

1. Description

ES817 is a gear sensor with adaptive functions, mainly used for automobile gear sensor as well as other speed sensor, the device is open drain output, the core has output short circuit protection circuit.

ES817 contains a 10 bit ADC and logic sampling keeping circuit in the chip. Four bit independent ADC to ensure the stability of the hysteresis. The circuit does not have chopper delay, using a single hall chip, thereby eliminating the alignment problem between devices and gear. Magnetic bias field range of - 500Gs to 4000Gs.

When the signal is sampled, logic circuit judge increase or decrease of magnetic field, when the magnetic field reaches the maximum, began to decrease, and reduced to a certain value, the output is lower; On the contrary, when the magnetic field reaches the minimum, began to increase, and increased to a certain value, the output is high.

2. Product Image



3. Features

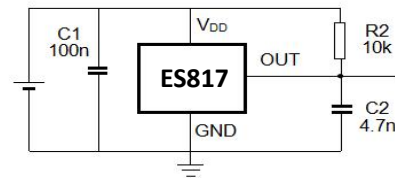
- ◆ On a chip integrated hall sensors
- ◆ Contains a 10 bit ADC
- ◆ Output short circuit protection
- ◆ Self adjusting scope of magnetic field
- ◆ Zero speed detection
- ◆ Circuit can operation at a high speed without chopper circuit
- ◆ AEC-Q100 automotive qualified
- ◆ RoHS Compliant: (EU)2015/863

4. Applications

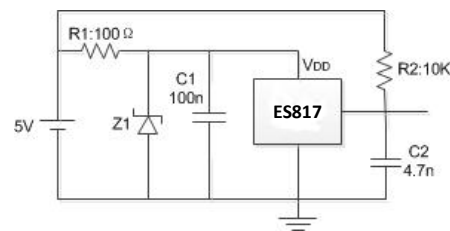
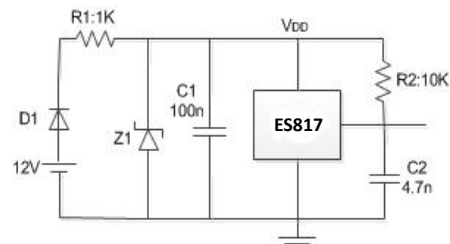
- ◆ Gear sensor
- ◆ Linear coder
- ◆ Direction detection
- ◆ Rotary encoder

5. Typical Application Circuit

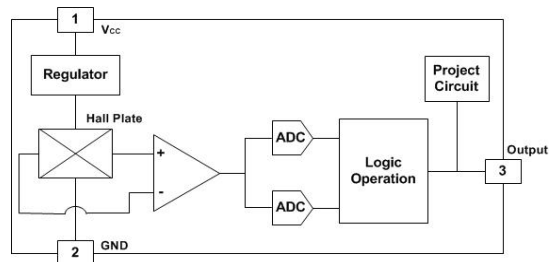
Typical Three-Wire Application Circuit



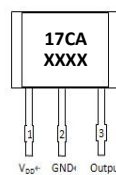
Automotive and Severe Environment Protection Circuit



6. Functional Block Diagram



7. Pin Definitions and Descriptions



Name	P/I/O	Pin #	Descriptions
V _{DD}	P	1	Supply Voltage
GND	P	2	Ground
Output	O	3	Output

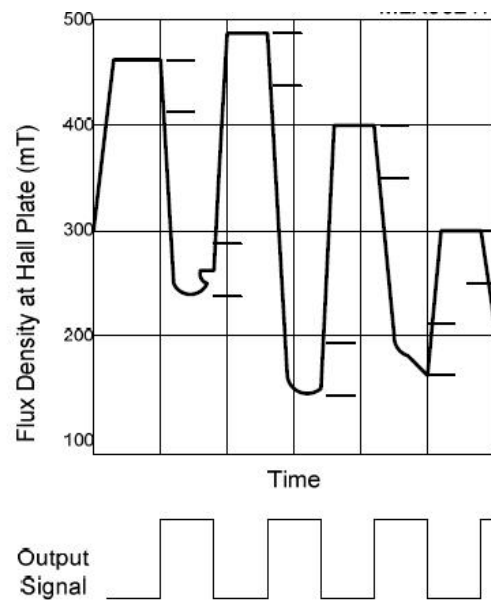
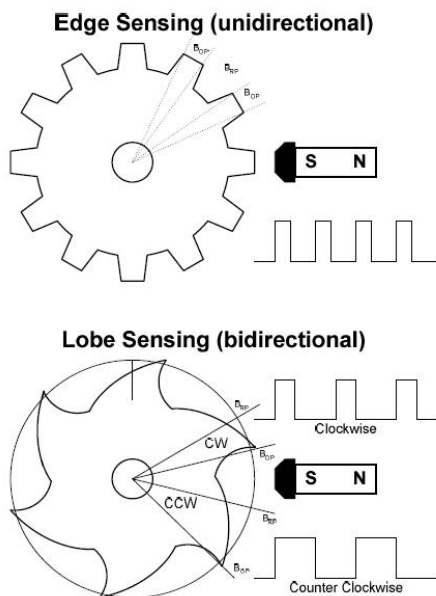
8. Magnetic Specifications

Parameter	Symbol	Min	Typ	Max	Units
Back magnetic bias	B _{BIAS}	-300	-	4000	Gs
Linearity range (V _{DD} = 12V)		50	-	500	Gs
Hysteresis	B _{HYS}	10	20	50	Gs

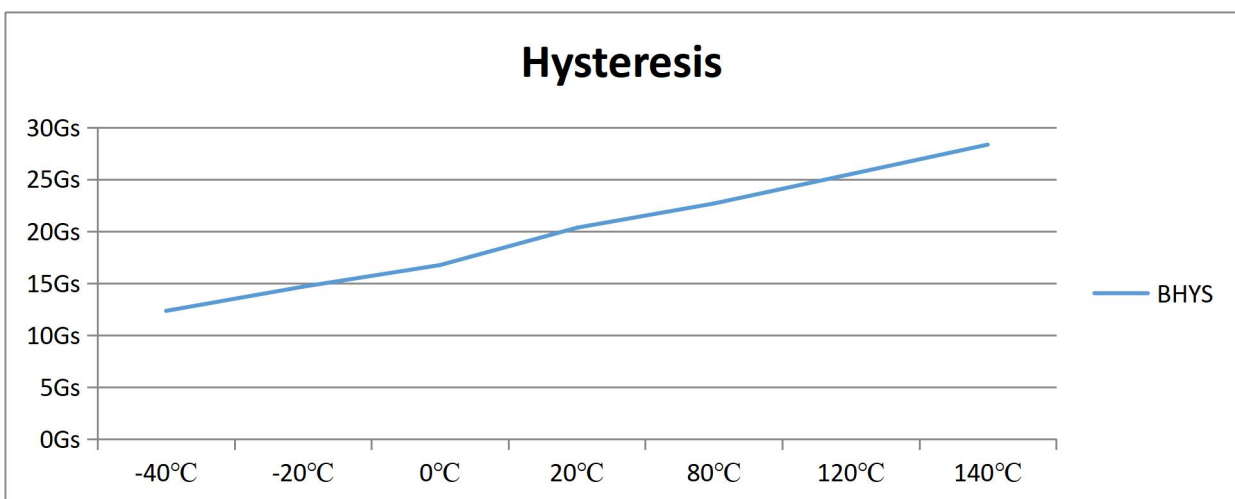
9. DC Electrical Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Operating voltage	V_{DD}		6.5	-	24	V
Operating current	I_{DD}	$V_{DD} = 5V \sim 24V$	1.0	3.5	6	mA
Leak current	I_{LEAK}	$V_{DD} = 5V \sim 24V$	-	-	10	μA
Output Current	I_{OUT}	-	-	-	25	mA
Output saturation voltage	V_{SAT}	$V_{DD} = 12V, I_{OUT} = 25mA$	-	-	600	mV
Output short circuit protection current	I_{FAULT}	-	50		150	mA
Saturation voltage drop	T_R	$V_{DD}=12V R1=880 \Omega C1=20pf$		-	400	nS
Rising time of output	T_F	$V_{DD}=12V R1=880 \Omega C1=20pf$		-	400	nS
Falling time of output	BW		-	-	15	KHz
Operation bandwidth	V_{DD}		6.5	-	24	V

10. Application of Legend

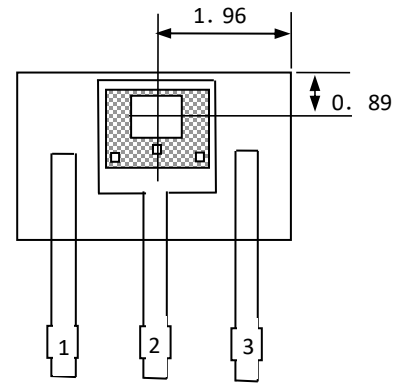
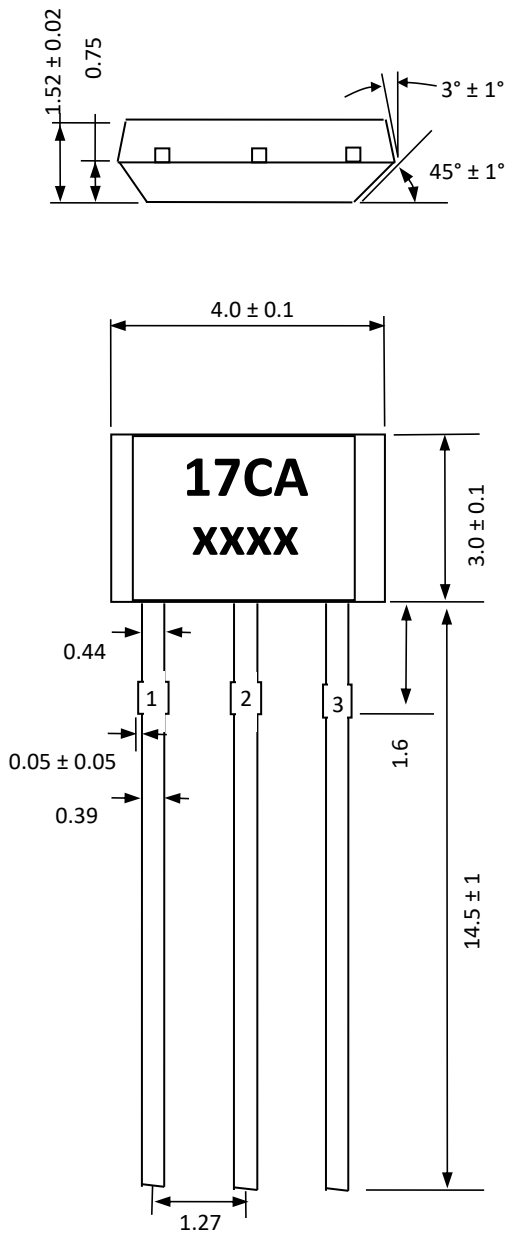


11. Temperature Characteristic Curve

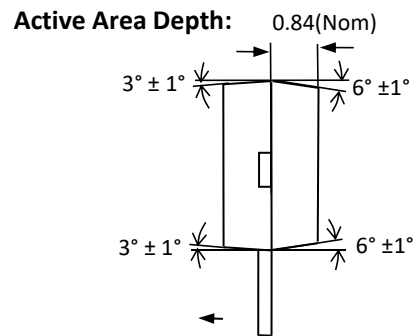


12. Package Information

UA package(TO-92)



Sensor 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 V_{DD}
Pin 2 GND
Pin 3 Output

Marking:

17CA -- Code of Device (ES817);
XXXX -- Production Lot;

13. Ordering Information

Part No.	Package Code
ES817	UA (TO-92S)