Description

The FAN3111 2A gate driver is designed to drive an N-channel enhancement-mode MOSFET in low-side switching applications.FAN3111 has dual CMOS inputs with thresholds referenced to VDD for use with PWM controllers and other input-signal sources that operate from the same supply voltage as the driver.

Applications

- Switch-Mode Power Supplies
- Synchronous Rectifier Circuits
- Pulse Transformer Driver
- Logic to Power Buffer
- Motor Control

Features

- Dual inputs allow configuration as non-inverting or inverting with enable function
- CMOS logic inputs
- Input logic protection as low as -10V
- 4.5 to 25-V Single-Supply Range
- Internal resistance turns off driver when there is no input
- Operating Temperature Range of -40 to 125°C
- Turn on/Turn off Delays:
  -- Ton/Toff =20ns/20ns
- 2-A Peak Source and Sink-Drive Current

Pin Configuration
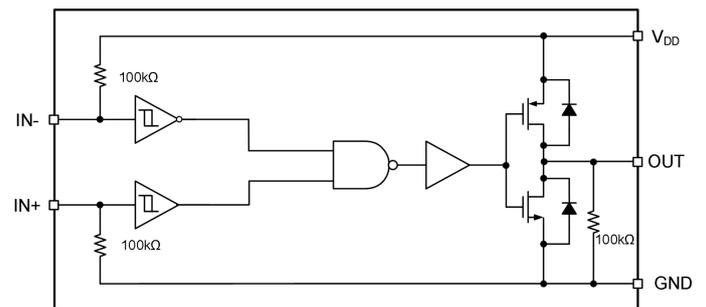
Pin Configuration and Functions
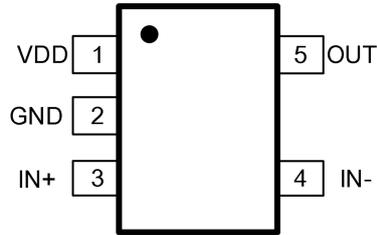
Figure 7-1 5-Pin SOT23-5 Package Top View

Table7-1 Pin Functions

PIN	NAME	DESCRIPTION
1	VDD	Bias supply input
2	GND	Ground: All signals are referenced to this pin.
3	IN+	Non-inverting Input
4	IN-	Inverting Input
5	OUT	Gate driven Ouput

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 ℃.

Symbol	Definition	MIN	MAX	UNIT
V_{DD}	Supply voltage range	-0.3	25	
V_O	OUT voltage range	-0.3	V_{DD}+0.3	V
V_{IN}	IN+, IN- voltage	-12	25	

ESD Ratings

Symbol	Definition	MIN	MAX	UNIT
ESD	Human body model (HBM)	—	2000	V
	Charged device model (CDM)	—	500	V

Power Ratings

Symbol	Definition	MIN	MAX	UNIT
PD	SOIC package power（TA ≤70°C）	—	470	mW

Thermal Information

Symbol	Definition	MIN	MAX	UNIT
T_S	Storage temperature	-65	+150	°C
T_J	Operating junction temperature	—	+150	

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 ℃.

Symbol	Definition	MIN	MAX	UNIT
V_{DD}	Supply voltage range	4.5	25	
V_O	OUT voltage range	0	V_{DD}	V
V_{IN}	IN+, IN- voltage	-10	25	
T_A	ambient temperature	-40	125	°C

Electrical Characteristics

TA= 25℃, VDD=15V(unless otherwise noted)

| Symbol	Definition	MIN	TYP	MAX	UNIT
V_{IH}	Input signal high threshold	—	7.5	—	V
V_{IL}	Input signal low threshold	—	4.5	—	V
I_{IN+}	Input current(IN+=15V, IN-=0V)	—	150	300	μA
I_{IN-}	Input current(IN+=0V, IN-=15V)	—	—	1	μA
V_{OH}	High output voltage	V_{DD}-0.025	—	—	V
V_{OL}	Low output voltage	—	—	0.025	V
I_{O+}	Output high short-circuit pulse current	—	2	—	A
I_{O-}	Output low short-circuit pulse current	—	2	—	A
t_R	Rise time($CL=1nF$)	—	—	15	ns
t_F	Fall time($CL=1nF$)	—	—	15	ns
t_{ON}	Turn-on propagation delay($CL=1nF$)	—	—	30	ns
t_{OFF}	Turn-off propagation delay($CL=1nF$)	—	—	30	ns
I_{Q1}	VCC supply current(V_{IN-}=HIGH V_{IN+}=LOW)	—	—	30	μA
I_{Q2}	VCC supply current(V_{IN-}=LOW V_{IN+}=HIGH)	—	300	500	μA

Function description
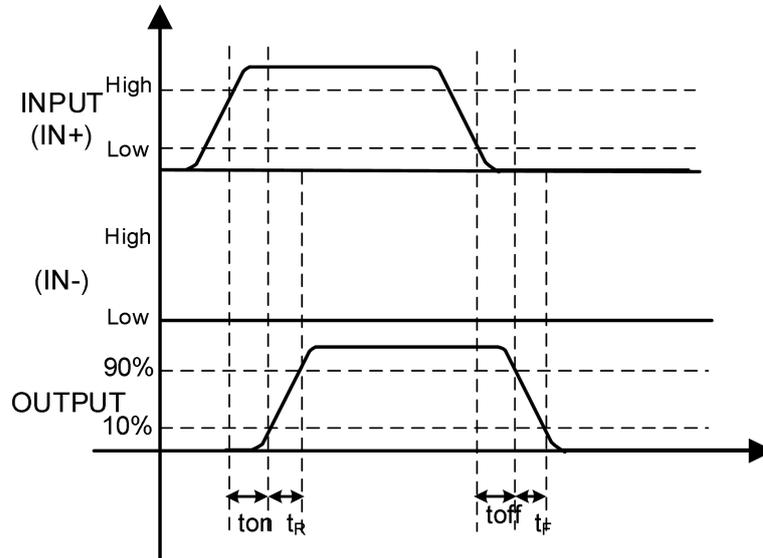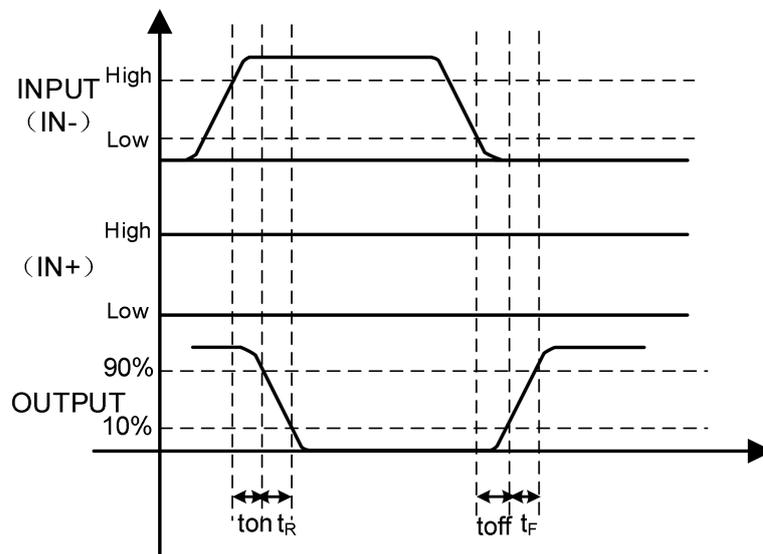

Figure 9-1 Input-Output waveform(non-inverting)

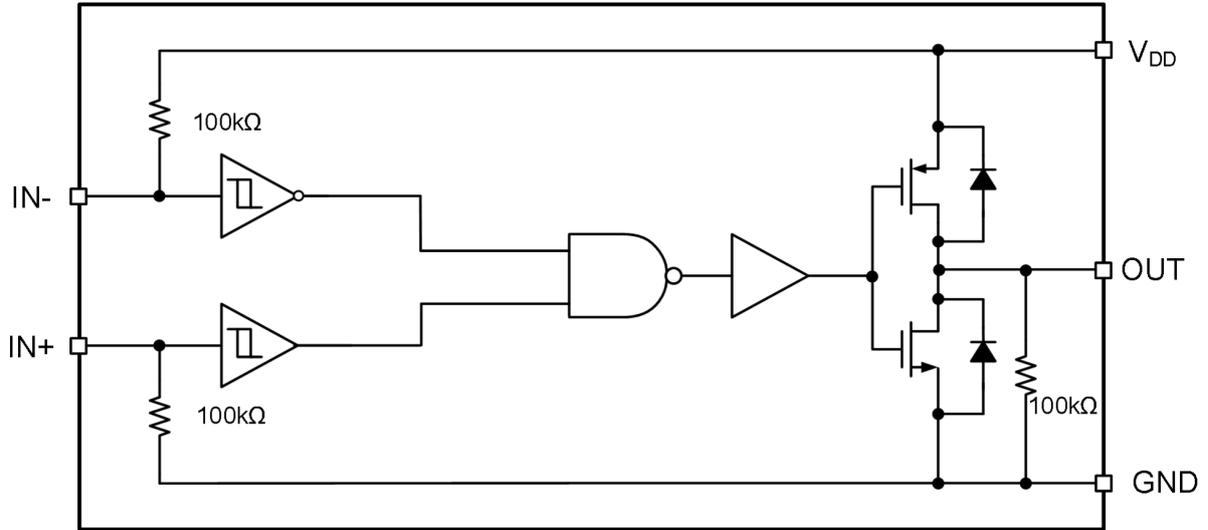Figure 9-2 Input-Output waveform(inverting)

Function Block Diagram

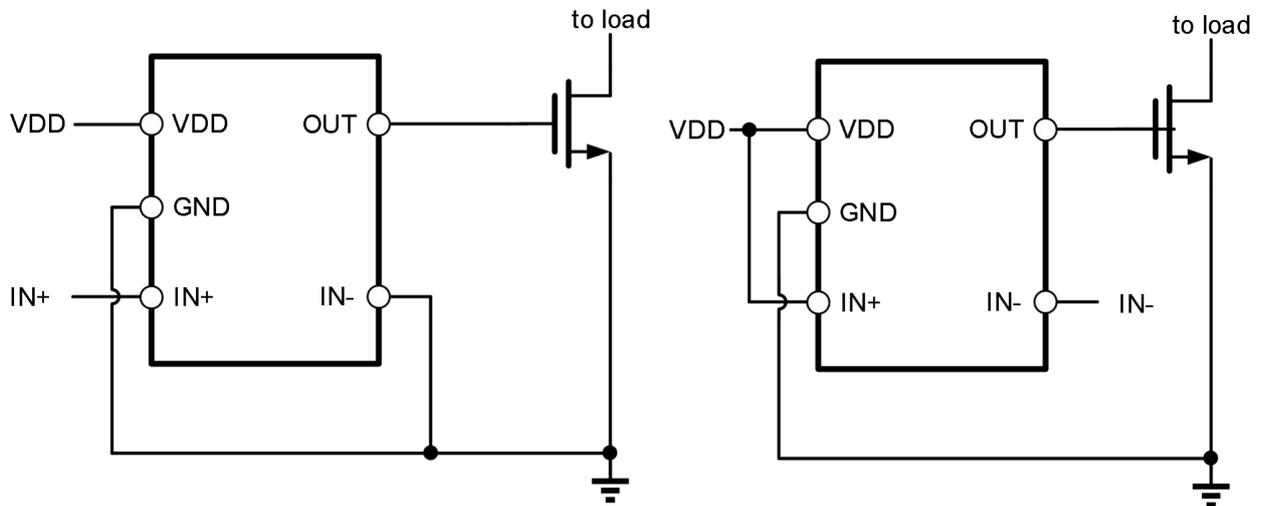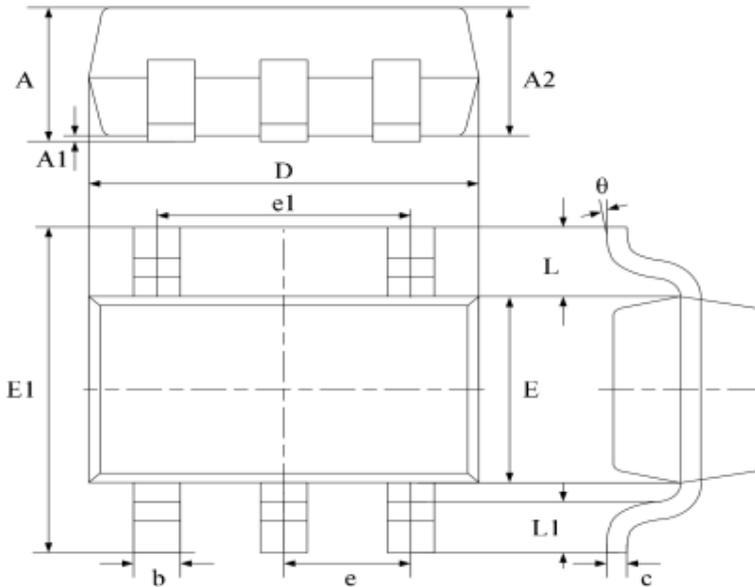Figure 10-1 Function Block Diagram of FAN3111

Application message

Figure10-2 Typical application circuit of FAN3111

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
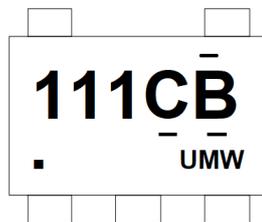
Ordering information

Order code	Package	Baseqty	Deliverymode
UMW FAN3111CSX	SOT23-5	3000	Tape and reel