



DESCRIPTION

The AG27517 is a low-voltage power MOSFET and IGBT in-phase gate driver. It is implemented using a proprietary latch-up immune CMOS technology, providing a highly robust, single-chip integrated solution for demanding applications. The logic input levels are compatible with CMOS or LS TTL logic down to 3.3 V, allowing direct interfacing with common microcontrollers and digital control devices. The output driver features a wide VCC operating range, an undervoltage lockout (UVLO) with hysteresis, and a buffered high-current output stage to ensure reliable gate-drive performance.

The AG27517 is specified for operation over a wide temperature range of -40°C to $+125^{\circ}\text{C}$, making it suitable for industrial, power management, and automotive-related applications.

AG27517 is available in a SOT25 package.

FEATURES

- Dual-input design, allowing selection of inverting (IN-) or non-inverting (IN+) driver configuration
 - The unused input pin can be used to enable or disable the device
- Compatible with 3.3 V logic input levels
- Operating supply voltage range: 5 V to 25 V
- Wide operating temperature range: -40°C to $+125^{\circ}\text{C}$
- Undervoltage lockout (UVLO) protection
 - UVLO rising threshold: 4.0 V
 - UVLO falling threshold: 3.9 V
- Matched turn-on and turn-off propagation delays:
 - $t_{on} / t_{off} = 30 \text{ ns} / 30 \text{ ns}$

High peak drive current capability

– Source current / Sink current = 4 A / 4 A

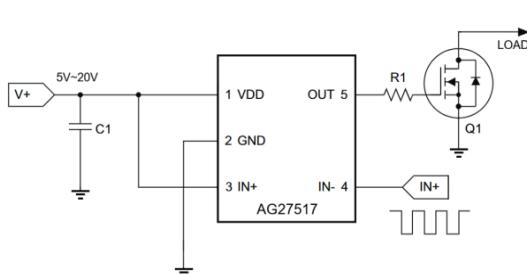
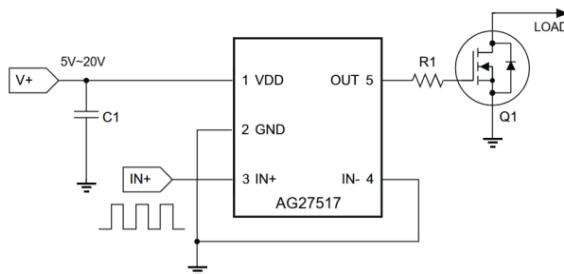
ORDERING INFORMATION

Package Type	Part Number	
SOT-25 SPQ: 4,000pcs/Reel	E5	AG27517E5R
		AG27517E5VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

APPLICATION

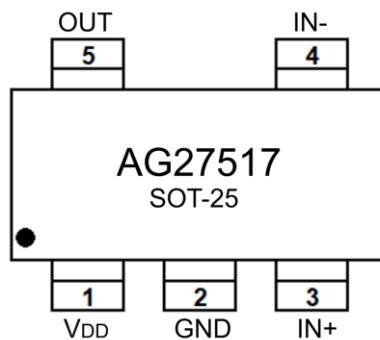
- Small and medium- power motor driver
- Switched-mode power supplies (SMPS)
- Switching regulators / switching converters
- General purpose gate driver applications

TYPICAL APPLICATION CIRCUIT





PIN DESCRIPTION



SOT-25, E5

Top View

Pin #	Symbol	Function
1	VDD	Bias supply input.
2	GND	Ground. All signals reference to this pin.
3	IN+	Noninverting input. When the driver is configured for inverting operation, connect IN+ to VDD to enable the output. If IN+ is left unbiased or floating, the OUT pin is held low.
4	IN-	Inverting input. When the driver is configured for noninverting operation, connect IN+ to GND to enable the output. If IN+ is left unbiased or floating, the OUT pin is held low.
5	OUT	Sourcing/Sinking current output of driver.



ABSOLUTE MAXIMUM RATINGS

V_{DD} , Supply voltage	-0.3V ~ 25V
V_O , Out Voltage	-0.3V ~ V_{DD} +0.3V
V_{IN} , Logic Input Voltage IN+, IN-	-0.3V ~ V_{DD} +0.3V
R_{thJA} , Thermal Resistance Junction to Ambient	SOT-25 (MAX) 151°C/W
T_J , Junction Temperature	150°C/W
T_S , Storage Temperature	-55°C~150°C
T_L , Lead Temperature (Soldering, 10 seconds)	300°C

Stresses beyond the absolute maximum ratings may cause permanent damage to the device. All voltage ratings are referenced to GND.

Current ratings are specified with current flowing into the pin as positive. Unless otherwise noted, specifications are given at an ambient temperature of 25 °C

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Max.	Units
Supply voltage	V_{DD}	5	20	V
Output Voltage	V_O	0	V_{DD}	V
Input Voltage	V_{IN}	0	V_{DD}	V
Ambient Temperature	T_A	-40	125	°C



ELECTRICAL CHARACTERISTICS

$V_{DD}=15V$, $C_L = 1000pF$ and $T_A = 25^\circ C$, unless otherwise specified.

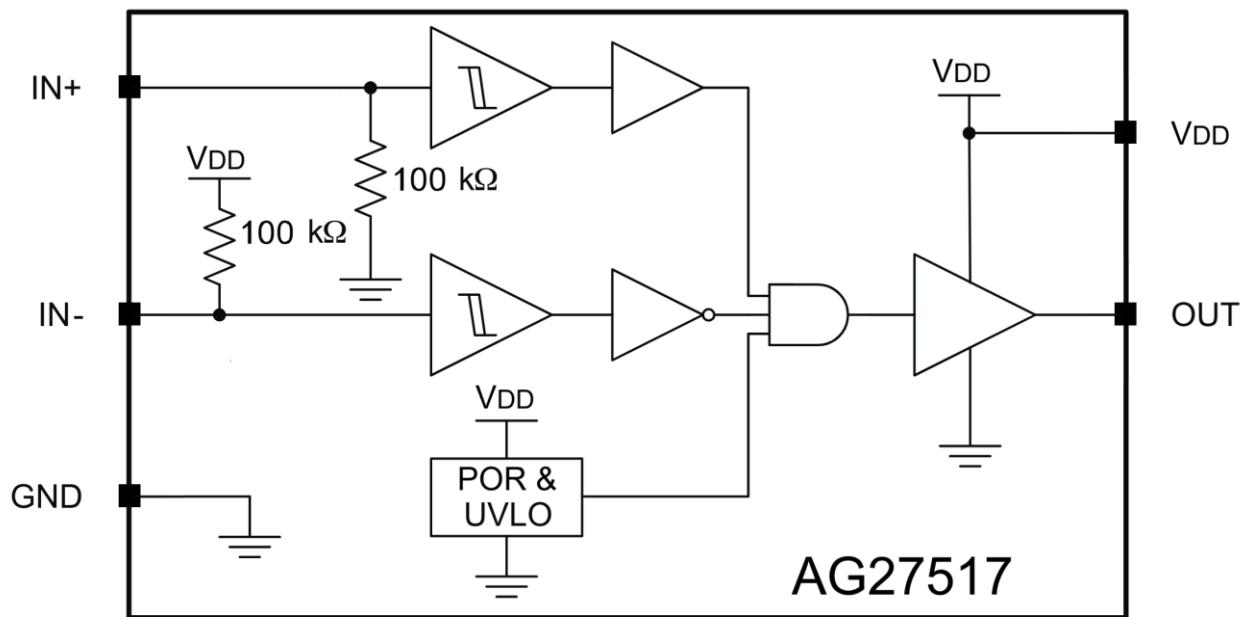
Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Dynamic						
Turn-On propagation delay	t_{on}		-	30	60	ns
Turn-Off propagation delay	t_{off}		-	30	60	
Turn-On Rise Time	t_r		-	10	15	
Turn-Off Fall Time	t_f		-	10	15	

$V_{DD}= 15V$, $C_L = 1000pF$, and $T_A = 25^\circ C$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static						
Logic "1" Input Voltage	V_{IH}		2.7	-	-	V
Logic "0" Input Voltage	V_{IL}		-	-	0.8	
High-level output voltage drops from V_{DD}	V_{OH}		-	-	0.35	
Low-level output voltage drops to GND	V_{OL}		-	-	0.35	
V_{DD} Supply Current	I_{QDD}		-	180	400	μA
Logic "1" Input Bias Current	I_{IN+}		-	50	100	
Logic "0" Input Bias Current	I_{IN-}		-	-	5	
V_{DD} Supply UVLO Threshold	V_{DDU+}		-	4.0	-	
	V_{DDU-}		-	3.9	-	
V_{DD} Hysteresis Voltage	$V_{DDUVHYS}$		-	0.1	-	V
Output Source Current	I_{O+}		$V_O=0V P_w \leq 0.5\mu s$	-	4	
Output Sink Current	I_{O-}		$V_O=0V P_w \leq 0.5\mu s$	-	4	



BLOCK DIAGRAM



APPLICATION CIRCUIT

Fig 1. Typical Application Circuit (Non-Inverting)

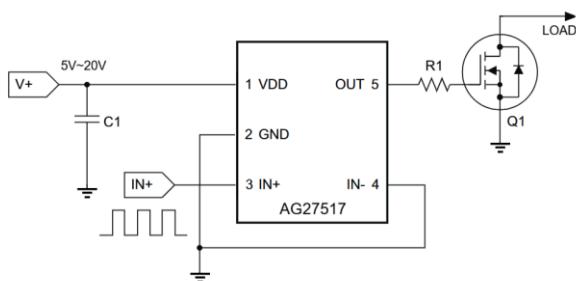
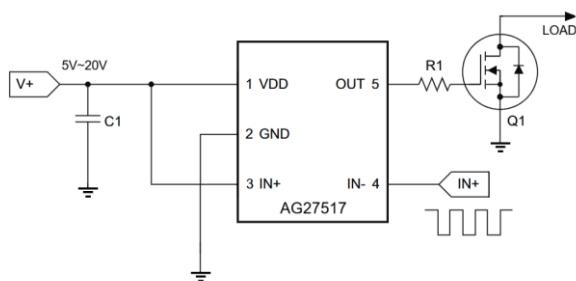


Fig 2. Typical Application Circuit (Inverting)





LOGIC FUNCTION & TIMING WAVEFORMS

Fig 3. Input and Output Waveforms (Non-Inverting)

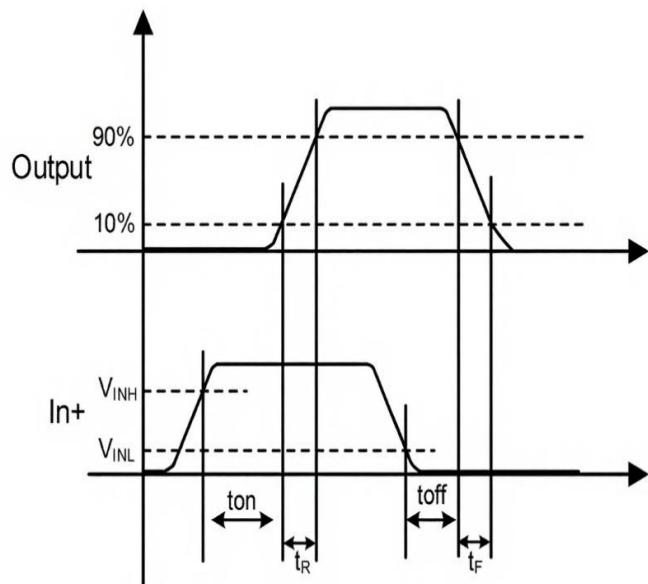
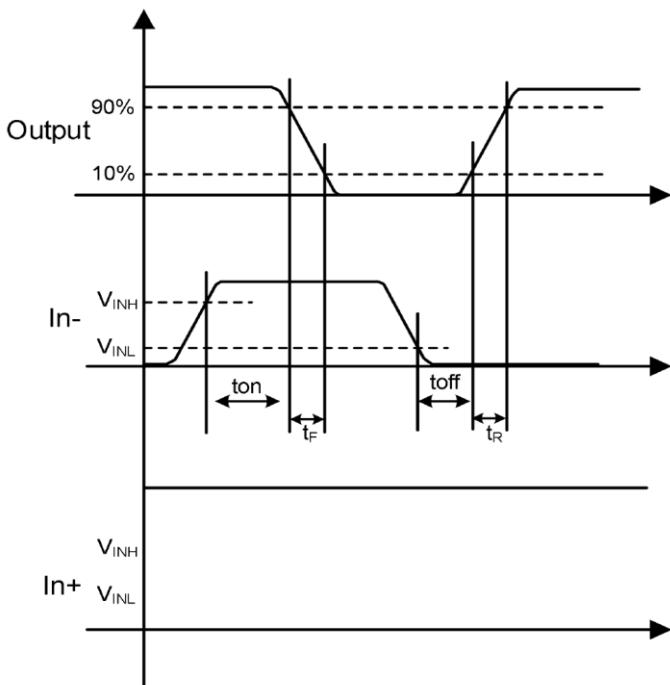


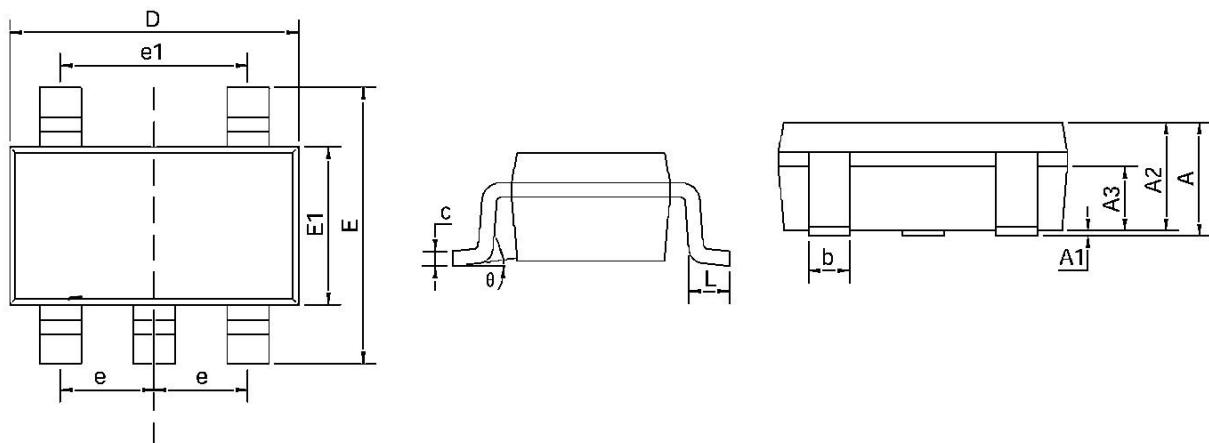
Fig 4. Input and Output Waveforms (Inverting)





PACKAGE INFORMATION

Dimension in SOT-25 (Unit: mm)



Symbol	Millimeters	
	Min	Max
A	-	1.350
A1	0.040	0.150
A2	1.000	1.200
A3	0.550	0.750
b	0.380	0.480
c	0.100	0.250
D	2.720	3.120
E	2.600	3.000
E1	1.400	1.800
e	0.950 BSC	
e1	1.900 BSC.	
L	0.300	0.600
θ	0°	8°



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