Ignition Gate Drive IC

FAN1100-F085

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 then 13 μs 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

ORDERING INFORMATION

Part Number	Operating Temperature Range	Package	Shipping
–	– ° °	–	

Recommended External Components

TYPICAL EXTERNAL COMPONENTS

Component	Description	Vendor	Parameter	Typ.	Unit
					Ω
					μ
					Ω

Typical Application

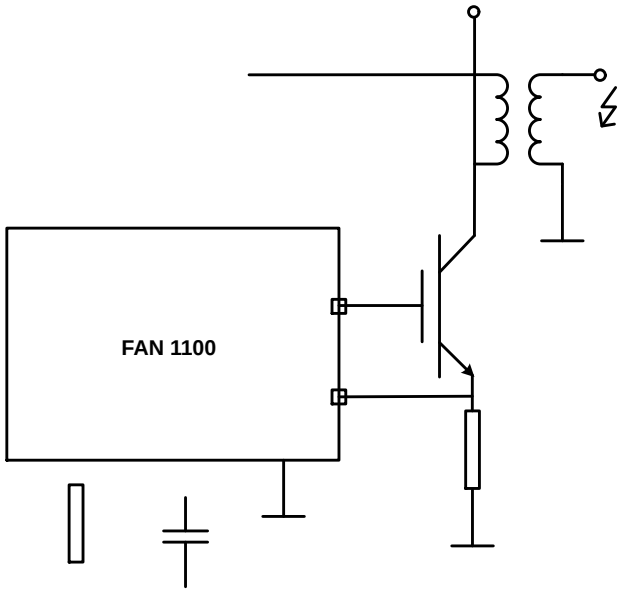

Figure 1. Typical Application

Block Diagram

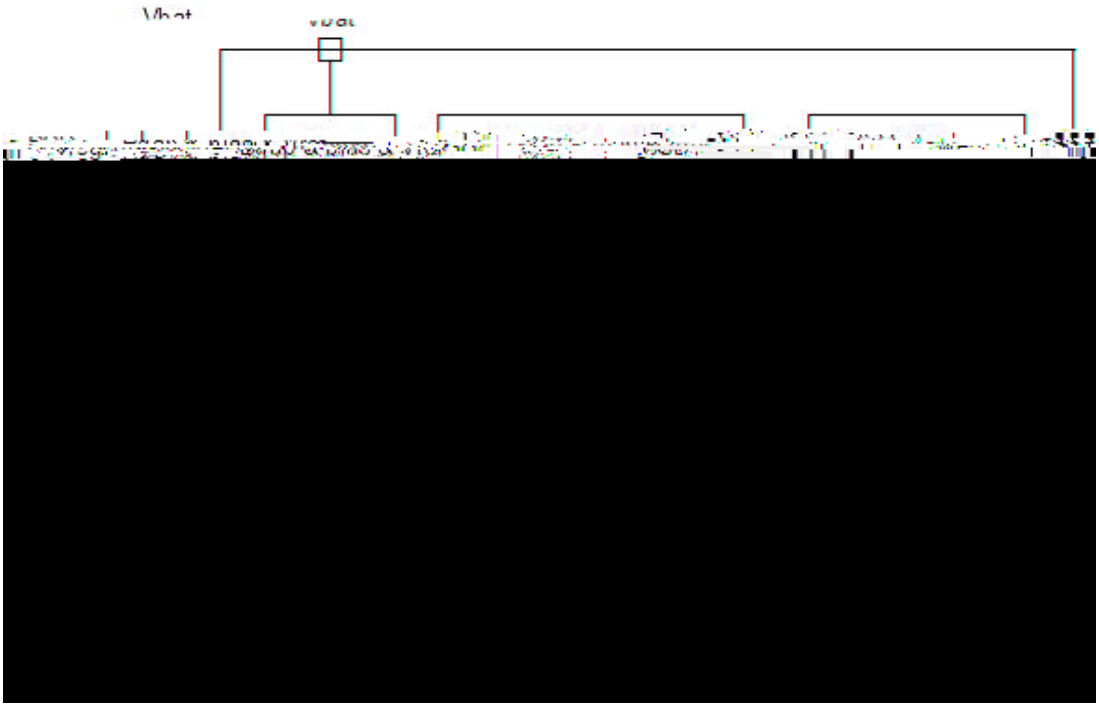

Figure 2. Block Diagram

Package Outline

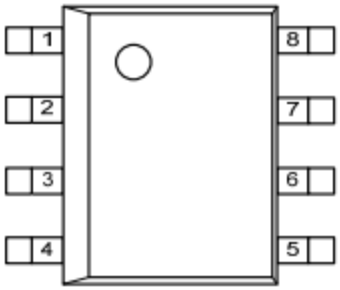

Figure 3. Pin Assignment (Top View)

PIN DESCRIPTION

Name	Type	Description
		– –

RECOMMENDED OPERATING CONDITIONS

Symbol	Characteristic	Min.	Typ.	Max.	Units
	°				Ω
					Ω

onsemi

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
POWER SUPPLY CONDITIONS						

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

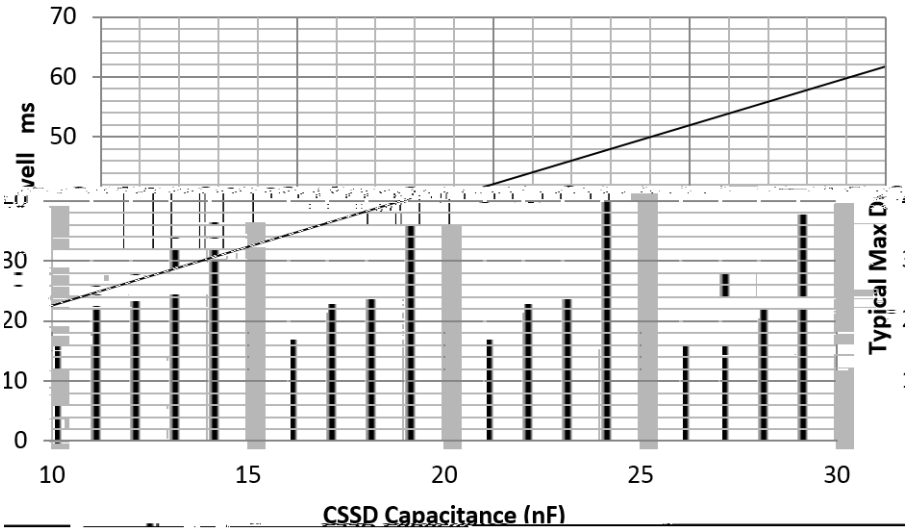

Figure 5. T_{DMAX} as Function of External CSSD Capacitor

Figure 6 shows the Signal input current vs. IRA current

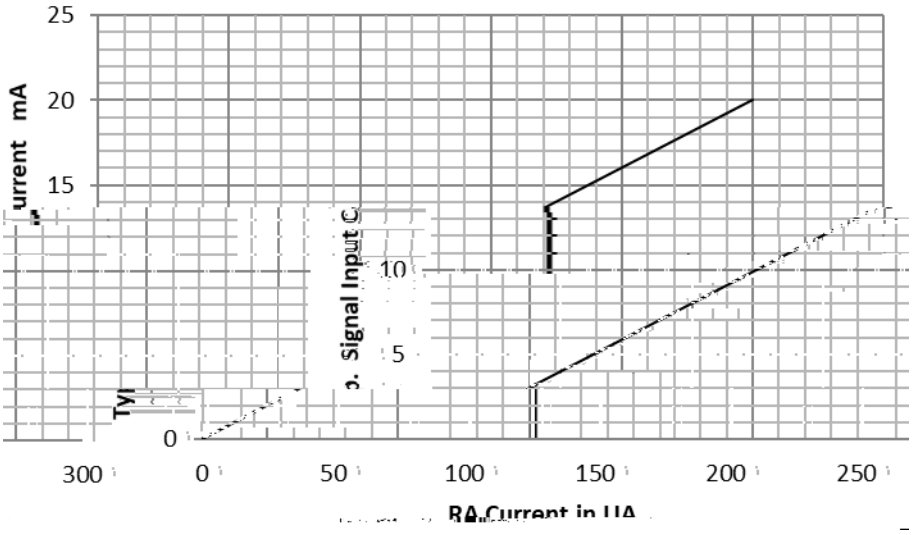

Figure 6. Interrelationship between Signal Input Current and IRA

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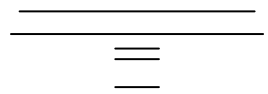

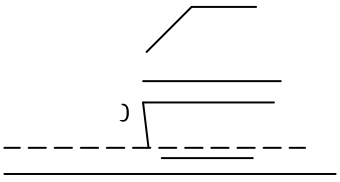

12, VARIATION AA.