SA2530

Single 25V Low Side Gate Drive IC

Description

The SA2530 is single channel high speed, low-side, gate driver device capable of effectively driving MOSFET and IGBT power switches.

The SA2530 is designed to operate over a wide VDD range of 5.0 V to 25 V and wide temperature range of –40°C to 125°C. Internal Undervoltage Lockout (UVLO) circuitry on VDD pin holds output low outside VDD operating range. The capability to operate at low voltage levels such as below 5 V, along with best-in-class switching characteristics, is especially suited for driving emerging wide band-gap power-switching devices such as GaN power semiconductor devices.

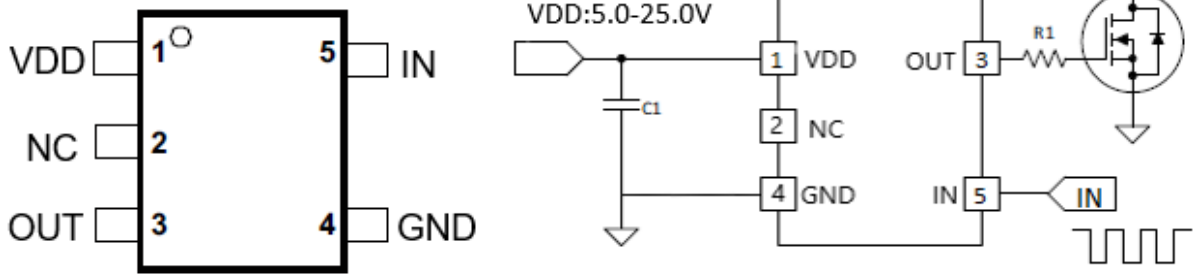
Features

- Fully operational to 25V
- 3.3/5/25V input logic compatible
- 1.0A/1.5A(typ.) current capability
- Tolerant to negative transient voltage
- Fast propagation delays
- SOT23-5 package available

Application

- Switch-Mode Power Supplies
- DC-to-DC Converters
- Motor Control, Solar Power
- Gate Drive for Emerging Wide Band-Gap Power Devices Such as GaN

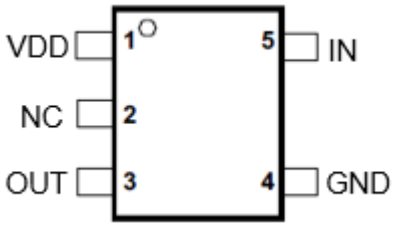
SA2530 Package & Simplified Application



Order Information

Part No.	Package	Quality	Operation Temp T_A.
SA2530	SOT23-5	3000	-40~125 ˚C

Pin Descriptions



NO.	NAME	TYPE	DESCRIPTION
1	VDD	P	Device power supply
2	NC	NC	No Connection
3	OUT	O	Output of driver
4	GND	P	Ground
5	IN	I	Input of driver

Absolute Maximum Ratings (T_A=25℃)

Parameter		Min.	Max.	Unit
VDD	Power supply	-0.3	32	V
IN	Logic input of IN	-0.3	32	
Junction temp.	T_J	-40	150	°C
Operation temp.	T_A	-40	125	
Storage temp.	T_{stg}	-65	150	
Thermal resistance	θ_{JA}		260	°C/W

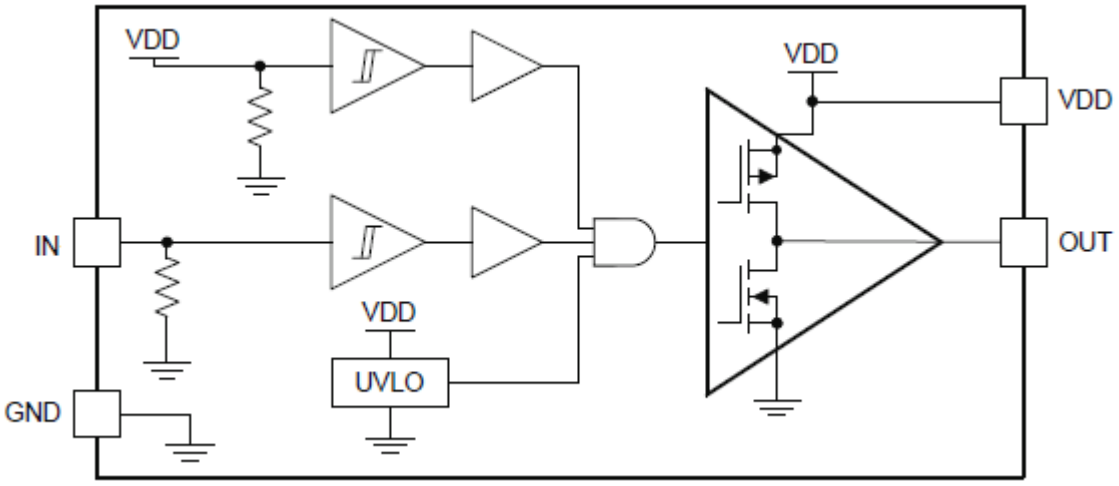
Recommended operating conditions (T_A=25℃)

Parameter		Min.	Max.	Unit
VDD	Power supply	-0.3	25	V
IN	Logic input of IN	-0.3	25	
Operation temp.	T_A	-40	125	°C

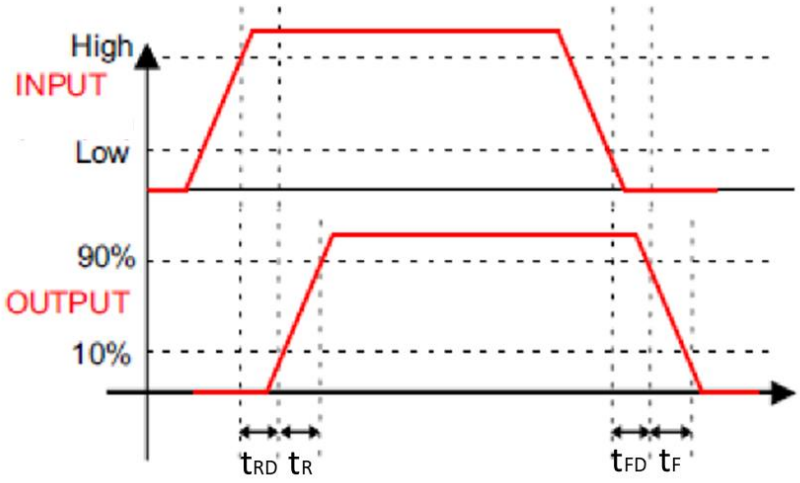
Electrical Characteristics (V_{DD}= 18.0V, C_L=1000pF, T_A=25 ˚C)

Parameter		Test Condition	Min.	Typ.	Max.	Unit
Supply Current						
V_{DD} supply current	I_{DD}	V_{DD}=18V, IN=0		0.30	1.0	mA
		V_{DD}=18V, IN=5V		0.35	1.0	mA
		V_{DD}=18V, IN=18V		0.35	1.0	mA
IN						
Input high level voltage	V_{INH}		2.5			V
Input low level voltage	V_{INL}		0		0.8	V
Pull down resistance	R_{PD}			85		kΩ
UVLO						
VDD UVLO rising threshold	V_{DDUV_R}			3.8		V
VDD UVLO falling threshold	V_{DDUV_F}			3.6		V
VDD UVLO Hysterisis	V_{DDUV_H}			200		mV
OUT						
Output high voltage	V_{OHL}	I_O=20mA		110		mV
Output low voltage	V_{OLL}	I_O=20mA		60		mV
Source peak current	I_{OHL}	V_O=0, V_{IN}=5V		1.0		A
Sink peak current	I_{OLL}	V_O=18V, V_{IN}=0V		1.5		A
Turn on rising time	t_R	10% to 90%		25		ns
Turn on propagation delay	t_{RD}	50% to 10%		50		ns
Turn off falling time	t_F	90% to 10%		25		ns
Turn off propagation delay	t_{FD}	50% to 90%		110		ns

Functional Block Diagrams

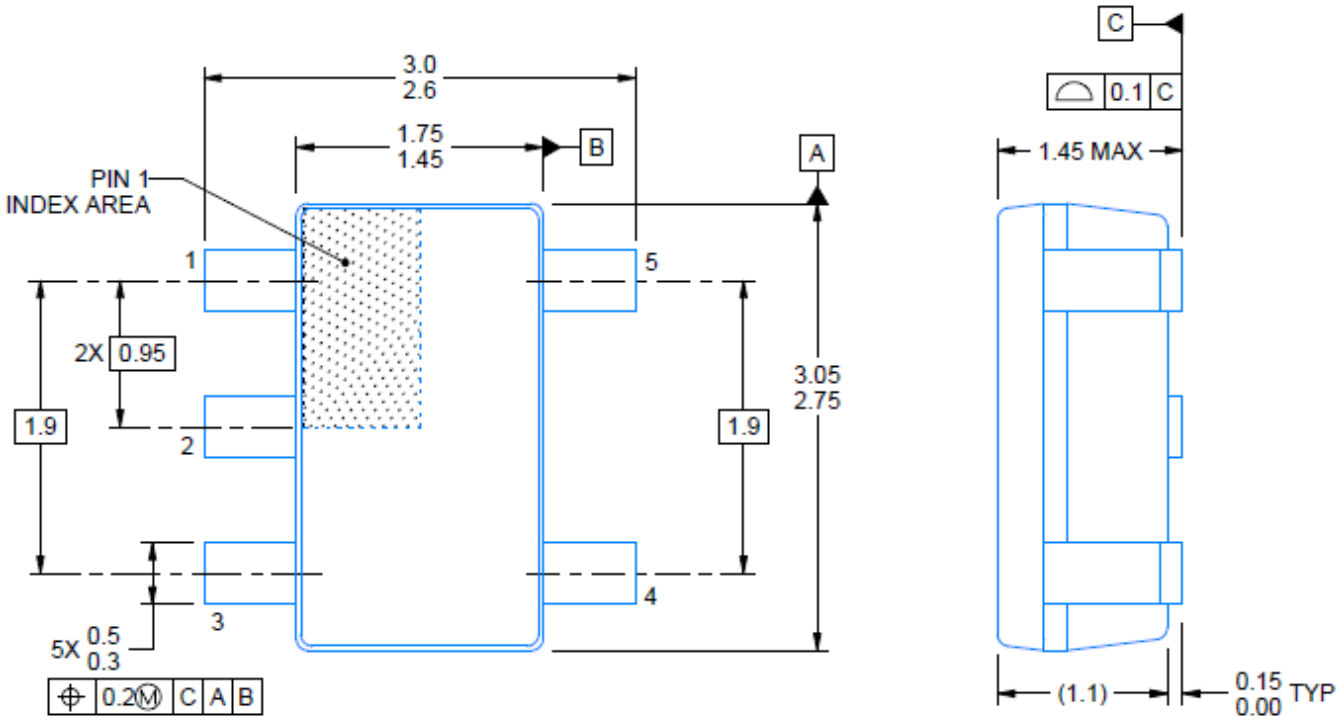


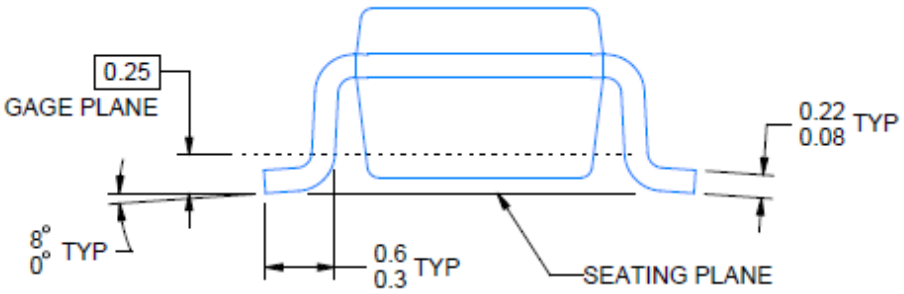
Timing Diagrams



Package

SOT23-5





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