Dual Low Side Driver

Features

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

Product Summary

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

Description

The IR25600(S) 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.

Package Options

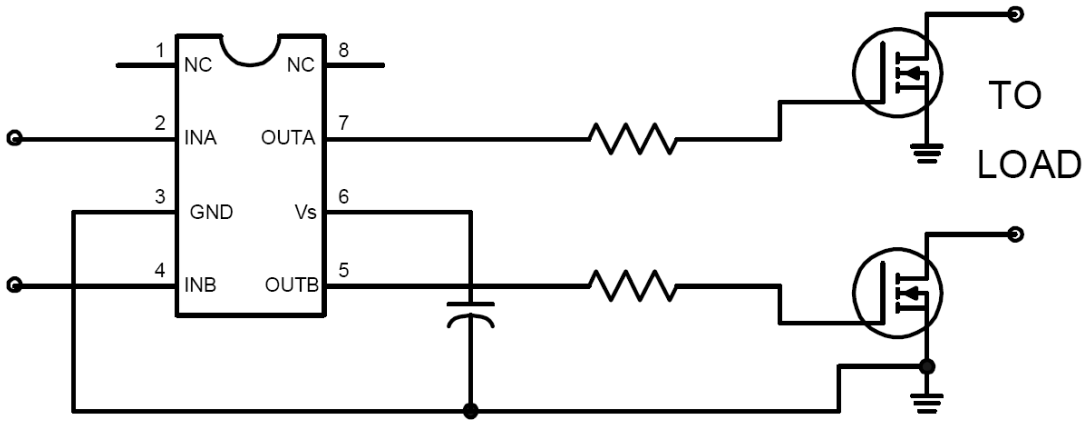
8 Lead SOIC

8 Lead PDIP

Ordering Information

Base Part Number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IR25600SPBF	SO8N	Tube	95	IR25600SPBF
IR25600SPBF	SO8N	Tape and Reel	2500	IR25600STRPBF
IR25600PBF	PDIP8	Tube	50	IR25600PBF

Typical Connection 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		-0.3	V_S + 0.3	
P_D	Package power dissipation @ $T_A \leq$ +25°C	8 lead PDIP	—	1	W
		8 lead SOIC	—	0.625	
Rth_{JA}	Thermal resistance, junction to ambient	8 lead PDIP	—	125	°C/W
		8 lead SOIC	—	200	
T_J	Junction temperature		—	150	°C
T_S	Storage temperature		-55	150	
T_L	Lead temperature (soldering, 10 seconds)		—	300	

Recommended Operating Conditions

For proper operation the device should be used within the recommended conditions. All voltage parameters are absolute voltages references 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 (IN & SD)	0	V_S	
T_A	Ambient temperature	-40	125	°C

Dynamic Electrical Characteristics

V_{BIAS} (V_S) = 15V, CL = 1000 pF and T_A = 25°C unless otherwise specified.

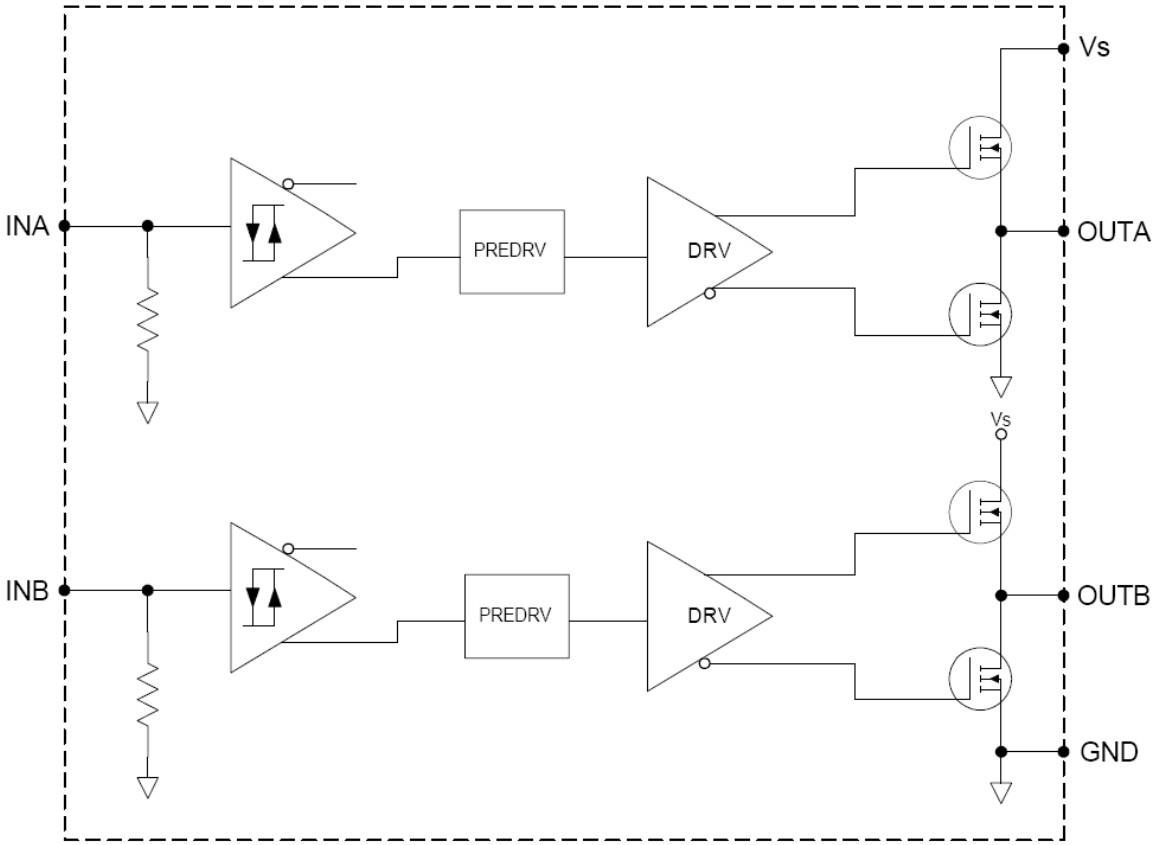
Symbol	Definition	Min.	Typ.	Max.	Units	Test Conditions
t_{on}	Turn-on propagation delay	—	85	160	ns	Figure 2
t_{off}	Turn-off propagation delay	—	65	150		
t_r	Turn-on rise time	—	15	35		
t_f	Turn-off fall time	—	10	25		

Static Electrical Characteristics

V_{BIAS} (V_S) = 15V and 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 and INB. The V_O and I_O parameters are referenced to GND and are applicable to the respective output leads: OUTA and OUTB.

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

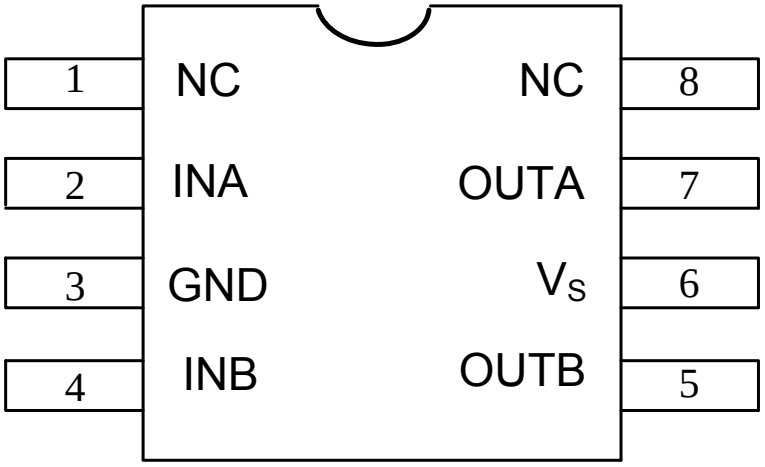
Functional Block Diagram



Lead Definitions

Symbol	Description
INA	Logic input gate driver output (OUTA), in phase
INB	Logic input gate driver output (OUTB), in phase
OUTA	Gate drive output A
OUTB	Gate drive output B
V_S	Supply Voltage
GND	Ground

Lead Assignments



Application Information and Additional Information

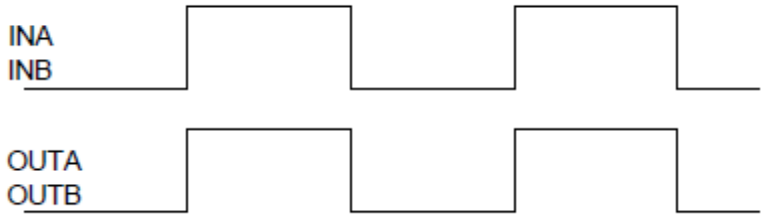


Figure 1. Input/Output Timing Diagram

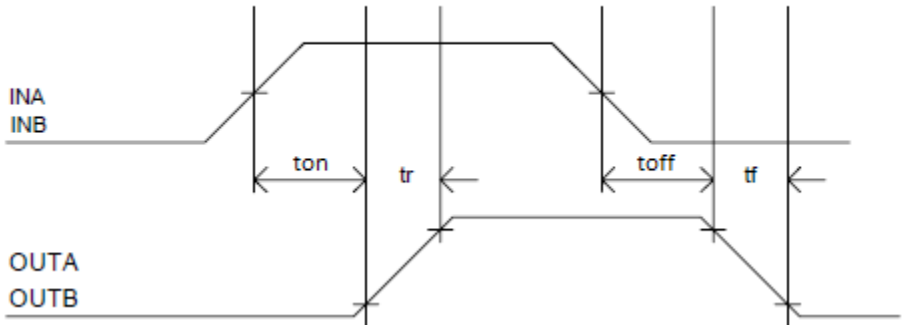
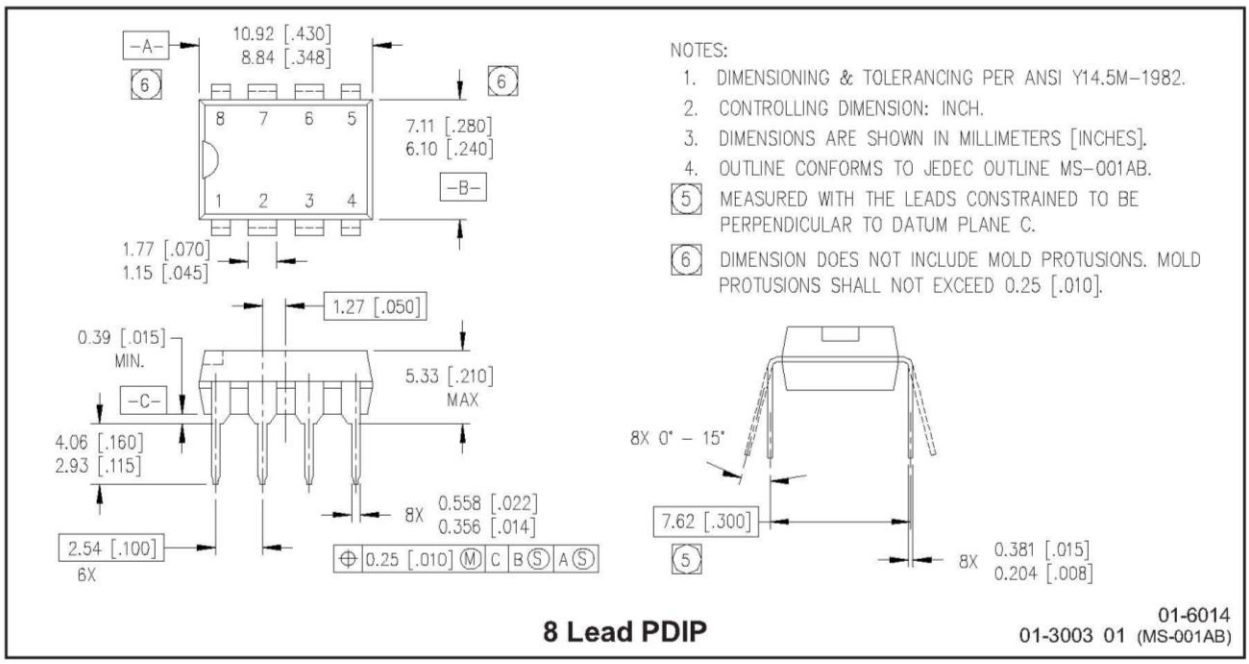
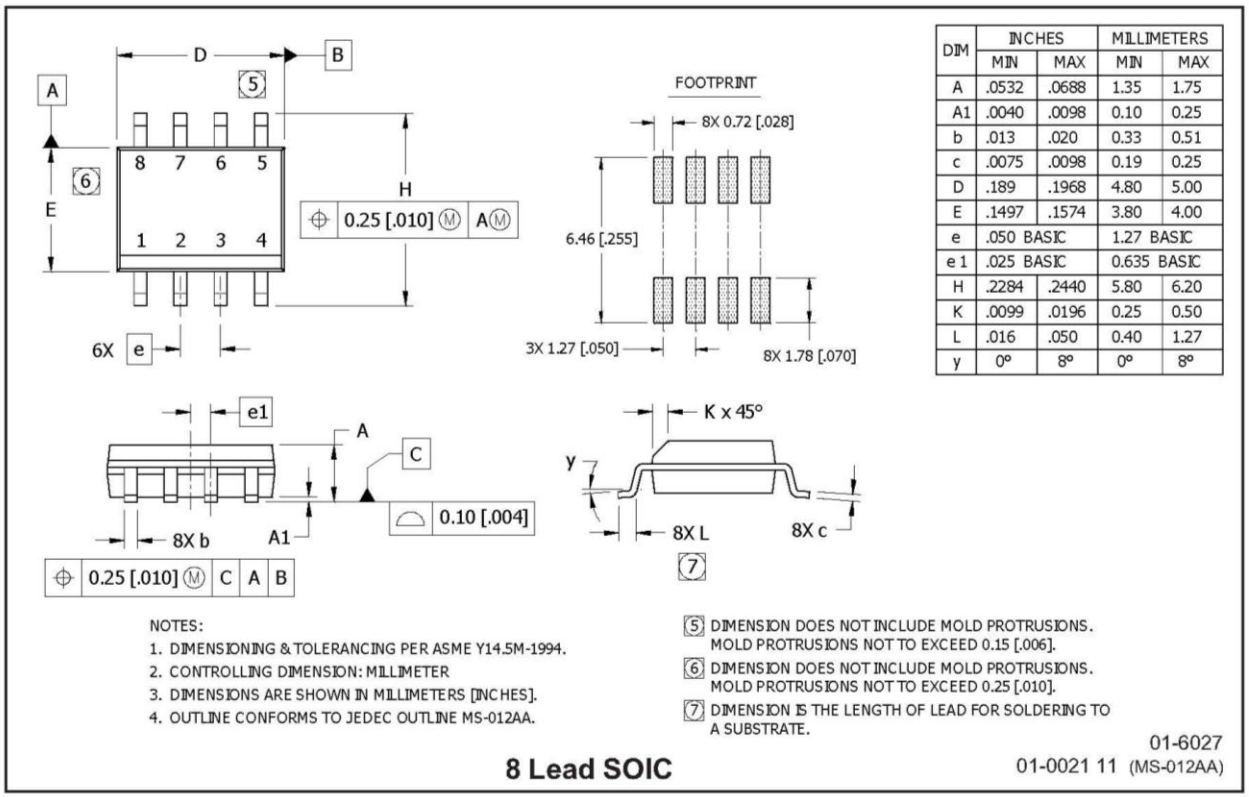


Figure 2. Switching Time Waveform Definitions

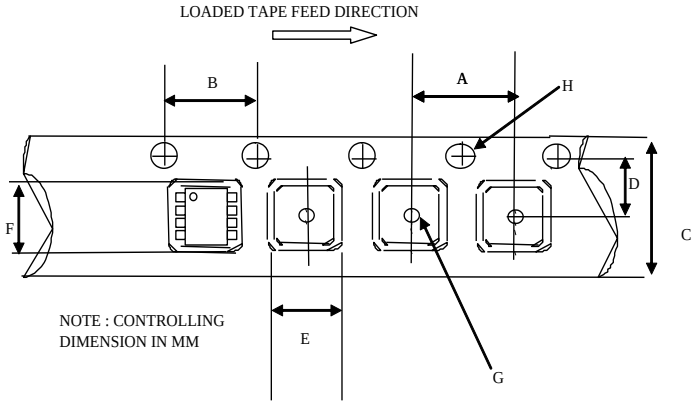
Package Details





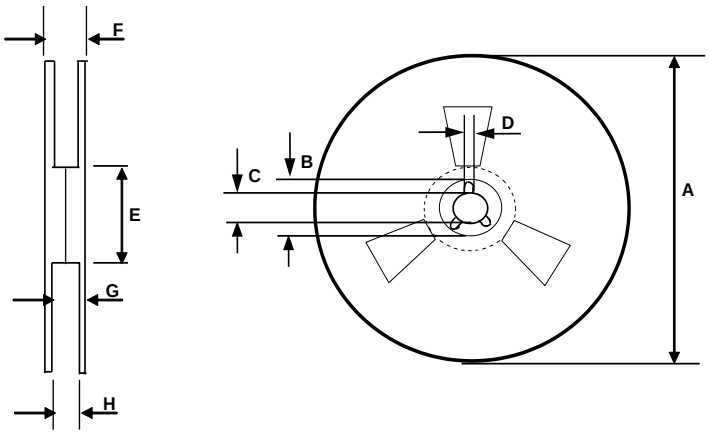
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e 1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27
y	0°	8°	0°	8°

Tape and Reel Details, SO8N



CARRIER TAPE DIMENSION FOR 8SOICN

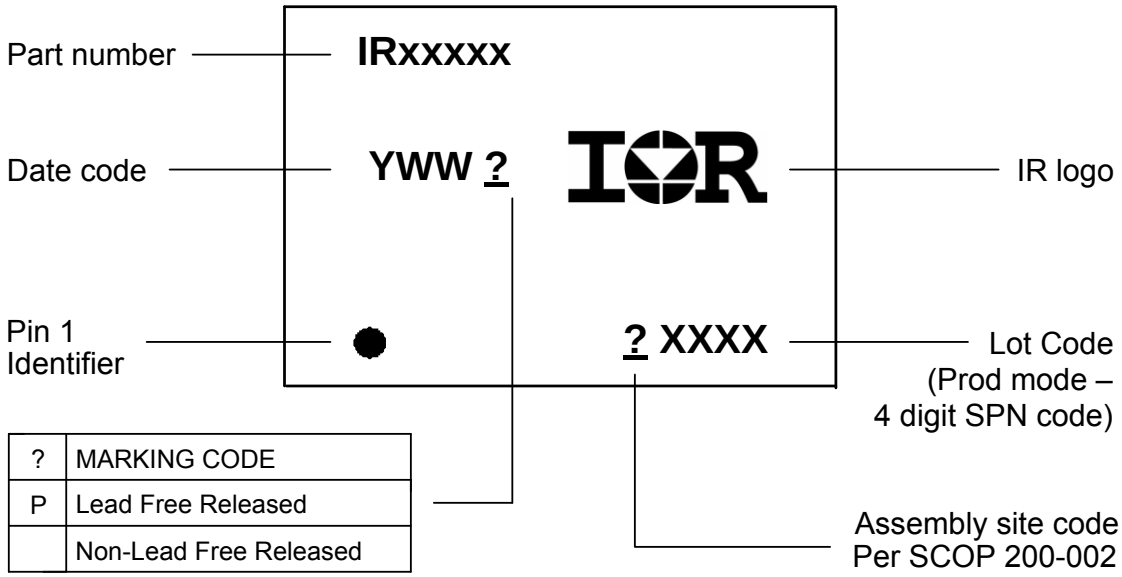
Code	Metric		Imperial	
	Min	Max	Min	Max
A	7.90	8.10	0.311	0.318
B	3.90	4.10	0.153	0.161
C	11.70	12.30	0.46	0.484
D	5.45	5.55	0.214	0.218
E	6.30	6.50	0.248	0.255
F	5.10	5.30	0.200	0.208
G	1.50	n/a	0.059	n/a
H	1.50	1.60	0.059	0.062



REEL DIMENSIONS FOR 8SOICN

Code	Metric		Imperial	
	Min	Max	Min	Max
A	329.60	330.25	12.976	13.001
B	20.95	21.45	0.824	0.844
C	12.80	13.20	0.503	0.519
D	1.95	2.45	0.767	0.096
E	98.00	102.00	3.858	4.015
F	n/a	18.40	n/a	0.724
G	14.50	17.10	0.570	0.673
H	12.40	14.40	0.488	0.566

Part Marking Information



?	MARKING CODE
P	Lead Free Released
	Non-Lead Free Released

Qualification Information†

Qualification Level	Industrial†† (per JEDEC JESD 47)	
	Comments: This family of ICs has passed JEDEC's Industrial qualification. IR's Consumer qualification level is granted by extension of the higher Industrial level.	
Moisture Sensitivity Level	SOIC8N	MSL2††† (per IPC/JEDEC J-STD 020)
	PDIP8	Not applicable (non-surface mount package style)
RoHS Compliant	Yes	

† Qualification standards can be found at International Rectifier's web site http://www.irf.com/

†† Higher qualification ratings may be available should the user have such requirements. Please contact your International Rectifier sales representative for further information.

††† Higher MSL ratings may be available for the specific package types listed here. Please contact your International Rectifier sales representative for further information.

For technical support, please contact IR's Technical Assistance Center
http://www.irf.com/technical-info/

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