

### General

The MIC2981/82 is an 8-channel, high-voltage, high-current source driver array ideal for switching high-power loads from logic-level TTL, CMOS, or PMOS control signals.

These drivers can manage multiple loads of up to 50V and 500mA, limited only by package power dissipation.

Micrel's MIC2981/82 features inputs compatible with 5V TTL and 5V to 15V CMOS or PMOS logic outputs. Micrel's dual-marked device replaces either UDN2981 or UDN2982 devices.

The MIC2981/82 is available in the 18-pin plastic DIP and 18-lead wide SOP package. Both devices operate in the industrial temperature range.

### Features

- Output voltage to 50V
- Output current to 500mA
- Transient-protected outputs
- Integral clamp diodes
- TTL, CMOS, or PMOS compatible inputs

### Applications

- Relay and solenoid switching
- Stepping motor
- LED and incandescent displays

### Ordering Information

Reference	Part Number Manufacturing*	PbFree	Temperature Range	Package
MIC2981BN**	MIC2981/82BN	MIC2981/82YN	-40°C to +85°C	18-pin DIP
MIC2982BN**	MIC2981/82BN	MIC2981/82YN	-40°C to +85°C	18-pin DIP
MIC2981BWM**	MIC2981/82BWM	MIC2981/82YWM	-40°C to +85°C	18-pin wide SOP
MIC2982BWM**	MIC2981/82BWM	MIC2981/82YWM	-40°C to +85°C	18-pin wide SOP

\* Order entry P/N.

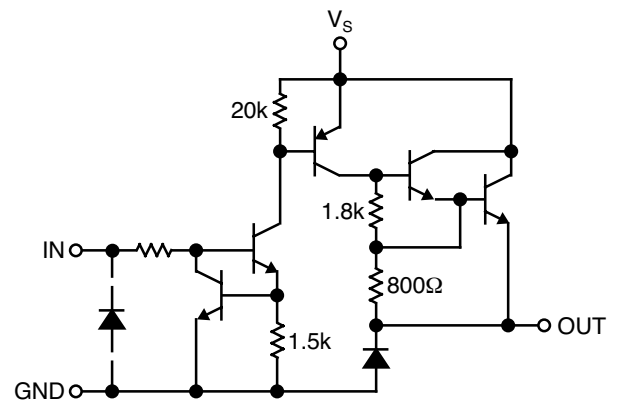
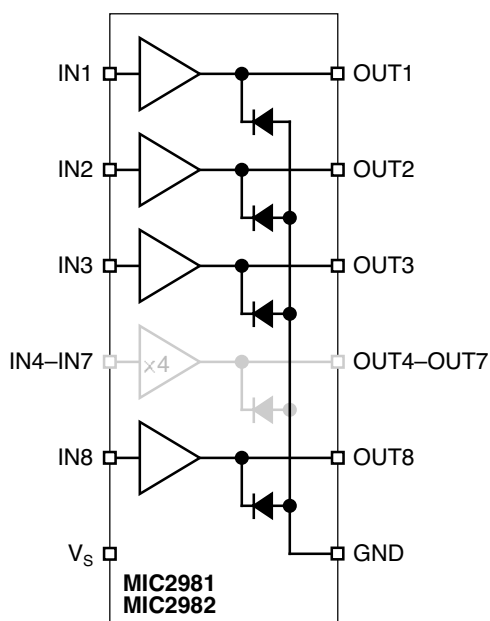
\*\*Orders for MIC2981BN or MIC2982BN will be filled with dual-marked MIC2981/82BN.

\*\*Orders for MIC2981YN or MIC2982YN will be filled with dual-marked MIC2981/82YN.

\*\*Orders for MIC2981BWM or MIC2982BWM will be filled with dual-marked MIC2981/82BWM.

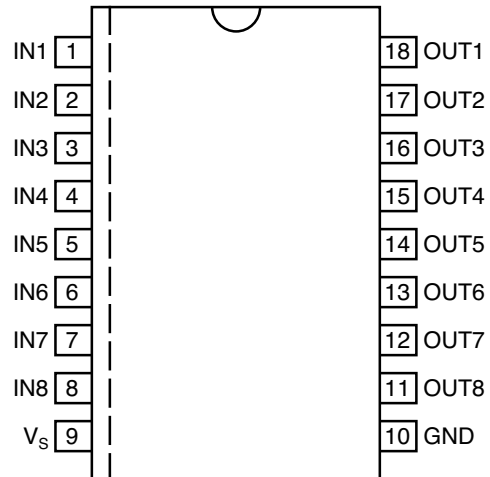
\*\*Orders for MIC2981YWM or MIC2982YWM will be filled with dual-marked MIC2981/82YWM.

### Functional Diagrams



Typical MIC2981/2982 Source Driver

## Pin Configuration



**18-Pin DIP (N)**  
**18-Pin Wide SOP (WM)**

## Pin Description

Pin No.	Pin No.	Pin Name	Pin Function
1–8	IN1–IN8	Input 1 through Input 8:	Base drive to driver input transistor.
9	$V_S$	Supply Input	
10	GND	Ground	
11–18	OUT8–OUT1	Output 8 through Output 1:	Emitter of Darlington driver output.

**Absolute Maximum Ratings**

Supply Voltage ( $V_S$ )	50V
Output Voltage ( $V_{CE}$ )	50V
Continuous Output Current ( $I_C$ )	500mA
Input Voltage ( $V_{IN}$ )	
MIC2981/82	30V
Ground Current ( $I_{GND}$ )	3A
Junction Temperature ( $T_J$ )	+150°C
Storage Temperature ( $T_S$ )	-65°C to +150°C

**Operating Ratings**

Supply Voltage ( $V_S$ )	5V to 50V
Ambient Temperature ( $T_A$ )	-40°C to +85°C
Package Thermal Resistance	
PDIP $\theta_{JA}$	56°C/W
SOP $\theta_{JA}$	84°C/W

**Electrical Characteristics**(Note 3)

$V_S = 50V$ ,  $T_A = +25^\circ C$ , unless noted.

Symbol	Parameter	Condition	Min	Typ	Max	Units
$I_{CEX}$	Output Leakage Current	$V_{IN} = 0.4V$ , $T_A = +70^\circ C$ , <b>Note 1</b>			200	$\mu A$
$V_{CE(sus)}$	Output Sustaining Voltage	$I_{OUT} = 45mA$	35			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{IN} = 2.4V$ , $I_{OUT} = 100mA$ $V_{IN} = 2.4V$ , $I_{OUT} = 225mA$ $V_{IN} = 2.4V$ , $I_{OUT} = 350mA$		1.7 1.8 1.9	2.0 2.1 2.2	V V V
$I_{IN(on)}$	Input Current	MIC2981 $V_{IN} = 2.4V$ $V_{IN} = 3.85$ MIC2982 $V_{IN} = 2.4V$ $V_{IN} = 12V$		140 310 140 1.25	200 450 200 1.93	$\mu A$ $\mu A$ $\mu A$ mA
$I_{OUT}$	Output Source Current	$V_{IN} = 2.4V$ , $V_{CE} = 2.2V$	350			mA
$I_S$	Supply Current	$V_{IN} = 2.4$ , OUT1-8 = open, <b>Note 1</b>			10	mA
$t_{ON}$	Turn-On Delay	$0.5E_{IN}$ to $0.5E_{OUT}$ , $R_L = 100\Omega$ , $V_S = 35V$ ,		1.0	2.0	$\mu s$
$t_{OFF}$	Turn-Off Delay	$0.5E_{IN}$ to $0.5E_{OUT}$ , $R_L = 100\Omega$ , $V_S = 35V$ , <b>Note 2</b>		5.0	10	$\mu s$
$I_R$	Clamp Diode Leakage Current	$V_R = 50V$ , $V_{IN} = 0.4V$ , <b>Note 1</b>			50	$\mu A$
$V_F$	Clamp Diode Forward Voltage	$I_F = 350mA$		1.5	2.0	V

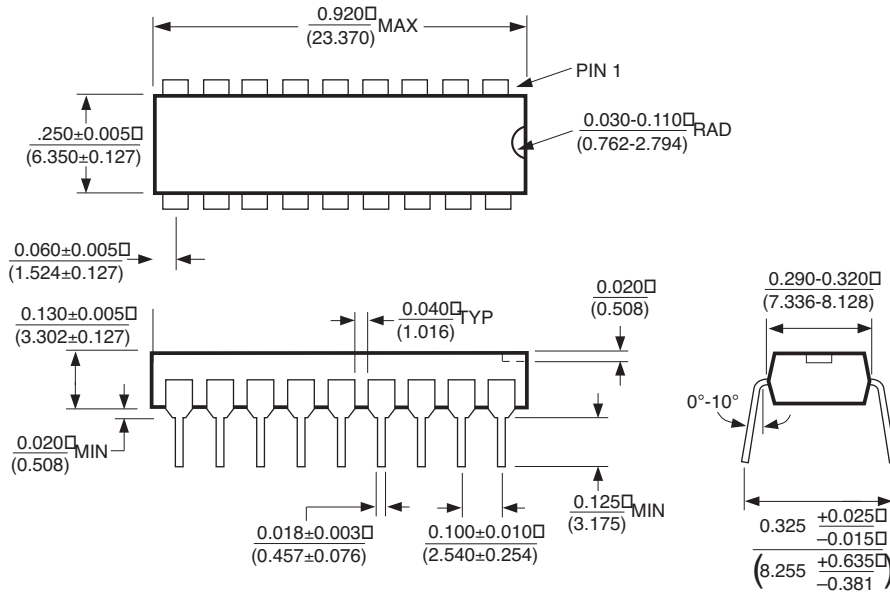
**General Note:** Devices are ESD protected; however, handling precautions are recommended.

**Note 1:** Applied to all 8 inputs simultaneously.

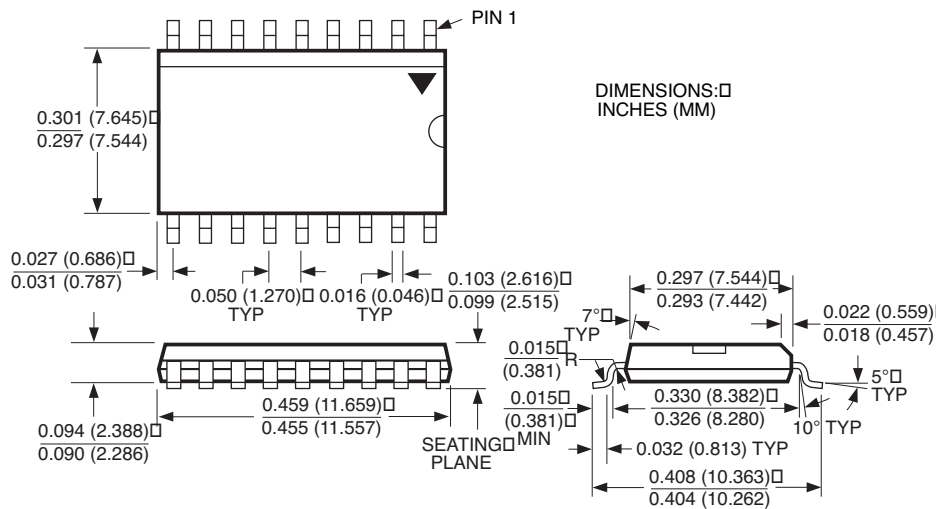
**Note 2:** Load conditions affect turnoff delay.

**Note 3:** Specification for packaged product only.

Package Information



18-Pin Plastic DIP (N)



18-Pin Wide SOP (WM)

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