

### Description

IR4428S is power switch driver. It has a matching rise and fall time when charging and discharging the gate of the power switch.

IR4428S has high latch resistance under all conditions in its rated power and voltage range. When noise spikes of up to 5V (either polarity) occur on the ground pin, the IR4428S is not damaged. IR4428S can accept reverse currents up to 500 mA to force back its output without damage or logic confusion. All ports are fully protected by up to 2.0 kV electrostatic discharge (ESD).

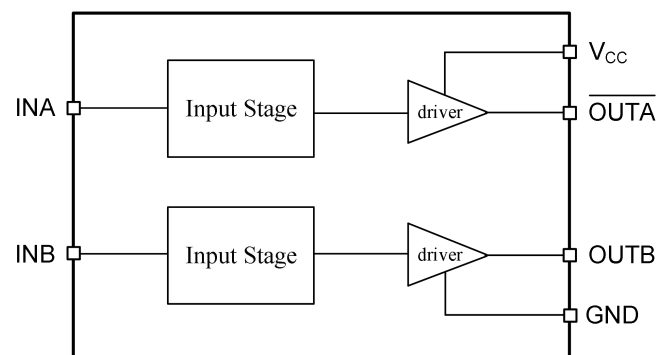
### Applications

- Switch-Mode Power Supplies
- line drivers
- Pulse transformer driver
- Driving MOSFETs and IGBTs
- Motor drives
- pulse generator
- Switch-Mode Power Supplies
- DC-to-DC Converters
- class D switching amplifier

### Features

- Latch Protection: withstand 0.5 A reverse current
- Ability to Handle Negative Voltages (-10 V) at Inputs
- Low Output Impedance
- Two Independent Gate-Drive Channel
- 2-A Peak Output Current
- 4.5 to 20-V Single-Supply Range
- High Ability of driving capacitive load
- Rise/Fall time matching
- Operating Temperature Range of -40 to 125° C
- Turn on/Turn off Delays: 25ns

Pin Configuration



Pin Configuration and Functions

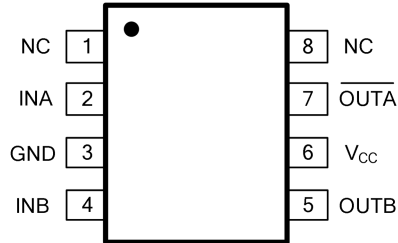


Figure7-1 8-Pin SOP8 Top view

Table7-1 Lead Definitions

PIN	NAME	DESCRIPTION
1	NC	--
2	INA	Input to Channel A
3	GND	Ground: All signals are referenced to this pin.
4	INB	Input to Channel B
5	OUTB	Output of Channel B
6	V <sub>CC</sub>	Bias supply input
7	$\overline{\text{OUTA}}$	Output of Channel A
8	NC	--

**Dual 2A Peak High-Speed Low-Side Power-MOSFET Drivers**
**Absolute Maximum Ratings**

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. All voltages are with respect to GND unless otherwise noted, Currents are positive into, negative out of the specified terminal, environment temperature is 25 °C.

Symbol	Definition	MIN	MAX	UNIT
V <sub>CC</sub>	Supply voltage range	—	25	V
V <sub>IN</sub>	INA, INB voltage	-12	25	

**ESD Ratings**

Symbol	Definition	MIN	MAX	UNIT
ESD	Human body model (HBM)	—	2000	V
	Charged device model (CDM)	—	500	V

**Power Ratings**

Symbol	Definition	MIN	MAX	UNIT
PD1	DFN package power (TA ≤70°C)	—	340	mW
PD2	SOIC package power (TA ≤70°C)	—	470	mW

**Thermal Information**

Symbol	Definition	MIN	MAX	UNIT
T <sub>J</sub>	Operating junction temperature	—	+150	°C
T <sub>S</sub>	Storage temperature	-45	+150	

**Recommended Operating Conditions**

To properly operate, device should be used in the following recommended conditions. All voltages are with respect to GND unless otherwise noted, Currents are positive into, negative out of the specified terminal, environment temperature is 25 °C.

Symbol	Definition	MIN	MAX	UNIT
V <sub>CC</sub>	Supply voltage range	4.5	20	V
T <sub>c</sub>	ambient temperature	-40	125	°C

**Dual 2A Peak High-Speed Low-Speed Power-MOSFET Drivers**
**Electrical Characteristics**
 $T_A = 25^\circ\text{C}$ ,  $V_{CC} = 15\text{V}$ ,  $C_{LOAD} = 1000\text{pF}$  (unless otherwise noted)

Symbol	Definition	MIN	TYP	MAX	UNIT
$V_{IH}$	Input signal high threshold	2.4			V
$V_{IL}$	Input signal low threshold			0.8	V
$I_{INA+}$	Input current ( $V_{INA} = 5\text{V}$ )		100	200	$\mu\text{A}$
$I_{INA-}$	Input current ( $V_{INA} = 0\text{V}$ )		150	250	$\mu\text{A}$
$I_{INB+}$	Input current ( $V_{INB} = 5\text{V}$ )		50	100	$\mu\text{A}$
$I_{INB-}$	Input current ( $V_{INB} = 0\text{V}$ )		0	1	$\mu\text{A}$
$V_{OH}$	High output voltage	$V_{CC} - 0.025$			V
$V_{OL}$	Low output voltage			0.025	V
$R_{OH}$	Output pullup resistance ( $I_O = 100\text{mA}$ )		4	8	$\Omega$
$R_{OL}$	Output pulldown resistance ( $I_O = 100\text{mA}$ )		2	4	$\Omega$
$I_{PK}$	Peak output source current		2		A
$I_{REV}$	Reverse current that latch protection can withstand (Working cycle $\leq 2\%$ , $t \leq 300\mu\text{s}$ )		$> 0.5$		A
$t_R$	Rise time			30	ns
$t_F$	Fall time			30	ns
$t_{ON}$	Turn-on propagation delay		25	50	ns
$t_{OFF}$	Turn-off propagation delay		25	50	ns
$I_{Q1}$	VCC quiescent supply current ( $V_{INA} = V_{INB} = \text{HIGH}$ )			1	mA
$I_{Q0}$	VCC quiescent supply current ( $V_{INA} = V_{INB} = \text{LOW}$ )			1	mA

Detailed description

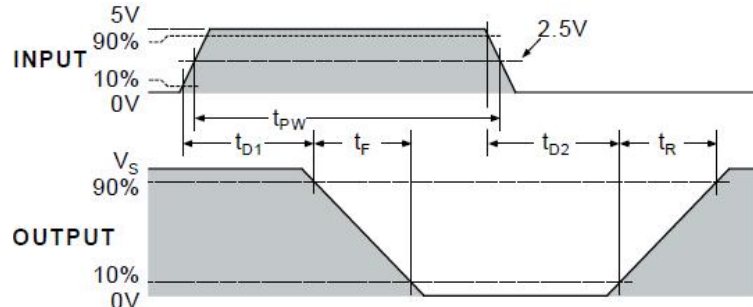


Figure 9-1 Input-Output A Functionality Diagram

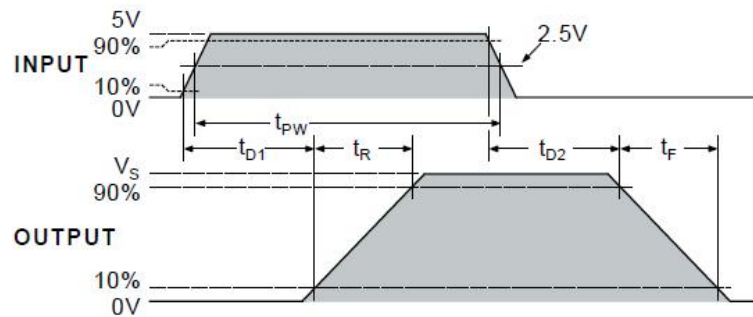


Figure 9-2 Input-Output B Functionality Diagram

Functional Block Diagram

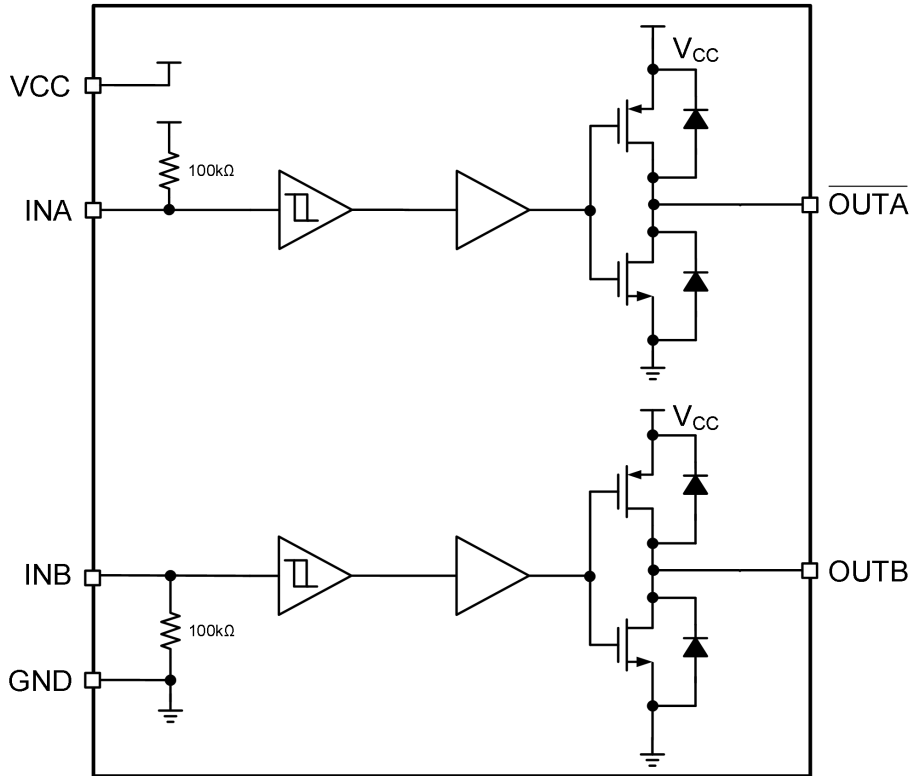


Figure 10-1 Function Block Diagram of IR4428S

Typical Application

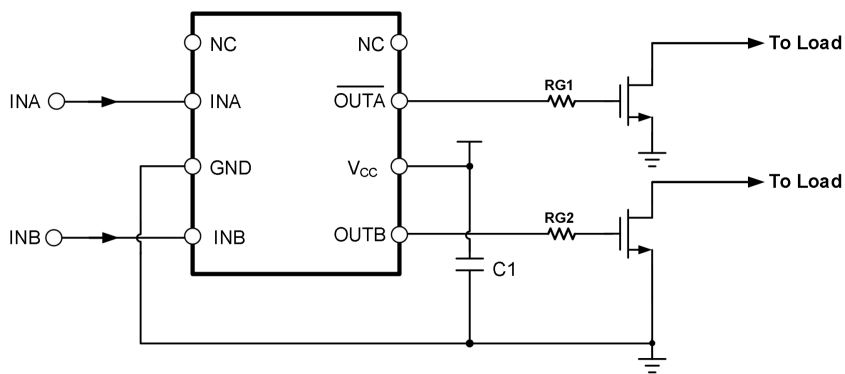
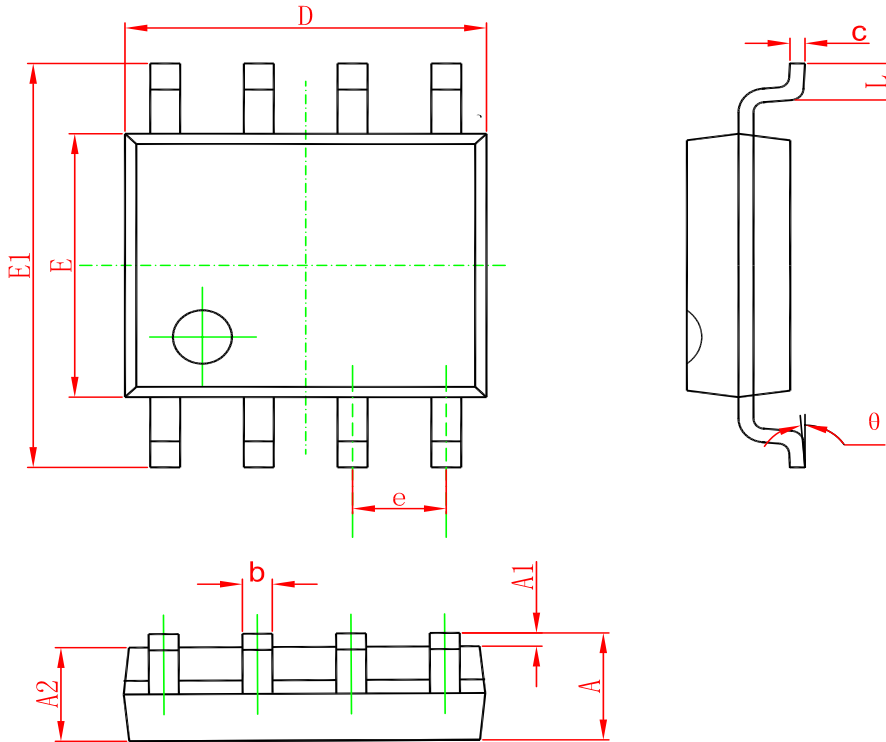


Figure 10-2 Typical Application Diagram of IR4428S

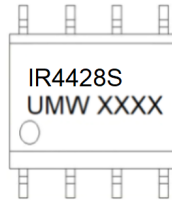
PACKAGE OUTLINE DIMENSIONS

SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

**Marking**



**Ordering information**

Order code	Package	Baseqty	Deliverymode
UMW IR4428STR	SOP-8	2500	Tape and reel