



The Infinite Bandwidth Company™

MIC2981/2982

High-Voltage High-Current Source Driver Array

Final Information

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

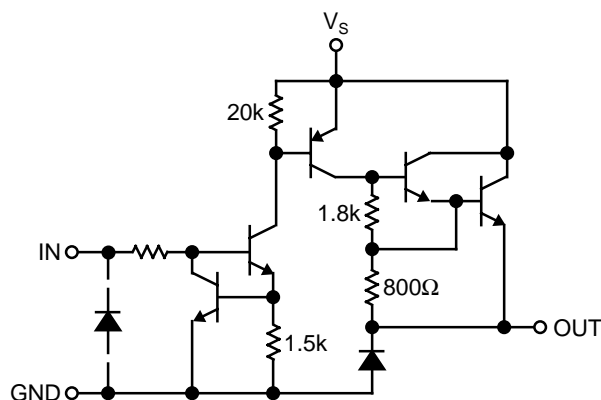
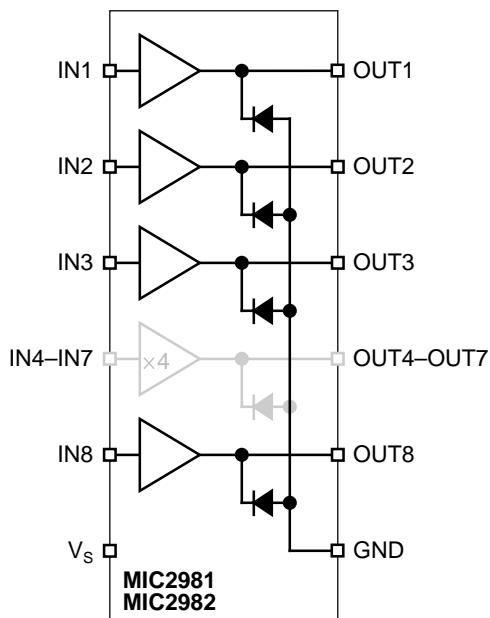
- Relay and solenoid switching
- Stepping motor
- LED and incandescent displays

Ordering Information

Part Number	Temperature Range	Package
MIC2981BN/ MIC2982BN*	-40°C to +85°C	18-pin DIP
MIC2981BWM/ MIC2982BWM*	-40°C to +85°C	18-pin wide SOP

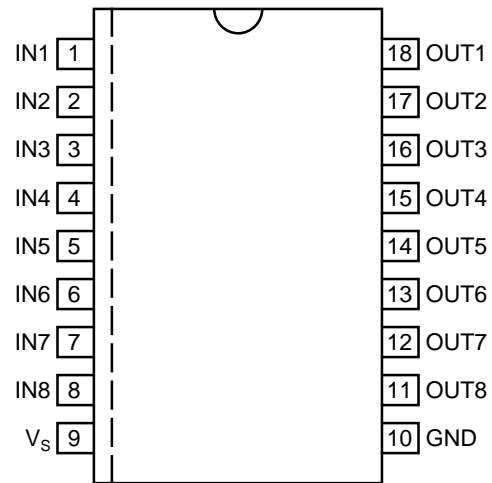
* Orders for MIC2981BN or MIC2982BN will be filled with dual-marked MIC2981/82BN. Orders for MIC2981BWM or MIC2982BWM will be filled with dual-marked MIC2981/82BWM.

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	VS	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	$V_{IN} = 2.4V$, $I_{OUT} = 100mA$		1.7	2.0	V
		$V_{IN} = 2.4V$, $I_{OUT} = 225mA$		1.8	2.1	V
		$V_{IN} = 2.4V$, $I_{OUT} = 350mA$		1.9	2.2	V
$I_{IN(on)}$	Input Current	MIC2981 $V_{IN} = 2.4V$ $V_{IN} = 3.85$		140 310	200 450	μA μA
		MIC2982 $V_{IN} = 2.4V$ $V_{IN} = 12V$		140 1.25	200 1.93	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.

The drawing illustrates the mechanical specifications of a 16-pin DIP package. The top view shows a rectangular body with a maximum length of 0.920 inches (23.370 mm) and a width of 0.250 inches (6.350 mm) with a tolerance of ±0.005 inches (±0.127 mm). The pin pitch is 0.040 inches (1.016 mm) typical. The side view shows a maximum height of 0.060 inches (1.524 mm) and a minimum standoff height of 0.020 inches (0.508 mm). The end view shows a maximum width of 0.290 inches (7.336 mm) and a pin thickness of 0.018 inches (0.457 mm) with a tolerance of ±0.003 inches (±0.076 mm). The pin length is 0.100 inches (2.540 mm) with a tolerance of ±0.010 inches (±0.254 mm). The package is shown with a 0° to 10° lead angle.

Top View Dimensions:

- Overall Length: 0.920 ± 0.005 (23.370 ± 0.127) MAX
- Overall Width: 0.250 ± 0.005 (6.350 ± 0.127)
- Pin Pitch: 0.040 TYP (1.016)
- Pin 1 Indicator: PIN 1
- Lead Radius: $0.030-0.110$ (0.762-2.794) RAD

Side View Dimensions:

- Overall Height: 0.060 ± 0.005 (1.524 ± 0.127)
- Standoff Height: 0.020 (0.508) MIN

End View Dimensions:

- Overall Width: $0.290-0.320$ (7.336-8.128)
- Pin Thickness: 0.018 ± 0.003 (0.457 ± 0.076)
- Pin Length: 0.100 ± 0.010 (2.540 ± 0.254)
- Lead Angle: $0^\circ-10^\circ$
- Pin Spacing: 0.125 (3.175) MIN

Bottom View Dimensions:

- Overall Width: 0.325 ± 0.025 (8.255 ± 0.635)
- Pin Thickness: 0.015 ± 0.005 (0.381 ± 0.127)

DIMENSIONS:
INCHES (MM)

Top View:

- Overall width: 0.301 (7.645) / 0.297 (7.544)
- Pin 1 indicator (arrow pointing to the top-right pin)
- Pin pitch (center-to-center): 0.027 (0.686) / 0.031 (0.787)
- Pin width: 0.050 (1.270) TYP
- Pin spacing (between groups): 0.016 (0.046) TYP
- Pin length: 0.103 (2.616) / 0.099 (2.515)

Side View:

- Overall height: 0.094 (2.388) / 0.090 (2.286)
- Seating Plane (indicated by an arrow)
- Pin length: 0.459 (11.659) / 0.455 (11.557)

Detail View (Right):

- Overall width: 0.297 (7.544) / 0.293 (7.442)
- Pin width: 0.022 (0.559) / 0.018 (0.457)
- Pin length: 0.015 (0.381) R
- Pin spacing: 0.015 (0.381) MIN
- Pin length: 0.330 (8.382) / 0.326 (8.280)
- Pin length: 0.032 (0.813) TYP
- Pin length: 0.408 (10.363) / 0.404 (10.262)
- Pin angle: 5° TYP
- Pin angle: 10° TYP
- Pin angle: 7° TYP

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