

4A Single-Channel, Low-Side, Non-Inverting Gate Driver

Description

The UCC27519 device is a low voltage power MOSFET and IGBT in phase gate driver. Proprietary latch-immune of CMOS technology enables single-chip integrated architectures with high robustness. The UCC27519 logic input level is compatible with CMOS or TTL logic output levels down to 3.3V. The output driver has Internal Undervoltage Lockout (UVLO) circuitry with hysteresis and buffer stage of output current . The UCC27519 is designed to operate over a wide VCC range of -10 V to 25 V and wide temperature range of -40°C to 125°C.

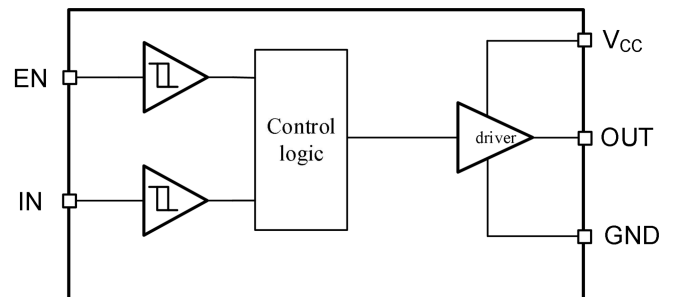
Applications

- Switch-Mode Power Supplies
- General Gate Driver
- Driving MOSFETs and IGBTs

Features

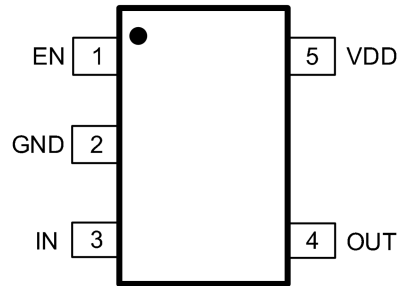
- Input output in-phase
- Compatible with 3.3V、5V、15V input logic
- -10 to 25V Single-Supply Range
- High capacitance load driving capability
- Operating Temperature Range of -40 to 125°C
- Undervoltage Lockout
 - Undervoltage Lockout turn-on threshold 4.5V
 - Undervoltage Lockout turn-off threshold 4.2V
- Turn on/Turn off Delays:
 - Ton/Toff =25ns/25ns
- 4-A Peak Source and Sink-Drive Current

Pin Configuration



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Pin Configuration and Functions



5-Pin SOT23-5 Package Top View

Pin Functions

PIN	NAME	DESCRIPTION
1	EN	Enable input.
2	GND	Ground: All signals are referenced to this pin.
3	IN	Logic input.
4	OUT	Gate drive output.
5	VDD	Bias supply input.

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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 _{DD}	Supply voltage range	-0.3	25	V
V _O	OUT voltage range	-0.3	V _{DD} +0.3	
V _{IN}	IN voltage	-12	25	

Thermal Information

Symbol	Definition	MIN	MAX	UNIT
R _{thJA}	thermal resistance		151	°C/W
T _S	Storage temperature	-55	+150	°C
T _J	Operating junction temperature		+150	
T _L	Lead temperature		300	

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 _{DD}	Supply voltage range	5.0	20	V
V _O	OUT voltage range	0	V _{DD}	
V _{IN}	IN voltage	-10	20	
T _A	ambient temperature	-40	125	°C

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Electrical Characteristics

TA= 25°C, VDD=15V, CL=1nF(unless otherwise noted)

Symbol	Definition	MIN	TYP	MAX	UNIT
V _{IH}	Input signal high threshold	2.7			V
V _{IL}	Input signal low threshold			0.8	V
V _{EN+}	EN input rising threshold	2.5			V
V _{EN-}	EN input drop threshold			0.8	V
V _{DDUV+}	Undervoltage Lockout (UVLO) turn-on threshold VDD		4.5	5	V
V _{DDUV-}	Undervoltage Lockout (UVLO) turn-off threshold VDD		4.2		V
V _{DDUVHY}	UVLO threshold hysteresis VDD		0.3		V
I _{IN+}	Input current (I _N =5V)		50	100	μA
I _{IN-}	Input current (I _N = 0V)			5	μA
V _{OH}	High output voltage			0.35	V
V _{OL}	Low output voltage			0.35	V
I _Q	VDD quiescent supply current		280	400	μA
I _{O+}	Output high short-circuit pulse current		4		A
I _{O-}	Output low short-circuit pulse current		4		A
t _R	Rise time		5		ns
t _F	Fall time		4		ns
t _{ON}	Turn-on propagation delay		25		ns
t _{OFF}	Turn-off propagation delay		25		ns

Function Description

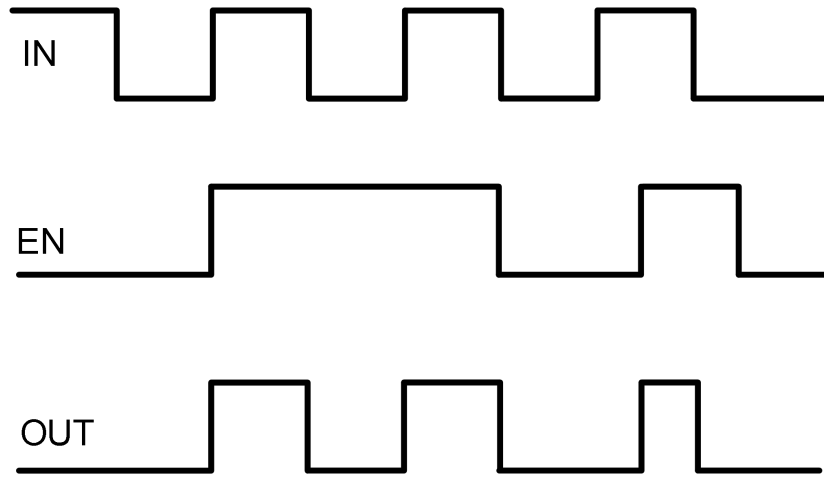


Figure 1 Input-Output waveform

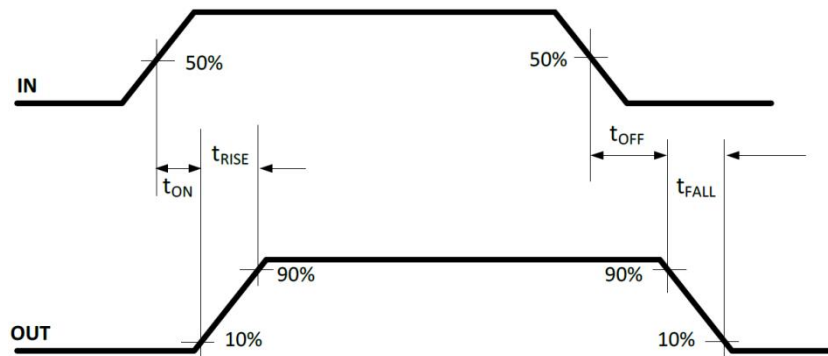


Figure 2 Propagation Time Waveform Definition

Function Block Diagram

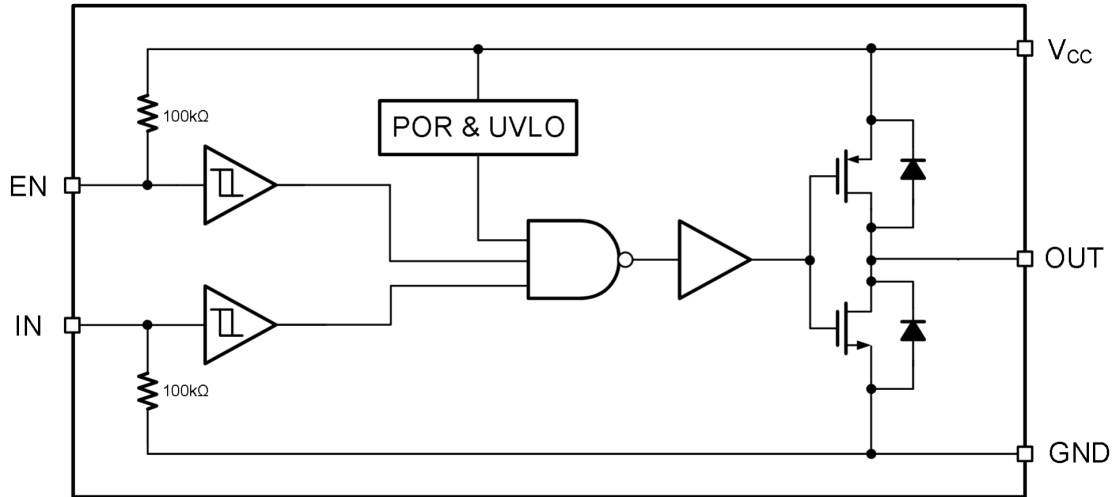


Figure 10-1 Function Block Diagram of UCC27519

Application message

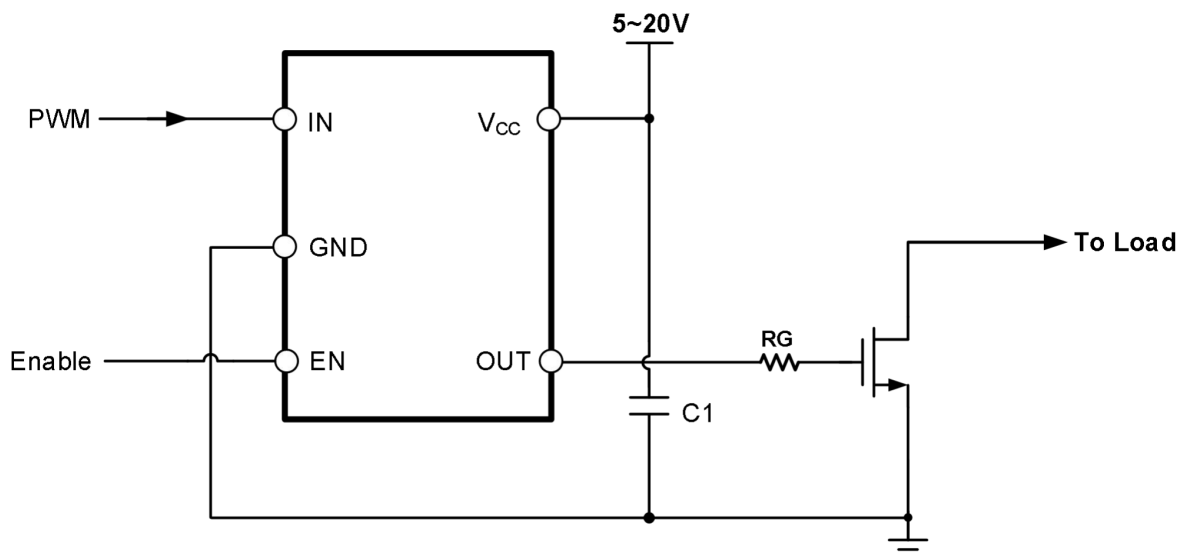
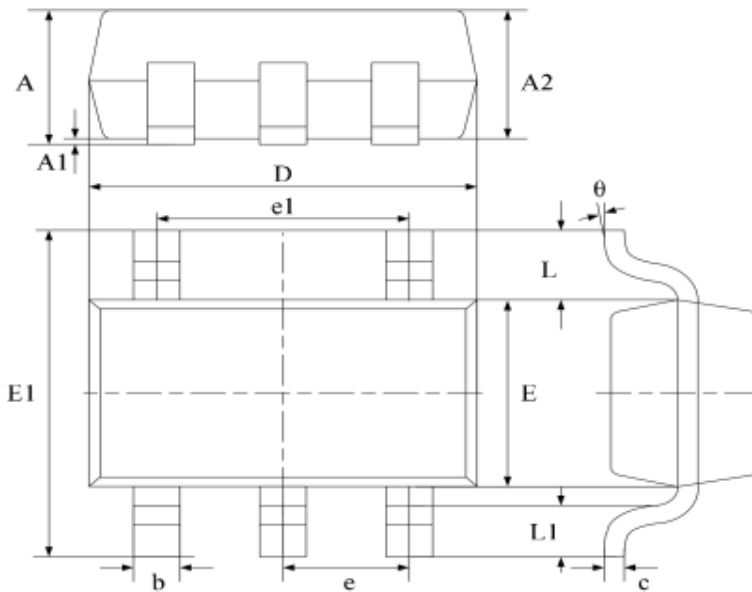


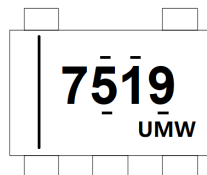
Figure10-2 Typical application circuit of UCC27519

SOT23-5



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.040	1.350	0.042	0.055
A1	0.040	0.150	0.002	0.006
A2	1.000	1.200	0.041	0.049
b	0.380	0.480	0.015	0.020
c	0.110	0.210	0.004	0.009
D	2.720	3.120	0.111	0.127
E	1.400	1.800	0.057	0.073
E1	2.600	3.000	0.106	0.122
e	0.950 typ.		0.037 typ.	
e1	1.900 typ.		0.078 typ.	
L	0.700 ref.		0.028 ref.	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW UCC27519DBVR	SOT23-5	3000	Tape and reel