A G D IC, H L S
600 V, 4.5 A
FAN7191-F085, FAD7191

Description

The FAN7191 / FAD7191 is a monolithic high− and low−side gate−driver IC, which can drive high speed MOSFETs and IGBTs that operate up to +600 V. It has a buffered output stage with all NMOS transistors designed for high pulse driving capability and minimum cross−conduction.

ON Semiconductor's high−voltage process and common−mode noise canceling technique provide stable operation of high−drivers under high dV/dt noise circumstances. An advanced level−shift circuit allows high−side gate driver operation up to V_S

Pin Assignment

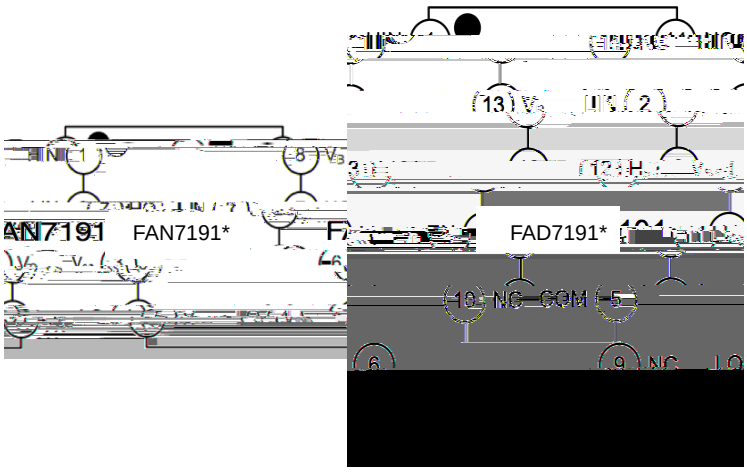


Figure 5. P A 、 (T V)

Table 1. PIN DEFINITIONS

8−Pin	14−Pin	Name	Description
1	1	HIN	Logic Input for High−Side Gate Driver Output
2	2	LIN	Logic Input for Low−Side Gate Driver Output
3	3	V_{SS}	Logic Ground, Power ground for 8−SOP
	4	EN	Enable Input (Internal Pull Up)
	5	COM	Power Ground for 14−SOP, Low−side Driver Return
4	6	LO	Low−Side Driver Output
5	7	V_{DD}	Low−Side and Logic Power Supply Voltage
6	11	V_S	High−Side Floating Supply Return
7	12	HO	High−Side Driver Output
8	13	V_B	High−Side Floating Supply
	8, 9, 10, 14	NC	No Connect

Table 2. ABSOLUTE MAXIMUM RATINGS

(T_A = −40°C to 125°C, unless otherwise specified. V_B, V_{DD} and V_{IN} are referenced to V_{SS})

Symbol	Parameter	Min.	Max.	Unit
V_S	High−side offset voltage VS	V_B − 25	V_B + 0.3	V
V_B	High−side floating supply voltage VB	−0.3	625	V
V_{HO}	High−side floating output voltage	V_S − 0.3	V_B + 0.3	V
V_{DD}	Low−side and logic−fixed supply voltage	−0.3	25	V
COM	Power Ground (14−SOP)	V_{DD} − 25	V_{DD} + 0.3	V
V_{IN}	Logic Input voltage (HIN, LIN, EN)	−0.3	V_{DD} + 0.3	V
V_{LO}	Low−Side Output Voltage LO (8−SOP)	V_{SS} − 0.3	V_{DD} + 0.3	V
	Low−Side Output Voltage LO (14−SOP)	COM − 0.3	V_{DD} + 0.3	V
T_{pulse} (Note 4)	Minimum Pulse Width	80		ns
$d_{VS/dt}$	Allowable offset voltage slew rate		50	V/ns
P_D (Note 1, 2, 3)				

Table 4. ELECTRICAL CHARACTERISTICS

(V_{BIAS} (V_{DD}, V_{BS}) = 15.0 V, V_S = V_{SS} = COM, T_A = −40°C to 125°C, unless otherwise specified. The V_{IL}, V_{IH} and I_{IN} parameters are referenced to V_{SS} and are applicable to the respective input signals HIN and LIN. The V_O and I_O parameters are referenced to COM (or V_{SS} in case of 8−SOP). V_S and COM (V_{SS} for 8−SOP) are applicable to the respective outputs HO and LO)

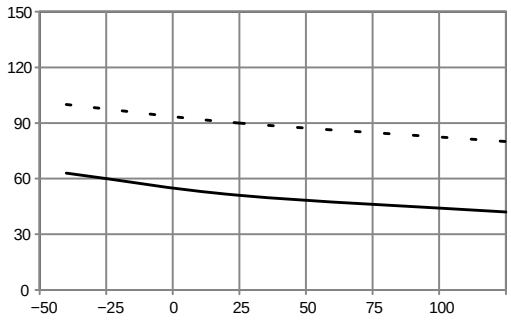
Symbol	Characteristic	Condition	Min.	Typ.	Max.	Unit
POWER SUPPLY SECTION (V_{DD} AND V_{BS})						
V_{DDUV+}	V					

Table 5. DYNAMIC ELECTRICAL CHARACTERISTICS
(V_{BIAS} (V_{DD}, V_{BS}) = 15.0 V, V_S = V_{SS} = COM = 0 V, T_A = −40°C to 125°C, C_{LOAD}

Typical Characteristics

Figure 6. Turn−on Propagation Delay

Typical Characteristics (continued)



Typical Characteristics (continued)

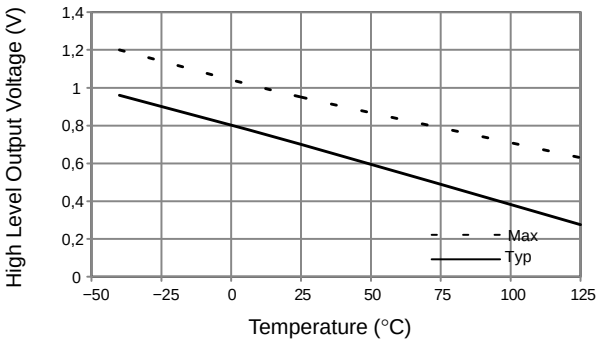


Figure 20. High−Level Output Voltage vs. Temperature

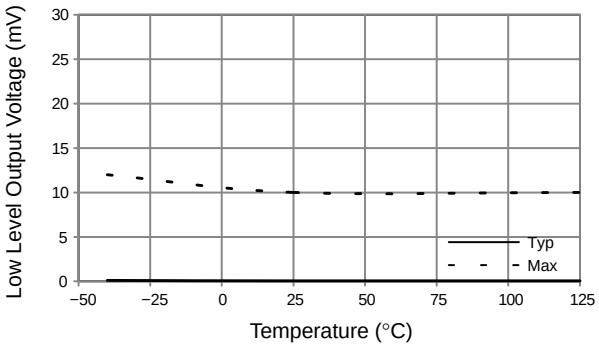


Figure 21. Low−Level Output Voltage vs. Temperature

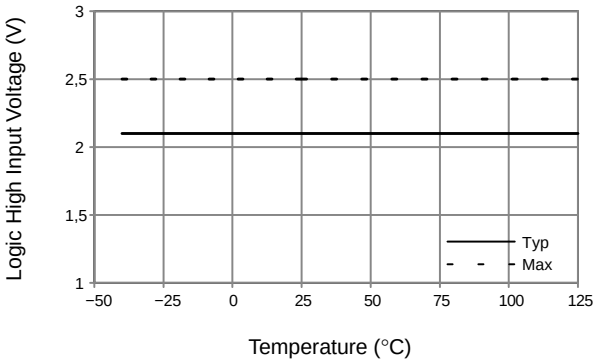


Figure 22. Logic High Input Voltage vs. Temperature

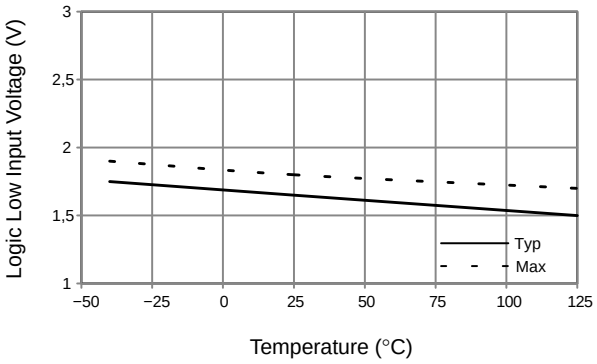


Figure 23. Logic Low Input Voltage vs. Temperature

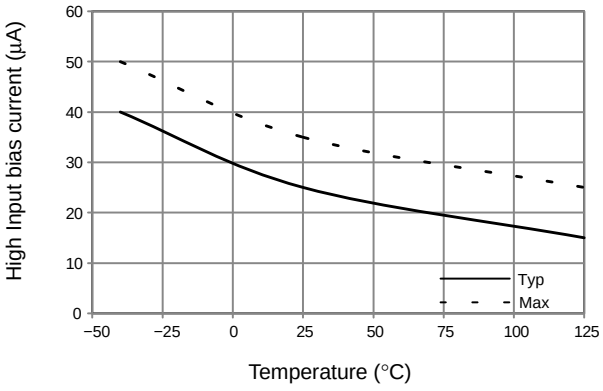


Figure 24. Logic “1” Input Bias Current vs. Temperature

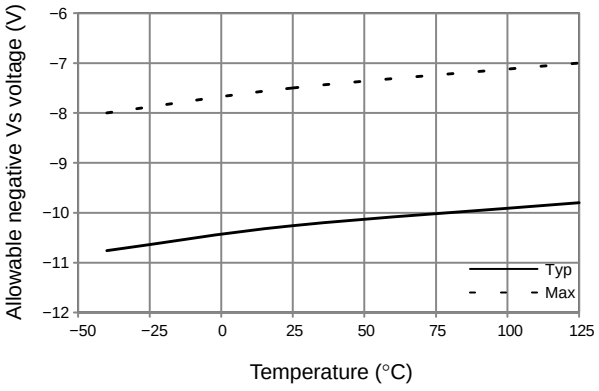


Figure 25. Allowable Negative VS Voltage vs. Temperature

Switching Time Definitions

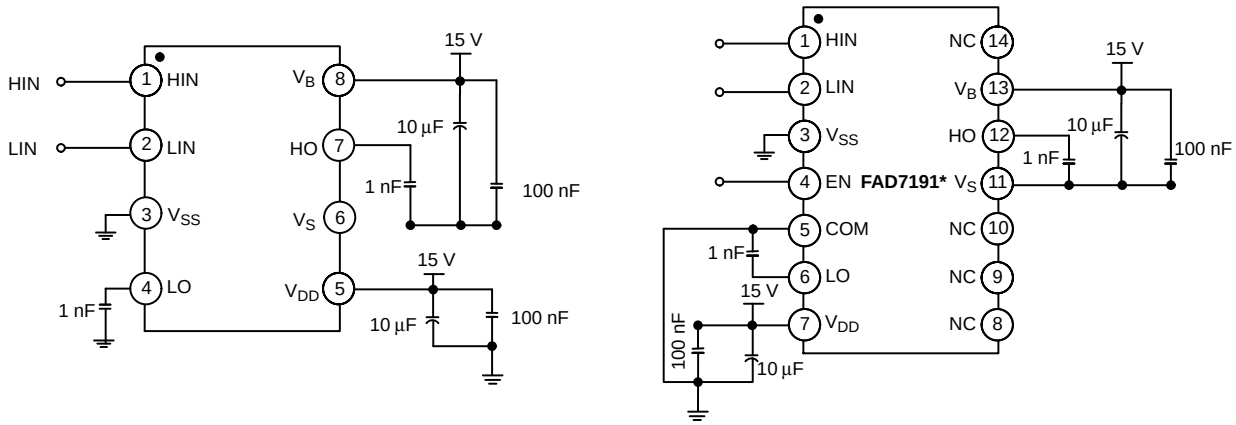


Figure 26. Switching Time Test Circuit

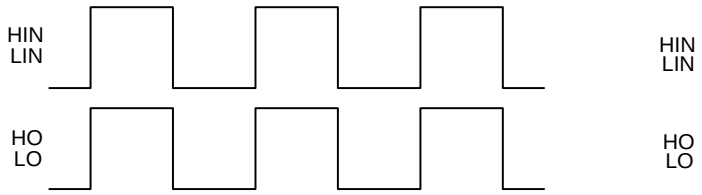


Figure 27. Input / Output Timing Diagram

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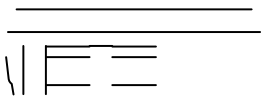

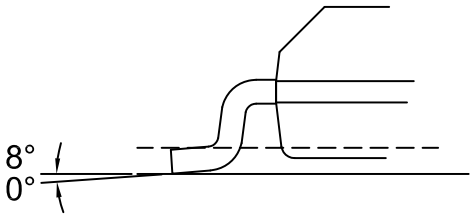

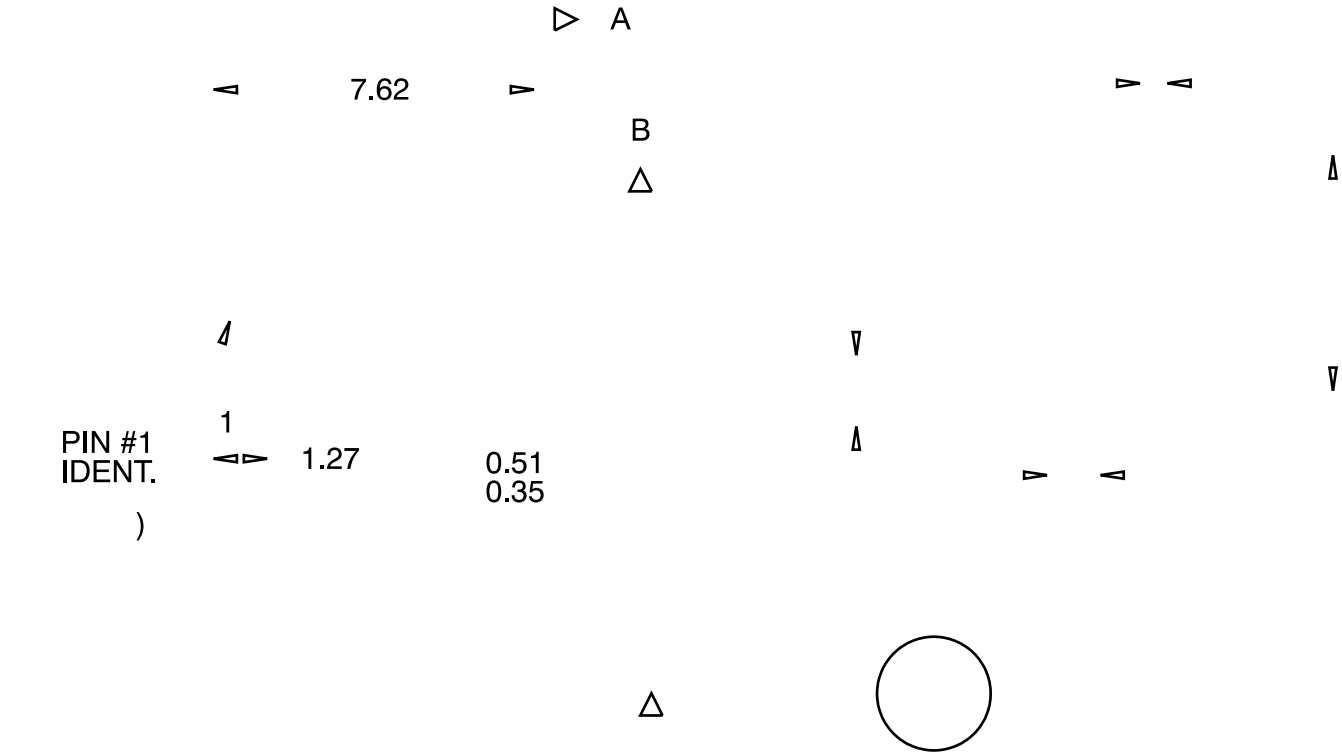
A
7.62
B
1
PIN #1
IDENT.
1.27
0.51
0.35