

FAN1100-F085/D

A 1100-05

Description

The FAN1100 F085 is designed to directly drive an ignition IGBT and control the current and spark event of the coil. The coil current is controlled via the input pin. When the input is driven high, the output of the FAN1100 F085 is enabled to turn on the IGBT and start charging the coil. The FAN1100 F085 will sink a current (IIN) into the input pin based on programmed current on the RA line.

An input spike filter suppresses input signals of less than 13 μ s in duration. A Max Dwell timer is included in the FAN1100 F085 which will turn off the IGBT if the input stays active for longer than the programmed time. This time interval can be modified through an external capacitor on the CSSD pin. When the Max Dwell timer is exceeded, the FAN1100 F085 will enter a Soft Shut Down mode (SSD) slowly dropping the collector current by lowering the gate drive to the IGBT thereby discharging the coil such as to inhibit a spark event. Once the soft shutdown operation has started, any transitions on the input signal are ignored until after completion of the soft shutdown function. The FAN1100 F085 will also limit the collector current of the IGBT to $I_{C(lim)}$ during charging. This again is done through the sense resistor in the emitter leg of the Ignition IGBT developing a signal input to the Vsense pin of the FAN1100 F085.

Features

- Signal Line Input Buffer
- Input Spike Filter
- Operation from Ignition or Battery Line
- Ground Shift Tolerance ± 1.5 V
- Programmable Maximum Dwell Time
- Programmable Input Pull Down Current
- Control IGBT Current Limiting through V_{SENSE} Pin
- Soft Shutdown following Max Dwell Time Out
- This is a Pb Free Device

Applications

The FAN1100 F085 is an advanced Ignition IGBT control IC

FAN1100-F085

ORDERING INFORMATION

Part Number	Operating Temperature Range	Package	Shipping†
FAN1100-F085	-40°C to 150°C	8-SOIC	2500 units / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

Recommended External Components

TYPICAL EXTERNAL COMPONENTS

Component	Description	Vendor	Parameter	Typ.	Unit
R _{BAT}	Limits transient currents during load dump		R	200 to 300	Ω
C _{BAT1}	Battery or Ignition voltage filtering		C	0.47	μF
C _{BAT}	Battery noise transients		C	10	nF
C _{IN}	Noise immunity		C	10	nF
R _{SENSE}	Sense the collector current		R	20	mΩ

Typical Application

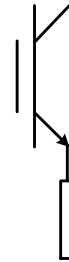


Figure 1. Typical Application

FAN1100-F085

Block Diagram

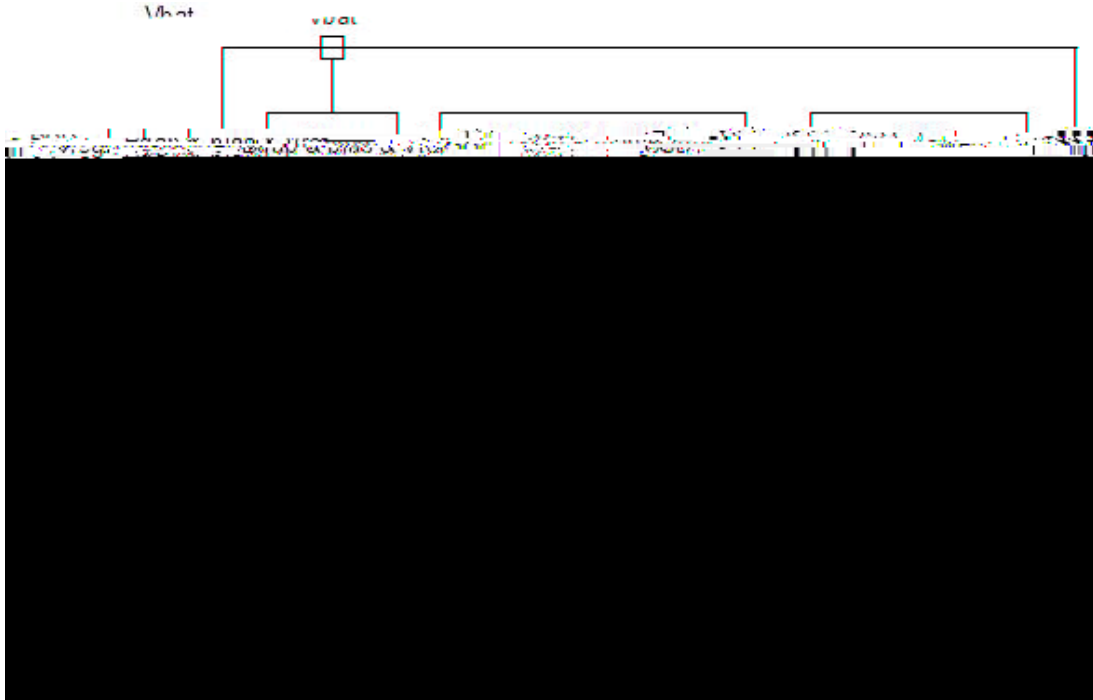


Figure 2. Block Diagram

FAN1100-F085

Package Outline

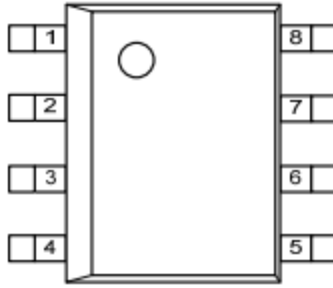


Figure 3. Pin Assignment (Top View)

PIN DESCRIPTION

Name	Type	Description
Pin1	GND	Ground Reference of the Control IC
Pin2	Input	Signal input
Pin3	NC	
Pin4	CSSD	Maximum dwell time and Soft-Shut-Down current output (to external capacitor)
Pin5	RA	Input reference current output (to external resistor)

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RECOMMENDED OPERATING CONDITIONS (Reference Load Characteristics) (Note 1)

Symbol	Characteristic	Min.	Typ.	Max.	Units
I_{Ctyp}	Collector (Coil) Operating Current		12		A
L_P	Coil Primary Inductance		1.5		mH
R_P	Coil Primary Resistance (25°C)		0.4		Ω
R_{LOAD}	Load Resistance (for delay time measurements)		2		Ω

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

1. **onsemi** does not recommend exceeding them or designing to Absolute Maximum Ratings.

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
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POWER SUPPLY CONDITIONS $V_{BAT} = 6$ to 28 V ; T

FAN1100-F085

Figure 5 shows the Relationship between the CSSD capacitor and Max Dwell Time

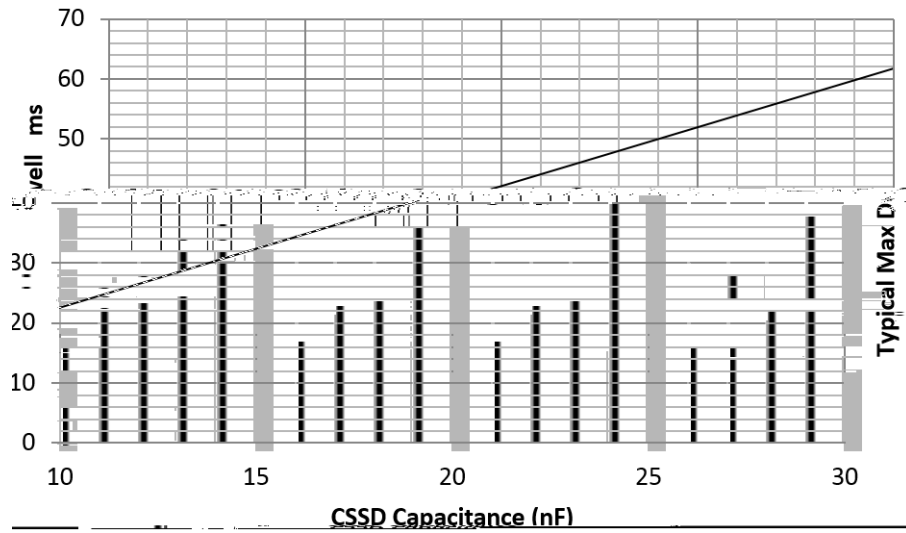


Figure 5. T_{DMAX} as Function of External CSSD Capacitor

Figure 6 shows the Signal input current vs. IRA current

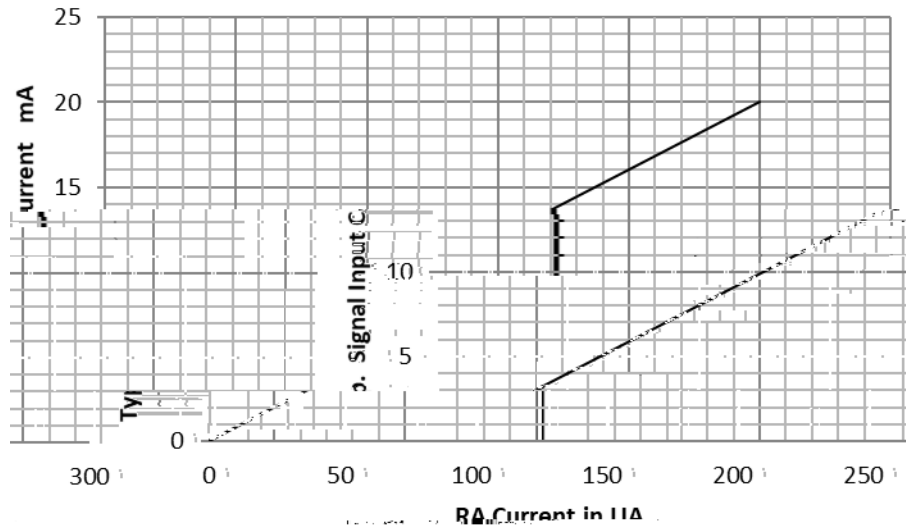
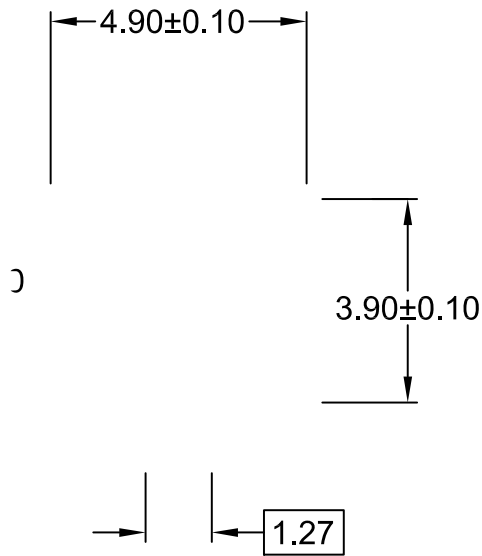


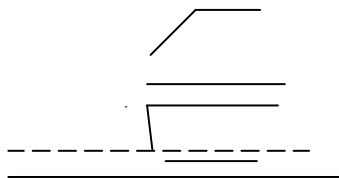
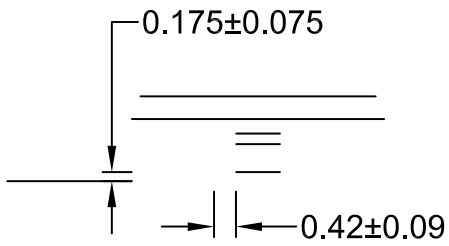
Figure 6. Interrelationship between Signal Input Current and IRA

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LAND PATTERN RECOMMENDATION



- 12, VARIATION AA.
- B) ALL DIMENSIONS TO UNLESS OTHERWISE SPECIFIED.
- C) LAND PATTERN STANDARD: SOIC127P600X175-8M
- D) LAND PATTERN STANDARD: SOIC127P600X175-8M

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