

DH257 Hall-effect sensor is a temperature stable, stress-resistant, Low Tolerance of Sensitivity micro-power switch. Superior high-temperature performance is made possible through a dynamic offset cancellation that utilizes chopper-stabilization. This method reduces the offset voltage normally caused by device over molding, temperature dependencies, and thermal stress.

DH257 is special made for low operation voltage, 2.5V, to active the chip which includes the following on a single silicon chip: voltage regulator, Hall voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, CMOS output driver. Advanced CMOS wafer fabrication processing is used to take advantage of low-voltage requirements, component matching, very low input-offset errors, and small component geometries. This device requires the presence of unipolar magnetic fields for operation.

The package type is in a Halogen Free version has been verified by third party Lab.

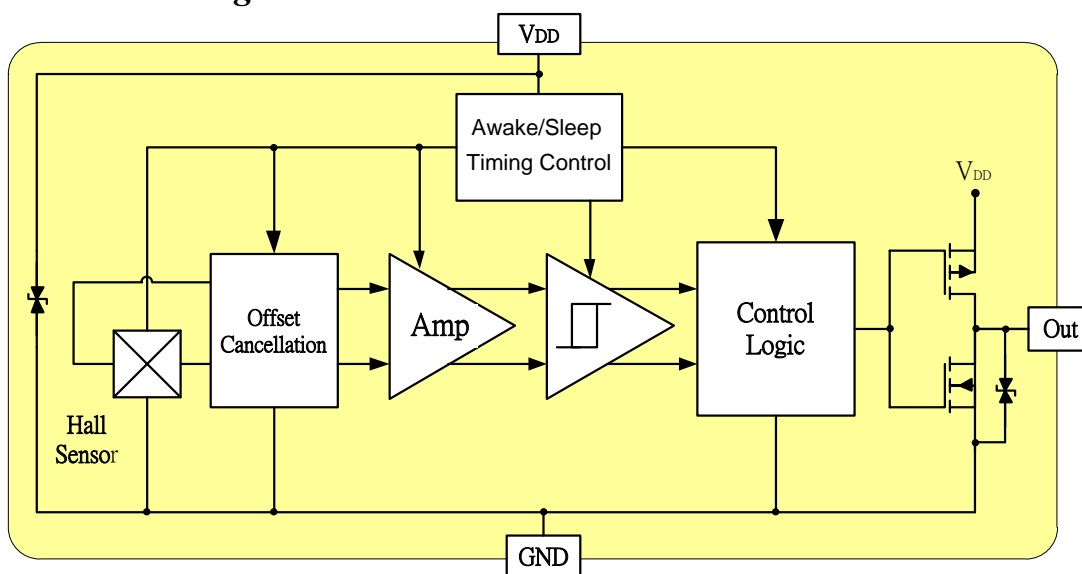
Features and Benefits

- CMOS Hall Effect IC
- Totem-pole output
- Omni polar output switch
- Micro-power consumption
- Low working voltage at 2.5V
- High ESD protection
- RoHS compliant 2011/65/EU and Halogen Free

Applications

- Solid state switch
- Handheld Wireless Handset Awake Switch (Flip Cell/PHS Phone/Note Book/Flip Video Set)
- Magnet proximity sensor for reed switch replacement in low duty cycle applications
- Water Meter
- PDA
- PDVD
- NB
- Pad PC

Functional Diagram



Note: Static sensitive device; please observe ESD precautions. Reverse V_{DD} protection is not included. For reverse voltage protection, a 100Ω resistor in series with V_{DD} is recommended.

DH257, HBM > $\pm 4KV$ which is verified by third party lab.

Absolute Maximum Ratings At($T_a=25^\circ\text{C}$)

Characteristics		Values	Unit
Supply voltage, (V_{DD})		6	V
Output Voltage, (V_{out})		6	V
Reverse Voltage, (V_{DD}) (V_{out})		-0.3	V
Magnetic flux density		Unlimited	Gauss
Output current, (I_{out})		1	mA
Operating temperature range, (T_a)		-40 to +85	$^\circ\text{C}$
Storage temperature range, (T_s)		-65 to +150	$^\circ\text{C}$
Maximum Junction Temp, (T_j)		150	$^\circ\text{C}$
Thermal Resistance	(θ_{JA}) ST/SQ/UA	310/540/206	$^\circ\text{C}/\text{W}$
	(θ_{JC}) ST/SQ/UA	223/390/148	$^\circ\text{C}/\text{W}$
Package Power Dissipation, (P_D) ST/SQ/UA		400/230 /606	mW

Note: Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute maximum-rated conditions for extended periods may affect device reliability.

Electrical Specifications

DC Operating Parameters : $T_a=25^\circ\text{C}$, $V_{DD}=2.0\text{V}$

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage, (V_{DD})	Operating	2.5		5.5	Volts
Supply Current, (I_{DD})	Awake State		1.4	3	mA
	Sleep State		3.5	7	μA
	Average		5	10	μA
Output Leakage Current, (I_{off})	Output off			1	μA
Output High Voltage, (V_{OH})	$I_{OUT}=0.5\text{mA}$ (Source)	$V_{DD}-0.2$			V
Output Low Voltage, (V_{OL})	$I_{OUT}=0.5\text{mA}$ (Sink)			0.2	V
Awake mode time, (T_{aw})	Operating		40	80	μs
Sleep mode time, (T_{sl})	Operating		40	80	mS
Duty Cycle, (D, C)			0.1		%
Electro-Static Discharge	HBM	4			KV

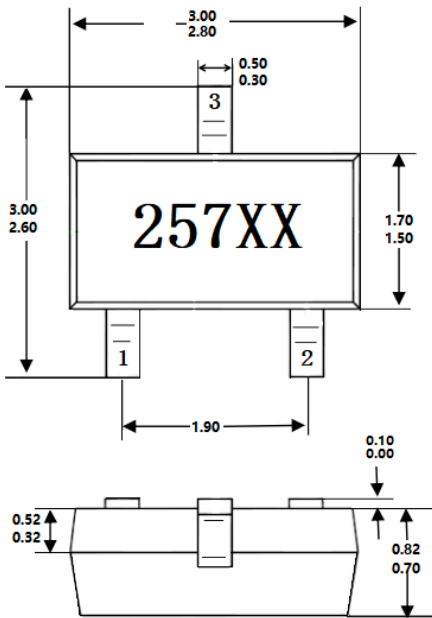
DH257E ST/SQ/UA Magnetic Specifications

DC Operating Parameters : $T_a=25^\circ\text{C}$, $V_{DD}=2.0\text{V}$

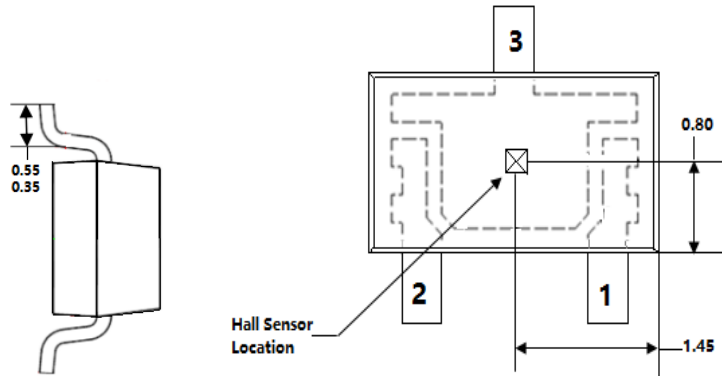
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Operating Point	B_{OP}	S pole to branded side, $B > B_{OP}$, V_{out} On		30	55	Gauss
Release Point	B_{RP}	S pole to branded side, $B < B_{RP}$, V_{out} Off	10	20	45	Gauss
Hysteresis	B_{HY}	$ B_{OPx} - B_{RPx} $		10		Gauss

Sensor Location, package dimension and marking

**ST Package (TSOT-23)
(Top View)**



**Hall Plate Chip Location
(Bottom view)**



NOTES:

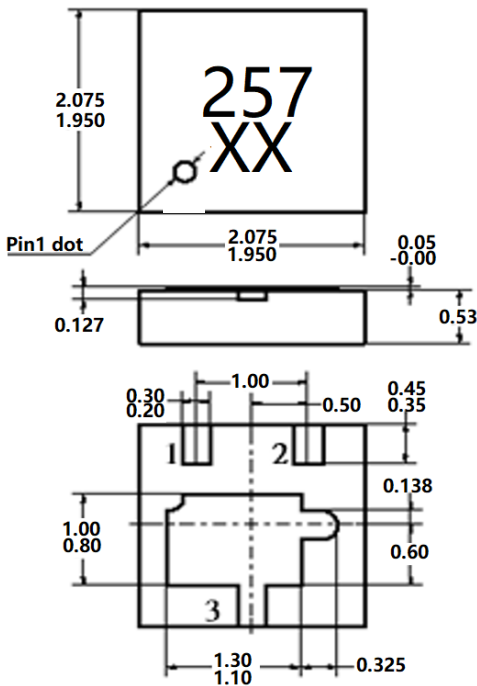
1. PINOUT (See Top View at left:)

- Pin 1 VDD
- Pin 2 Output
- Pin 3 GND

2. Controlling dimension: mm;

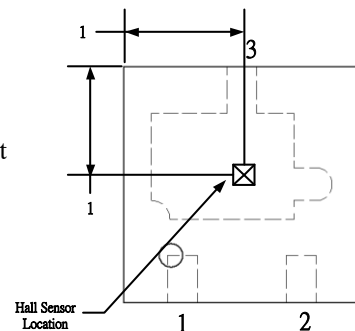
SQ Package (QFN2020-3)

(Top view)



(BOTTOM VIEW)

**Hall Plate Chip Location
(Top view)**



NOTES:

1. PINOUT (See Top View at left)

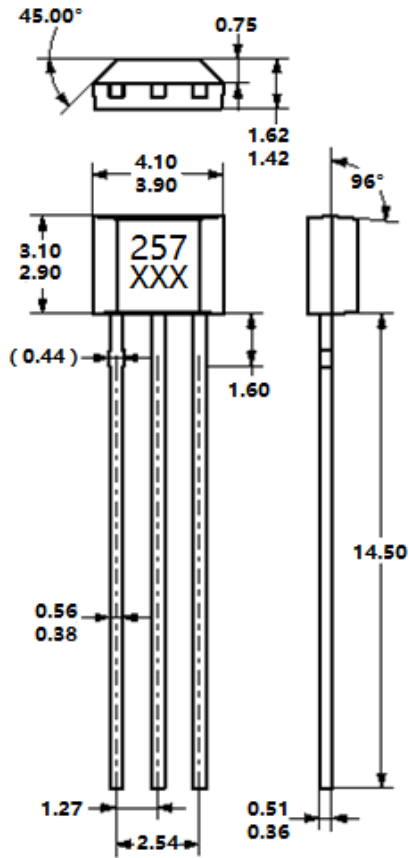
- Pin 1 VDD
- Pin 2 Output
- Pin 3 GND

2. Controlling dimension: mm;

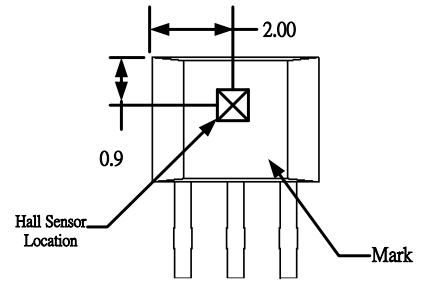
3. Chip rubbing will be 10mil maximum;

4. Chip must be in PKG. center.

UA Package (TO-92S)



Hall Chip location



NOTES:

- 1).Controlling dimension: mm
- 2).Leads must be free of flash and plating voids
- 3).Do not bend leads within 1 mm of lead to package interface.
- 4).PINOUT:

Pin 1	VDD
Pin 2	GND
Pin 3	Output

Output Pin Assignment (Top view)

