Features

- On-Chip Hall Sensor
- 3.5V to 20V Supply Voltage
- 300mA (avg) Output Sink Current
- Reversed Supply Voltage Protection
- -20℃ to 85℃ Operating Temperature
- Low Profile TO-94 (SIP-4L) Package
- High ESD Performance

Applications

- Dual-Coil Brush-less DC Motor
- Dual-Coil Brush-less DC Fan
- Revolution counting
- Speed measurement

General Description

The TX3277 is an integrated Hall sensor with output driver designed for electronic commutation of brush-less DC motor applications. The device includes an on-chip Hall voltage, a Schmitt trigger to provide switching hysteresis for noise rejection, a temperature compensation circuit to compensate the temperature drift of Hall sensitivity and two complementary open-collector drivers for sinking large load current.It also includes an internal band-gap regulator which is used to provide bias voltage for internal circuits. Placing the device in a variable magnetic field, if the magnetic flux density is larger than threshold BOP,the pin DO will be turned low (on) and pin DOB will be turned high (off). This output state is held until the magnetic flux density reverses and falls below BRP, then causes DO to be turned high (off) and DOB turned low(on).

TX3277 is available in TO-94(SIP-4L) package.

Pin Assignment

Fig 1

Pin Description

Pin Number	Pin Name	Function
1	Vcc	Supply voltage
2	DO	Output 1
3	DOB	Output 2
4	GND	Ground

Block Diagram

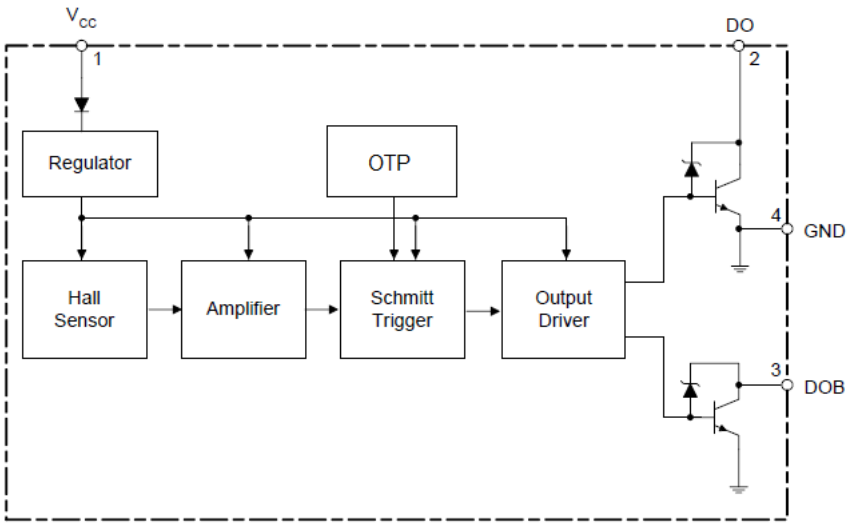


Fig 2

Absolute Maximum Ratings

Table1 (Ta=25℃)

Symbol	Parameter		Value	Unit
V_{CC}	Supply Voltage		20	V
V_{RCC}	Reverse Protection Voltage		-20	V
B	Magnetic Flux Density		Unlimited	Gauss
IO	Output Current	Continuous	300	mA
		Hold	500	mA
		Peak(start up)	750	mA
PD	Power Dissipation		550	mW
θ JA	Thermal Resistance	Die to atmosphere	227	℃/W
θ JC		Die to package case	49	℃/W
TSTG	Storage Temperature		-50 to 150	℃

Note: Stresses greater than those listed under “Absolut Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. “Absolute Maximum Ratings” for extended period may affect device reliability.

Recommended Operating Conditions

Table 2 (Ta=25℃)

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	3.5	20	V
Ambient Temperature	Ta	-20	85	℃

Electrical Characteristics

Table 3 (Vcc=12V,Ta=25℃, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{SAT}	Output Saturation Voltage	Vcc=12V,Io=100mA	-	0.1		V
		Io=300mA		0.3	0.5	V
I_{OL}	Output Leakage Current	V_{CE}=16V	-	0.1	10	uA
I_{CC}	Supply Current	VCC=12V,Output Open		12	16	mA
Vz	Output Zener Breakdown Voltage			55		V
tr	Output Rise Time	R_L=820Ω C_L=20pF	-	3.0	10	us
tf	Output Fall Time	R_L=820Ω C_L=20pF	-	0.3	1.5	us
δt	Switch Time Differential	R_L=820Ω C_L=20pF	-	3.0	10	us

Magnetic Characteristics

Table 4 (Ta=25℃)

Characteristics	Symbol	Grade	Min	Typ	Max	Unit
Operating Point	Bop	A	20	35	50	Gauss
		B	10	-	70	Gauss
		C	-	-	90	Gauss
		D	-	-	125	Gauss
Releasing Point	Brp	A	-50	-35	-20	Gauss
		B	-70	-	-10	Gauss
		C	-90	-	-	Gauss
		D	-125	-	-	Gauss
Hysteresis	Bhys	-	-	70	-	Gauss

Test Circuit

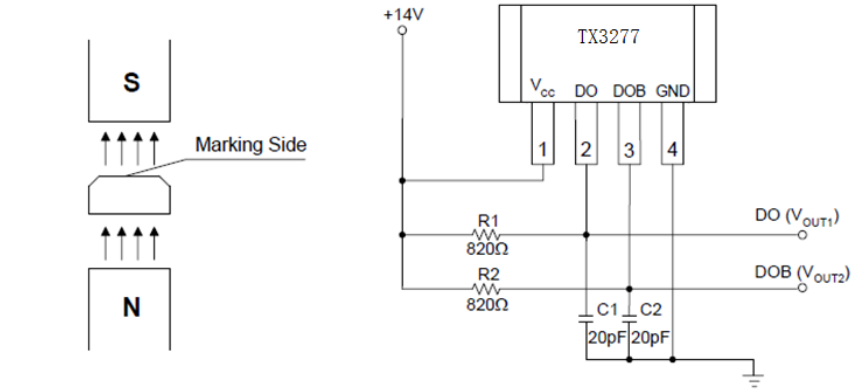


Fig 3 Test Circuit

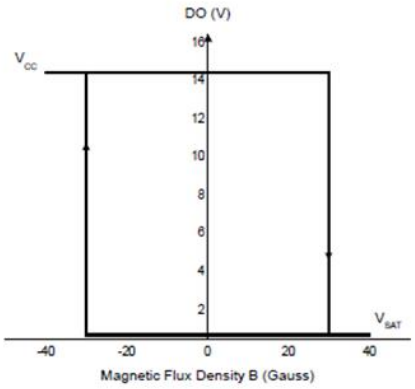


Fig 4 V_{DO} vs. Magnetic Flux Density

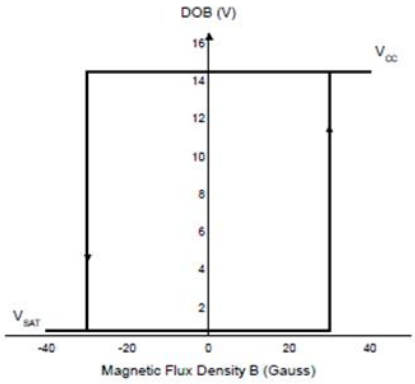


Fig 5 V_{DOB} vs. Magnetic Flux Density

Application Circuits

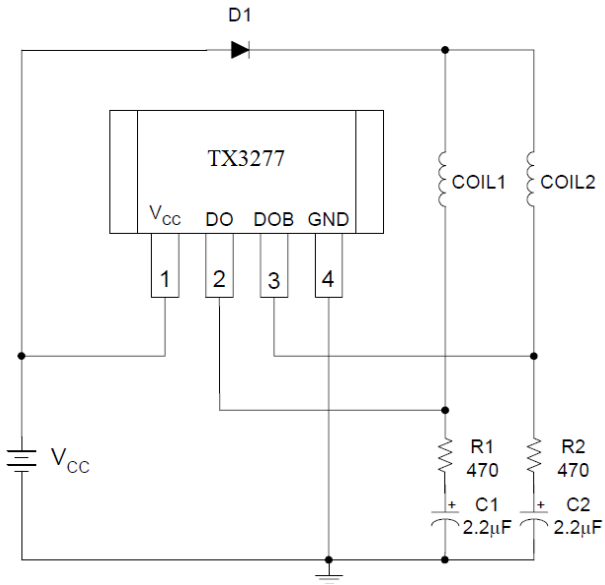
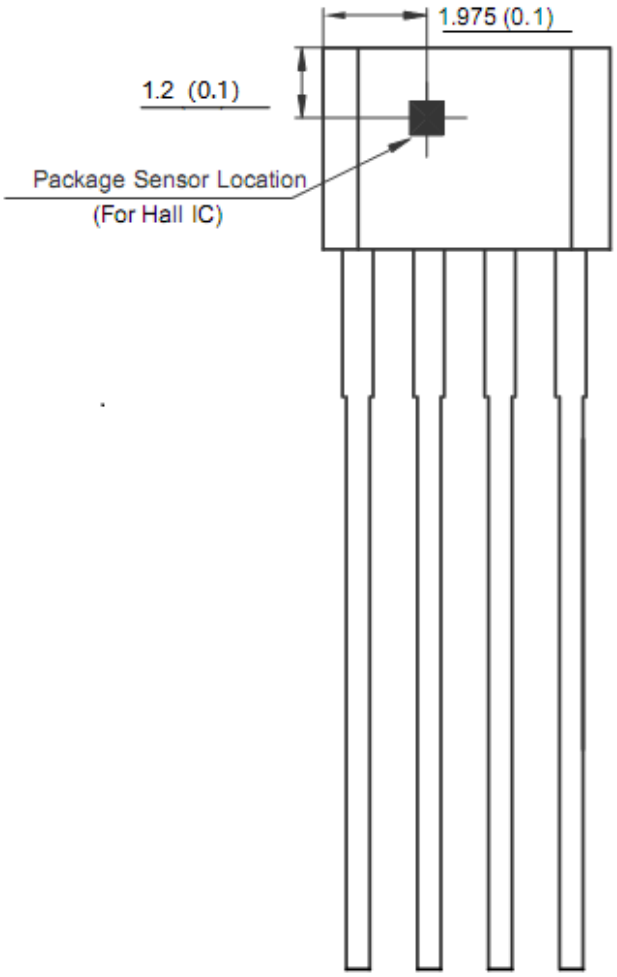


Fig 6

Mechanical Dimensions



Unit:(mm)

Package Information

TO-94 PACKAGE OUTLINE DIMENSIONS

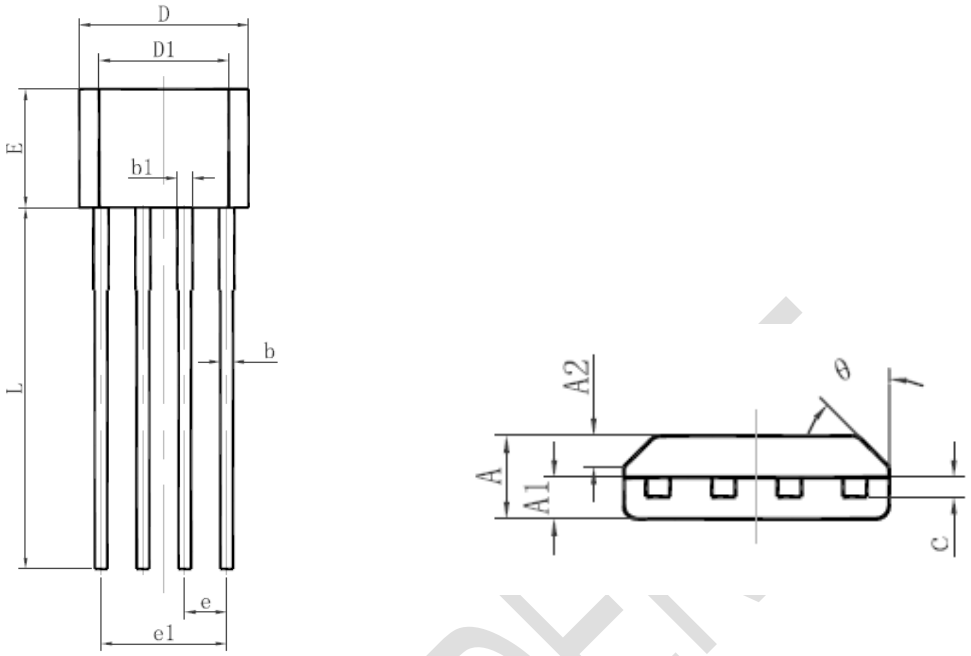


Fig 7

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.800	0.055	0.071
A1	0.700	0.900	0.028	0.035
A2	0.500	0.700	0.020	0.028
b	0.360	0.500	0.014	0.020
b1	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.980	5.280	0.196	0.208
D1	3.780	4.080	0.149	0.161
E	3.450	3.750	0.136	0.148
e	1.270 TYP.		0.050 TYP.	
e1	3.710	3.910	0.146	0.154
L	14.900	15.300	0.587	0.602
θ	45° TYP.		45° TYP.	