

DUAL LOW SIDE DRIVER

Features

- Gate drive supply range from 6 to 20V
- CMOS Schmitt-triggered inputs with pull-up
- Matched propagation delay for both channels
- Outputs out of phase with inputs

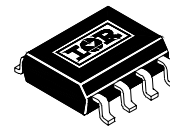
Description

The IR1210 is a low voltage, high speed power MOSFET and IGBT driver. Proprietary latch immune CMOS technologies enable ruggedized monolithic construction. Logic inputs are compatible with standard CMOS or LSTTL outputs. The output drivers feature a high pulse current buffer stage designed for minimum driver cross-conduction. Propagation delays between two channels are matched.

Product Summary

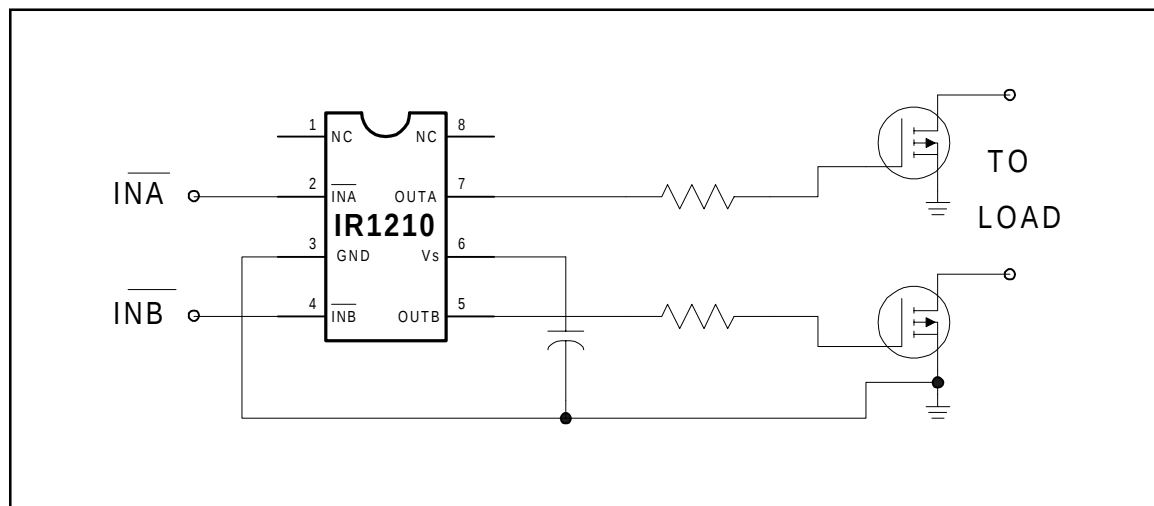
$I_{O+/-}$	1.5A / 1.5A
V_{OUT}	6V - 20V
$t_{on/off}$ (typ.)	85 & 65 ns

Package



8 Lead SOIC

Block Diagram



Absolute Maximum Ratings

Absolute maximum ratings indicate sustained limits beyond which damage to the device may occur. All voltage parameters are absolute voltages referenced to GND. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions.

Symbol	Definition	Min.	Max.	Units
V_S	Fixed supply voltage	-0.3	25	V
V_O	Output voltage	-0.3	$V_S + 0.3$	
V_{IN}	Logic input voltage (INA/N & INB/N)	-0.3	$V_S + 0.3$	
P_D	Package power dissipation @ $T_A \leq +25^\circ\text{C}$	—	0.625	W
R_{thJA}	Thermal resistance, junction to ambient	—	200	$^\circ\text{C/W}$
T_J	Junction temperature	—	150	$^\circ\text{C}$
T_S	Storage temperature	-55	150	
T_L	Lead temperature (soldering, 10 seconds)	—	300	

Recommended Operating Conditions

The input/output logic timing diagram is shown in figure 1. For proper operation the device should be used within the recommended conditions. All voltage parameters are absolute voltages referenced to GND.

Symbol	Definition	Min.	Max.	Units
V_S	Fixed supply voltage	6	20	V
V_O	Output voltage	0	V_S	
V_{IN}	Logic input voltage (INA/N & INB/N)	0	V_S	
T_A	Ambient temperature	-40	125	$^\circ\text{C}$

DC Electrical Characteristics

V_{BIAS} (V_S) = 15V, T_A = 25°C unless otherwise specified. The V_{IN} and I_{IN} parameters are referenced to GND and are applicable to input leads: INA/N and INB/N. The V_O and I_O parameters are referenced to GND and are applicable to the output leads: OUTA and OUTB.

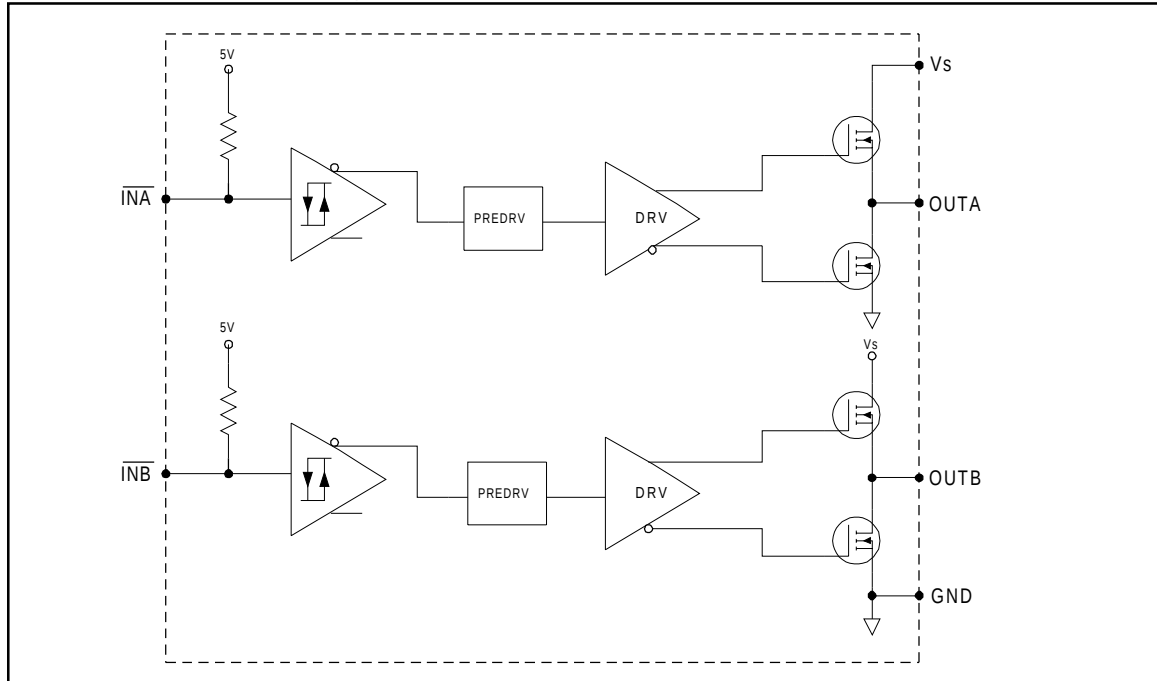
Symbol	Definition	Min.	Typ.	Max.	Units	Test Conditions
V_{IH}	Logic "0" input voltage (OUT=LO)	2.7	—	—	V	
V_{IL}	Logic "1" input voltage (OUT=HI)	—	—	0.8		
V_{OH}	High level output voltage, $V_{BIAS}-V_O$	—	—	1.2		
V_{OL}	Low level output voltage, V_O	—	—	0.1		
I_{IN+}	Logic "1" input bias current (OUT=HI)	—	5	15	μA	$V_{IN} = 0\text{V}$
I_{IN-}	Logic "0" input bias current (OUT=LO)	—	-10	-30		$V_{IN} = V_S$
I_{QS}	Quiescent V_S supply current	—	100	200		$V_{IN} = 0\text{V}$ or V_S
I_{O+}	Output high short circuit pulsed current	1.5	2.3	—	A	$V_O = 0\text{V}$, $V_{IN} = 0$ $PW \leq 10 \mu\text{s}$
I_{O-}	Output low short circuit pulsed current	1.5	3.3	—		$V_O = 15\text{V}$, $V_{IN} = V_S$ $PW \leq 10 \mu\text{s}$

Dynamic Electrical Characteristics

$V_{BIAS} (V_S) = 15V$, $C_L = 1000 \text{ pF}$, $T_A = 25^\circ\text{C}$ unless otherwise specified.

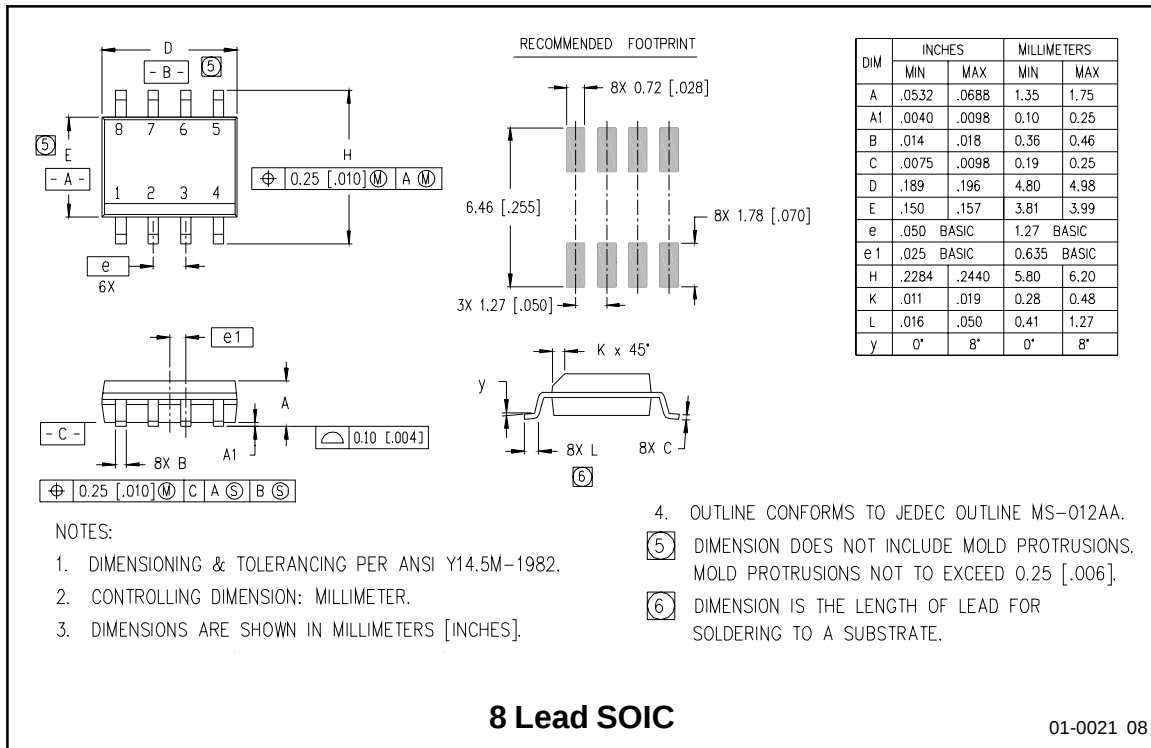
Symbol	Definition	Min.	Typ.	Max.	Units	Test Conditions
t_{d1}	Turn-on propagation delay	—	85	160	ns	figures 2 & 3
t_{d2}	Turn-off propagation delay	—	65	150		
t_r	Turn-on rise time	—	15	35		
t_f	Turn-off fall time	—	10	25		

Functional Block Diagram



Lead Assignment and Definitions

Symbol	Description	
V_S	Supply voltage	
GND	Ground	
INA	Logic input for gate driver output (OUTA), out of phase	
INB	Logic input for gate driver output (OUTB), out of phase	
OUTA	Gate drive output A	
OUTB	Gate drive output B	



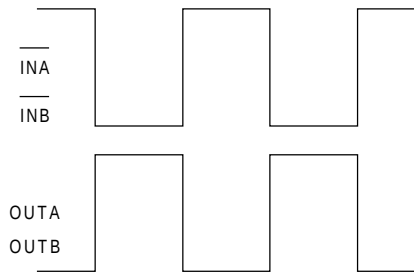


Figure 1. Timing Diagram

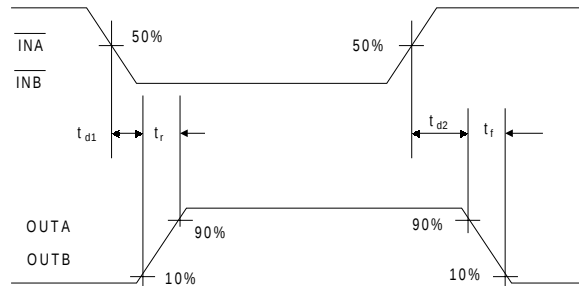


Figure 2. Switching Time Waveforms

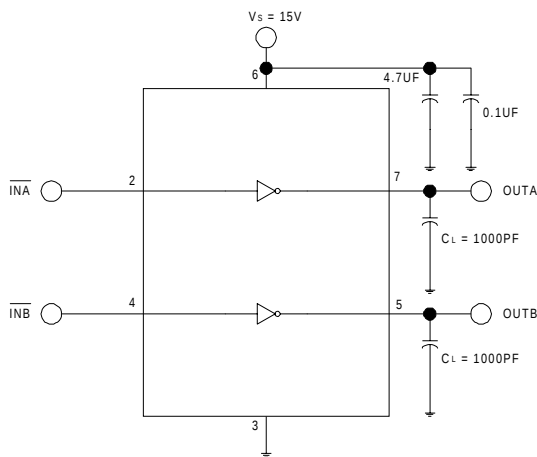


Figure 3. Switching Time Test Circuit