

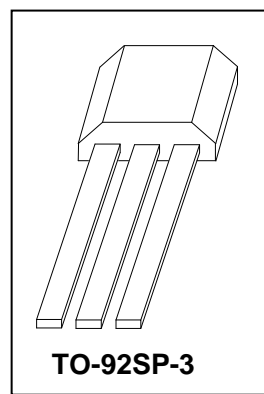
General Description

The FS177 is an integrated Hall effect latched sensor designed for electronic commutation of brush-less DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and open-collector output. An internal bandgap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.

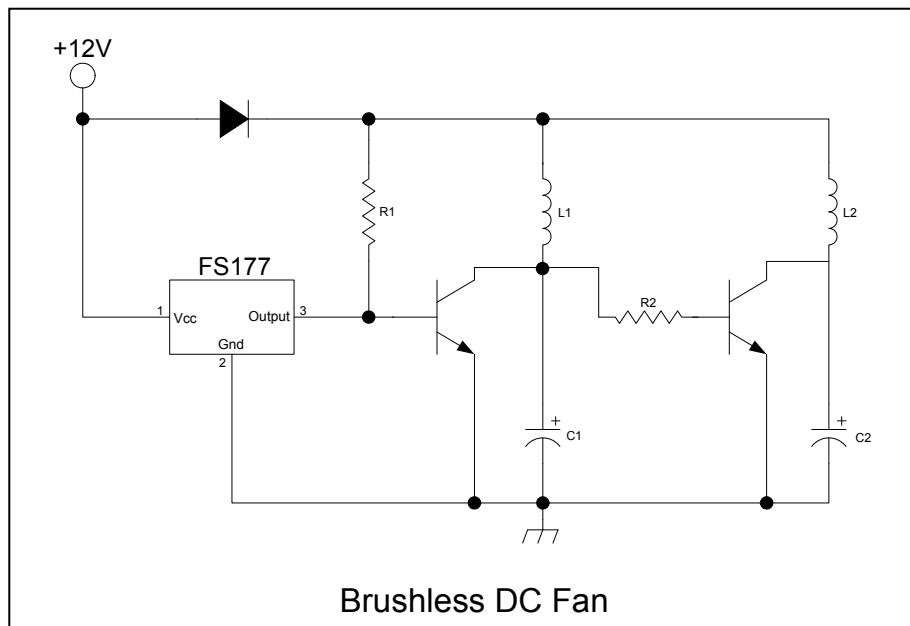
A north pole of sufficient strength will turn the output ON. In the absence of a magnetic field, the output is OFF.

Features

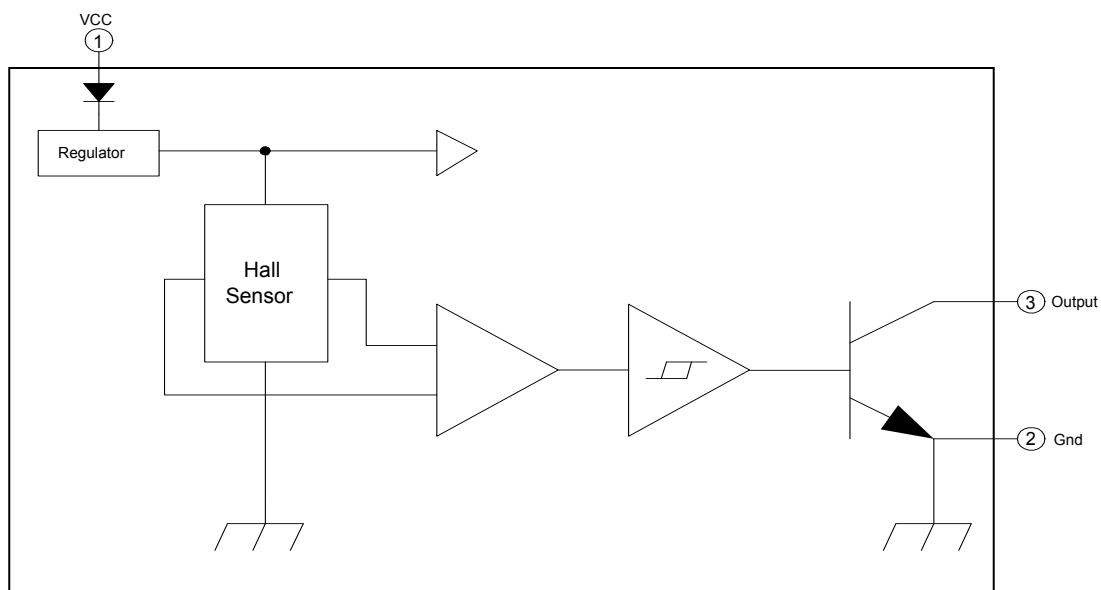
- ♦ Wide operating voltage range: 3.0V to 20V
- ♦ Maximum output sink current 25mA
- ♦ Open-Collector pre-driver
- ♦ Reverse polarity protection
- ♦ Package : TO-92SP-3



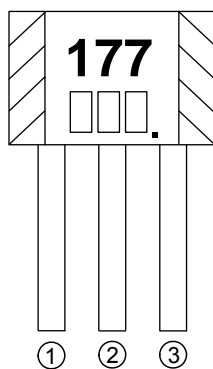
Typical Application Circuit



Functional Block Diagram

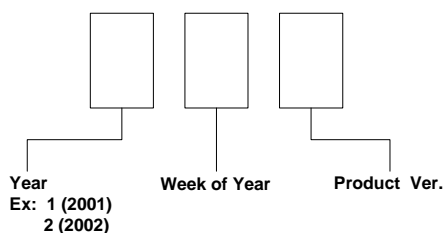


Mark View



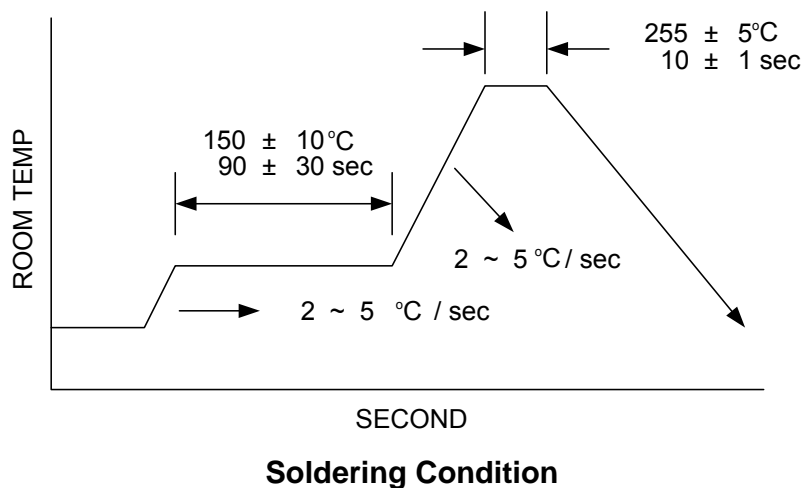
Pin Descriptions

NAME	NO.	STATUS	DESCRIPTION
VCC	1	P	IC Power Supply
GND	2	P	IC Ground
Output	3	O	It is low state during the N magnetic field.



Absolute Maximum Ratings (at $T_a = 25^\circ\text{C}$)

VCC Pin Voltage -----	20V
Output OFF Voltage, V_{ce} -----	20V
Output ON Current (I_o)	
Continuous Current -----	25mA
Power Dissipation	
$T_a=25^\circ\text{C}$ -----	400mW
$T_a=100^\circ\text{C}$ -----	178mW
Thermal Resistance	
$\Theta_{ja}=$ -----	0.34°C/mW
$\Theta_{jc}=$ -----	0.42°C/mW
Operating Temperature Range -----	-20°C to 100°C
Storage Temperature Range -----	-65°C to 150°C
Junction Temperature -----	$+160^\circ\text{C}$
Lead Temperature (Soldering, 10 sec) -----	$+260^\circ\text{C}$



DC Electrical Characteristics (at Ta = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V _{CC}	No use pin is open (Fig1)	3.0	-	20.0	V
Supply current	I _{CC}	No use pin is open V _{CC} : 3.0V to 20V (Fig1)	-	4.2	10	mA
Output Saturation Voltage	V _{SAT}	V _{CC} =12V, I _O = 20mA	-	165	200	mV
Output Rise time	(t _r)	RL=500ohm, CL=20pF (Fig1)	0.2	-	0.75	uS
Output Fall time	(t _f)	RL=500ohm, CL=20pF (Fig1)	20	-	150	nS

Note: Fig1 The IC output state is under N magnetic field.

CNC ENDSTOP
IDEA (TEST)

5v

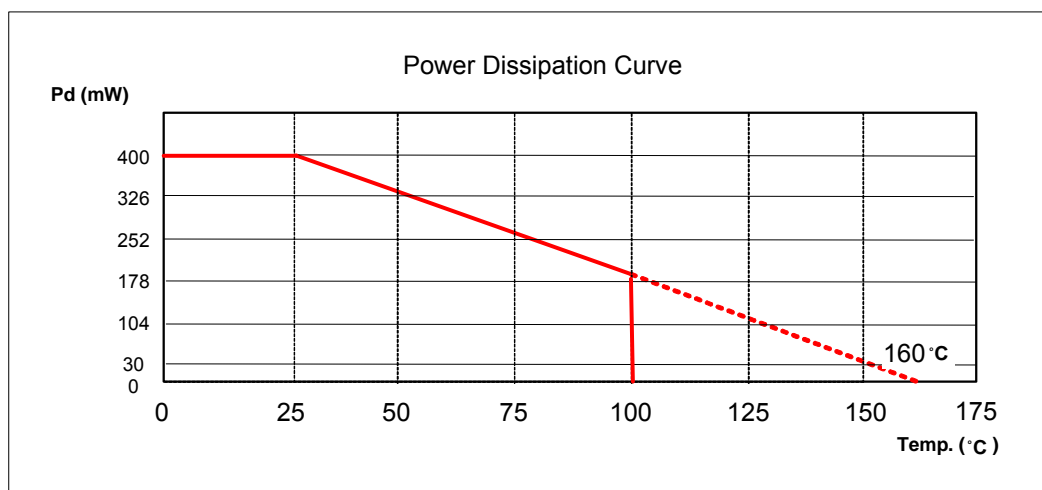
5v

5v wo/m
0v w/m

220ohm

104 cap

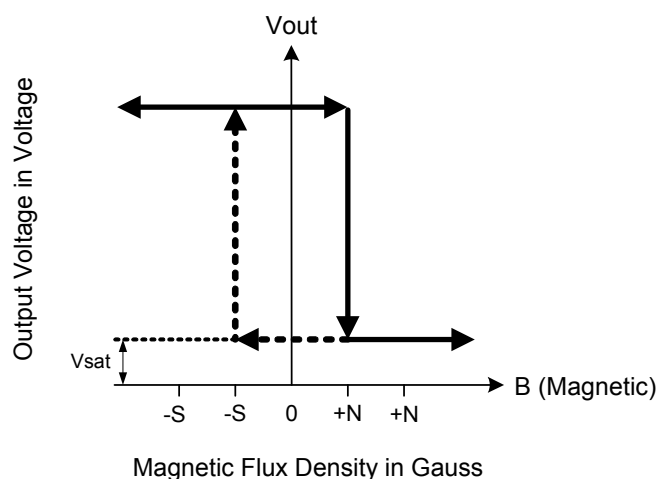
More info below



Magnetic Characteristics (1mT=10Gauss)

FS177LF- A		Ta = -20°C to 100°C			
Parameter	Symbol	Min.	Typ	Max.	Unit
Operate Point	Bop	+5	+35	+60	Gauss
Release Point	Brp	-60	-30	-5	Gauss
Hysteresis	Bhys	30		120	Gauss
FS177LF- B		Ta = -20°C to 100°C			
Parameter	Symbol	Min.	Typ	Max.	Unit
Operate Point	Bop	+5	-	+80	Gauss
Release Point	Brp	-80	-	-5	Gauss
Hysteresis	Bhys	30		120	Gauss
FS177LF- C		Ta = -20°C to 100°C			
Parameter	Symbol	Min.	Typ	Max.	Unit
Operate Point	Bop	-	-	+100	Gauss
Release Point	Brp	-100	-	-	Gauss
Hysteresis	Bhys	30		120	Gauss

FS177 Magnetic Hysteresis Characteristics Diagram:



Test Circuits

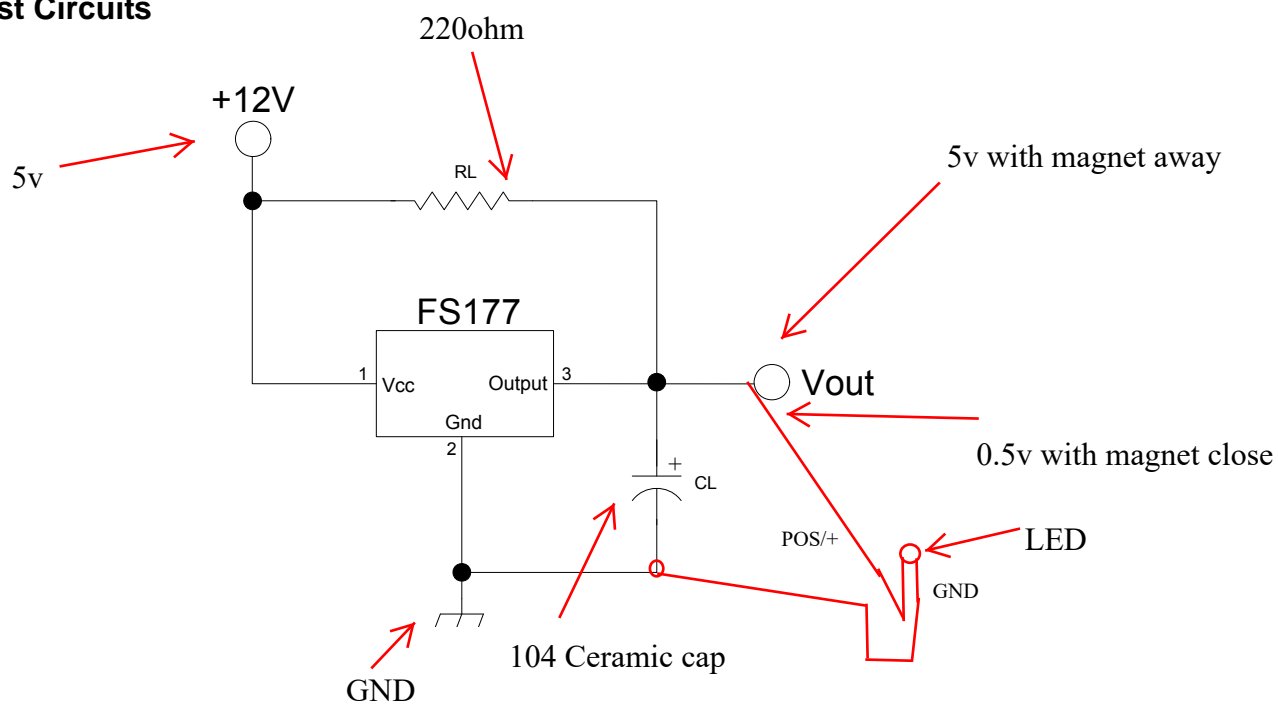


Fig 1

LED is ON when magnet is away
and OFF when close to 177hs

Typical Characteristics

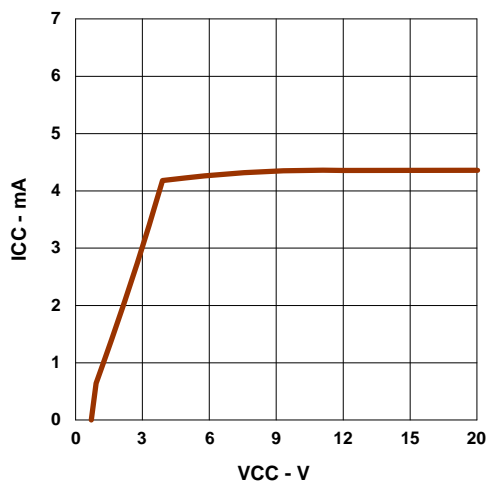


Figure 1

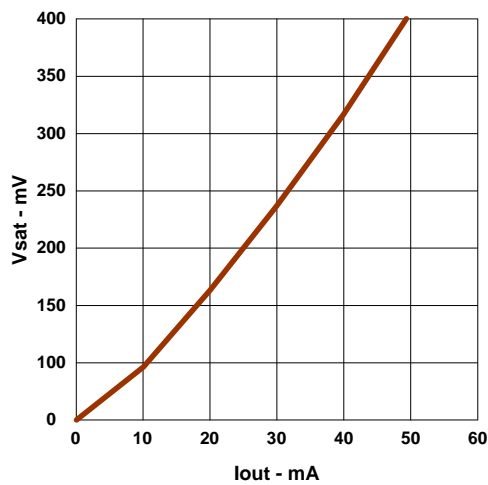


Figure 2

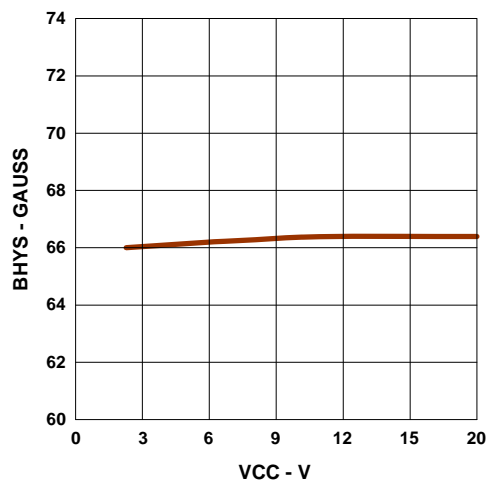


Figure 3

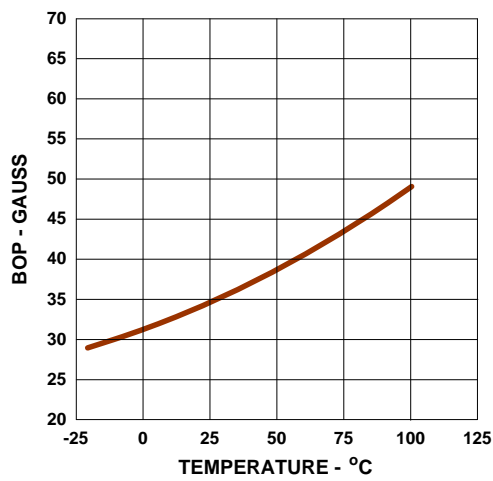


Figure 4

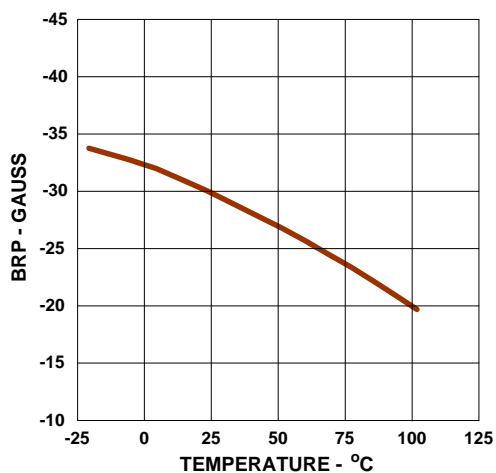


Figure 5

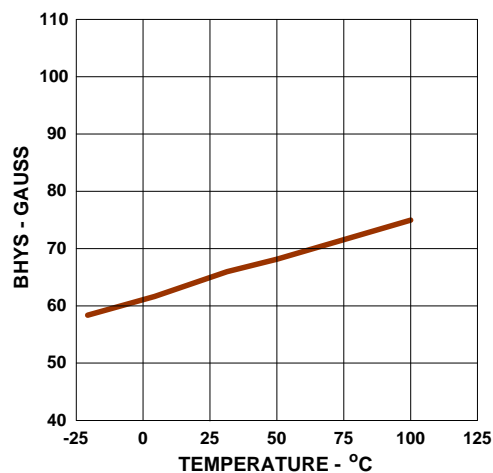


Figure 6

HALL SENSOR LOCATION

The Fig 2 is the hall sensor location, where marks the IC number.

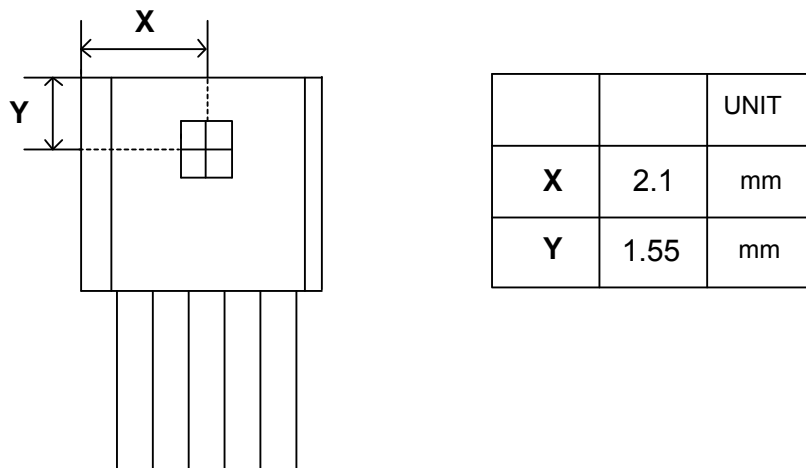
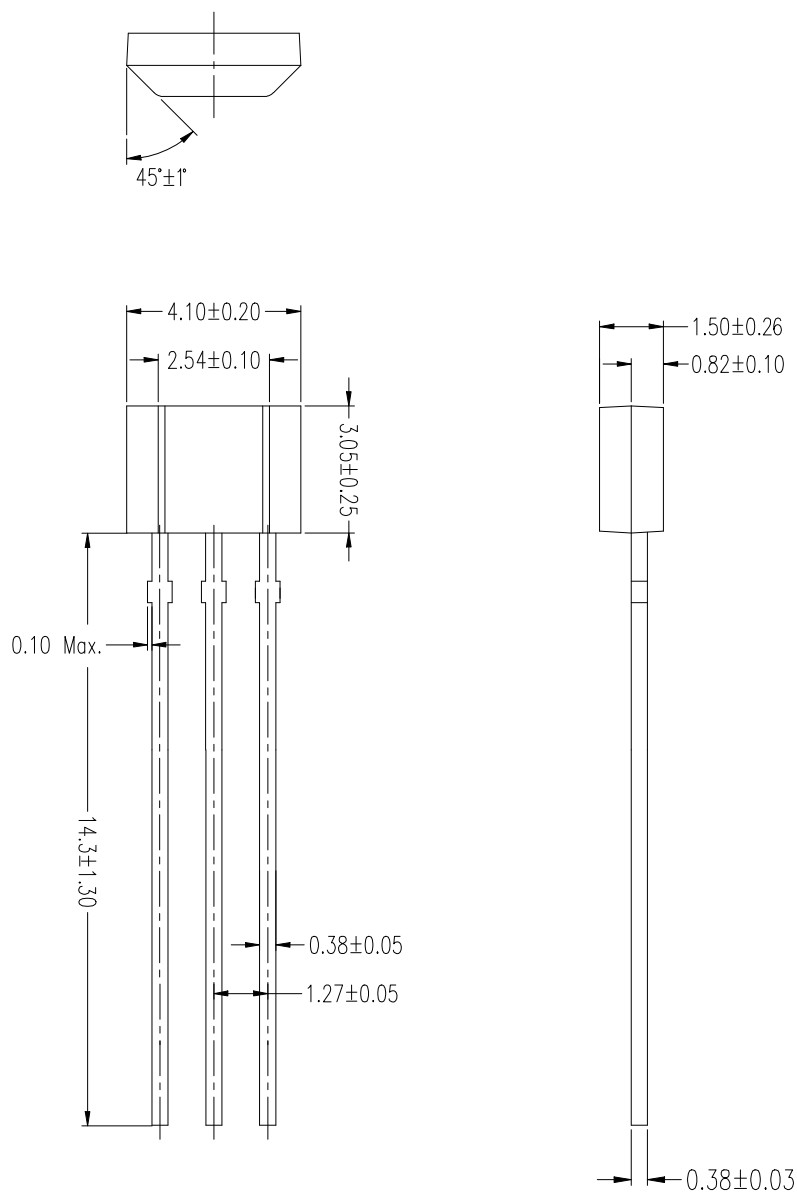
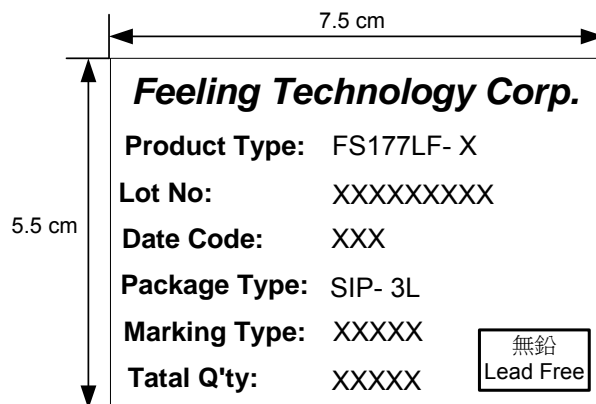


Fig 2 FS177 Hall Sensor Location

Package Outline (LEAD FREE)



LABEL SPECIFICATIONS



BAG LABEL, INSIDE BOX & CARTON LABEL

ORDER INFORMATION

Part Number	Operating Temperature	Package	Description
FS177LF- A	-20 °C to +100 °C	TO-92SP-3	± 60G (B)
FS177LF- B	-20 °C to +100 °C	TO-92SP-3	± 80G (B)
FS177LF- C	-20 °C to +100 °C	TO-92SP-3	±100G (B)