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FAIRCHILD SEMICONDUCTOR®

2024 年 5 月

FAN7361, FAN7362
高侧栅极驱动器

特性

- 浮动通道专为高达 +600 V 的自举运行而设计
- 源 / 灌电流驱动能力典型值为 250 mA/500 mA
- 共模 dv/dt 噪声消除电路
- V_{CC} 和 V_{BS} 供电范围从 10 V 至 20 V
- V_{BS} 欠压锁定功能
- 输出信号与输入信号同相位
- 8-SOP

应用

- PDP 扫描驱动器
- 电机控制
- SMPS
- 电子镇流器

说明

FAN7361/FAN7362 是单片高侧栅极驱动 IC，可以驱动工作电压最高达 +600 V 的 MOSFET 和 IGBT。飞兆的高压工艺和共模噪声消除技术可使高侧驱动器在高 dv/dt 噪声环境下稳定运行。先进的电平转换电路能使高侧栅极驱动器的工作偏置电压达到 V_S= -9 V（V = 15 V 时的典型值）。

UVLO 电路可防止 V_{BS} 于指定的阈值电压时发生故障。输出驱动器通常提供 250 mA/500 mA 的源电流 / 灌电流，适合萤光灯镇流器、PDP 扫描驱动器和电机控制等。

8-SOP

订购信息

器件编号	封装	工作温度范围	Eco 状态	包装方法
FAN7361M(1)	8-SOP	-40°C ~ 125°C	RoHS	塑料管
FAN7361MX(1)				卷带和卷盘
FAN7362M(1)				塑料管
FAN7362MX(1)				卷带和卷盘

注：

1. 这些器件通过了 JESD22A-111 波峰焊测试。

对于飞兆公司的 Eco 状态定义，请访问：*http://www.fairchildsemi.com/company/green/rohs_green.html*。

典型应用电路

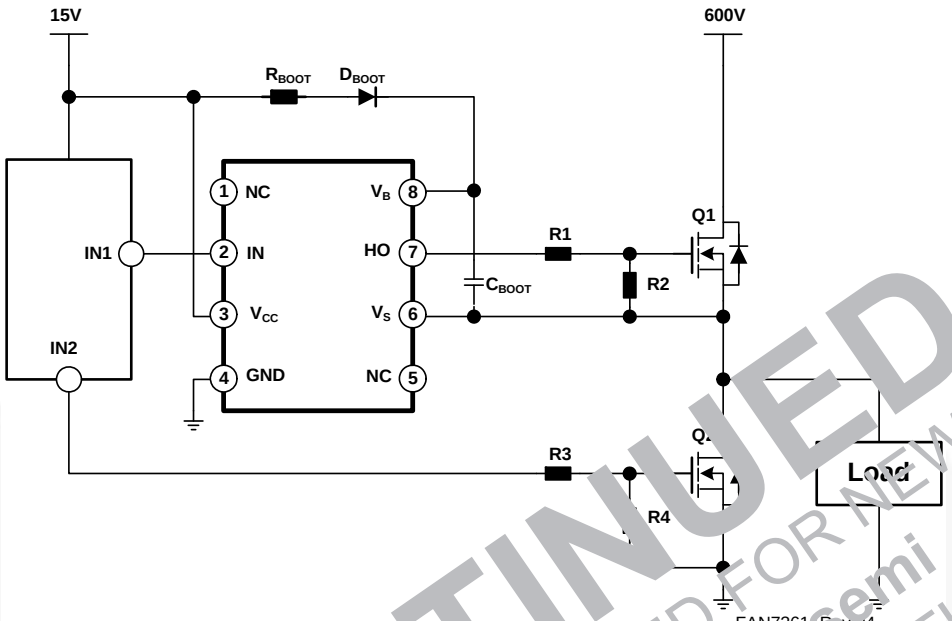


图 1. 典型应用电路

内部框图

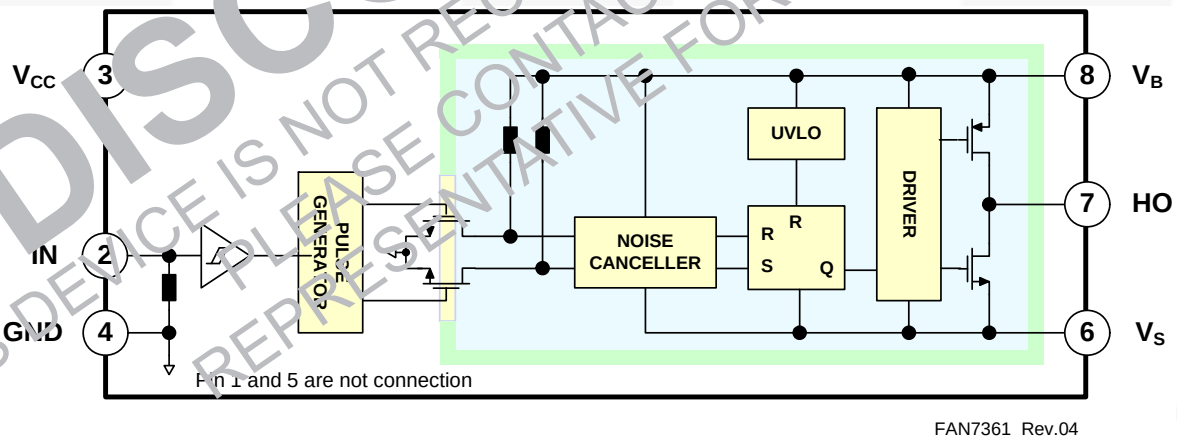
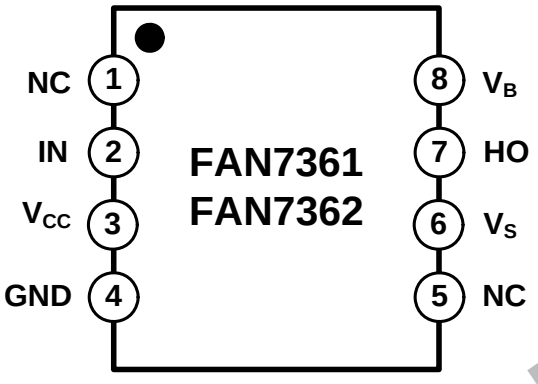


图 2. 功能框图

引脚配置



FAN7361 Rev.04

图 3. 引脚配置 （俯视图）

引脚定义

引脚	名称	功能 / 说明
1	NC	无连接
2	IN	高侧栅极驱动器输出逻辑输入
3	V_{CC}	电源电压
4	GND	逻辑地
5	NC	无连接
6	V_S	高侧浮动电源电压返回
7	HO	高侧驱动输出
8	V_B	高侧浮动电源

绝对最大额定值

应力超过绝对最大额定值，可能会损坏器件。在超出推荐的工作条件的情况下，该器件可能无法正常工作，所以不建议让器件在这些条件下长期工作。此外，长期在高于推荐的工作条件下工作，会影响器件的可靠性。绝对最大额定值仅是应力规格值。除非另有说明， T_A=25°C。

符号	特性	最小值	最大值	单位
V_S	高侧偏置电压	V_B-25	V_B+0.3	V
V_B	高侧浮动电源电压	-0.3	625	
V_{HO}	高侧浮动输出电压	V_S-0.3	V_B+0.3	
V_{CC}	固定逻辑电源电压	-0.3	25	
V_{IN}	逻辑输入电压	-0.3	V_{CC}+0.3	
dV_S/dt	允许的偏置电压变化速率		[illegible]	V/ns
P_D[2][3][4]	功耗		0.6[illegible]	W
θ_{JA}	结至环境热阻		[illegible]200	°C/W
T_J	结温		+1[illegible]	°C
T_S	存储温度		+150	°C
T_A	环境温度	[illegible]	+125	°C

注意：

2. 安装到 76.2 x 114.3 x 1.6 mm PCB 板 （FR-4 环氧[illegible]材料）
3. 参考以下标准：
   JESD51-2: 集成电路热测试方法环境条件 - 自然对流
   JESD51-3: 含铅表面贴装封装的低有效导[illegible]试板
4. 在任何情况下，都不要超过 P_D。

推荐工作条件

推荐的操作条件[illegible]确了[illegible]件的[illegible]实工作条件。指定推荐的工作条件，以确保器件的最佳性能达到数据表中的规格。飞兆半导体建[illegible]不[illegible]推荐工作条件，也不能按照绝对最大额定值进行设计。

符号	参数	最小值	最大值	单位
V_B	高侧浮动电源电压	V_S+10	V_S+20	V
V_S	高侧浮动电源偏置电压	6-V_{CC}	600	
V_{HO}	高侧输出电压	V_S	V_B	
V_{IN}	逻辑输入电压	GND	V_{CC}	
V_{CC}	逻辑电源电压	10	20	

电气特性

除非另有说明，V_{BIAS}(V_{CC}、V_{BS})=15.0V、T_A = 25°C。V_{IN} 和 I_{IN} 参数以 GND 作为基准。V_O 和 I_O 参数以 V_S 作为基准，适用于相应的输出 HO。

符号	特性	测试条件		最小值	典型值	最大值	单位
V_{BSUV+}	V_{BS} 电源欠压正向阀值	V_{BS}= 扫描	FAN7361	8.2	9.2	10.2	V
			FAN7362	7.6	8.6	9.6	
V_{BSUV-}	V_{BS} 电源欠压负向阀值	V_{BS}= 扫描	FAN7361	7.4	8.6	9.2	
			FAN7362	7.2	8.2	9.2	
V_{BSHYS}	V_{BS} 电源欠压锁定滞回电压回差	V_{BS}= 扫描	FAN7361		0.5		
			FAN7362		0.4		
I_{LK}	偏置电源漏电流	V_B=V_S=600V				10	μA
I_{QBS}	V_{BS} 静态电源电流	V_{IN}= 0 V 或 5 V			30	80	
I_{QCC}	V_{CC} 静态电源电流	V_{IN}=0V			30	75	
I_{PBS}	V_{BS} 工作电源电流	C_L=1nF, f=10kHz			420	550	
V_{IH}	逻辑 “1” 输入电压		FAN7361	3.0			V
			FAN7362	2.9			
V_{IL}	逻辑 “0” 输入电压		FAN7361			1.0	
			FAN7362			0.8	
V_{OH}	高电平输出电压， V_B-V_{HO}	无负载				0.1	
V_{OL}	低电平输出电压， V_{HO}	无负载				0.1	
I_{IN+}	逻辑 “1” 输入偏置电流	=5V			50	90	μA
I_{IN-}	逻辑 “0” 输入偏置电流	V_{IN}=0V			1.0	2.0	
I_{O+}	输出高电平短脉冲电流	V_{HO}= 0 V， V_{IN}= 5 V， PW ≤ 10μs		200	250		mA
I_{O-}	输出低电平短脉冲电流	V_{HO}=15V, V_{IN}=0V, PW ≤ 10μs		400	500		
V_S	IN 信号低电平时 HO 的允许的 V_S 引脚负电压				-9.8	-7.0	V

动态电气特性

除非另有说明，V_{BIAS}(V_{CC}、V_{BS})=15.0V、V_S=GND、C_L=1000pF 且 T_A = 25°C。

符号	特性	测试条件	最小值	典型值	最大值	单位
t_{on}	导通传播延时	V_S=0V		120	200	ns
t_{off}	关断传播延时	V_S= 0 V 或 600 V		90	180	
t_r	导通上升时间			70	160	
t_f	关断下降时间			30	100	

注：

5. 参数由设计者提供。

典型特性

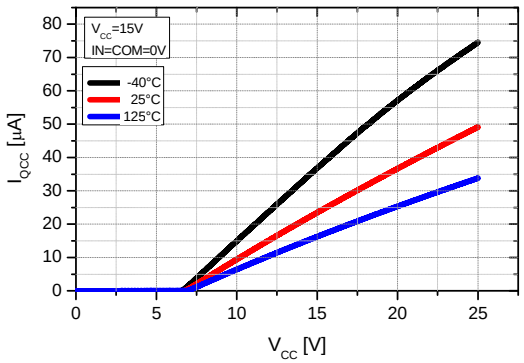


图 4. I_{QCC} 与电源电压的关系

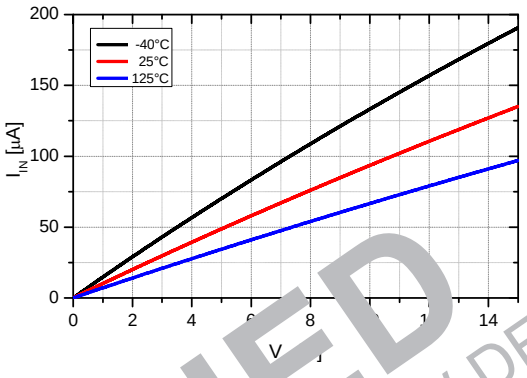


图 5. 输入偏置电流与输入电压的关系

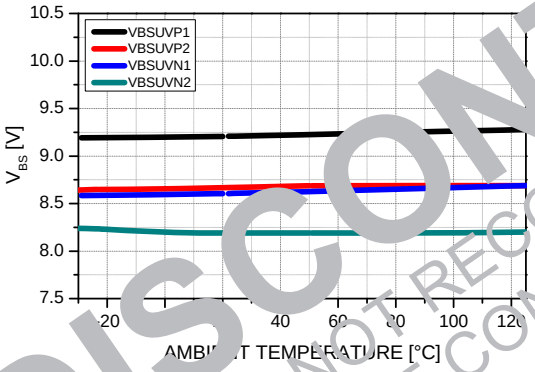


图 6. V_{BS} UVLO 与温度的关系

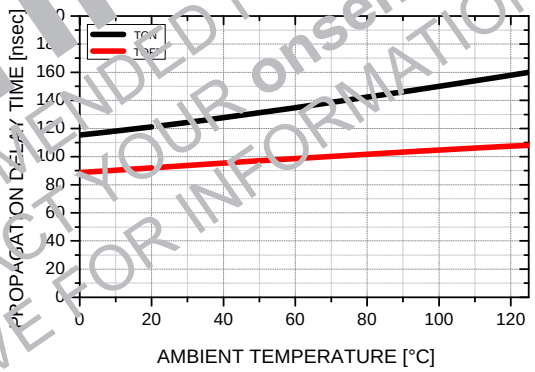


图 7. 导通 / 关断传播时间与温度的关系

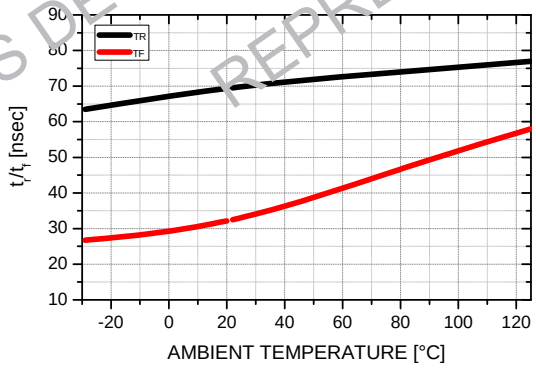


图 8. 上升 / 下降时间与温度的关系

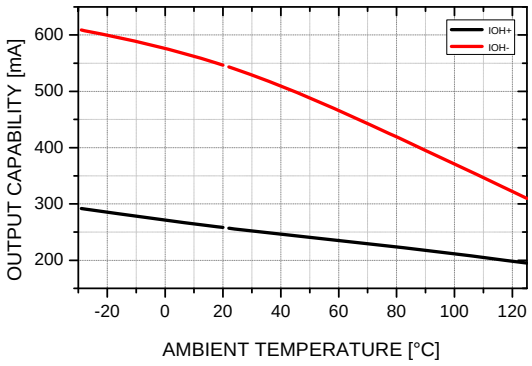


图 9. 输出灌电流 / 源电流与温度的关系

开关时间定义

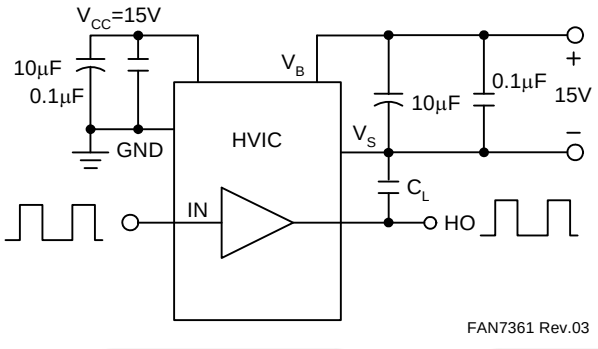


图 10. 开关时间测试电路

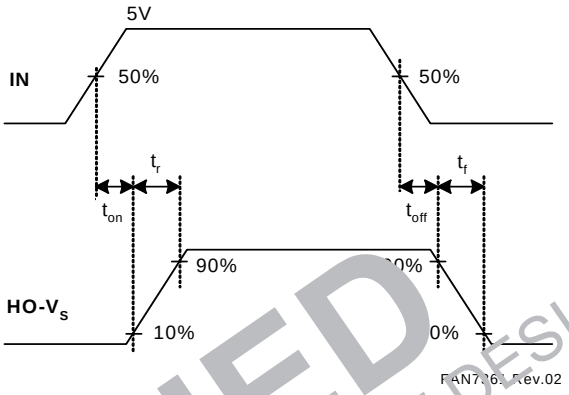
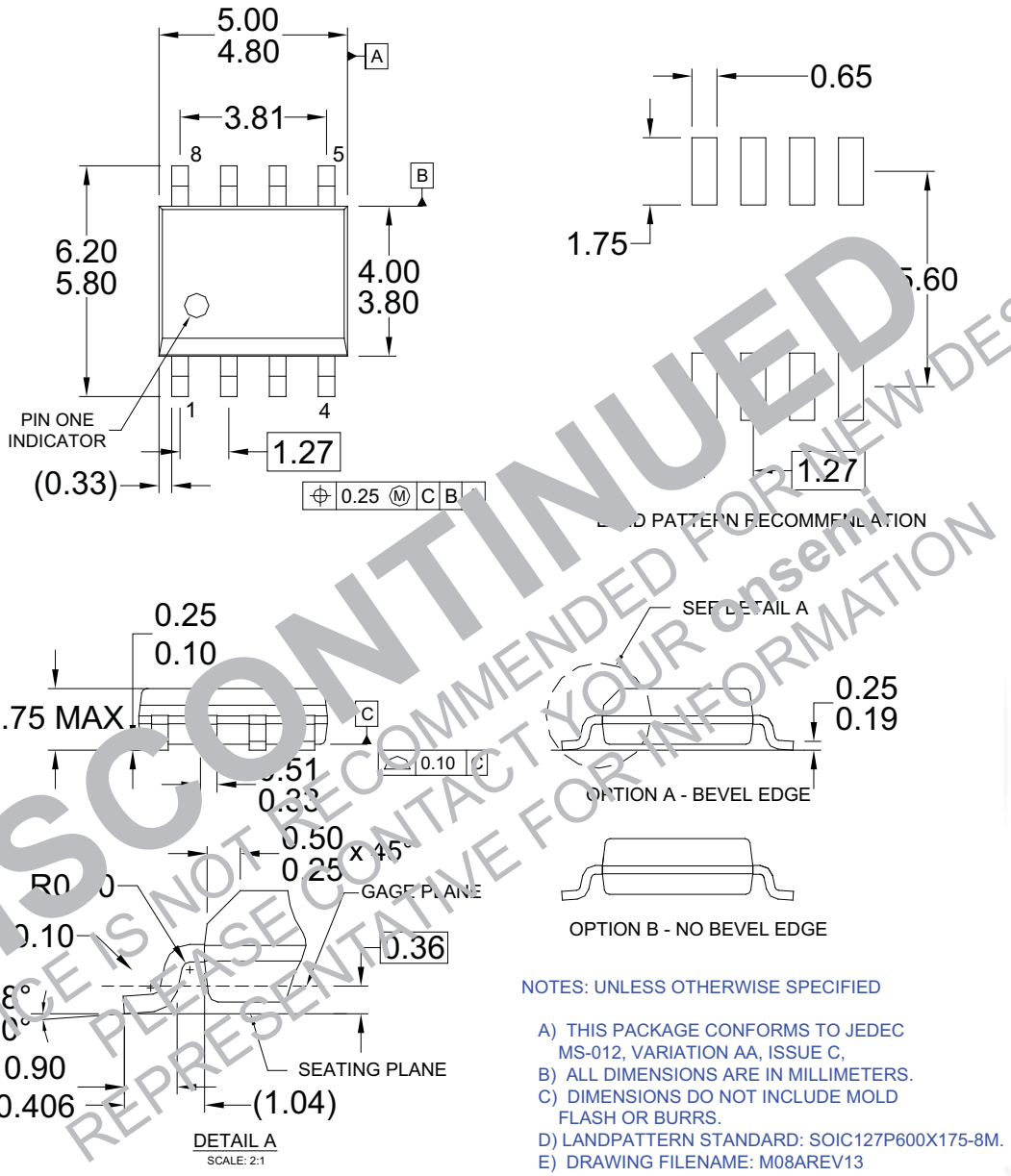


图 11. 输入 / 输出时序图

物理尺寸



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B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS DO NOT INCLUDE MOLD FLASH OR BURRS.
D) LANDPATTERN STANDARD: SOIC127P600X175-8M.
E) DRAWING FILENAME: M08AREV13

图 12. 8- 引脚小尺寸封装 (SOP)

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No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

Rev. I43

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