

General Description

The DH475 Omnipolar Hall effect sensor IC is fabricated from mixed signal CMOS technology. It is comprised of two Hall plates and a CMOS output driver, mainly designed for battery-operation. The total power consumption in normal operation is typically 5 μ W with a 3V power source. either north or south poles of sufficient strength will turn the output on. The output will be turned off under no magnetic field. While the magnetic flux density (B) is larger than operating point (BOP), the output will be turned on (low), the output is held until B is lower than release point (BRP), and then turned off.

The DH475 is available in many flexible packaging options, such as SOT23-3L/SIP-3L. Operating temperature range of the DH475 is from -40°C to 85°C.

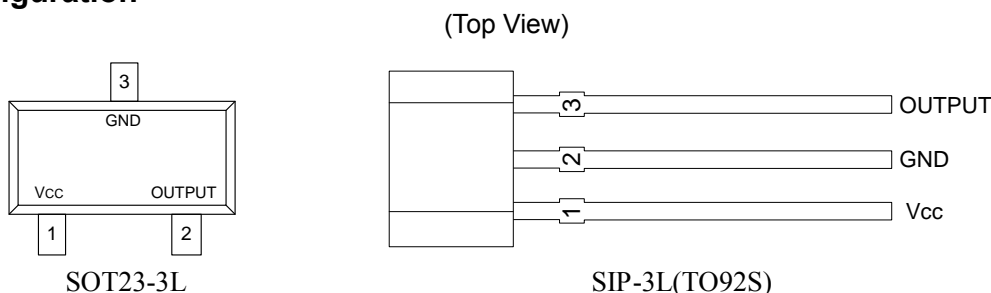
- 1.67 μ A Micro power design
- 125HZ measuring frequency
- Omnipolar Operation with North or South pole
- CMOS Output
- 2.4V to 5.5V battery operation
- High sensitivity and high stability of the magnetic switching points
- High resistance to mechanical stress
- Digital output signal
- Good RF noise immunity
- -40°C to 85°C operating temperature
- SOT23-3L/SIP-3L(TO92S) package

Applications

- Smart meter
- Solid State Switch
- Magnet proximity sensor for reed switch replacement in low duty cycle applications

Features

Pin Configuration



Pin Name	Pin		Description
	SOT23-3L	SIP-3L	
VCC	1	1	IC Power Supply
OUTPUT	2	3	It is low state during the S/N magnetic field
GND	3	2	IC Ground

Application Circuit

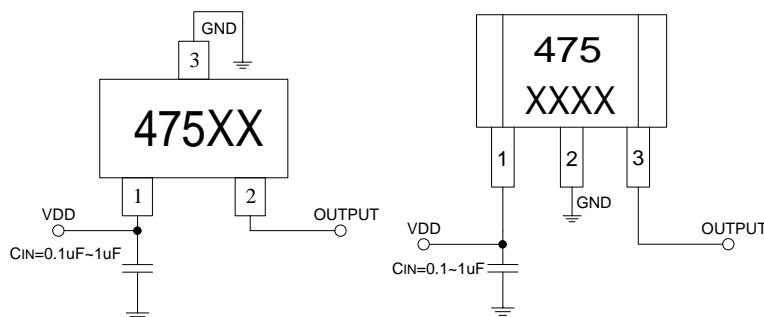


Figure 1, application circuit

Note: C_{IN} is for power stabilization and to strengthen the noise immunity, the recommended capacitance is 0.1~1 μ F.

Ordering Information

PartNumber	Package Type	Packing Qty	B _{OP} (Gauss)	B _{RP} (Gauss)	Temperature	Eco Plan	Lead
DH475	SOT23-3L	3000pcs/Reel	±30(Typ.)	±22(Typ.)	-40~ +85°C	ROHS	Cu
DH475	SIP-3L	1000pcs/Bag	±30(Typ.)	±22(Typ.)	-40~ +85°C	ROHS	Cu

■ **Block Diagram**

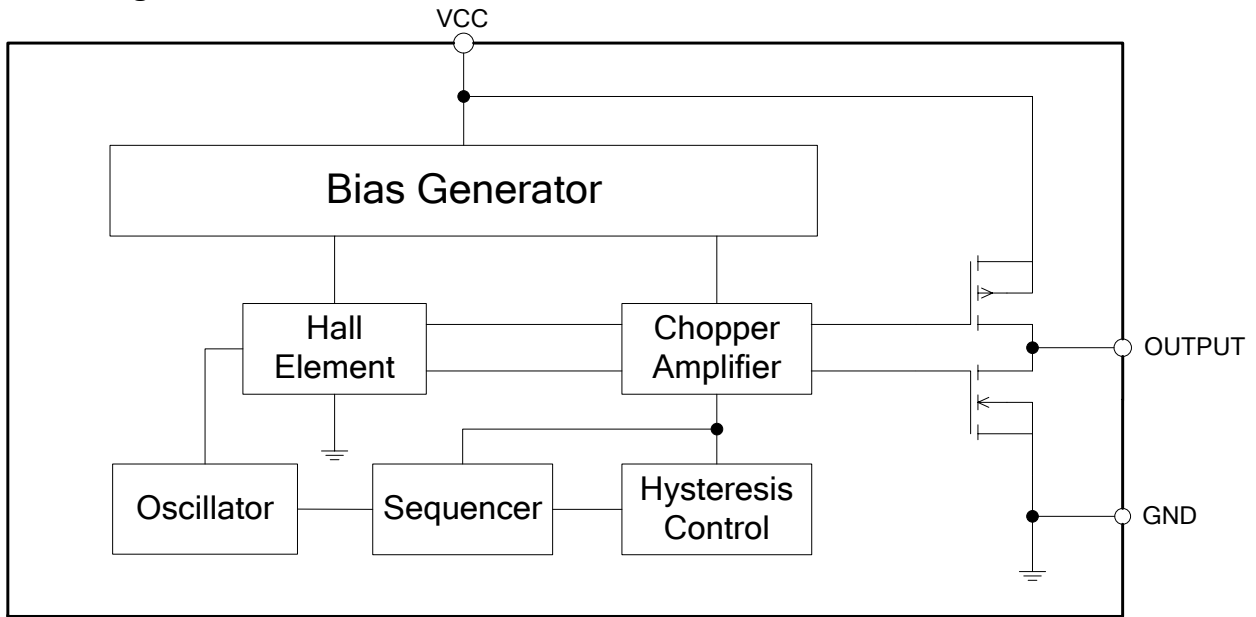


Figure 2, Block Diagram Of DH475

■ **Absolute Maximum Ratings¹** ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Rating	Unit
VDD to GND	V_{CC}	-0.3 to 6	V
Magnetic Flux Density	B	Unlimited	
Storage Temperature Range	T_S	-65 to +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-40 to 150	$^\circ\text{C}$
Maximum Power Dissipation	SOT23-3L	230	mW
	SIP-3L	300	
Maximum Soldering Temperature(at leads, 10 sec)	T_{LEAD}	260	$^\circ\text{C}$

■ **Recommended Operating Conditions** ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Rating	Unit
Supply Voltage	V_{DD}	Operating	2.4 ~ 5.5	V
Operating Temperature Range	T_A	Operating	-40 ~ +85	$^\circ\text{C}$

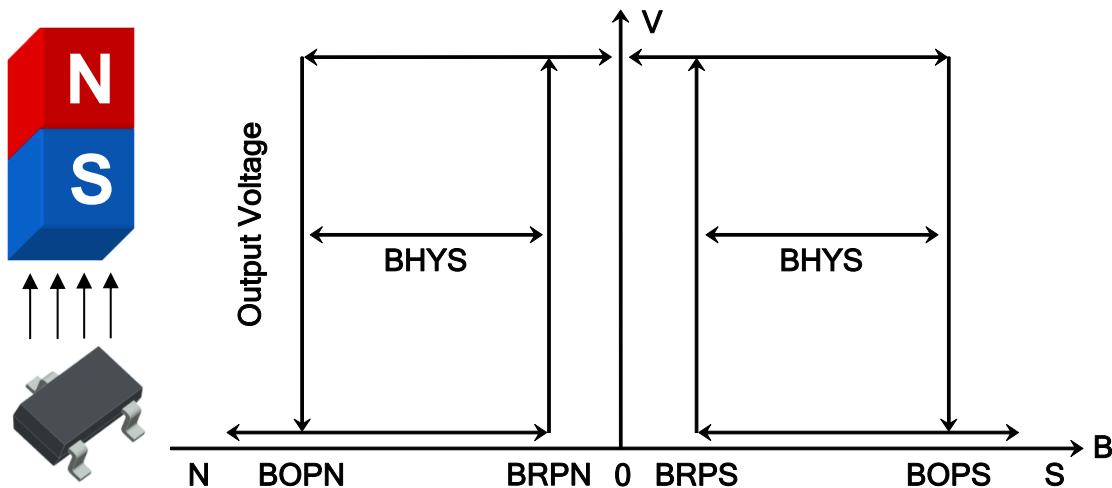
■ Electrical Characteristics

(Unless otherwise noted, typical values are at $T_A=25^\circ\text{C}$, $V_{DD}=3\text{V}$)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{OL}	Output On Voltage (Low side)	$I_{OUT}=-1\text{mA}$	-0.3	0.1	0.3	V
I_{OFF}	Output Leakage Current	$V_{OUT}=5.5\text{V}$, Output off	-	<0.1	1	μA
$I_{DD}(EN)$	Supply Current	Chip enable, $T_A=25^\circ\text{C}$, $V_{DD}=3\text{V}$	-	1.5	2.3	mA
$I_{DD}(EN)$		Chip enable, $T_A=-40\sim 85^\circ\text{C}$, $V_{DD}=2.4\sim 5.5\text{V}$	-	1.5	2.8	mA
$I_{DD}(DIS)$		Chip disable, $T_A=25^\circ\text{C}$, $V_{DD}=3\text{V}$	-	0.45	0.8	μA
$I_{DD}(DIS)$		Chip disable, $T_A=-40\sim 85^\circ\text{C}$, $V_{DD}=2.4\sim 5.5\text{V}$	-	0.45	1.2	μA
$I_{DD}(AVG)$		Average supply current, $T_A=25^\circ\text{C}$, $V_{DD}=3\text{V}$	-	1.67	3	μA
$I_{DD}(AVG)$		Average supply current, $T_A=-40\sim 85^\circ\text{C}$, $V_{DD}=2.4\sim 5.5\text{V}$	-	1.67	4	μA
T_{awake}		Awake Time	-	5	9	15
T_{period}	Period	-	4	8	13	ms
D.C.	Duty Cycle	-	-	0.13	-	%

■ Magnetic Characteristics

$V_{DD}=3\text{V}, T_A=25^\circ\text{C}$					
Parameter	Symbol	Min.	Typ.	Max.	Unit
South Pole Operate point	BOPS	12	30	46	Gauss
South Pole Release point	BRPS	5	22	42	Gauss
North Pole Operate point	BOPN	-46	-30	-12	Gauss
North Pole Release point	BRPN	-42	-22	-5	Gauss
Hysteresis	BHYS	4	8	20	Gauss



■ Hall Sensor Location

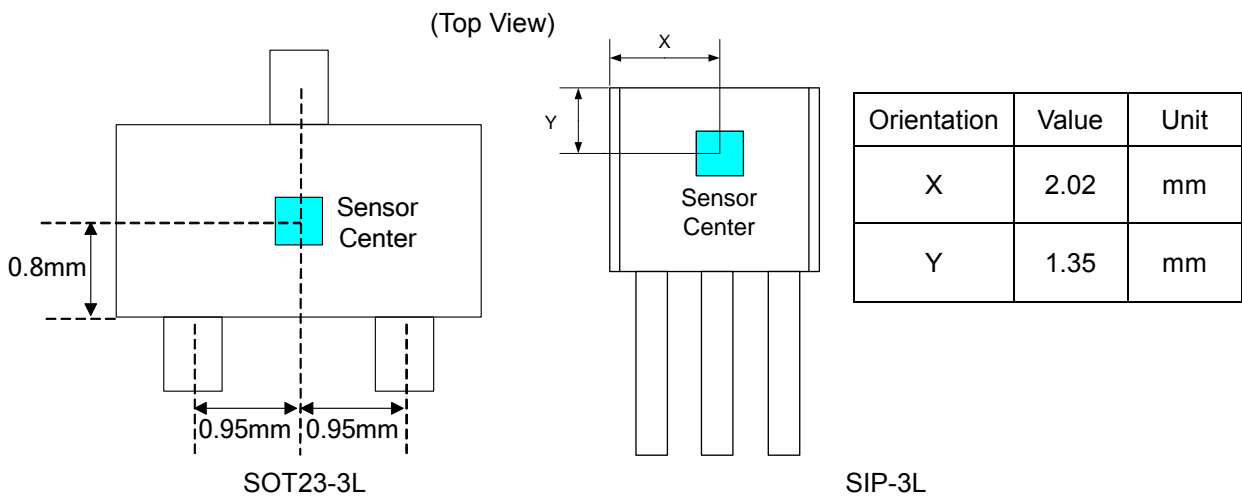


Figure4, Hall Sensor Location

■ Land Pattern (for reference only)

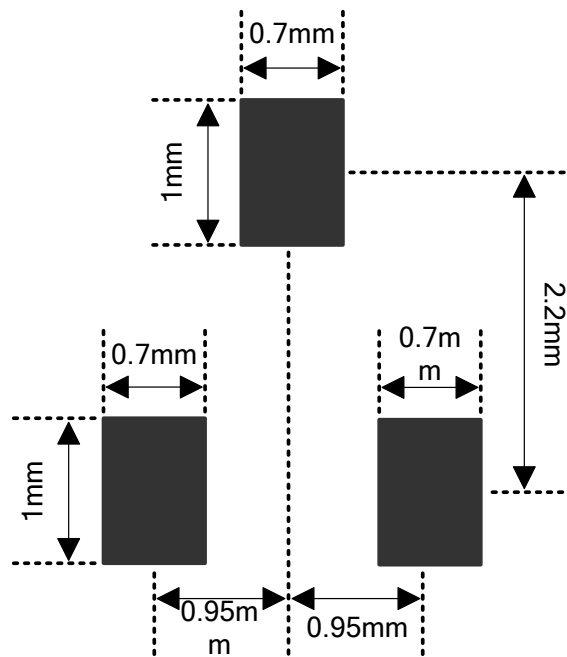
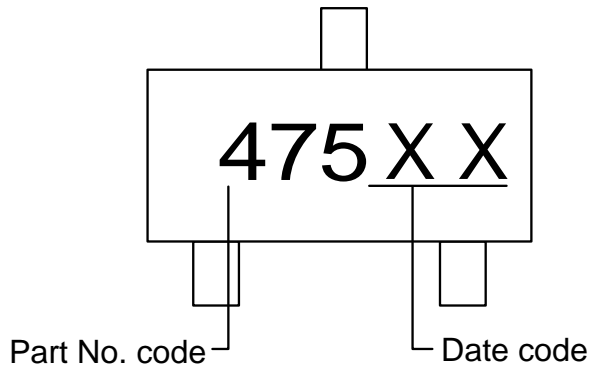


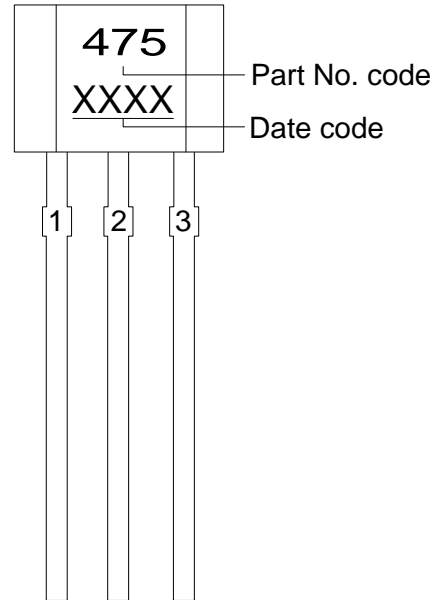
Figure 5, Land Pattern Dimension (SOT23-3L)

■ Marking Information

(Top View)



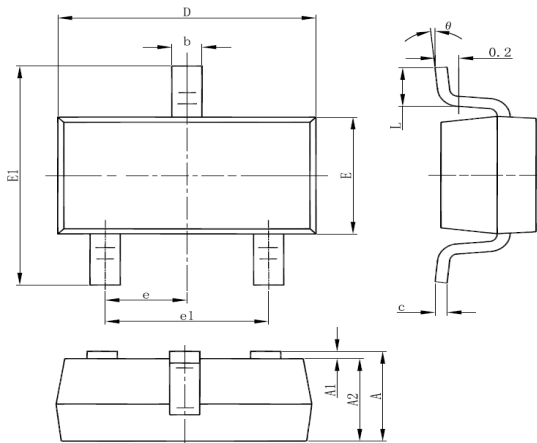
SOT23-3L



SIP-3L

■ Package Information

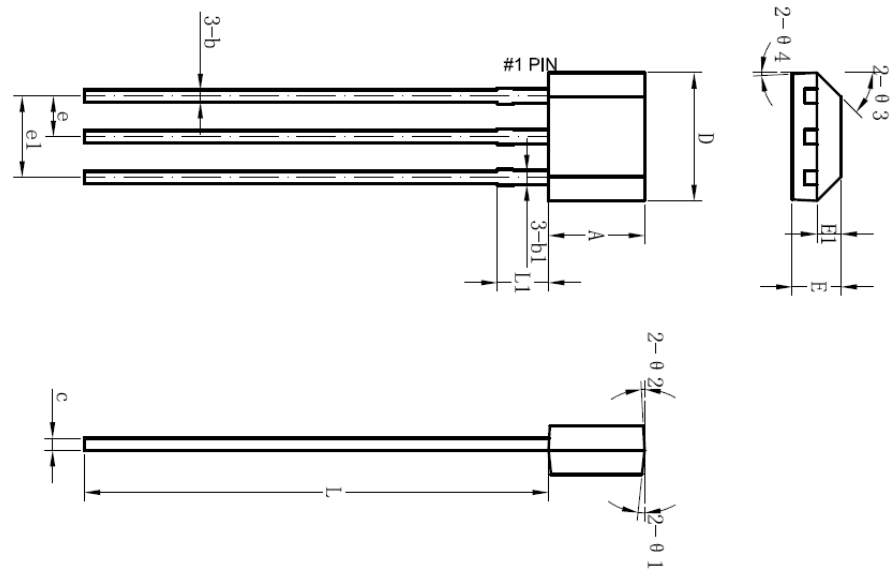
1)SOT23-3L



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.050	1.15	1.250	0.041	0.045	0.049
A1	0.000	0.050	0.100	0.000	0.002	0.004
A2	1.050	1.100	1.150	0.041	0.043	0.045
b	0.300	0.400	0.500	0.012	0.016	0.020
c	0.100	0.150	0.200	0.004	0.006	0.008
D	2.820	2.920	3.020	0.111	0.115	0.119
E	1.500	1.600	1.700	0.059	0.063	0.067
E1	2.650	2.800	2.950	0.104	0.110	0.116
e1	1.800	1.900	2.000	0.071	0.075	0.079
e	0.950 REF			0.037 REF		
L	0.300	0.450	0.600	0.012	0.018	0.024

■ Package Information

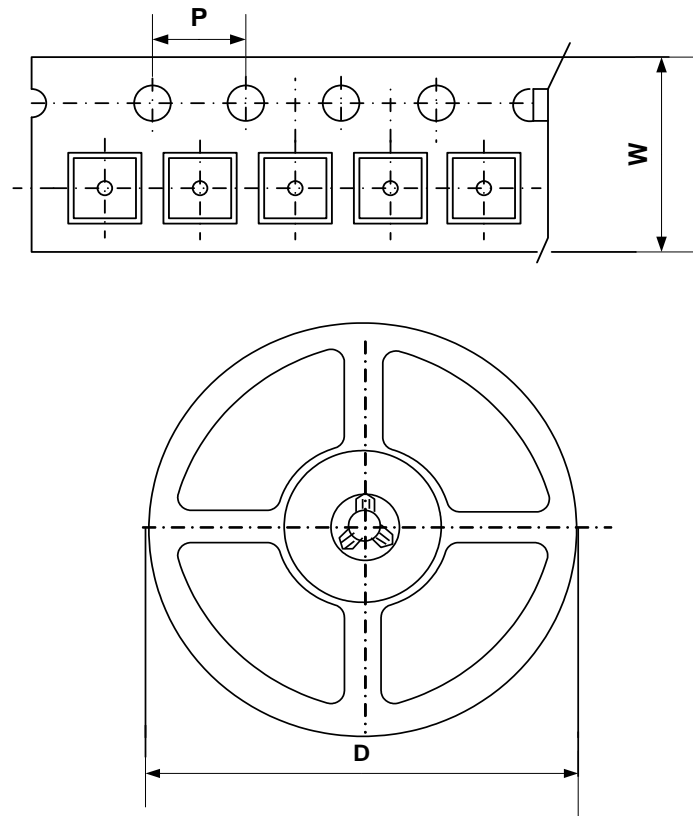
2)SIP-3L



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.90	3.00	3.10	0.11	0.12	0.12
b	0.35	0.39	0.56	0.01	0.02	0.02
b1		0.44			0.02	
c	0.36	0.38	0.51	0.01	0.01	0.02
D	3.9	4.0	4.2	0.15	0.16	0.16
E	1.42	1.52	1.62	0.06	0.06	0.06
E1		0.75			0.03	
e		1.27			0.05	
e1		2.54			0.10	
L	13.50	14.50	15.50	0.53	0.57	0.61
L1		1.60			0.06	
Θ1		6°			0.24°	
Θ2		3°			0.12°	
Θ3		45°			1.77°	
Θ4		3°			0.12°	

■ Packing Information

1)SOT23-3L



Package Type	Carrier Width (W)	Pitch (P)	Reel Size(D)	Packing Minimum
SOT23-3L	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	3000pcs

Note: Carrier Tape Dimension, Reel Size and Packing Minimum

2)SIP-3L

1. Packing Type: Bag

2. Packing minimum: 1000pcs/Bag