ATS177

SINGLE OUTPUT HALL EFFECT LATCH

Features

- 3.5V to 20V DC operation voltage
- Temperature compensation
- Wide operating voltage range
- Open-Collector pre-driver
- 25mA maximum sinking output current.
- Reverse polarity protection
- Lead Free Finish/RoHS Compliant for Lead Free products (Note 1)
- Package: SIP-3L

General Description

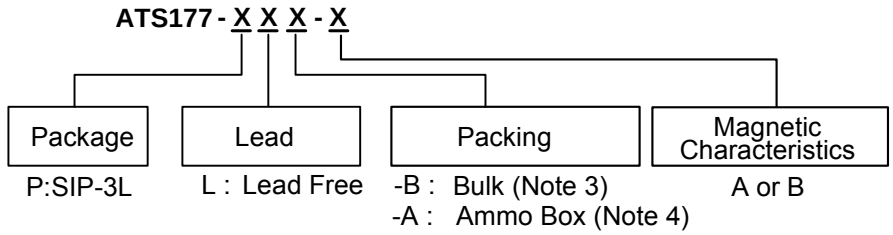
ATS177 is an integrated Hall effect latched sensor designed for electronic commutation of brush-less DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall voltage, and a schmitt trigger to provide switching hysteresis for 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.

If a magnetic flux density larger than threshold Bop, DO is turned on(low). The output state is held until a magnetic flux density reversal falls below Brp causing DO to be turned off (high).

Applications

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

Ordering Information



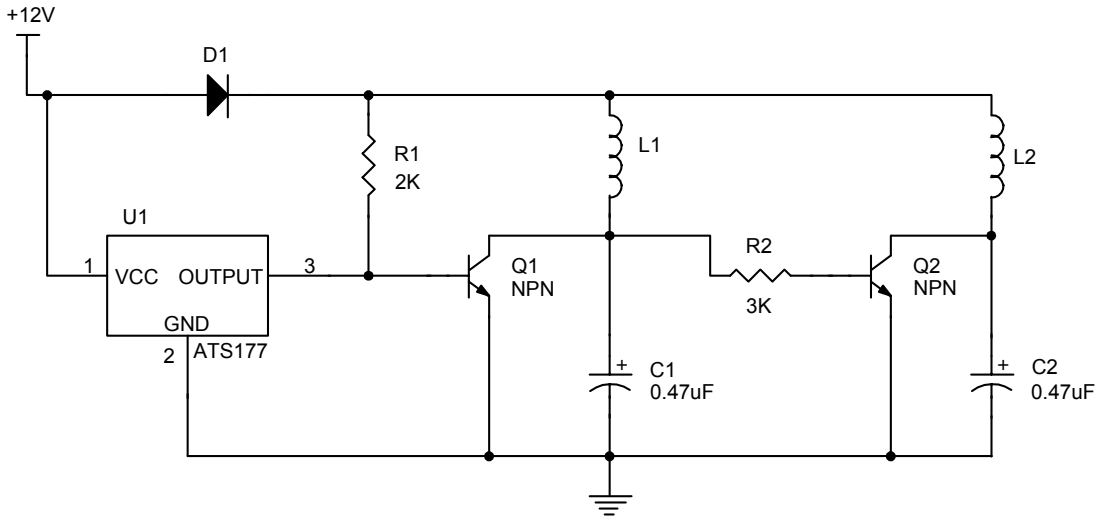
Note: 1. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see *EU Directive Annex Notes 5 and 7*.

Device	Package Code	Packaging (Note 2)	Tube/Bulk		7" Tape and Reel		Ammo Box	
			Quantity	Part Number Suffix	Quantity	Part Number Suffix	Quantity	Part Number Suffix
ATS177-P	P	SIP-3L	1000	-B	NA	NA	4000/Box	-A

Note: 2. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
3. Bulk is for SIP-3L Straight Lead.
4. Ammo Box is for SIP-3L Spread Lead.

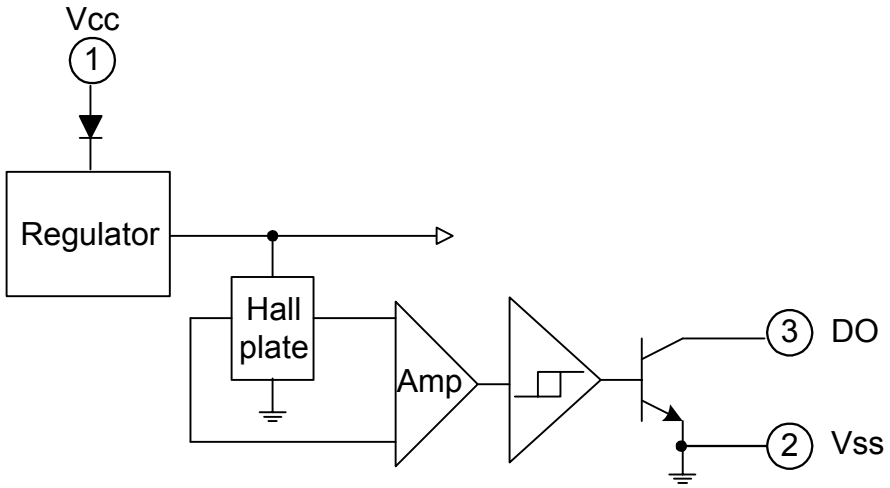
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Typical Circuit



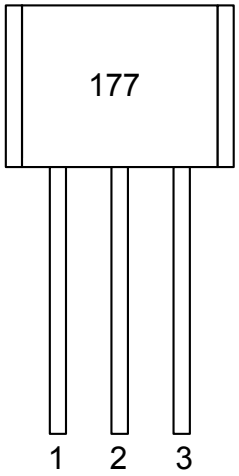
Brush-less DC Fan

Functional Block Diagrams



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Pin Descriptions



SIP-3L

Name	P/I/O	Pin #	Description
Vcc	P	1	Positive power supply
Vss	P	2	Ground
DO	O	3	Digital output

Absolute Maximum Ratings (at T_A=25°C)

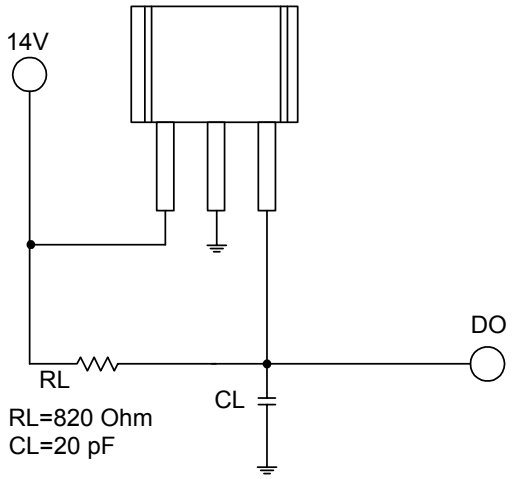
Characteristics		Symbol	Values	Unit
Supply Voltage		V_{CC}	20	V
Reverse Vcc Polarity Voltage		V_{RCC}	-20	V
Magnetic Flux Density		B	Unlimited	
Output OFF Voltage		Vce	30	V
Output "ON" Current	Continuous	Ic	25	mA
Operating Temperature Range		TA	-20~+85	°C
Storage Temperature Range		Ts	-65~+150	°C
Maximum Junction Temp.		Tj	150	°C
Package Power Dissipation	SIP-3L	P_D	550	mW

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Electrical Characteristics (TA=+ 25°C)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	Vcc	—	3.5	-	20	V
Output Saturation Voltage	Vce(sat)	Vcc=14V, Ic=20mA	-	300	700	mV
Output Leakage Current	Icex	Vce=14V, Vcc=14V	-	<0.1	10	uA
Supply Current	Icc	Vcc=20V, Output Open	-	5	10	mA
Output Rise Time	tr	Vcc=14V, RL=820Ω, CL=20pF	-	0.3	1.5	us
Output Falling Time	tf	Vcc=14V, RL=820Ω, CL=20pF	-	0.3	1.5	us

Test Circuit



Test Circuit

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Magnetic Characteristics (TA=25°C)

1mT=10Gauss)

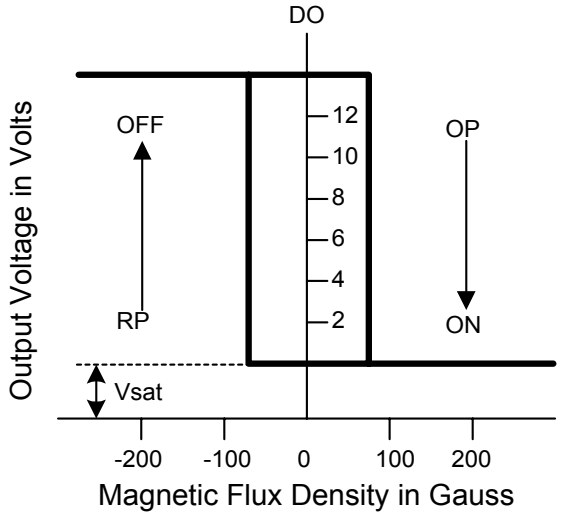
A grade

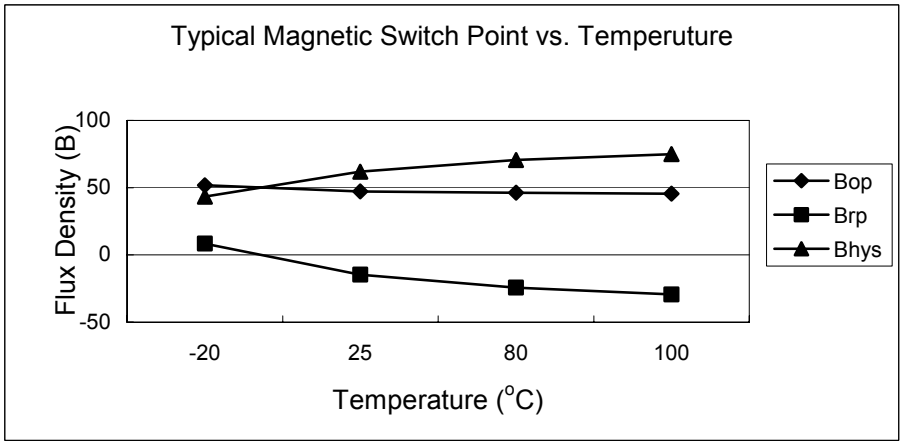
Parameter	Symbol	Min.	Typ.	Max.	Unit
Operate Point	Bop	5	-	70	Gauss
Release Point	Brp	-70	-	-5	Gauss
Hysteresis	Bhys	-	80	-	Gauss

B grade

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operate Point	Bop	-	-	100	Gauss
Release Point	Brp	-100	-	-	Gauss
Hysteresis	Bhys	-	80	-	Gauss

*B grade is for SIP-3L package only.

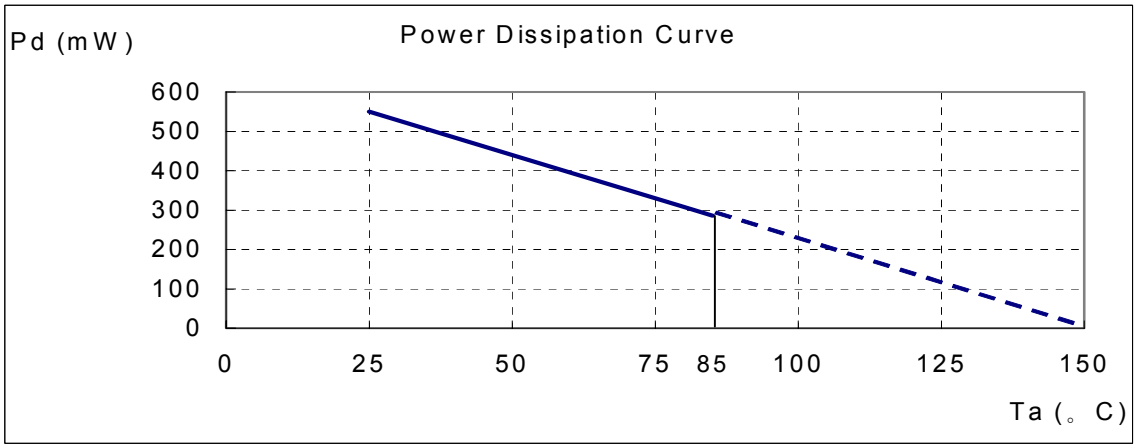




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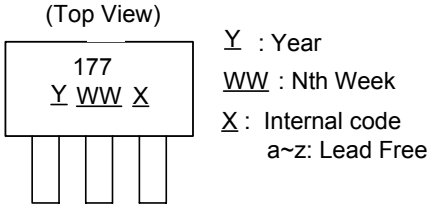
Performance Characteristics (SIP-3L)

Ta (°C)	25	50	60	70	80	85	90	95	100
Pd (mW)	550	440	396	352	308	286	264	242	220
Ta (°C)	**105**	**110**	**115**	**120**	**125**	**130**	**135**	**140**	**150**
Pd (mW)	198	176	154	132	110	88	66	44	0



Marking Information

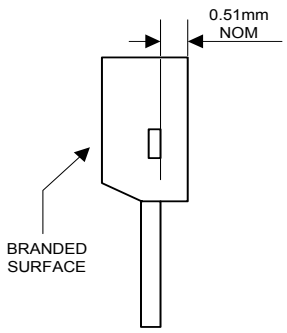
SIP-3L



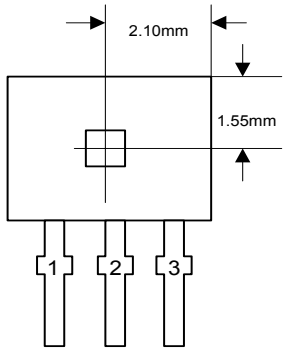
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Package Information (unit: mm)

(1) Package Type: SIP-3L for Bulk Pack

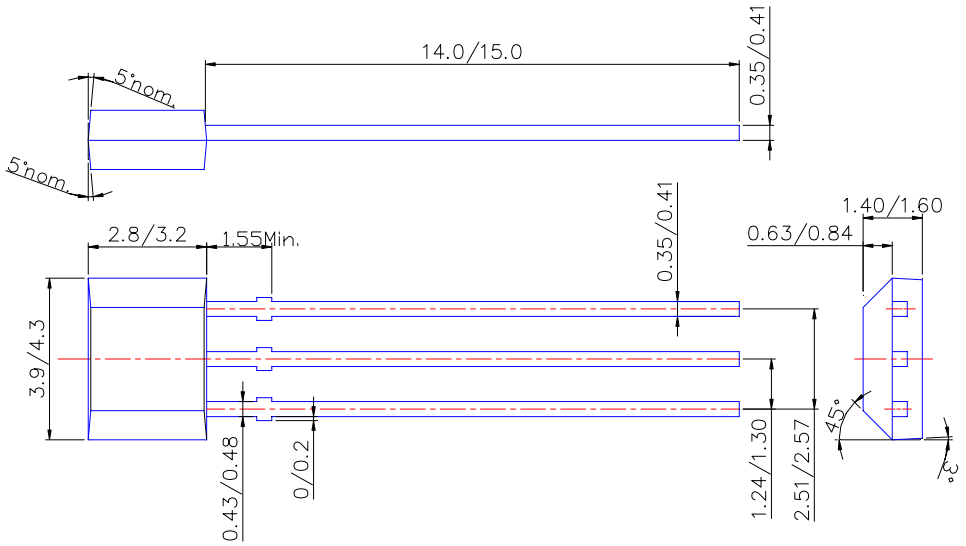


Active Area Depth



Sensor Location

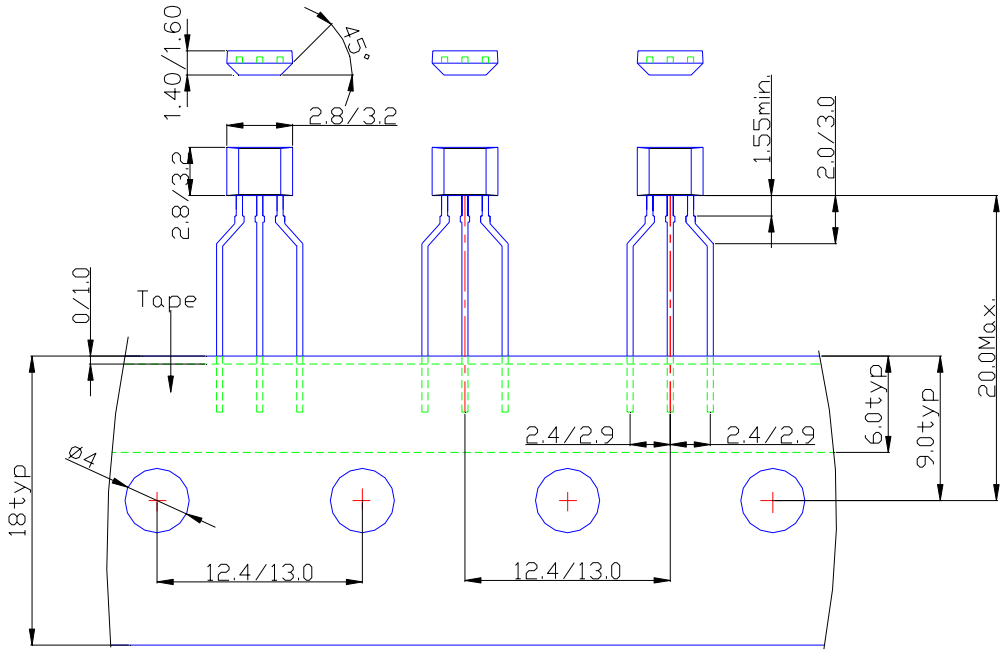
Package Dimension



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Package Information (Continued)

(2) Package Type: SIP-3L for Ammo Pack-only



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