

Single Phase Hall Effect Switch

■ Features

- 4.2V to 28V DC operation voltage
- Temperature compensation
- Wide operating voltage range
- Open drain pre-driver
- 25mA maximum sinking output current.
- Package: SIP3, SOT23

■ Applications

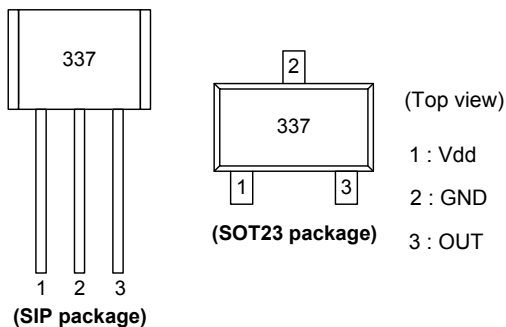
- VCD/DVD loader, CD/DVD ROM
- Cover detector
- Speed measurement
- Home appliances
- Home safety

■ General Description

AH337 is a switched Hall-Effect IC which is for contactless switching applications. The device includes an on-chip Hall voltage generator for magnetic sensing, an amplifier that amplifies the Hall voltage, a schmitt trigger to provide switching hysteresis for noise rejection, and an open-drain output. The bandgap regulator allows a wide operating voltage 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).

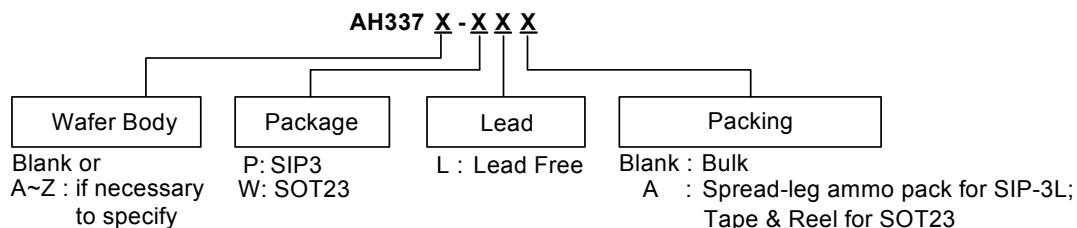
■ Pin Assignment



■ Pin Descriptions

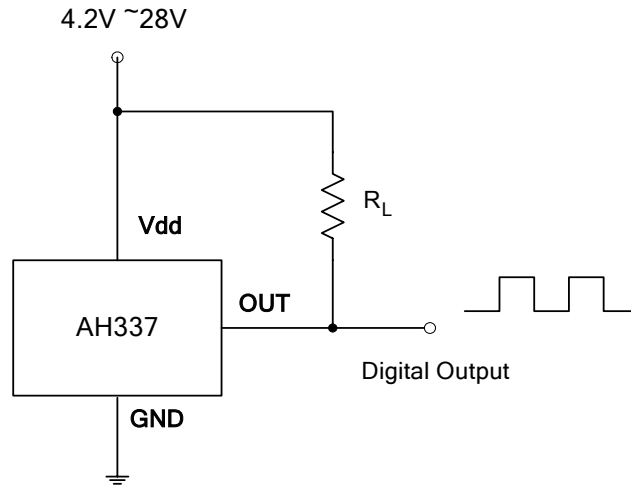
Name	P/I/O	Pin #	Description
Vdd	P	1	Positive Power Supply
GND	P	2	Ground
OUT	O	3	Output Pin

■ Ordering Information

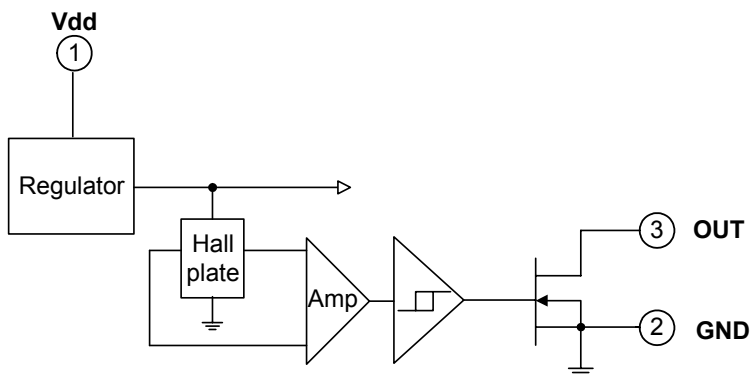


Single Phase Hall Effect Switch

■ Typical Application Circuit



■ Functional Block Diagrams



Single Phase Hall Effect Switch

■ Absolute Maximum Ratings (at Ta=25°C)

Characteristics		Symbol	Values	Unit
Supply Voltage		Vdd	30	V
Magnetic Flux Density		B	Unlimited	
Output OFF Voltage		V _{DS}	30	V
Output "ON" Current	Continuous	I _d	25	mA
Operating Temperature Range		T _a	-40~+125	°C
Storage Temperature Range		T _s	-65~+150	°C
Maximum Junction Temp.		T _j	150	°C
Package Power Dissipation	SIP-3L	P _d	550	mW
	SOT23-3L		230	mW

■ Recommended Operating Conditions (Ta=25°C)

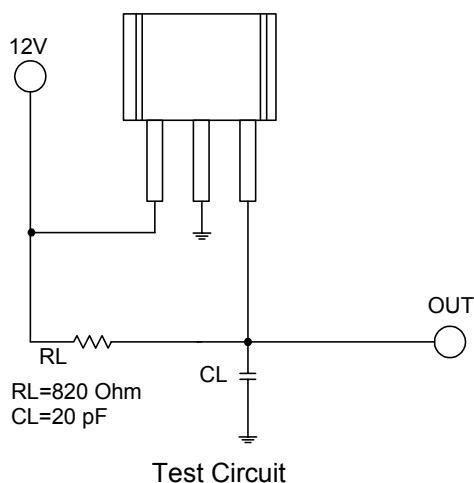
Paramter	Symbol	Conditions	Rating	Unit
Supply Voltage	Vdd	Operating	4.2*~28	V

*Note: The output of IC will be switched after the supply voltage is over 4.2V, but the magnetic characteristics won't be normal until the supply is over 4.5V.

■ Electrical Characteristics (Ta=+ 25°C, Vdd=12V)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Output Saturation Voltage	V _{DS(sat)}	I _{out} =10mA, B > B _{op}	-	300	400	mV
Output Leakage Current	I _{off}	B < B _{rp}	-	<0.1	10	uA
Supply Current	I _{dd}	Output Open	-	2	4	mA
Output Rise Time	t _r	R _L =820Ω, C _L =20pF	-	0.1	1	us
Output Falling Time	t _f	R _L =820Ω, C _L =20pF	-	0.1	1	us

■ Test Circuit

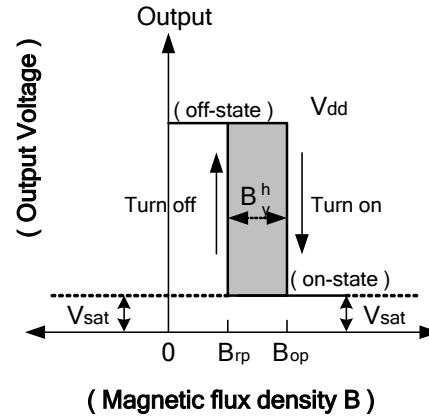
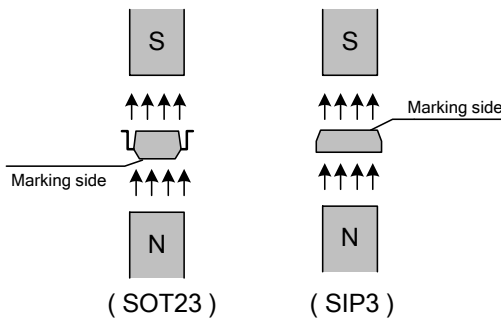


Single Phase Hall Effect Switch

■ Magnetic Characteristics (Ta=25°C, Vdd=4.5V to 28V)

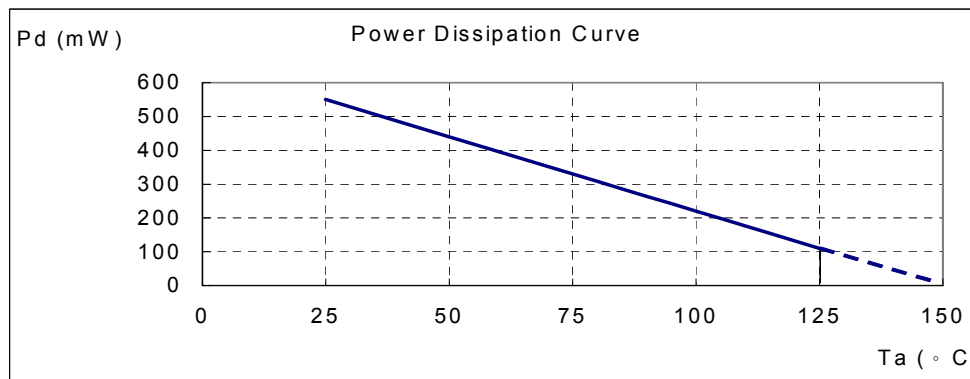
(1mT=10Gauss)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operate Point	B _{op}	90	120	150	Gauss
Release Point	B _{rp}	30	60	90	Gauss
Hysteresis	B _{hys}	-	60	-	Gauss



■ Performance Characteristics (SIP3)

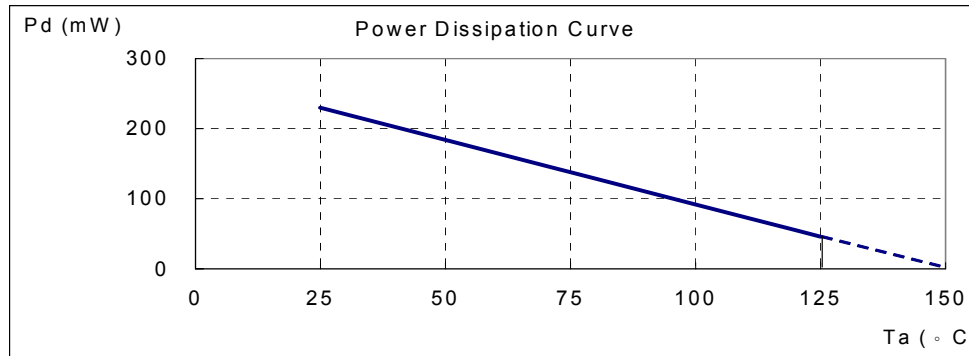
Ta (°C)	25	50	60	70	80	85	90	95	100
Pd (mW)	550	440	396	352	308	286	264	242	220
Ta (°C)	105	110	115	120	125	130	135	140	150
Pd (mW)	198	176	154	132	110	88	66	44	0



Single Phase Hall Effect Switch

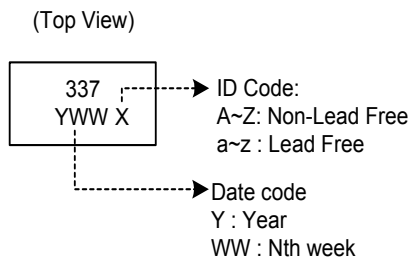
■ Performance Characteristics (SOT23-3)

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

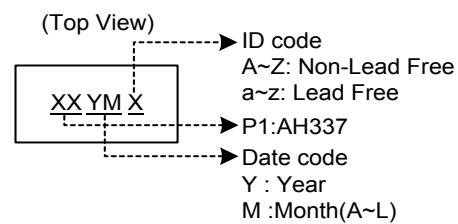


■ Marking Information

(1) SIP3



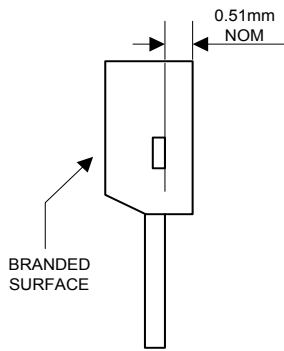
(2) SOT23



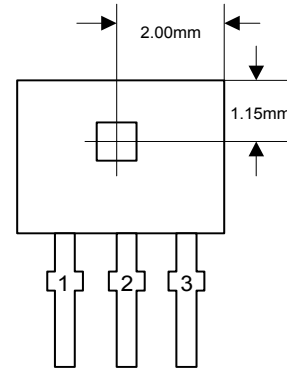
Single Phase Hall Effect Switch

■ Package Information (unit: mm)

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

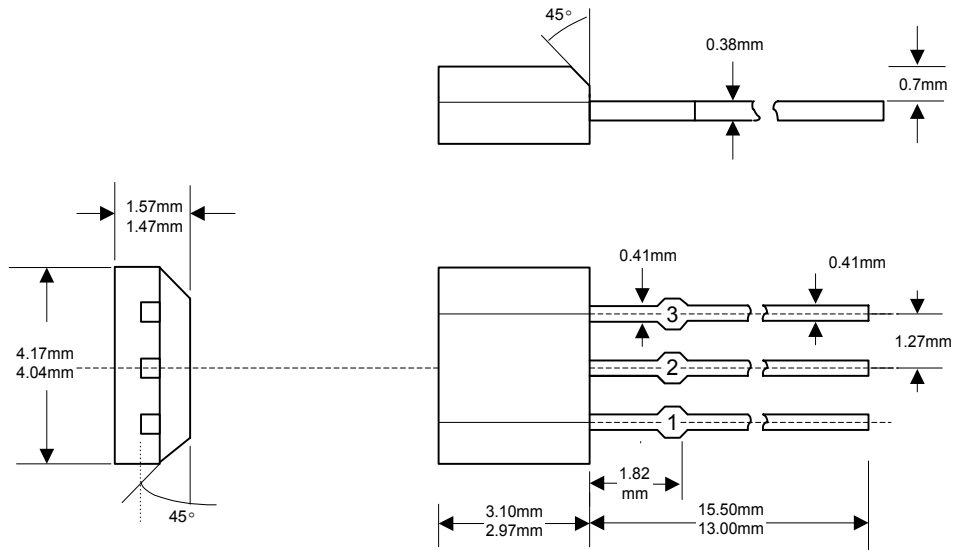


Active Area Depth



Sensor Location

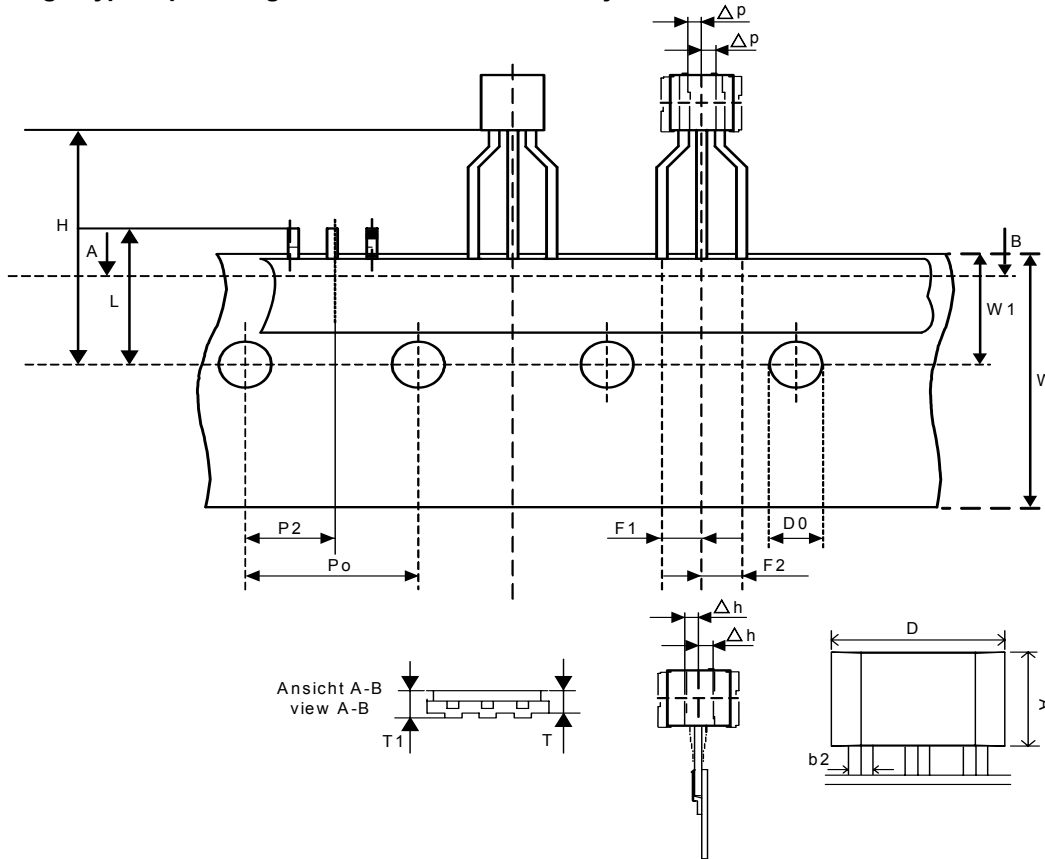
Package Dimension



Single Phase Hall Effect Switch

■ Package Information (Continued)

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

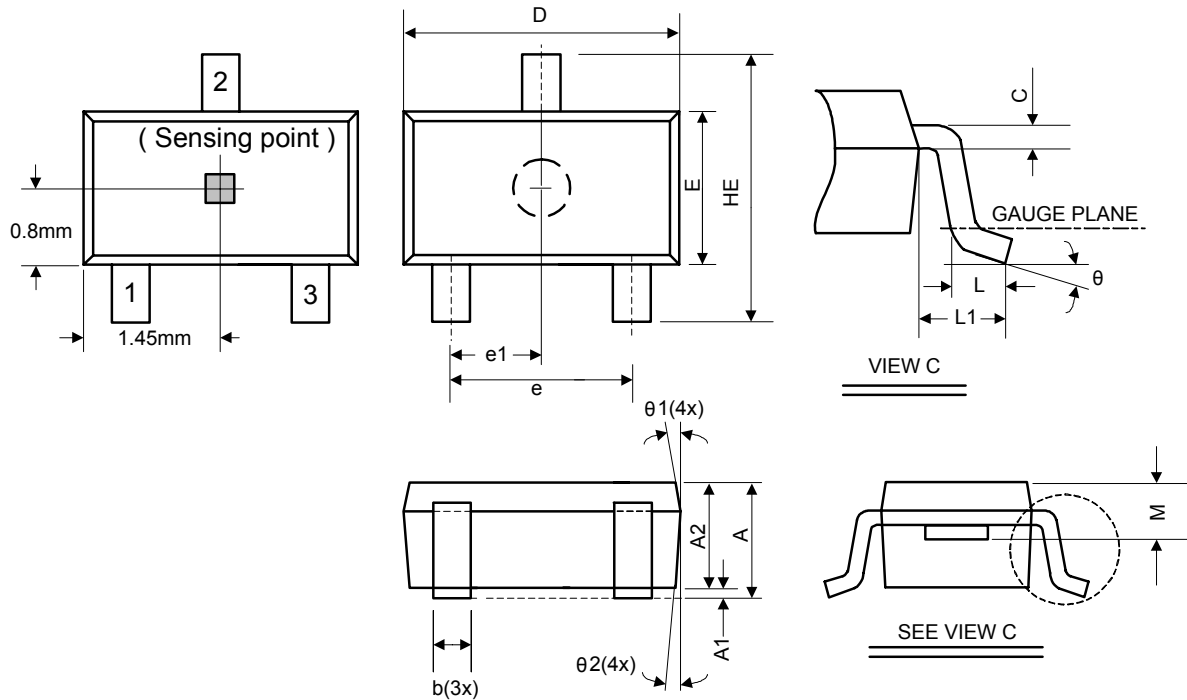


Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	2.80	3.00	3.20	0.110	0.118	0.125
D	3.90	4.10	4.30	0.153	0.161	0.169
b2	0.33	0.38	0.42	0.012	0.014	0.016
D0	3.80	4.00	4.20	0.149	0.157	0.165
F1	2.35	2.55	2.75	0.092	0.100	0.108
F2	2.45	2.55	2.85	0.096	0.100	0.112
H	-	-	20	-	-	0.787
Δh	-	-	1	-	-	0.039
L	-	-	11	-	-	0.433
P0	12.2	12.7	13.2	0.480	0.5	0.519
P2	5.95	6.35	6.75	0.234	0.25	0.265
Δp	-	-	1	-	-	0.039
T	-	-	0.55	-	-	0.021
T1	-	-	1.42	-	-	0.055
W	17.5	18.0	18.5	0.688	0.708	0.728
W1	5.5	6.0	6.5	0.216	0.236	0.255

■ Package Information (Continued)

Single Phase Hall Effect Switch

(3) Package Type: SOT23-3L



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	1.05	-	1.35	0.041	-	0.053
A1	0.05	-	0.15	0.002	-	0.006
A2	1.00	1.10	1.20	0.039	0.043	0.047
b	0.25	-	0.50	0.010	-	0.020
C	0.08	-	0.20	0.003	-	0.008
D	2.70	2.90	3.00	0.106	0.114	0.118
E	1.50	1.60	1.70	0.059	0.063	0.067
HE	2.60	2.80	3.00	0.102	0.110	0.118
L	0.30	-	0.60	0.012	-	0.024
L1	0.50	0.60	0.70	0.020	0.024	0.028
M	0.73	0.78	0.83	0.029	0.031	0.033
e	1.80	1.90	2.00	0.071	0.075	0.079
e1	0.85	0.95	1.05	0.033	0.037	0.041
θ	0°	5°	10°	0°	5°	10°
$\theta 1$	3°	5°	7°	3°	5°	7°
$\theta 2$	6°	8°	10°	6°	8°	10°