

MIC4428YM-HX Dual 4A-Peak Low-Side MOSFET Drivers

General Description

The MIC4428YM-HX series of dual low-side MOSFET drivers are manufactured on a BiCMOS/DMOS process, providing efficient power usage and high reliability. These drivers translate input logic levels from TTL or CMOS to output voltage levels that swing within 25 mV of the positive supply or ground. This is in contrast to bipolar devices, which can only swing to within 1V of the supply. The MIC4428YM-HX drivers are available in three configurations: dual inverting, dual non-inverting, and one inverting plus one non-inverting output. They are designed to replace the MIC4428YM-HX and MIC4428YM-HX, offering improved electrical performance and ruggedness.

The MIC4428Y M-HX drivers are capable of withstanding up to 500 mA of reverse current (of either polarity) without latching, as well as up to 5 V noise spikes (of either polarity) on the ground pins. These drivers are primarily designed for driving power MOSFETs, but are also suitable for driving other loads that require low-impedance, high peak current, and fast switching time. Other potential applications include driving heavily loaded clock lines, coaxial cables, or piezoelectric transducers. It is important to note that the total driver power dissipation must not exceed the package's limits. For high power and narrow pulse applications, see MIC4428YM-HX.

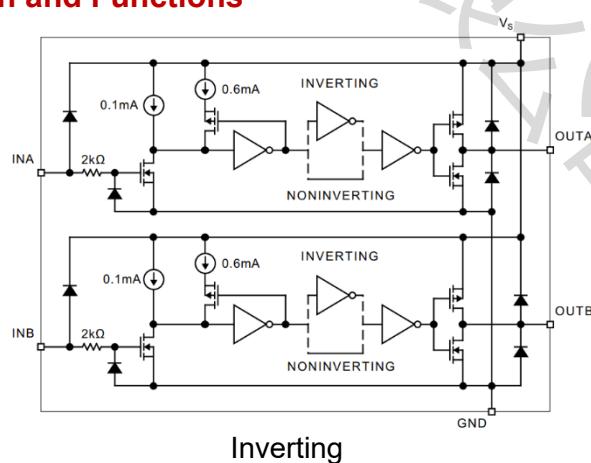
Pin Configuration and Functions

Features

- 4A-Peak Output Current
- Latch-Up Protected to >500 mA Reverse Current
- 4.5V to 25V Operating Range
- Switches 1000 pF in 25 ns
- Low Quiescent Supply Current
 - 4 mA at Logic 1 Input
 - 400 μ A at Logic 0 Input
- Matched Rise and Fall Times
- 7 Ω Output Impedance
- <40 ns Typical Delay
- Logic-Input Protection to -5V
- Logic-Input Threshold Independent of Supply Voltage
- 6 pF Typical Equivalent Input Capacitance
- 25 mV Max. Output Offset from Supply or Ground

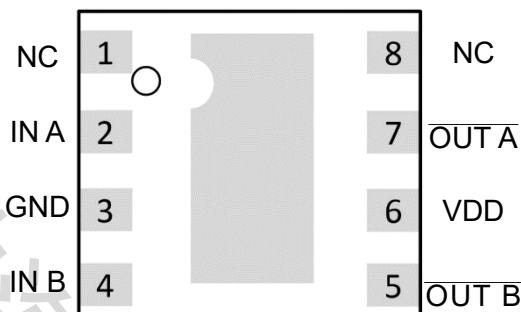
Applications

- MOSFET Driver
- Piezoelectric Transducer Driver
- Coax Cable Driver
- Clock Line Driver



Functional Block Diagram

SOP8



Dual Inverting

Pin Diagram

ELECTRICAL CHARACTERISTICS

Parameter	Sym.	Min.	Typ.	Max.	Units
Input					
Logic 1 Input Voltage	VIH	2.4	1.4	—	V
		2.4	1.5	—	
Logic 0 Input Voltage	VIL	—	1.1	0.8	V
		—	1.0	0.8	
Input Current	IIN	-1	—	1	µA
Output					
High Output Voltage	VOH	V_s -	—	—	V
Low Output Voltage	VOL	—	—	0.025	V
Output Resistance	R _O	—	6	10	Ω
		—	8	12	
Peak Output Current	IPK	—	1.5	—	A
Latch-Up Protection	I	>500	—	—	mA
Switching Time					
Rise Time	t _r	—	18	30	ns
		—	20	40	
Fall Time	t _f	—	15	20	ns
		—	29	40	
Delay Time	tD1	—	17	30	ns
		—	19	40	
Delay Time	tD2	—	23	50	ns

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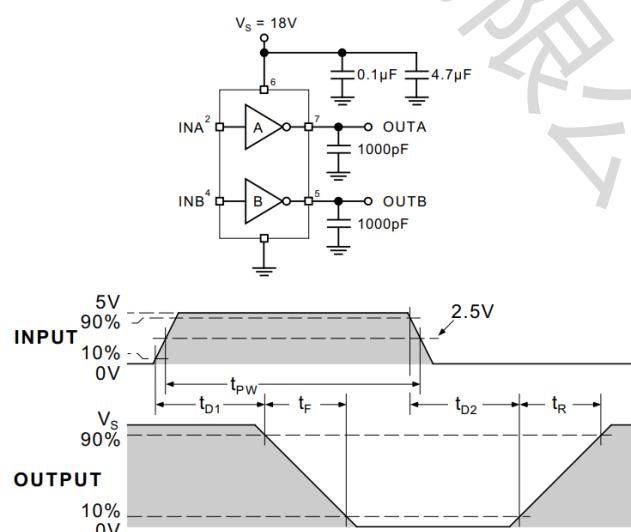
ELECTRICAL CHARACTERISTICS (CONTINUED)

Parameter	Sym.	Min.	Typ.	Max.	Units
Pulse Width	tPW	400	—	—	ns
Power Supply					
Power Supply Current	IS	0.6	1.4	4.5	mA
		—	1.5	8	
Power Supply Current	IS	—	0.18	0.4	mA
		—	0.19	0.6	

TEMPERATURE SPECIFICATIONS

Temperature Ranges					
Maximum Junction Temperature	T _J	—	—	+150	°C
Storage Temperature Range	T _S	−65	—	+150	°C
Lead Temperature	—	—	—	+300	°C
Junction Operating Temperature	T _J	0	—	+70	°C
Junction Operating Temperature	T _J	−40	—	+85	°C
Package Thermal Resistances					
Thermal Resistance, PDIP 8-Ld	θ _{JA}	—	130	—	°C/W
Thermal Resistance, PDIP 8-Ld	θ _{JC}	—	42	—	°C/W
Thermal Resistance, SOIC 8-Ld	θ _{JA}	—	120	—	°C/W
Thermal Resistance, SOIC 8-Ld	θ _{JC}	—	75	—	°C/W
Thermal Resistance, MSOP 8-Ld	θ _{JA}	—	250	—	°C/W

Application Information



Switching Time Test Circuit

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