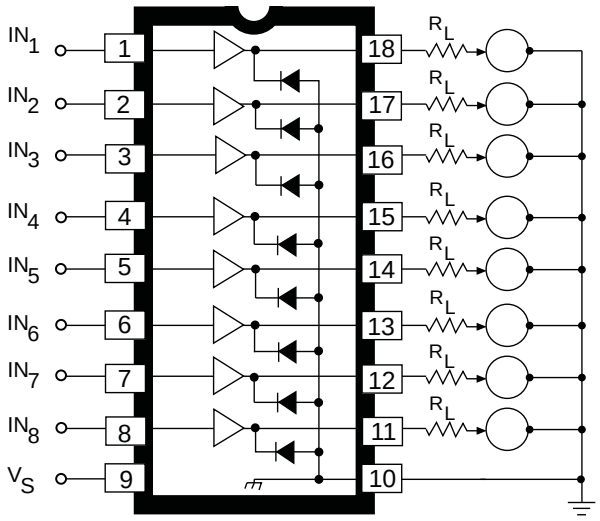


One of Eight Drivers

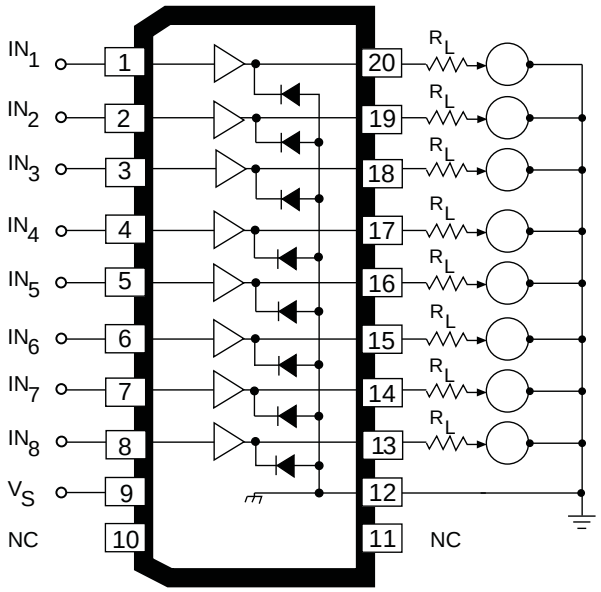


Typical electrosensitive printer application

2981 DIP18/SOP18



2982 SOP20 (LW Package)



Pins 10 and 11 can float; other pins match discontinued 18-pin SOIC: 1 to 9 same, pins 12 to 20 match pins 10 to 18

ELECTRICAL CHARACTERISTICS[1,2] at T_A = +25°C (unless otherwise specified).

Characteristic	Symbol	Variant	Test Conditions	Test Fig.	Min.	Typ.	Max.	Units
Output Leakage Current[3]	I_{CEX}	All	V_{IN} = 0.4 V, V_S = 50 V	1	—	—	20	µA
Output Sustaining Voltage	$V_{CE(SUS)}$	All	I_{OUT} = -45 mA	—	35	—	—	V
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	$I_{IN(ON)}$	2981	V_{IN} = 2.4 V	3	—	140	200	µA
			V_{IN} = 3.85 V	3	—	310	450	µA
		2982	V_{IN} = 2.4 V	3	—	140	200	µA
			V_{IN} = 12 V	3	—	1.25	1.93	mA
Output Source Current (Outputs Open)	I_{OUT}	2981	V_{IN} = 2.4 V, V_{CE} = 2.0 V	2	-350	—	—	mA
		2982	V_{IN} = 2.4 V, V_{CE} = 2.0 V	2	-350	—	—	mA
Supply Current Leakage Current	I_S	All	V_{IN} = 2.4 V*, V_S = 50 V	4	—	—	10	mA
Clamp Diode Current	I_R	All	V_R = 50 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	—	—	0.3	2.0	µs
Turn-Off Delay[4]	t_{OFF}	All	0.5 E_{IN} to 0.5 E_{OUT}, R_L = 100Ω, V_S = 35 V, See Note	—	—	2.0	10	µs

[1]Negative current is defined as coming out of (sourcing) the specified device terminal.

[2]All unused inputs must be connected to ground. Pull-down resistors (approximately 10 kΩ) are recommended for inputs that are allowed to float while power is being applied to V_S.

[3]All inputs simultaneously.

[4]Turn-off delay is influenced by load conditions. Systems applications well below the specified output loading may require timing considerations for some designs, i.e., multiplexed displays or when used in combination with sink drivers in a totem pole configuration.

TEST FIGURES

Figure 1

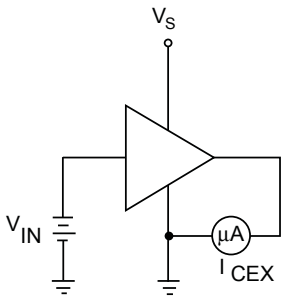


Figure 2

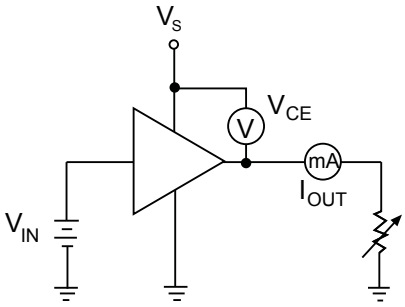


Figure 3

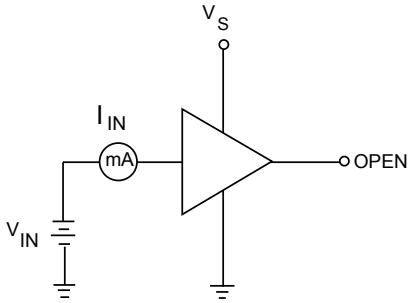


Figure 4

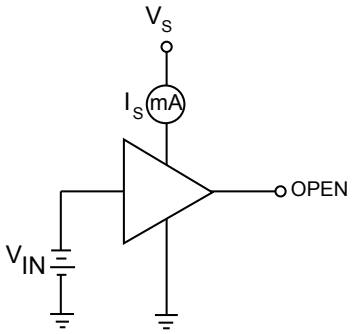


Figure 5

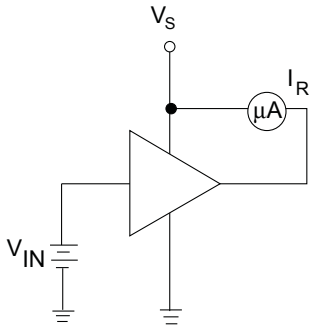
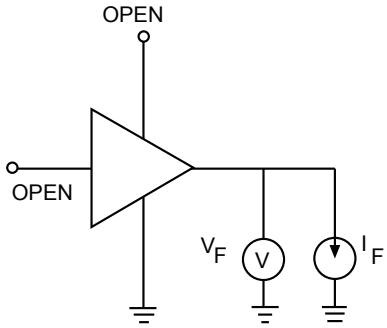
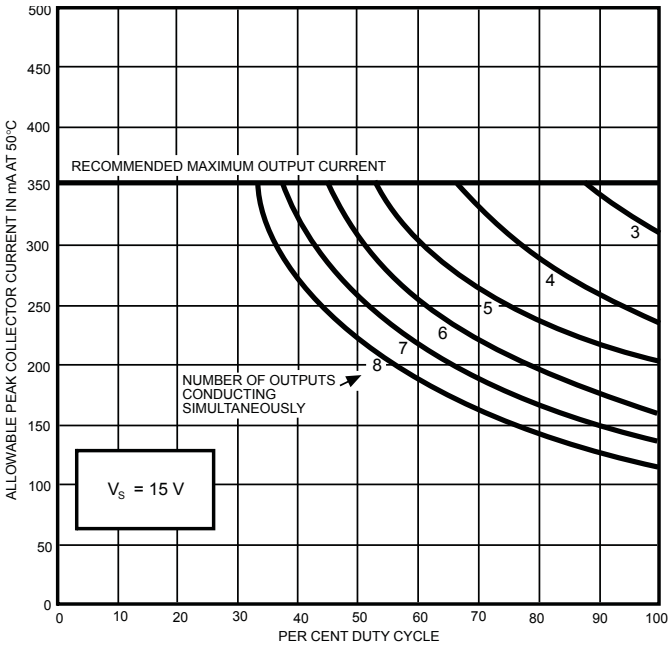


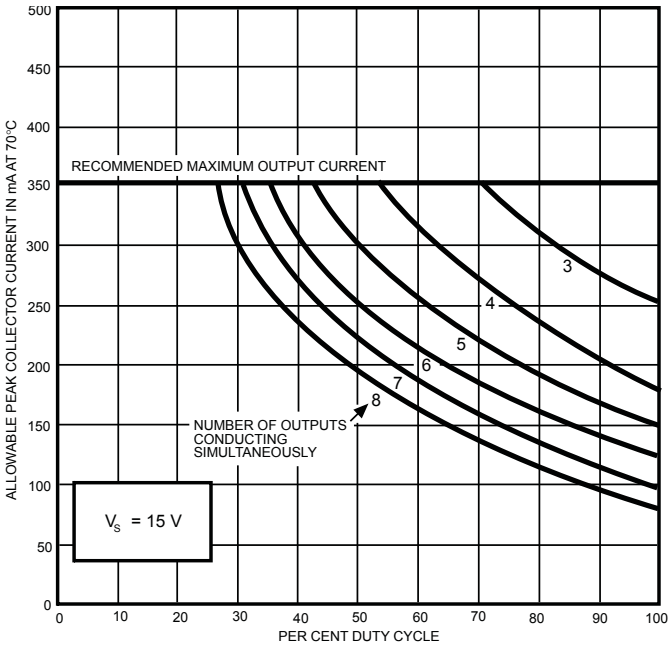
Figure 6



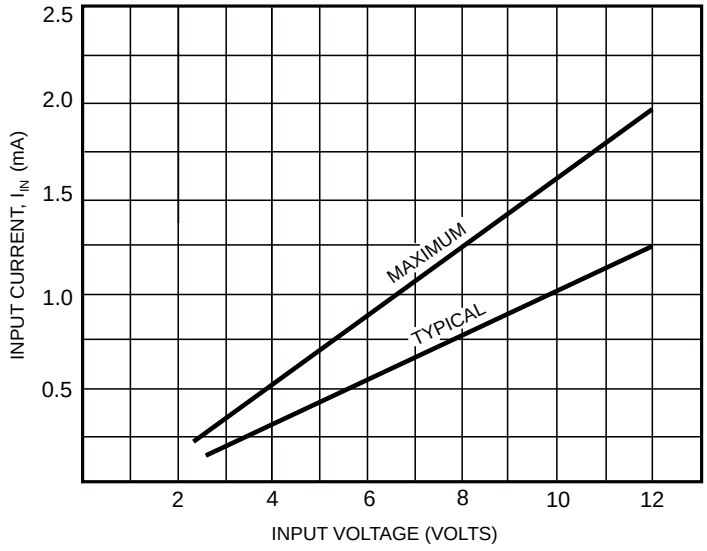
Allowable peak collector current as a function of duty cycle

XDXL/2981 and XL2982SL





Input current as a function of input voltage



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