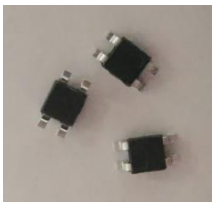
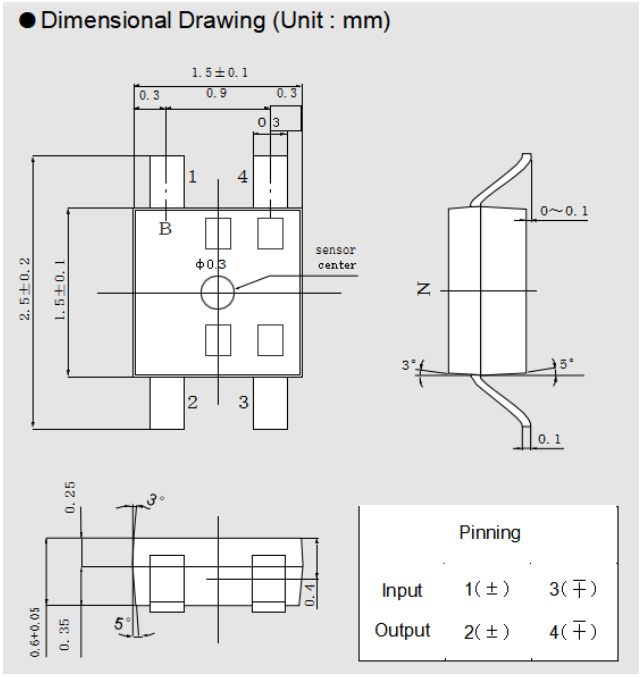
High Performance Instrumentation Quality GaN Hall Sensor X113



Features:

- Instrumentation Quality
- Excellent linearity error : 0.05%
- TC of sensitivity: 30ppm/K
- Max Range : 15T



Typical Applications

- Current and power measurement
- Magnetic field measurement
- Control of brushless DC motors
- Rotation and position sensing
- Measurement of diaphragm

The third-generation semiconductor gallium nitride (GaN) Hall sensor X113, built into a SMT package (SOT-143), has the characteristics of good temperature stability, high linearity and low noise, which is superior to the second-generation semiconductor gallium arsenide (GaAs) sensor technology.

Hall sensor X113 is outstanding for its excellent linearity error 0.05% and very low temperature coefficients 30ppm/K. While the sensor is operated with constant current, the output hall voltage is directly proportional to a magnetic field acting perpendicular to the surface of the sensor.

Maximum Ratings

Parameter	Symbol	Value	Unit
Operating temperature	T_A	– 40 … + 100	°C
Storage temperature	T_{stg}	– 60 … + 130	°C
Supply current	I_1	30	mA
Thermal conductivity, soldered in air	G_{thC} G_{thA}	≥ 2.2 ≥ 1.5	mW/K mW/K

Characteristics (T_A = 25℃)

Parameter	Condition	MIN	TYP	MAX	Unit
Nominal supply current	I_{1N}		20	30	mA
Open-circuit hall voltage $I_1 = I_{1N}$, B = 0.1 T	V_{20}	7.0		9.0	mV
Ohmic offset voltage $I_1 = I_{1N}$, B = 0 T	V_{R0}		0.1	0.3	mV
Active area (in the sensor center)			0.07		mm^2
Linearity of Hall voltage B = 0.1 … 2.0 T	F_L		0.05		%
Input resistance B = 0 T	R_{10}	60		75	Ω
Output resistance B = 0 T	R_{20}	60		75	Ω
Temperature coefficient of the open-circuit Hall-voltage $I_1 = I_{1N}$, B = 0.5 T	TC_{V20}		-30		ppm/K
Temperature coefficient of the internal resistance B = 0 T	$TC_{R10, R20}$		0.08		%/K
Temperature coefficient of ohmic offset voltage $I_1 = I_{1N}$, B = 0 T	TC_{VR0}	1		4	μT/K
Noise figure	F		10		dB
Range		10		15	Tesla

Hall Sensor