

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.

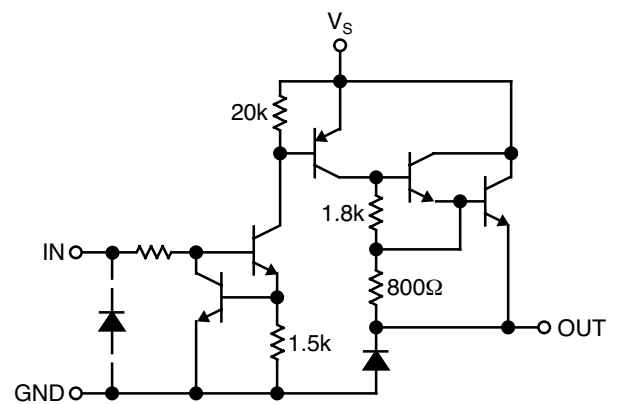
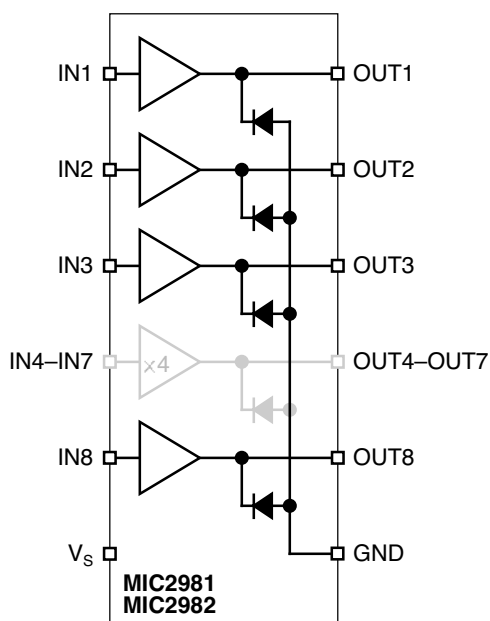
**Orders for MIC2981BN or MIC2982BN will be filled with dual-marked MIC2981/82BN.

**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.

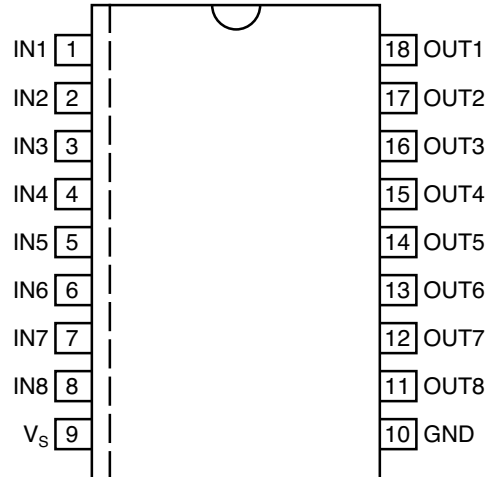
**Orders for MIC2981YWM or MIC2982YWM will be filled with dual-marked MIC2981/82YWM.

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 θ_{JA} | 56°C/W |
| SOP θ_{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 | $V_{IN} = 0.4V$, $T_A = +70^\circ C$, Note 1 | | | 200 | μA |
| $V_{CE(sus)}$ | 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 | μA μA μA 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, Note 1 | | | 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 | μs |
| t_{OFF} | Turn-Off Delay | $0.5E_{IN}$ to $0.5E_{OUT}$, $R_L = 100\Omega$, $V_S = 35V$, Note 2 | | 5.0 | 10 | μs |
| I_R | Clamp Diode Leakage Current | $V_R = 50V$, $V_{IN} = 0.4V$, Note 1 | | | 50 | μA |
| V_F | Clamp Diode Forward Voltage | $I_F = 350mA$ | | 1.5 | 2.0 | V |

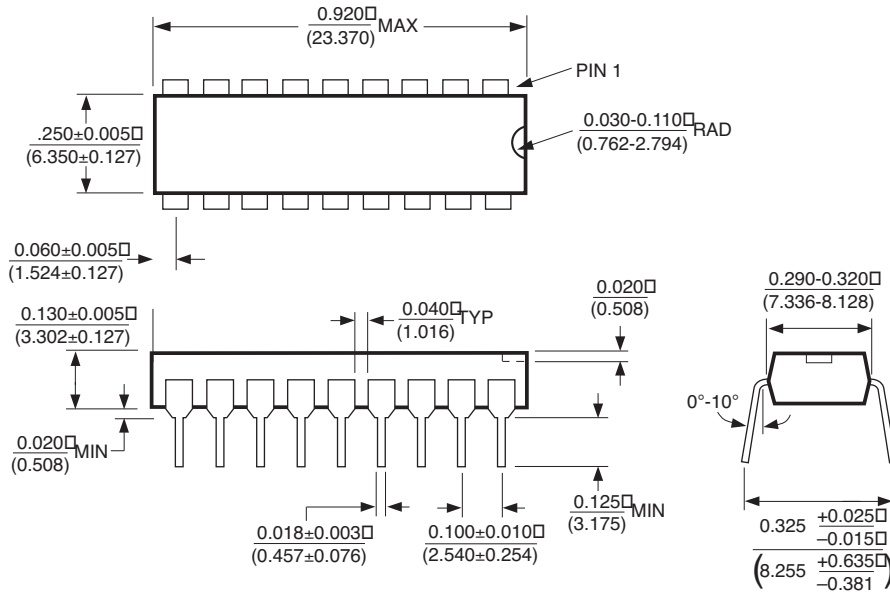
General Note: Devices are ESD protected; however, handling precautions are recommended.

Note 1: Applied to all 8 inputs simultaneously.

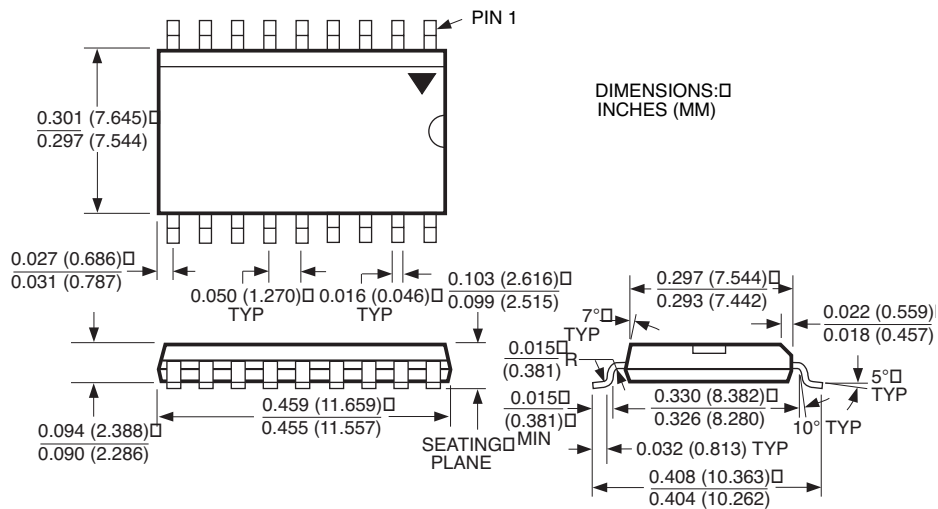
Note 2: Load conditions affect turnoff delay.

Note 3: Specification for packaged product only.

Package Information



18-Pin Plastic DIP (N)



18-Pin Wide SOP (WM)

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