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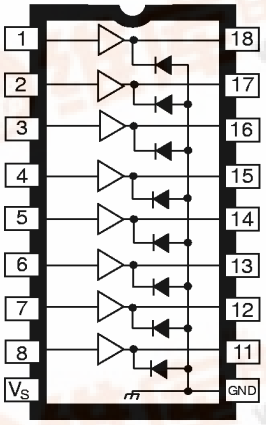
2981 THRU 2984

Data Sheet 29310D

8-CHANNEL SOURCE DRIVERS

UDN2981A thru UDN2984A



Dwg. No. A-10, 243

Note that the UDN2980A series (dual in-line package) and UDN2980LW series (small-outline IC package) are electrically identical and share a common terminal number assignment.

ABSOLUTE MAXIMUM RATINGS
at 25°C Free-Air Temperature

Output Voltage Range, V_{CE}
(UDN2981A, UDN2982A, UDN2982LW, and A2982SLW) . . **5 V to 50 V**
(UDN2983A, UDN2984A, UDN2984LW, and A2984SLW) . **35 V to 80 V**
Input Voltage, V_{IN}
(UDN2981A and UDN2983A) . . . . . **15 V**
(UDN2982A, UDN2984A, UDN2982LW, UDN2984LW, A2982SLW, and A2984SLW) . . . . . **20 V**
Output Current, I_{OUT} . . . . . **-500 mA**
Package Power Dissipation, P_D . . . . . **See Graph**
Operating Temperature Range, T_A . . . . . **-20°C to +85°C**
Storage Temperature Range, T_S . . . . . **-55°C to +150°C**

Recommended for high-side switching applications that benefit from separate logic and load grounds, these devices encompass load supply voltages to 80 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 UDN2981A, UDN2982A, UDN2982LW, and A2982SLW are electrically interchangeable, will withstand a maximum output OFF voltage of 50 V, and operate to a minimum of 5 V; the UDN2983A, UDN2984A, UDN2984LW, and A2984SLW drivers are electrically interchangeable, will withstand an output voltage of 80 V, and operate to a minimum of 35 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' (all devices) 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.

The suffix 'LW' (UDN2982LW and UDN2984LW only) indicates an 18-lead surface-mountable wide-body SOIC package; the A2982SLW and A2984SLW are provided in a 20-lead wide-body SOIC package with improved thermal characteristics.

The UDN2982A, UDN2982LW, A2982SLW, UDN2984A, UDN2984LW, and A2984SLW drivers are also available for operation over an extended temperature range to -40°C. To order, change the prefix 'UDN' to 'UDQ' or the suffix 'SLW' to 'ELW'.

FEATURES

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

Always order by complete part number, e.g., **UDN2981A**.
Note that all devices are not available in all package styles.

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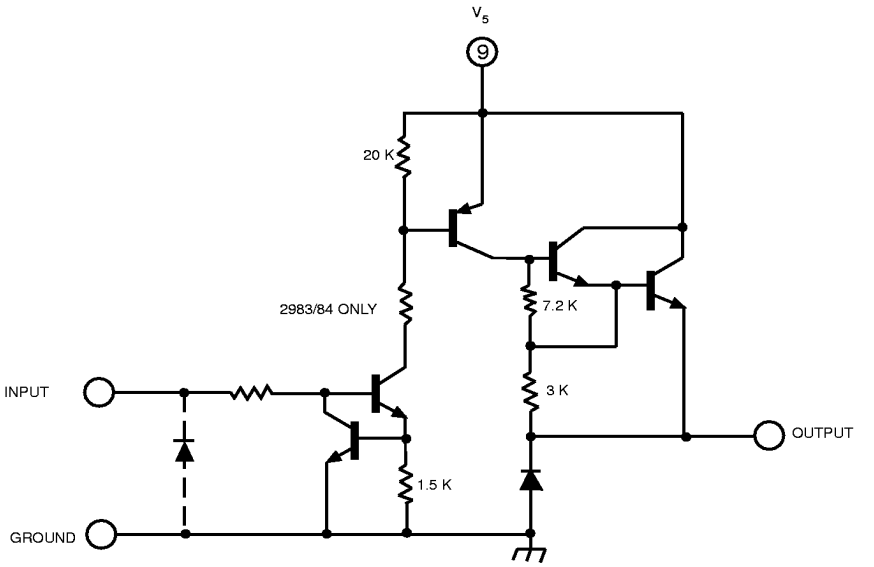
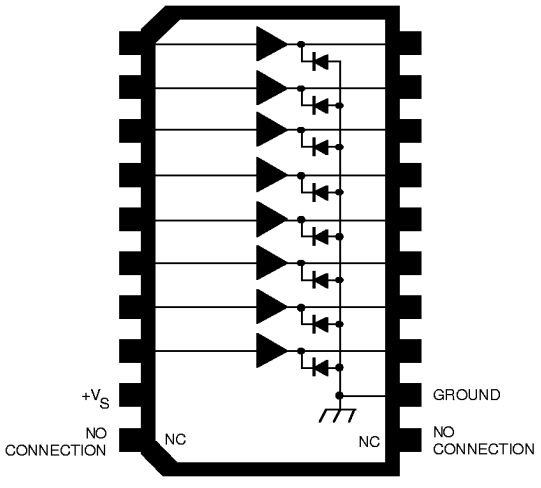
One of Eight Drivers

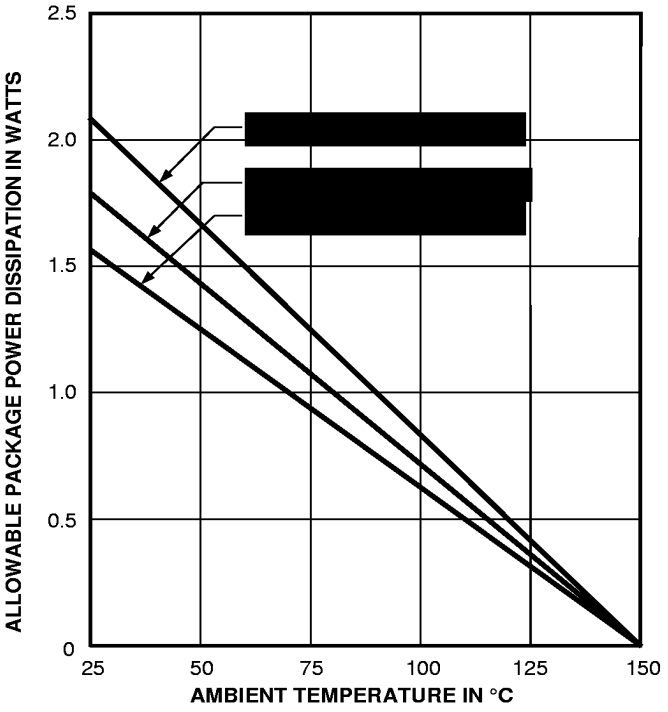


Dwg. No. A-10,242B

A2982SLW and A2984SLW



Dwg. PP-064-2



Dwg. GP-022-4

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

Characteristic	Symbol	Applicable Devices	Test Conditions	Test Fig.	Limits Min.	Typ.	Max.	Units
Output Leakage Current	I_{CEX}	2981/82†	V_{IN} = 0.4 V*, V_S = 50 V, T_A = +70°C	1	—	—	200	µA
		2983/84†	V_{IN} = 0.4 V*, V_S = 80 V, T_A = +70°C	1	—	—	200	µA
Output Sustaining Voltage	$V_{CE(SUS)}$	2981/82†	I_{OUT} = -45 mA	—	35	—	—	V
		2983/84†	I_{OUT} = -70 mA	—	45	—	—	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	$I_{IN(ON)}$	2981/83A	V_{IN} = 2.4 V	3	—	140	200	µA
			V_{IN} = 3.85 V	3	—	310	450	µA
		2982/84†	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}	2981/83A	V_{IN} = 2.4 V, V_{CE} = 2.0 V	2	-350	—	—	mA
		2982/84†	V_{IN} = 2.4 V, V_{CE} = 2.0 V	2	-350	—	—	mA
Supply Current Leakage Current	I_S	2981/82†	V_{IN} = 2.4 V*, V_S = 50 V	4	—	—	10	mA
		2983/84†	V_{IN} = 2.4 V*, V_S = 80 V	4	—	—	10	mA
Clamp Diode Forward Voltage	I_R	2981/82†	V_R = 50 V, V_{IN} = 0.4 V*	5	—	—	50	µA
		2983/84†	V_R = 80 V, V_{IN} = 0.4 V*	5	—	—	50	µA
Clamp Diode	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, See Note	—	—	5.0	10	µs

NOTES: 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.

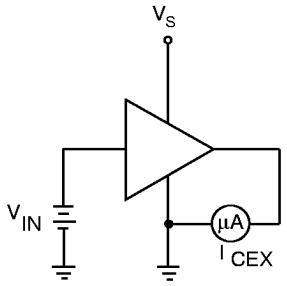
Negative current is defined as coming out of (sourcing) the specified device terminal.

* All inputs simultaneously.

† Complete part number includes a prefix (A or UDN) and a suffix (A or SLW) as follows:
UDN2981A,
UDN2982A, UDN2982LW, or A2982SLW,
UDN2983A,
UDN2984A, UDN2984LW, or A2984SLW.

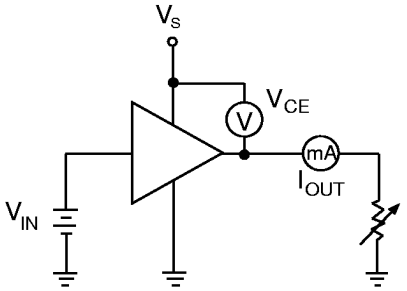
TEST FIGURES

Figure 1



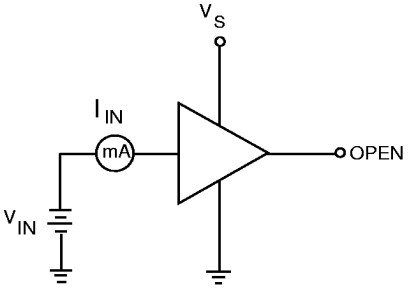
Dwg. No. A-11,083

Figure 2



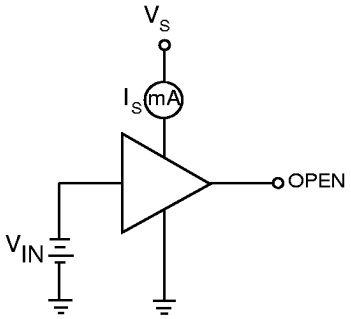
Dwg. No. A-11,084

Figure 3



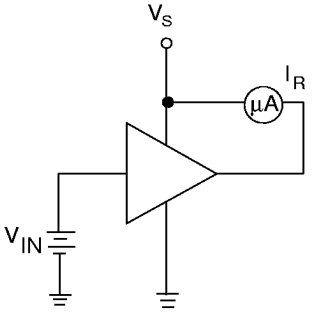
Dwg. No. A-11,085

Figure 4



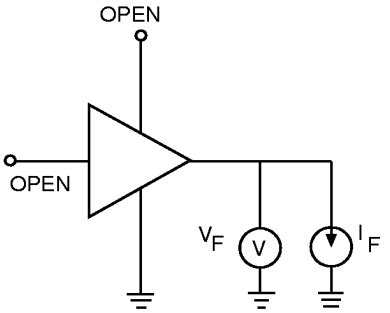
Dwg. No. A-11,086

Figure 5



Dwg. No. A-11,087

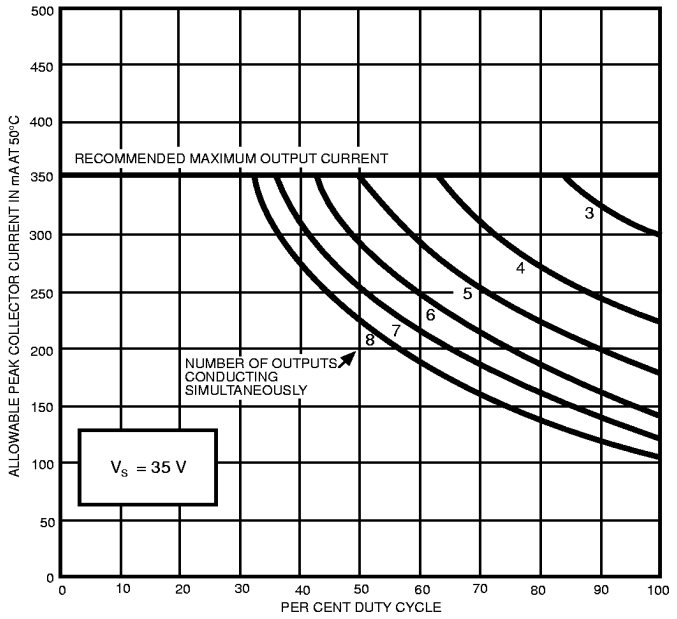
Figure 6



Dwg. No. A-11,088

Allowable peak collector current as a function of duty cycle

Series UDN2980A



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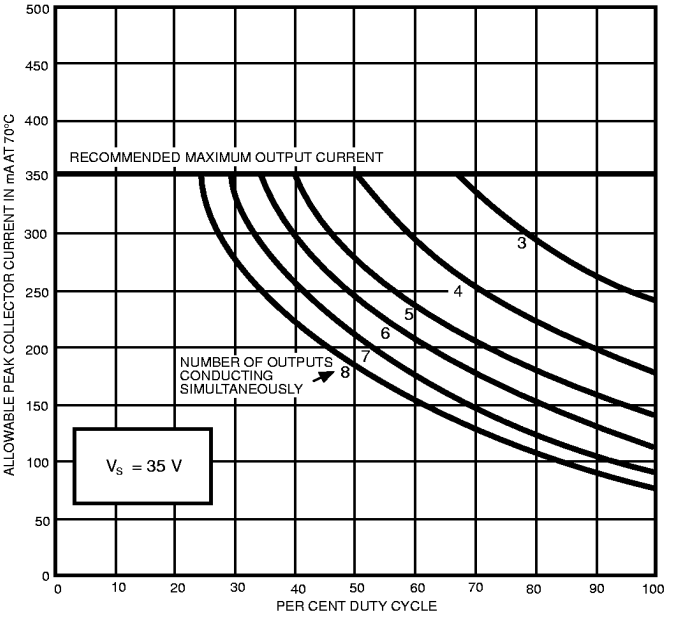
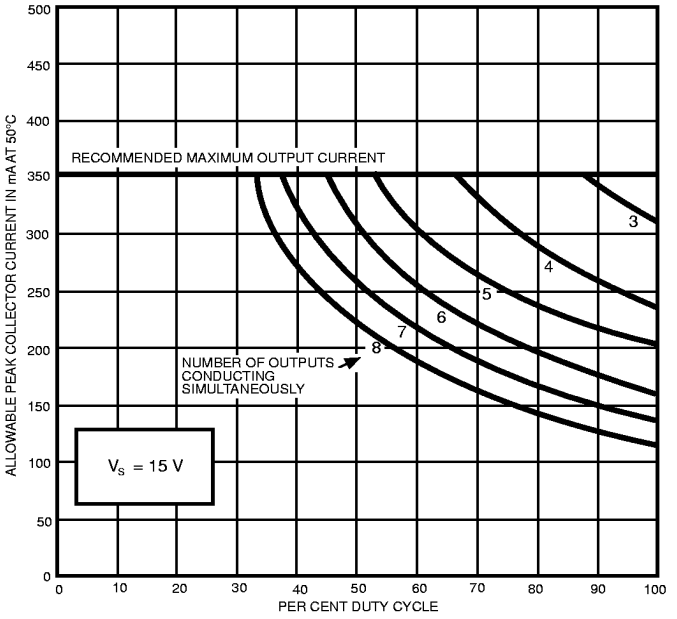
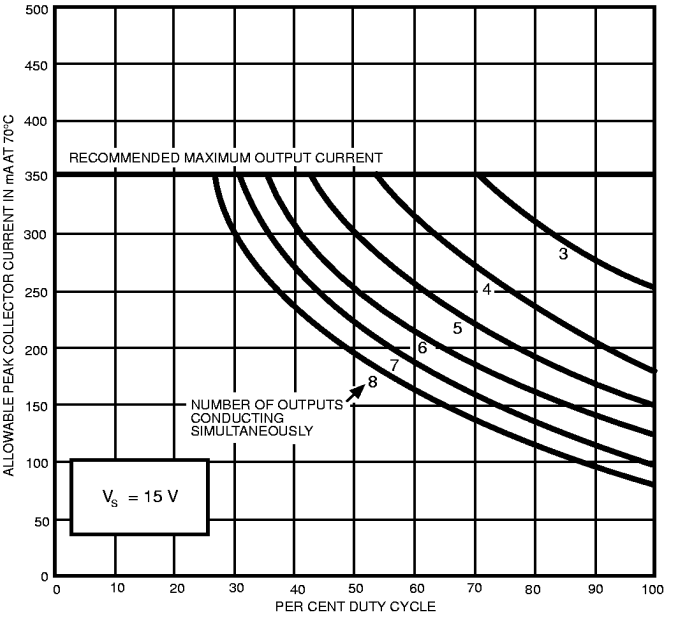


Dwg. No. A-11,111B

UDN2981A and UDN2982A



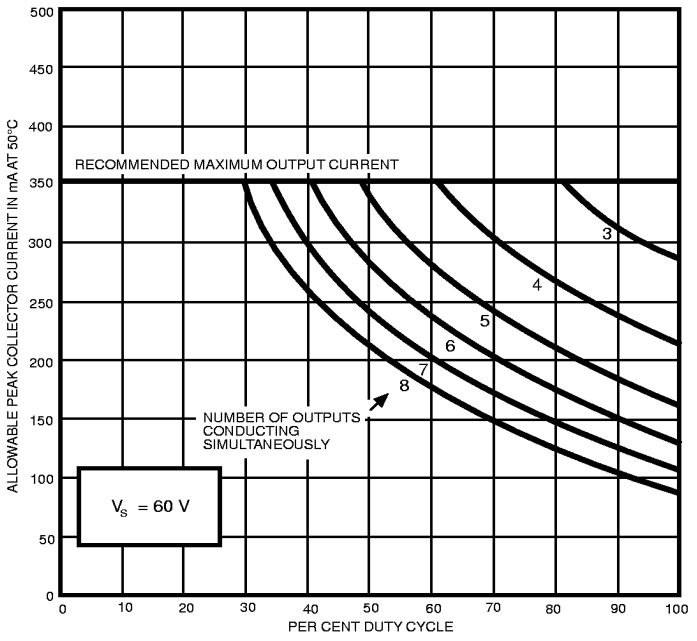
Dwg. No. A-11,107B



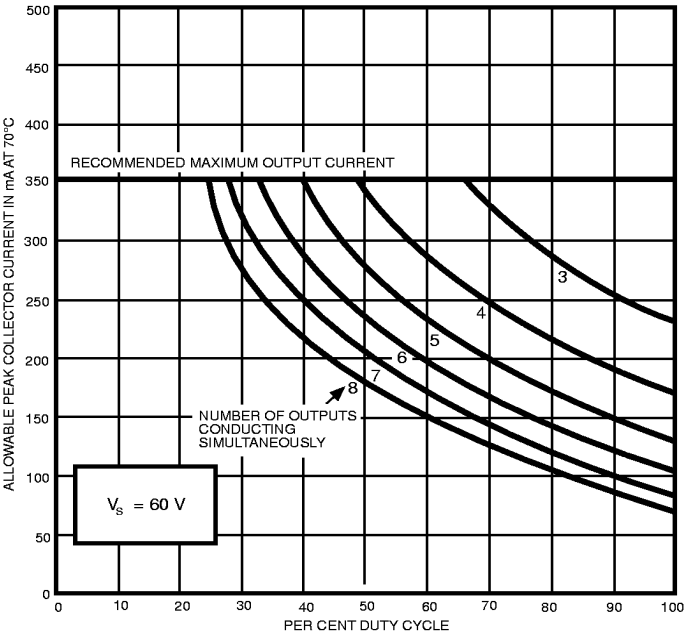
Dwg. No. A-11,108B

Allowable peak collector current as a function of duty cycle

UDN2983A and UDN2984A

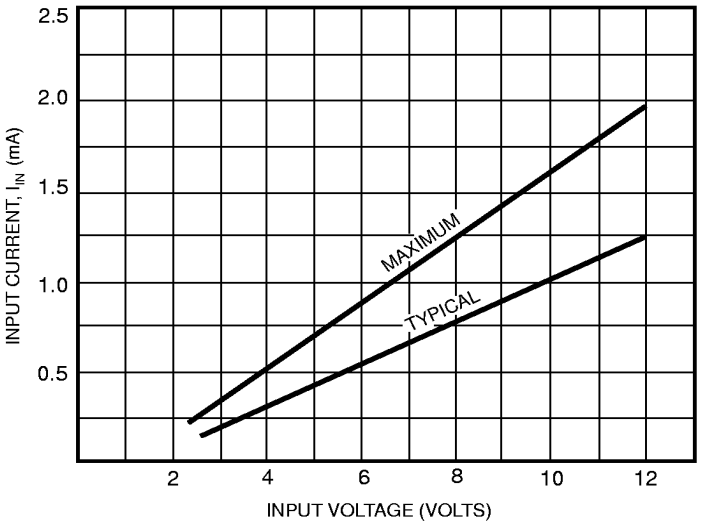


Dwg. No. A-11,109B



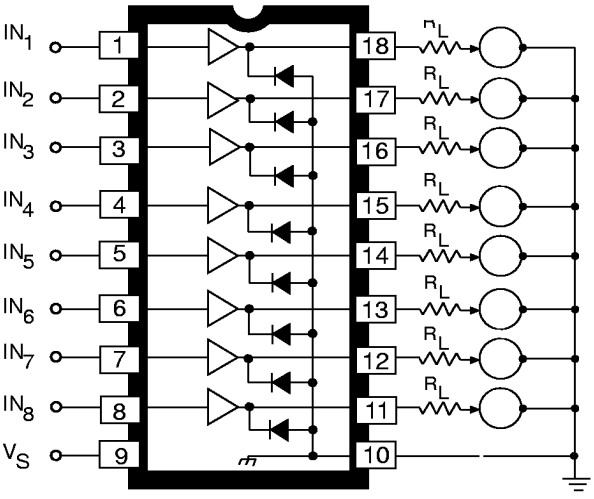
Dwg. No. A-11,110B

Input current as a function of input voltage



Dwg. No. A-11,115B

Typical electrosensitive printer application



Dwg. No. A-11,113A

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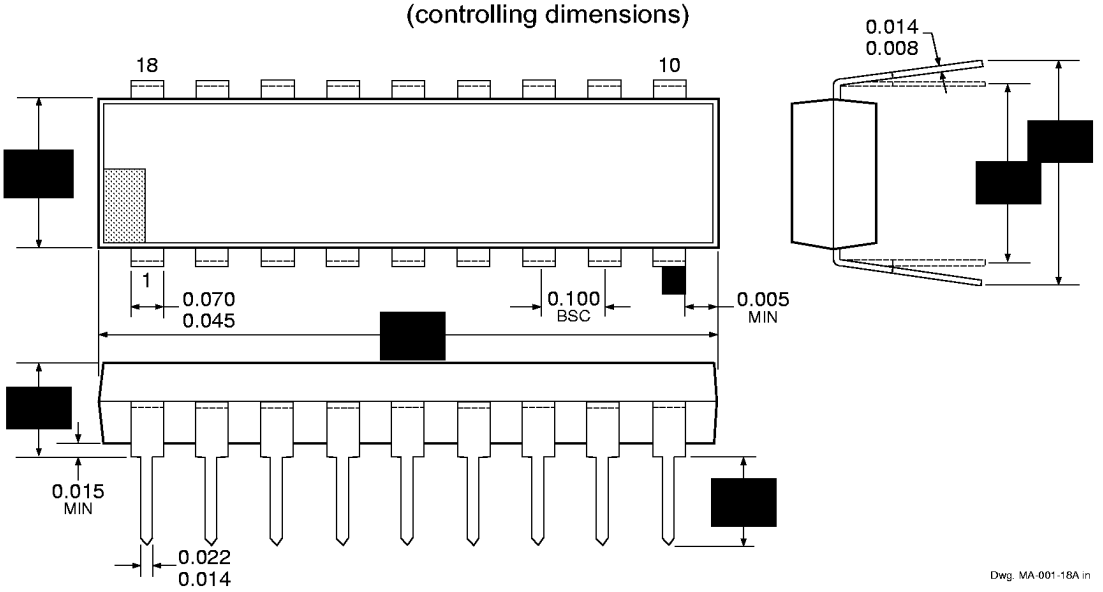
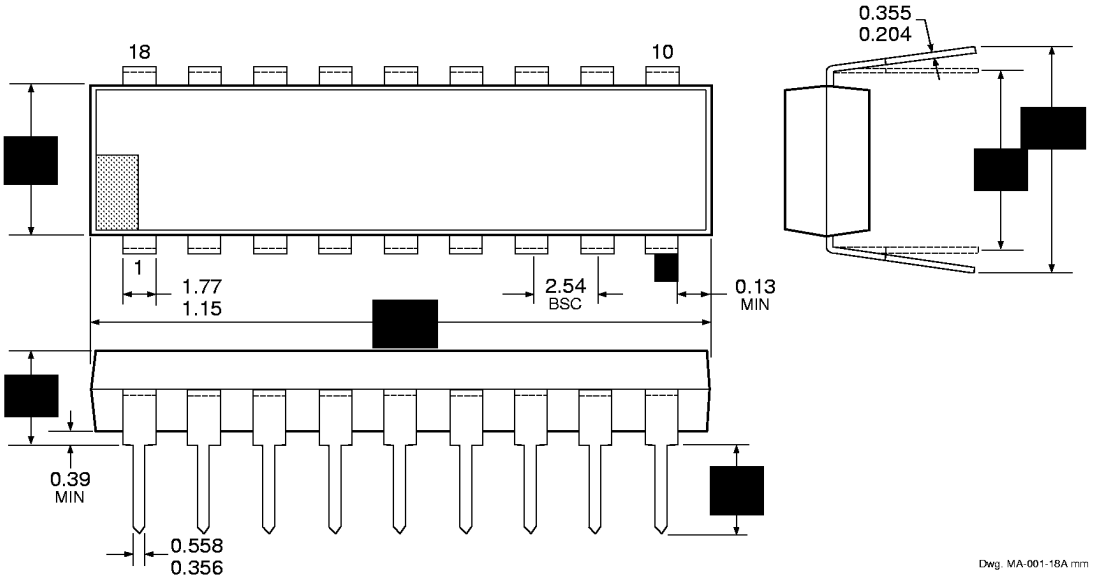
UDN2981A, UDN2982A, UDN2983A, and UDN2984A

Dimensions in Inches
(controlling dimensions)



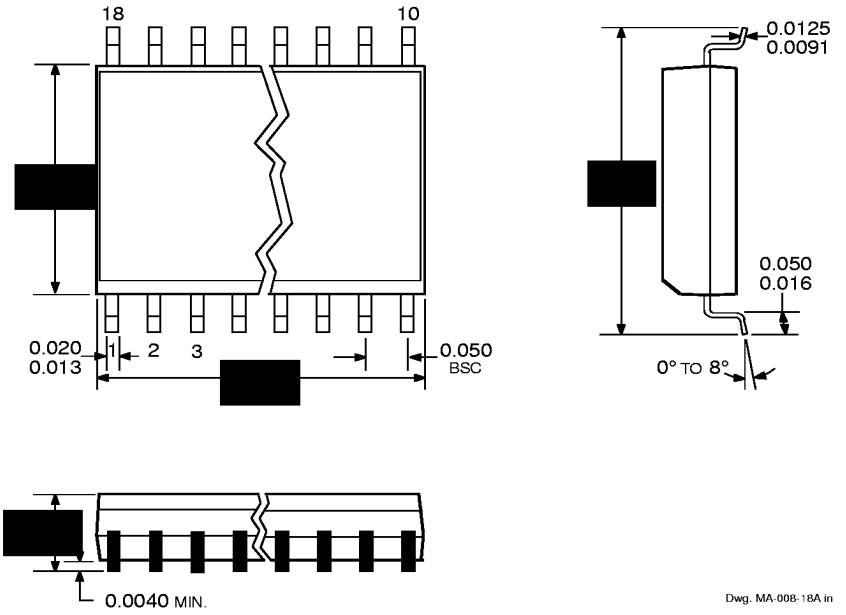
Dimensions in Millimeters
(for reference only)



NOTES: 1. Exact body and lead configuration at vendor's option within limits shown.
2. Lead spacing tolerance is non-cumulative.
3. Lead thickness is measured at seating plane or below.

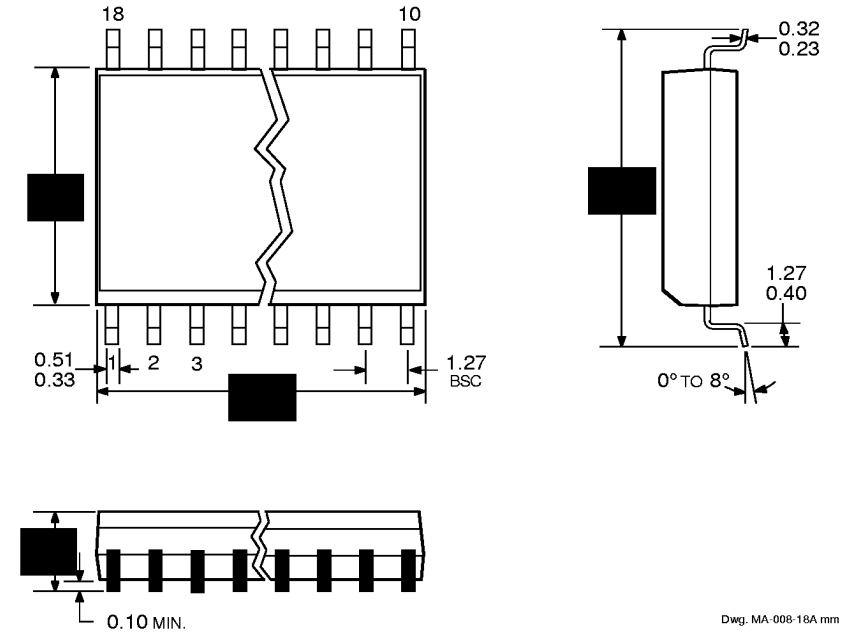
UDN2982LW and UDN2984LW

Dimensions in Inches
(for reference only)



Dwg. MA-008-18A in

Dimensions in Millimeters
(controlling dimensions)



Dwg. MA-008-18A mm

NOTES: 1. Exact body and lead configuration at vendor's option within limits shown.
2. Lead spacing tolerance is non-cumulative.

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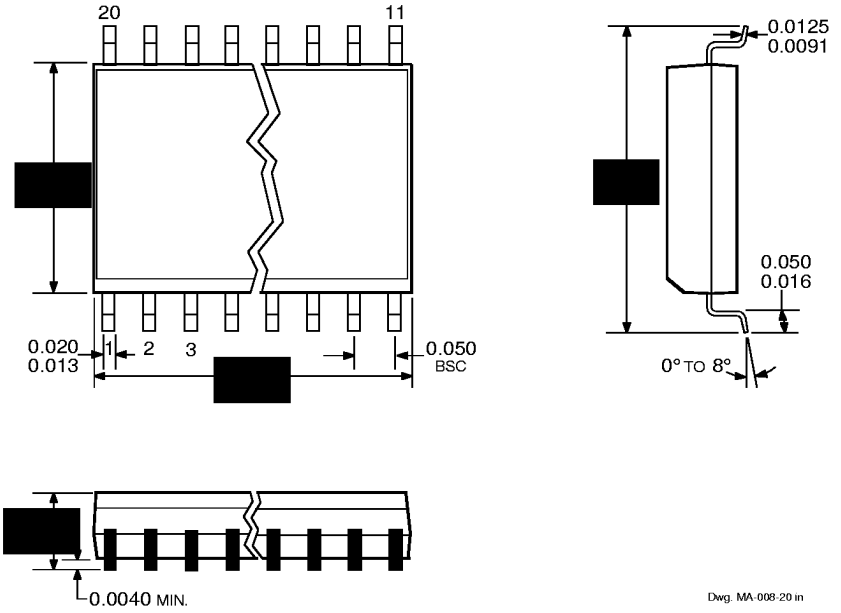
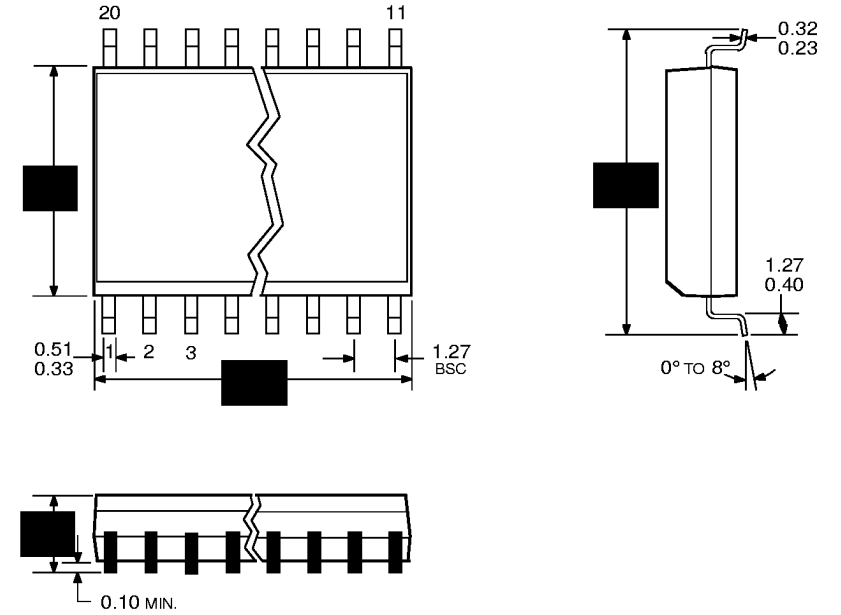
A2982SLW and A2984SLW

Dimensions in Inches
(for reference only)



Dwg. MA-008-20 in

Dimensions in Millimeters
(controlling dimensions)



NOTES: 1. Exact body and lead configuration at vendor's option within limits shown.
2. Lead spacing tolerance is non-cumulative.

POWER SOURCE DRIVERS SELECTION GUIDE

IN ORDER OF 1) OUTPUT CURRENT, 2) OUTPUT VOLTAGE, 3) NUMBER OF DRIVERS

Output Ratings *			Features					
mA	V	#	Serial Input	Latched Drivers	Diode Clamp	Saturated Outputs	Internal Protection	Part Number †
-25	60	8	–	X	–	–	–	5815
	60	10	X	X	Active Pull-Down	–	–	5810-F and 6809/10
	60	12	X	X	Active Pull-Down	–	–	5811 and 6811
	60	20	X	X	Active Pull-Down	–	–	5812-F and 6812
	60	32	X	X	Active Pull-Down	–	–	5818-F and 6818
	85	8	–	–	–	–	–	6118
-120	-25	8	–	–	X	X	–	2585
	30	8	–	–	X	X	–	2985
	50	8	X	X	X	X	–	5895
-350	35	8	–	–	X	–	X	2987
	50	8	–	–	X	–	–	2981 and 2982
	50	8	X	X	X	–	–	5891
	-50	8	–	–	X	–	–	2580
	80	8	–	–	X	–	–	2983 and 2984
	80	8	X	X	X	–	–	5890
	-80	8	–	–	X	–	–	2588

* Current is maximum specified test condition, voltage is maximum rating. See specification for sustaining voltage limits or over-current protection voltage limits.

† Complete part number includes additional characters to indicate operating temperature range and package style.

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