

## 1. Description

UMW IR4428STR is power switch driver. It has a matching rise and fall time when charging and discharging the gate of the power switch.

UMW IR4428STR 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 UMW IR4428STR is not damaged. UMW IR4428STR 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).

## 2. Features

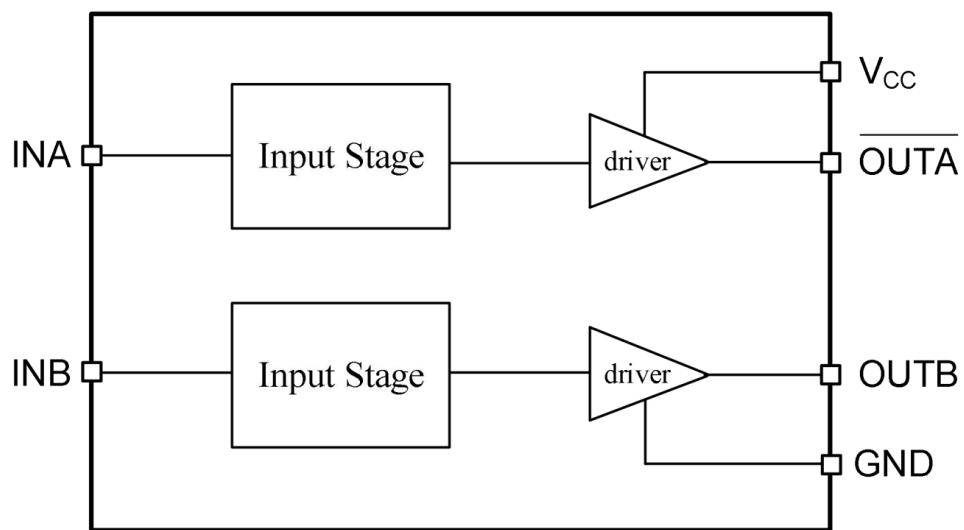
- Latch Protection: withstand 0.5 A reverse current
- Ability to Handle Negative Voltages (-10V) at Inputs
- Low Output Impedance
- Two Independent Gate-Drive Channel
- 2-A Peak Output Current
- 4.5 to 20-V Single-Supply Range
- High Ability of driving capacitive load
- Rise/Fall time matching
- Operating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

## 3. Applications

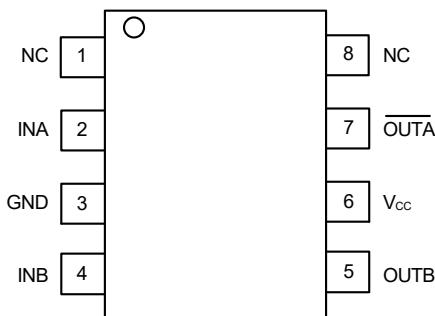
- Switch-Mode Power Supplies
- line drivers
- Pulse transformer driver
- Driving MOSFETs and IGBTs
- Motor drives
- pulse generator
- Switch-Mode Power Supplies
- DC-to-DC Converters
- Class D switching amplifier



## 4. Pin Configuration



## 5. Pinning Information



SOP-8

### Lead Definitions

Number	Symbol	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	OUTA	Output of Channel A
8	NC	



## 6. 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.

Parameter	Symbol	Min	Max	Units
Supply voltage range	V <sub>CC</sub>		25	V
INA, INB voltage	V <sub>IN</sub>	-12	25	V

## 7. ESD Ratings

Parameter	Symbol	Min	Max	Units
Human body model (HBM)	ESD		2000	V
Charged device model (CDM)			500	V

## 8. Power Ratings

Parameter	Symbol	Min	Max	Units
DFN package power (T <sub>A</sub> ≤ 70°C)	P <sub>D1</sub>		340	mW
SOIC package power (T <sub>A</sub> ≤ 70°C)	P <sub>D2</sub>		470	mW

## 9. Thermal Information

Parameter	Symbol	Min	Max	Units
Operating junction temperature	T <sub>J</sub>		+150	°C
Storage temperature	T <sub>S</sub>	-45	+150	°C



## 10. 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.

Parameter	Symbol	Min	Max	Units
Supply voltage range	$V_{CC}$	4.5	20	V
Ambient temperature	$T_C$	-40	125	°C



## 11. Electrical Characteristics

$T_A=25^\circ\text{C}$ ,  $V_{CC}=15\text{V}$ ,  $C_{LOAD}=1000\text{pF}$  (unless otherwise noted)

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

## 12. Detailed description

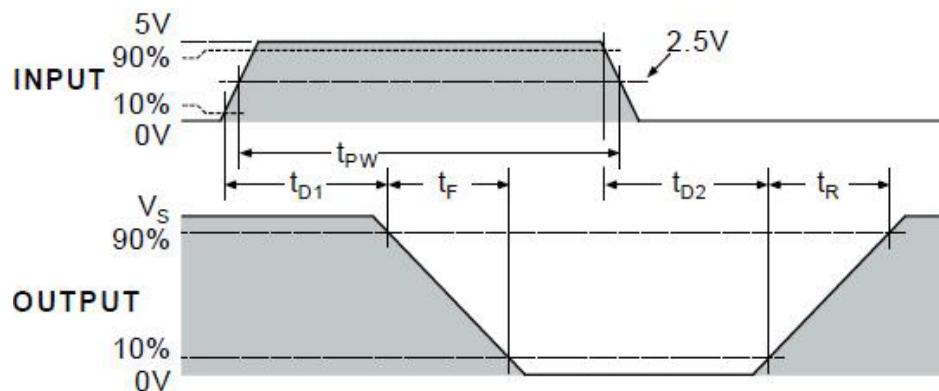


Figure 1. Input-Output A Functionality Diagram

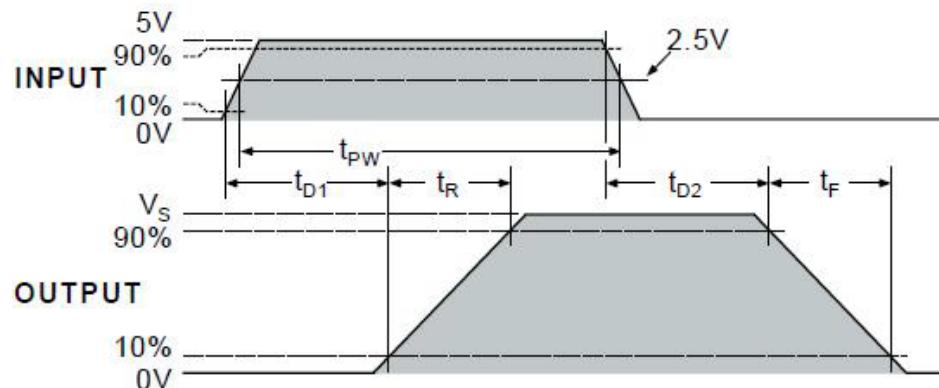


Figure 2. Input-Output B Functionality Diagram

### 13. Functional Block Diagram

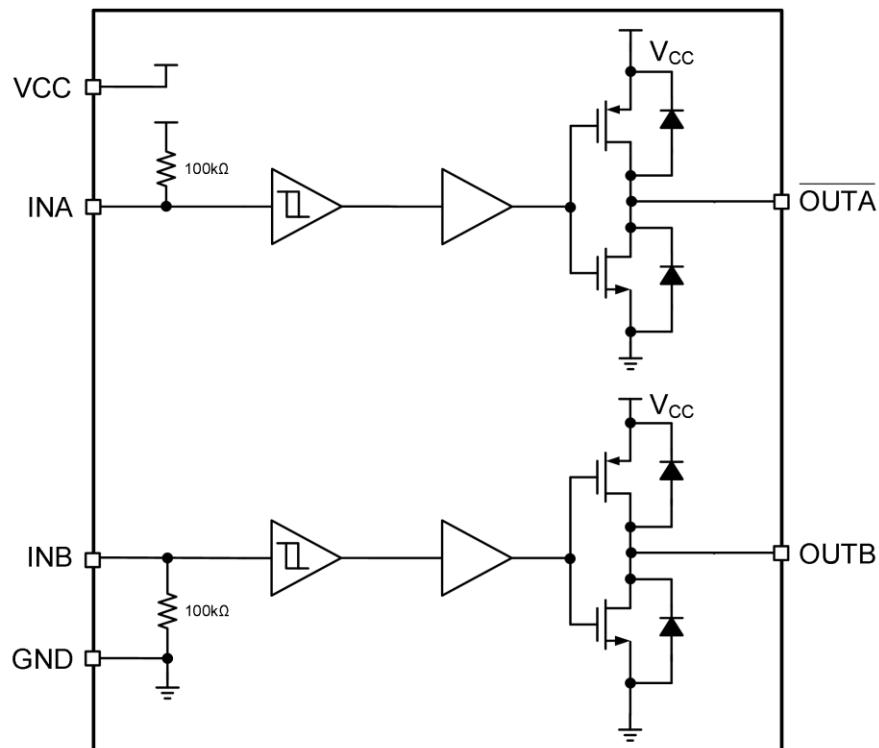


Figure 3. Function Block Diagram of IR4428S



## 14.Typical Application

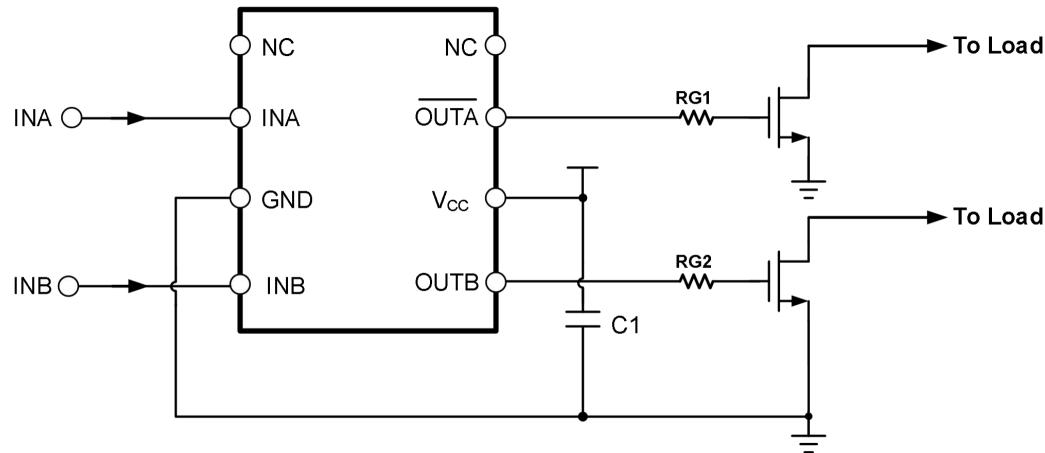
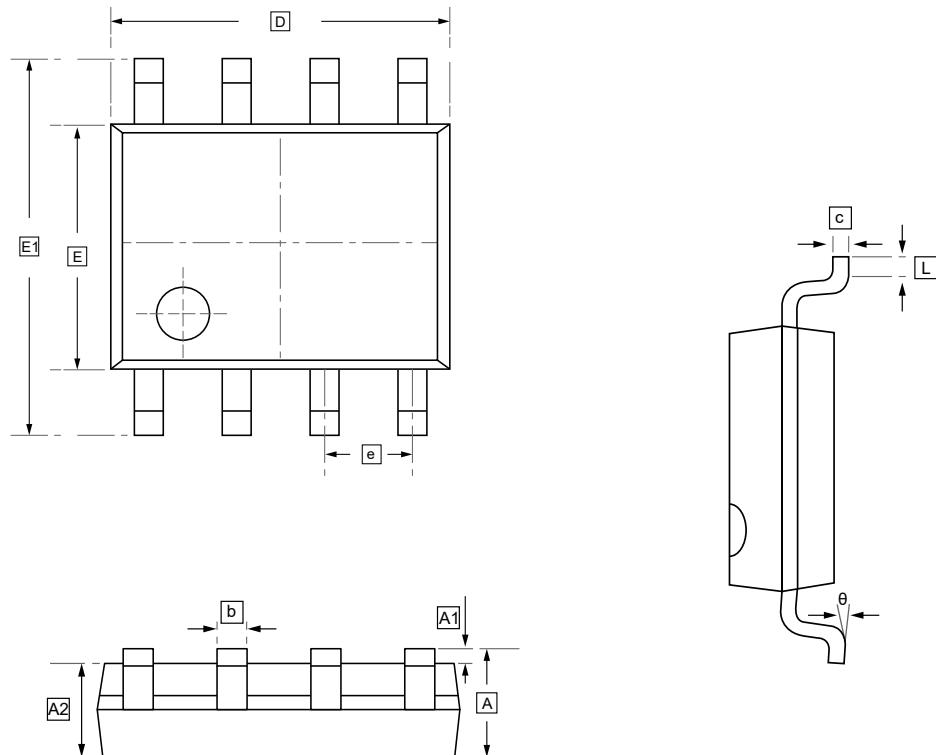


Figure 4. Typical Application Diagram of IR4428S

## 15.SOP-8 Package Outline Dimensions

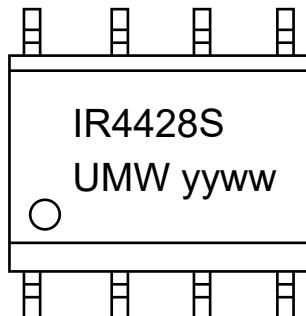


### DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E	E1	e	L	θ
<b>Min</b>	1.350	0.000	1.350	0.330	0.170	4.700	3.800	5.800	1.270	0.400	0°
<b>Max</b>	1.750	0.100	1.550	0.510	0.250	5.100	4.000	6.200	BSC	1.270	8°



## 16.Ordering information



yy: Year Code

ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW IR4428STR	SOP-8	2500	Tape and reel



## 17. Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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