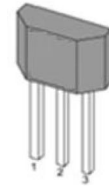


SD43F

FEATURES

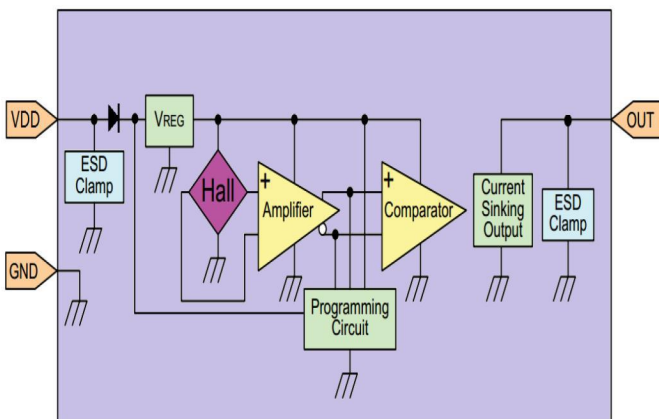
- ✧ Wide operating voltage range: 3.8V to 30V
- ✧ Built-in reverse voltage protecting capability
- ✧ Robust design: will operate up to 150°C
- ✧ Package: TO-92S package
- ✧ Unipolar respond to a single pole: North (AT) or South (A, BT and ET), making these products well-suited for shift selectors, wiper end/home position, door ajar/open, and vane-interrupt systems etc.
- ✧ RoHS-compliant material meets directive 2011/65/EU

PACKAGES



TO-92S

Functional Block Diagram



APPLICATIONS

- ✧ Speed and RPM sensing
- ✧ Door or lid closure detection
- ✧ Flow-rate sensing
- ✧ Printer head position sensing
- ✧ Robotics control
- ✧ Medication bin monitor on portable drug carts

DESCRIPTION

The SD43F is small, versatile digital Hall-effect devices that are operated by the magnetic field from a permanent magnet or an electromagnet.

These unipolar sensors are designed to meet the requirements of a wide range of potential applications. These economical unipolar sensors are well suited for simple, high-volume, cost-sensitive position and motion sensing applications.

The 3.8 Vdc to 30Vdc supply voltage range allows this device to be used in very wide voltage applications.

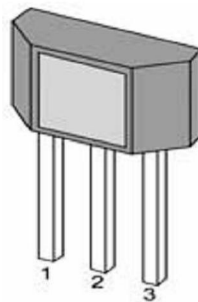
SD43F

1. Package

Part Number	Marking ID	Description
SD43F	43F	Flat, TO-92S package, bulk packing (1000 units per bag)

2. Pin Definitions and Descriptions

SD43F	Name	Type	Function
1	VDD	Supply	Supply Voltage pin
3	OUT	Output	Collector Output pin
2	GND	Ground	Ground pin



TO-92S

3. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
Supply Voltage	V_{DD}	-30	40	V
VDD Reverse Voltage VDD	V_{RDD}	-	-30	V
Output Voltage	V_{OUT}	-	40	V
Output Current	I_{OUT}	-	50	mA
Operating Ambient Temperature	T_A	-40	150	°C
Storage Temperature	T_S	-65	170	°C
Magnetic Flux	B	No Limit		Gauss

4. ESD Protections

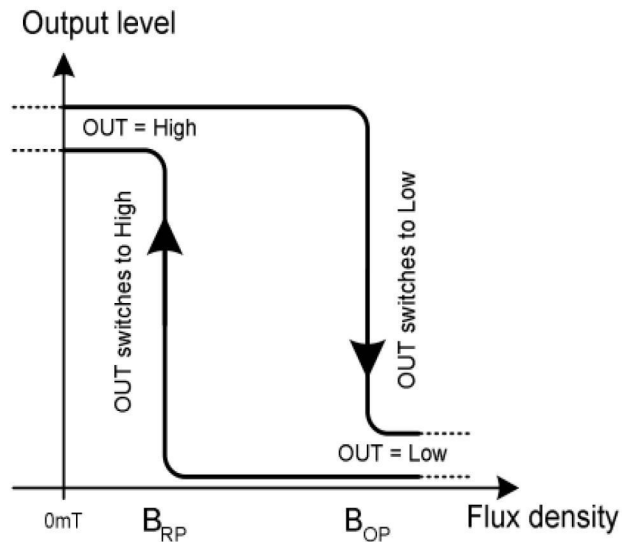
Parameter	Value	Unit
HBM (human body mode, C=100pF, R=1.5 kohm)	+/-8000	V

5. Function Description

The SD43F exhibits unipolar magnetic switching characteristics. Therefore, it requires south or north poles to operate properly.

The device behaves as a unipolar with asymmetric operating and release switching points. This means While the magnetic flux density(B) is larger than operate point (Bop), the output will be turned on (Low), while the magnetic flux density(B) is lower than release point (Brp), then turn off (High).

6. Magnetic Activation



Unipolar switch characteristic

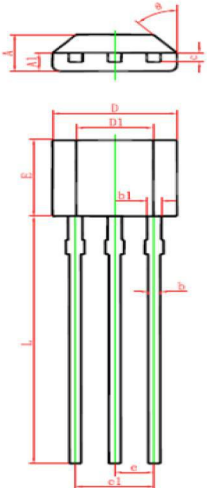
SD43F

7. Parameters Specification (At 12V supply, 20mA load, TA= 25°C.)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V _{DD}	Supply voltage	regular work	3.8	-	30	V
I _{DD}	Supply Current	V _{DD} = 12V	-	4.0	10	mA
V _{DSon}	Output saturation voltage	at 20mA, Gauss >Bop	-	-	0.4	V
I _{OFF}	Output Leakage Current	B < Brp	-	-	10	uA
T _R	Output rise time	V _{DD} = 12V at 25 °C C _L = 20 pF	-	-	1.5	uS
T _F	Output fall time	V _{DD} = 12V at 25 °C C _L = 20 pF	-	-	1.5	uS
B _{OP}	Magnetic operating point	TA=25°C	70		180	Gauss
B _{RP}	Magnetic release point	TA=25°C	50		150	Gauss
B _{HYST}	Magnetic hysteresis window	TA=25°C B _{OP} -B _{RP}	30	50	80	Gauss
T	Operating temperature		-40	-	150	°C
T _S	Storage temperature:	-	-65	-	170	°C

8. Package Information

PACKAGE DESIGNATOR
TO-92S(SD92T)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.420	1.620	0.056	0.064
A1	0.660	0.860	0.026	0.034
b	0.350	0.480	0.014	0.019
b1	0.400	0.550	0.016	0.022
c	0.360	0.510	0.014	0.020
D	3.900	4.100	0.154	0.161
D1	2.280	2.680	0.090	0.106
E	3.050	3.250	0.120	0.128
e	1.270 TYP.		0.050 TYP.	
e1	2.440	2.640	0.096	0.104
L	15.100	15.500	0.594	0.610
θ	45° TYP.		45° TYP.	