
Features

- 2.2V to 20V DC Operation Voltage
- Temperature Compensation
- Wide Operating Voltage Range
- Open Drain Pre-Driver
- 25mA Maximum Sinking Output Current
- Lead Free Package: SIP3 (Note 1) and SC59 (Commonly known as SOT23 in Asia)
- SC59: Available in "Green" Molding Compound (No Br, Sb)
- Lead Free Finish/RoHS Compliant (Note 2)

General Description

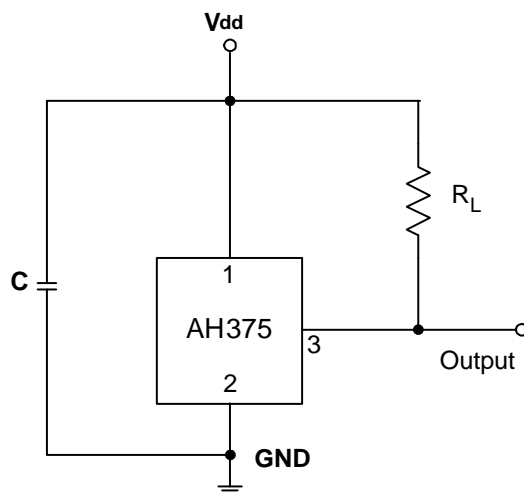
AH375 is an integrated Hall effect latched sensor designed for electronic commutation of brush-less DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and open drain output. An internal band-gap 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 B_{op} , 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).

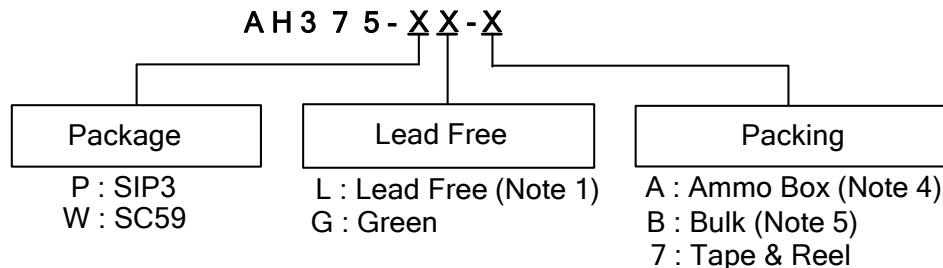
Applications

- Brush-Less DC Motor
- Brush-Less DC Fan
- Revolution Counting
- Speed Measurement

Typical Application Circuit



Ordering Information



Device	Package Code	Packaging (Note 3)	Bulk		7" Tape and Reel		Ammo Box	
			Quantity	Part Number Suffix	Quantity	Part Number Suffix	Quantity	Part Number Suffix
AH375-PL-A	P	SIP3	NA	NA	NA	NA	4000/Box	-A
AH375-PL-B	P	SIP3	1000	-B	NA	NA	NA	NA
AH375-WL-7	W	SC59	NA	NA	3000/Tape & Reel	-7	NA	NA
AH375-WG-7	W	SC59	NA	NA	3000/Tape & Reel	-7	NA	NA

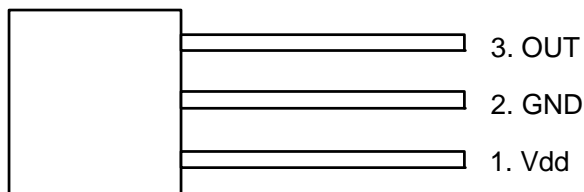


- Notes:
1. SIP3 is available in "Lead Free" product only.
 2. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at http://www.diodes.com/products/lead_free.html.
 3. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 4. Ammo Box is for SIP3 Spread Lead.
 5. Bulk is for SIP3 Straight Lead.

Pin Assignment

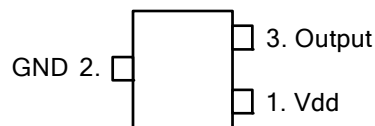
(1) SIP3

(Top View)



(2) SC59 (Commonly known as SOT23 in Asia)

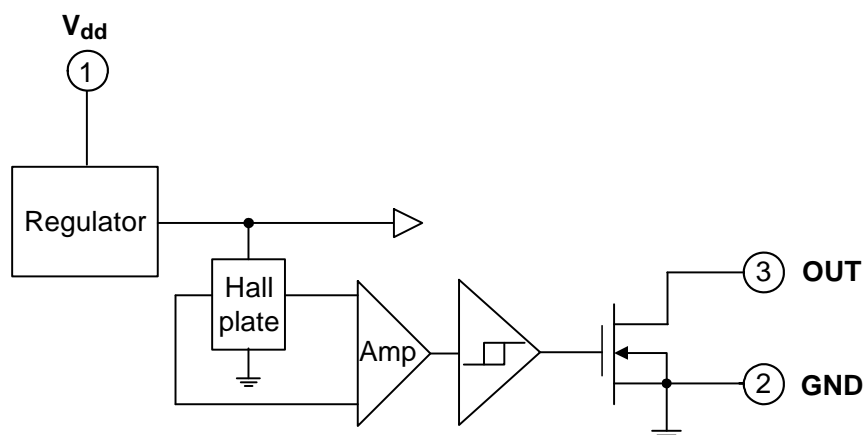
(Top View)



Pin Descriptions

Pin Name	P/I/O	Pin #	Description
Vdd	P	1	Positive Power Supply
GND	P	2	Ground
OUT	O	3	Output Pin

Block Diagram



Absolute Maximum Ratings (T_A = 25°C)

Symbol	Characteristics		Values	Unit
V _{DD}	Supply Voltage		20	V
B	Magnetic Flux Density		Unlimited	
V _{DS}	Output OFF Voltage		30	V
I _D	Output "On" Current	Continuous	25	mA
T _{ST}	Storage Temperature Range		-65~+150	°C
T _{J(MAX)}	Maximum Junction Temperature		150	°C
P _D	Package Power Dissipation	SIP3	550	mW
		SC59	230	
θ _{JC}	Thermal Resistance	SIP3	227	°C/W
		SC59	543	

Recommended Operating Conditions

Symbol	Parameter	Conditions	Min	Max	Unit
V _{dd}	Supply Voltage (Note 6)	Operating	2.2	20	V
T _A	Operating Ambient Temperature	Operating	-40	125	°C

Notes: 6. The output of IC will be switched after the supply voltage is over 2.2V, but the magnetic characteristics won't be normal until the supply is over 2.5V.

Electrical Characteristics (T_A = + 25°C, V_{dd} = 12V)

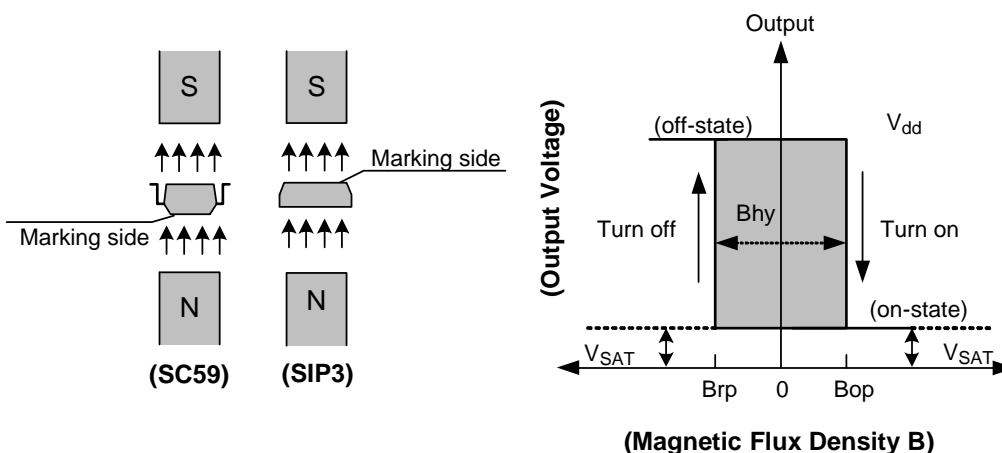
Symbol	Characteristic	Test Conditions	Min	Typ.	Max	Unit
V _{ds(SAT)}	Output Saturation Voltage	I _{out} = 20mA	-	300	700	mV
I _{off}	Output Leakage Current	V _{DD} = 14V	-	<0.1	10	uA
I _{dd}	Supply Current	Output Open	-	2	4	mA

Magnetic Characteristics (T_A = 25°C, V_{dd} = 2.5V to 20V, Note 7)

(1mT = 10 Gauss)

Symbol	Parameter	Min	Typ.	Max	Unit
B _{ops} (south pole to brand side)	Operation Point	5	30	60	Gauss
B _{rps} (south pole to brand side)	Release Point	-60	-30	-5	Gauss
B _{hy} (B _{opx} - B _{rpx})	Hysteresis	-	60	-	Gauss

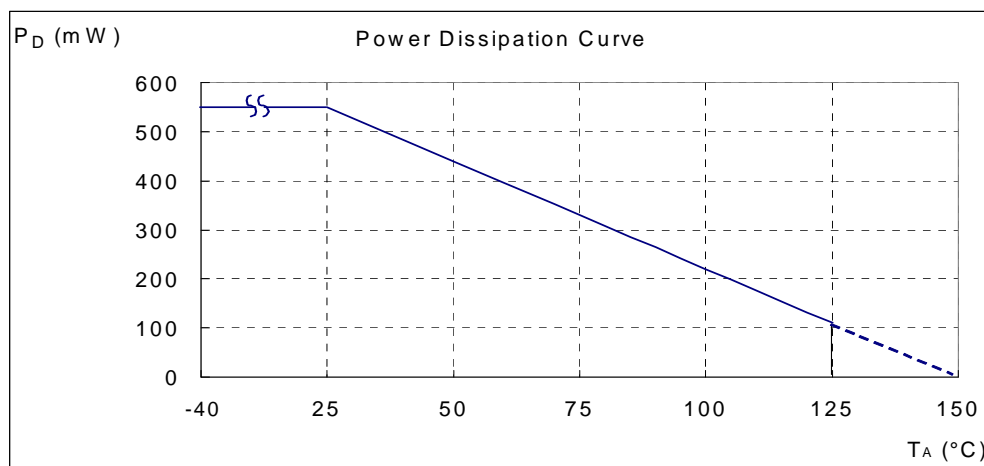
Notes: 7. Magnetic characteristics are for design information, which will vary with supply voltage, operating temperature and after soldering.



Performance Characteristics

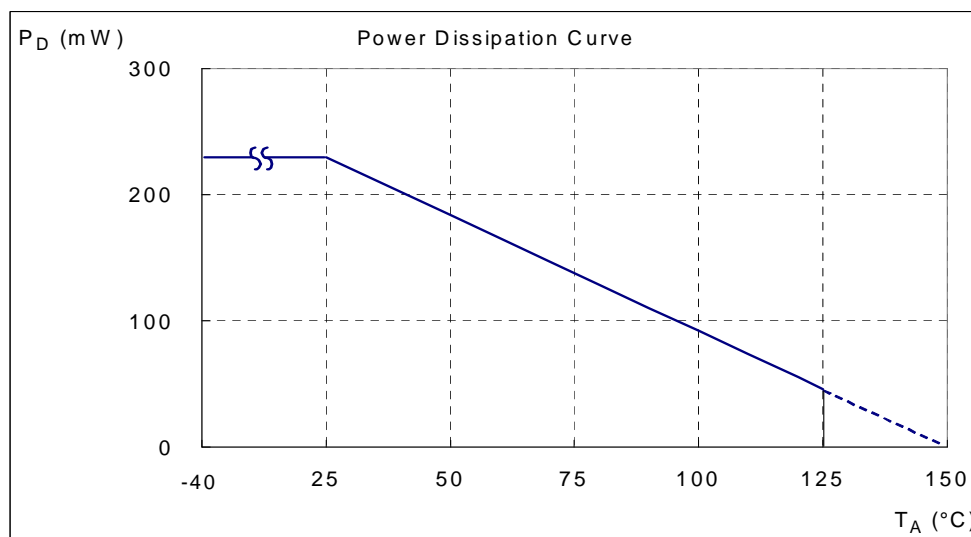
(1) SIP3

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



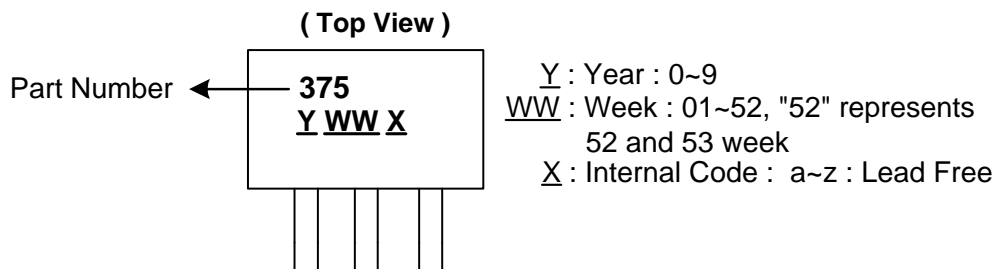
(2) SC59 (Commonly known as SOT23 in Asia)

T_A (°C)	25	50	60	70	80	90	100	110	120	125	130	140	150
P_D (mW)	230	184	166	147	129	110	92	74	55	46	37	18	0

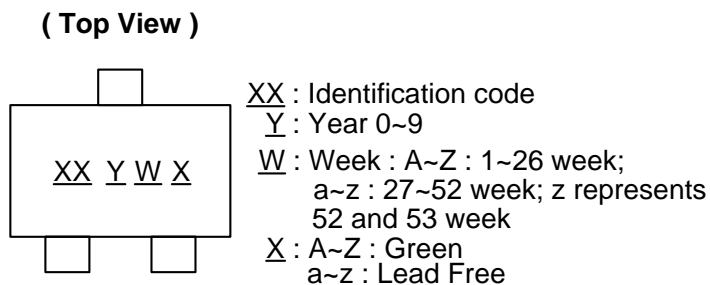


Marking Information

(1) SIP3



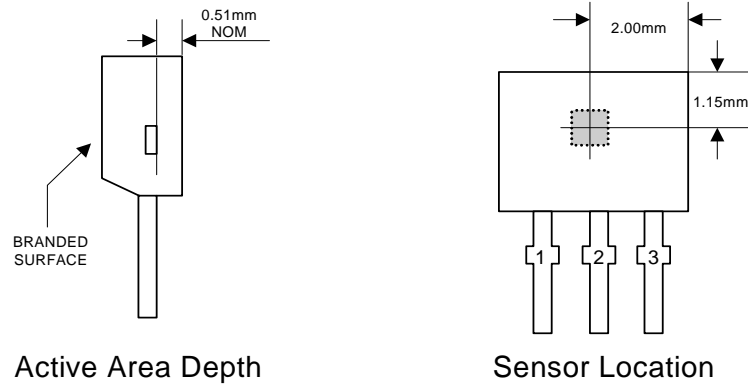
(2) SC59 (Commonly known as SOT23 in Asia)



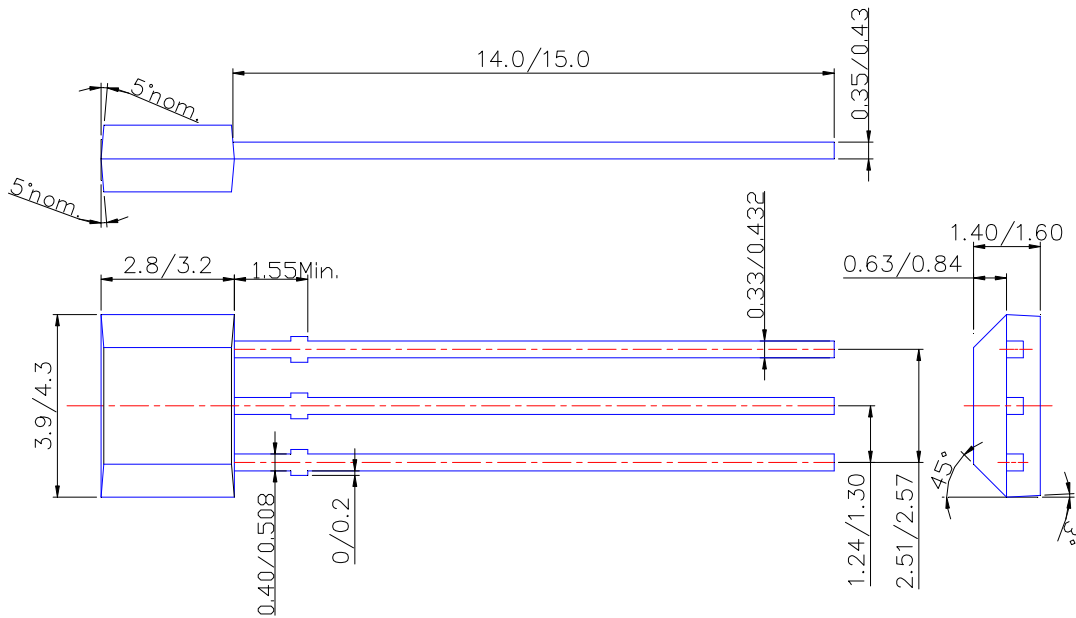
Part Number	Package	Identification Code
AH375	SC59	P3

Package Information (All Dimensions in mm)

(1) Package Type: SIP3 for Bulk only

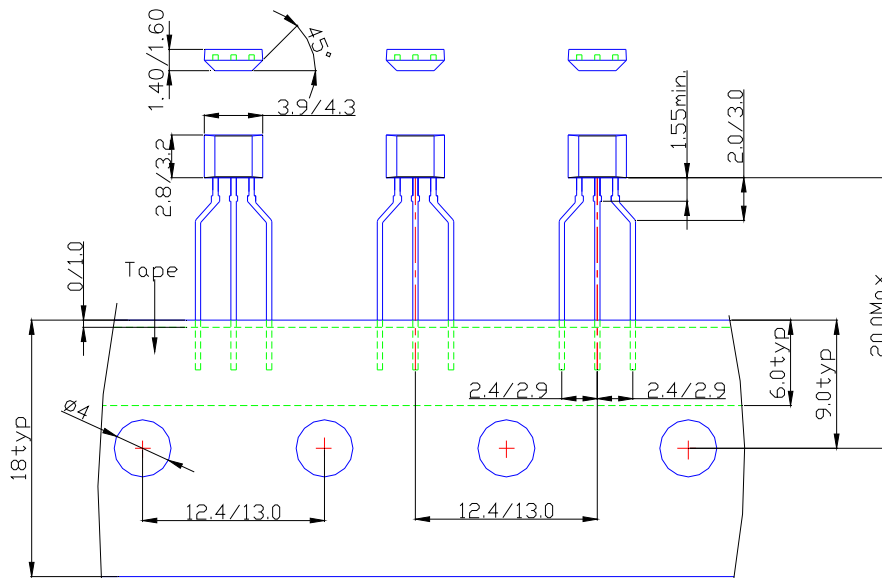


Package Dimension

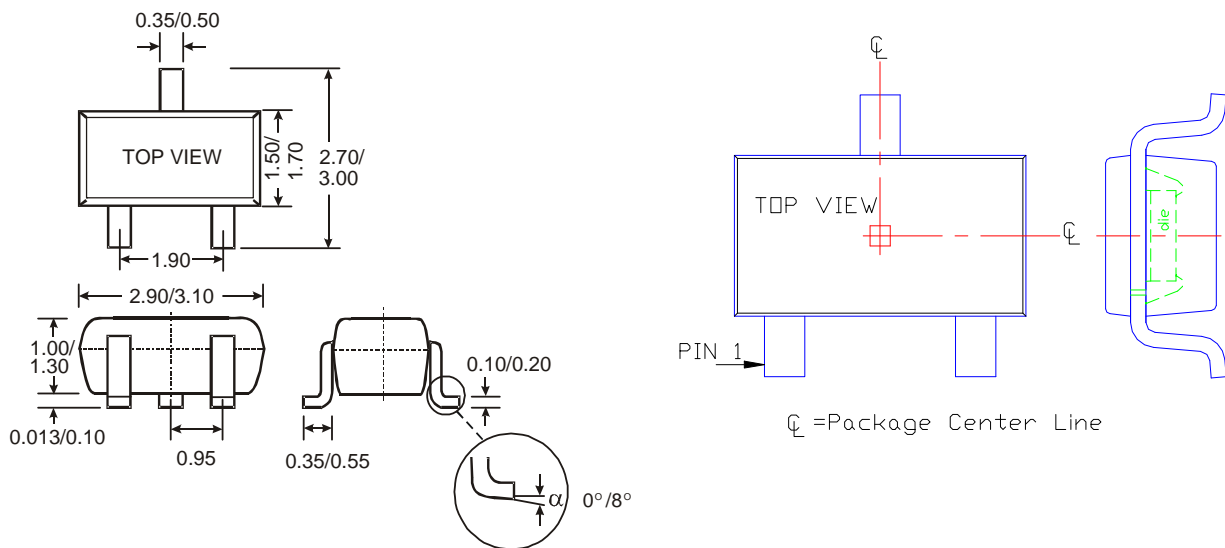


Package Information (Continued)

(2) Package Type: SIP3 for Ammo Pack-only



(3) SC59 (Commonly known as SOT23 in Asia)



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