

Description

The ECS1412 family, produced with Bi-CMOS technology, is a chopper-stabilized Hall Effect Sensor that offers a magnetic sensing solution with superior sensitivity stability over temperature and integrated protection features.

Superior high-temperature performance is made possible through dynamic offset cancellation, which reduces the residual offset voltage normally caused by device over molding, temperature dependencies, and thermal stress. Each device includes on a single silicon chip a voltage regulator, Hall-voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, and an open-drain output to sink up to 20mA. An onboard regulator permits with supply voltages of 2.5 to 24V which makes the device suitable for a wide range of industrial and automotive applications.

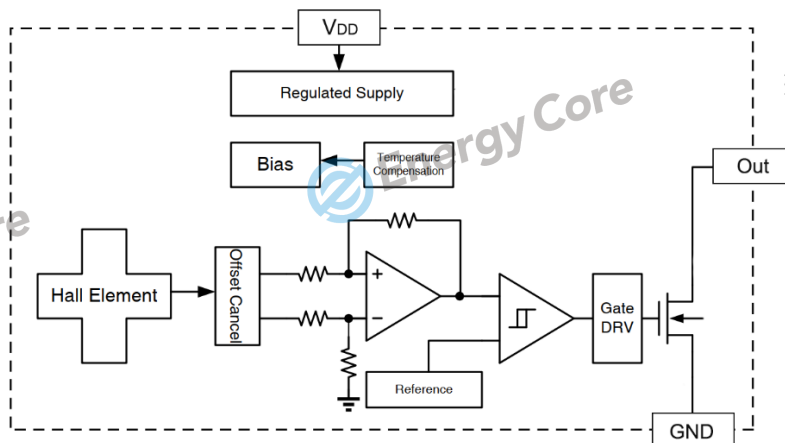
Feature

- ◆ Input voltage range : 2.5V~24V
- ◆ Digital Unipolar Hall sensor
- ◆ High chopping frequency
- ◆ Solid-state reliability

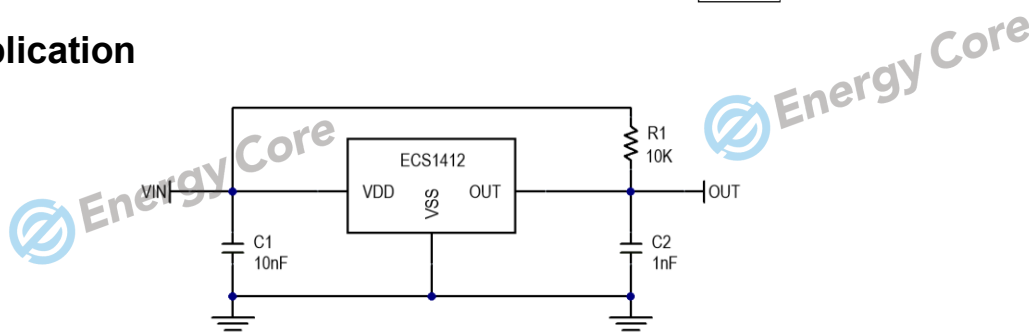
Application

- ◆ Flow meters
- ◆ Valve and solenoid status
- ◆ BLDC motors with sensors
- ◆ Proximity sensing
- ◆ Tachometer

Functional Block Diagram



Typical Application



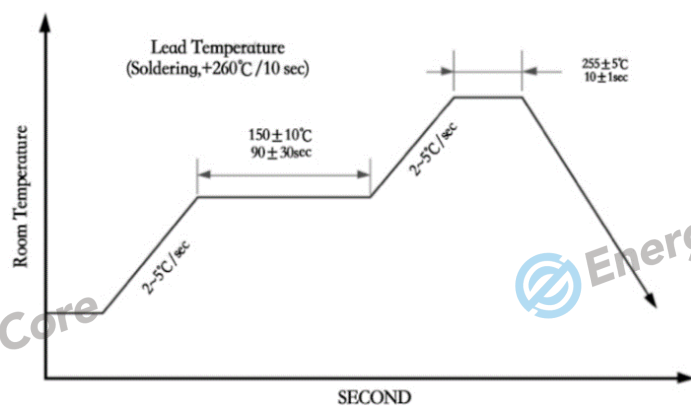
Absolute Maximum Ratings

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Voltage	V _{DD}		-0.5		28	V
Output Voltage	V _{OUT}		-0.5		28	V
Reverse Voltage	V _{DD}				-0.5	V
Operating Temperature Range	T _A		-40		+150	°C
Storage temperature range	T _S		-65		+175	°C
Junction Temperature	T _J		-55		+165	°C

Electrical Characteristics V_{in}=5V, T_A=25°C (unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input Voltage	V _{DD}		2.5	-	24	V
Average Supply Current	I _{DD}	V _{DD} =2.5 to 24 V, T _A =25°C	0.8	1.4	2	μA
Output Leakage Current	I _{QL}	Output Hi-Z		3		μA
Power-on time	T _{ON}			35	50	μS
Output delay time	T _D	B=BRP to BOP		15	25	μS
Output rise time(10% to 90%)	T _R	R1=1K Ω Co=50pF			0.5	μS
Output fall time (90% to 10%)	T _F	R1=1K Ω Co=50pF			0.2	μS
Operate Point	B _{OP}		-155	-120	-85	Gauss
Release point	B _{RP}		-135	-90	-45	Gauss
Hysteresis	B _{HYS}			30		Gauss
Electro-Static Discharge	HBM		3			KV

IR Reflow Curve



YR Soldering Condition

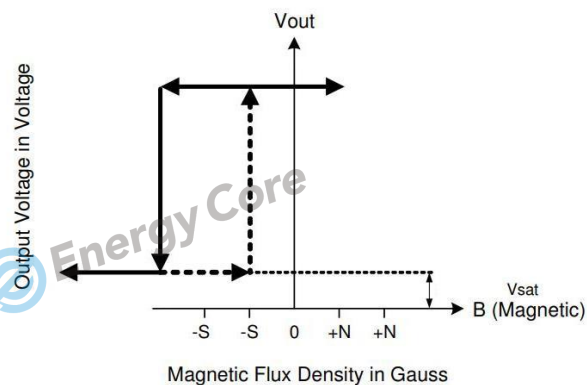
Ordering Information

Part Number*	Package	Top Marking
ECS1412-YR	SOT23-3	412XX

South Pole

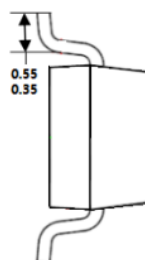
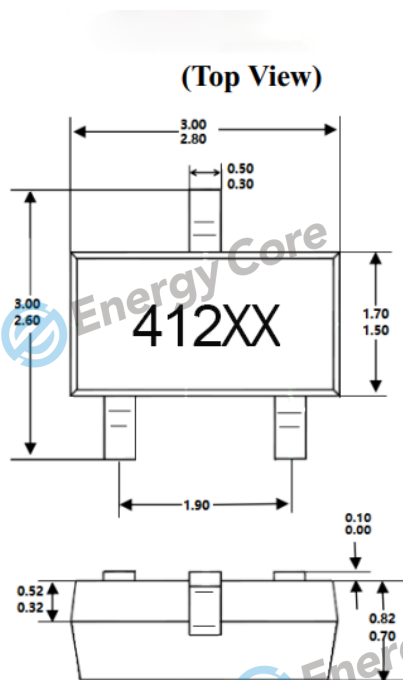


YR Package



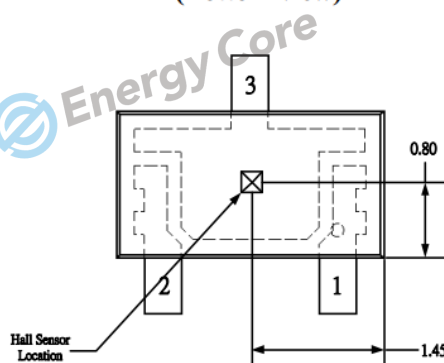
Sensor Location, Package And Marking

YR Package (SOT23-3)



Hall Plate Chip Location

(Bottom view)



NOTES:

- PINOUT (See Top View at left:)
 - Pin 1 VDD
 - Pin 2 Output
 - Pin 3 GND
- Controlling dimension: mm;

Technical drawing of a mechanical part, showing three views: a top view, a side view, and a bottom view.

Top View: A circular disc with four lobes. The central hub has a diameter of $\phi 13$. The outer diameter is $\phi 178.5$. The inner diameter of the central hub is $\phi 177.5$. The thickness of the disc is 1.5.

Side View: A cross-section of the disc. The total height is 10.6. The thickness of the disc is 1.5. The inner diameter of the central hub is $\phi 60.5$. The outer diameter of the central hub is $\phi 59.5$. The diameter of the central hole is $\phi 13$.

Bottom View: A cross-section of the disc. The total height is 10.6. The thickness of the disc is 1.5. The inner diameter of the central hub is $\phi 13$. The outer diameter of the central hub is $\phi 14$. The diameter of the central hole is $\phi 13$.

1. Material: Conductive polystyrene;
2. DIM in mm;
3. 10 sprocket hole pitch cumulative tolerance ± 0.2 ;
4. Camber not to exceed 1mm in 100mm;
5. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole;
6. (S.R. OHM/SQ) Means surface electric