



Advanced Sensor Technology

Linear High Precision

Analog Hall Sensors Overview

AST works with High End Analog Hall Sensors

Magnetic field range from a few μ -Tesla up to 10 Tesla or even more!

Measures both strong and weak magnetic fields with high precision

No linearization needed - linearity error typically 0,1 % up to 1,5 T

Two basic platforms:

HE144

- *Resolution in the order mT*
- *Low noise*
- *Wide temperature range*
- *Typical 1000 Ohm and 0,2 Volt/Tesla at 1 mA*

HE244

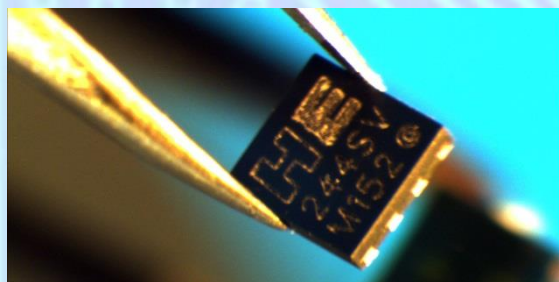
- *Resolution in the order μ T*
- *Very low noise*
- *Very wide temperature range*
- *Typical 500 Ohm and 0,2 Volt/Tesla at 2 mA*
- *Extremely low offset - no offset compensation needed*
- *Very low temperature coefficient*

Package types:

- *SMD, lead frame, wired, ceramic*

Temperature ranges:

- *Standard range: up to 180°C*
- *Extended range: up to 250°C*

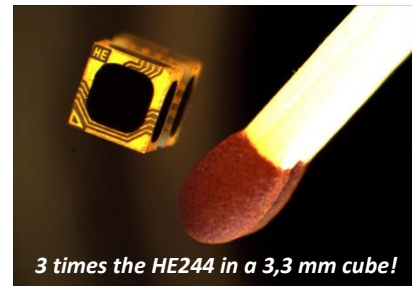


When Performance Matters
Asensor Technology AB, Sweden

3-dimensional Hall sensor

Makes it possible to measure both magnetic field strength and 3D direction using one sensor.

All axes crosses in the same center point. Axes do not influence each other and they are separately accessible without PHE errors.



Some typical applications for our Hall sensors:

- *Magnetic field measurements*
- *Position sensing*
- *Rotation sensing*
- *Movement sensing*
- *3D compass*
- *Pressure measurement*
- *Precise current and power sensors*
- *Multi-sensor and differential usage*
- *Control of motors*
- *Wind generators*
- *Oil drill direction measurement*
- *Measurements in small metal, magnet and ferrite gaps*
- *Sensing low DC current in strong AC current, as for example in windmills*
- *NMR, MRI*

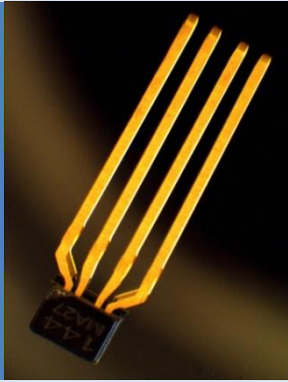


AST can offer custom made packages

- *to improve performance in customer applications*
- *to optimize for customer production*
- *We can for example make packages down to 0,4 mm thickness, ceramic packages for high temp applications, integrate temperature sensors...*

PACKAGE TYPES:

PIN version



HE144P

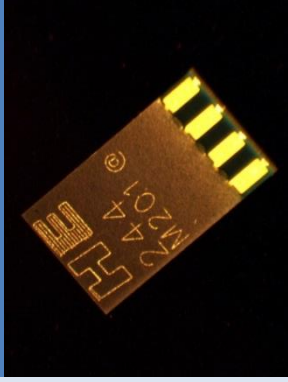
Body size 2,2 x 3,1 mm
Max thickness 0,70 mm
Total length 14,3 mm, pitch 1,27 mm

HE244P

Not in production

SOLDER PAD version

Only on request



HE144S

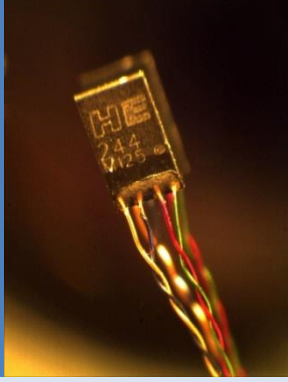
Size 3,0 x 5,0 mm
Max thickness 0,45 mm

HE244S

Size 3,0 x 5,0 mm
Max thickness 0,80 mm

TWISTED WIRE version

Standard or high temp



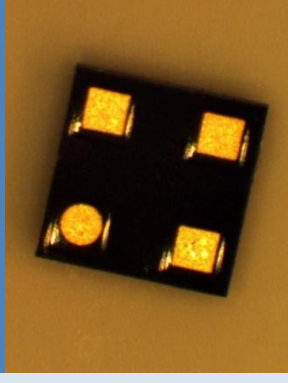
HE144T / HE144HT

Identical to HE144S,
200 mm twisted wires attached
Other lengths on demand

HE244T / HE244HT

Identical to HE244S,
200 mm twisted wires attached
Other lengths on demand

SMD version



HE144SH

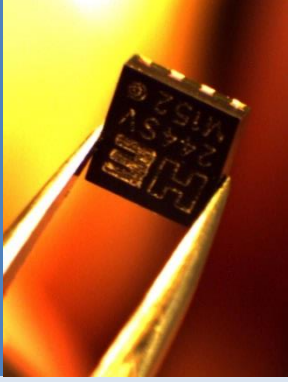
Size 3,0 x 3,0 mm
Max thickness 0,50 mm

HE244SH

Size 3,0 x 3,0 mm
Max thickness 0,70 mm

VERTICAL SMD version

Only on request



HE144SV

Size 3,0 x 3,0 mm
Max thickness 0,70 mm

HE244SV

Size 3,0 x 3,0 mm
Max thickness 1,0 mm

Available in two basic platforms:

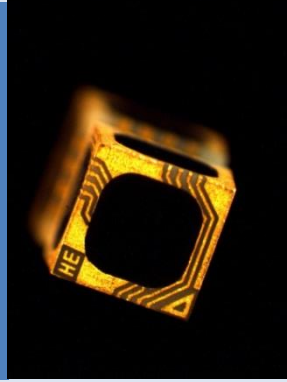
HE144 platform:

HE244 platform:

3D HALL SENSOR PACKAGES:

All 3D Hall sensors are based on the HE244 platform x 3

3D Hall sensor



HE444

Size 3,3 mm - cubic

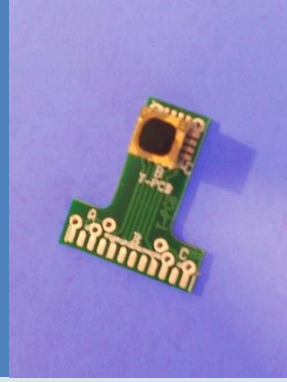
3D Hall sensor with wires



HE444T

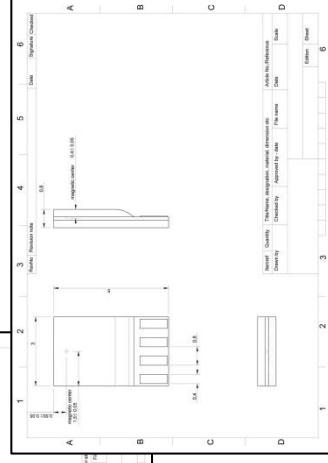
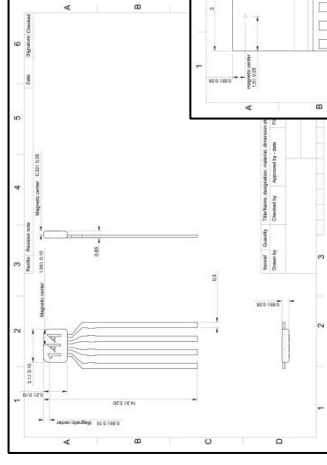
Size 3,3 mm - cubic
200 mm twisted wires attached

3D Hall sensor on T-PCB



HE444 with T-PCB

Size 3,3 mm - cubic
Mounted on T-shaped PCB



Detailed drawings showing the exact position of the magnetic center are available upon request

Electrical specifications		HE144 series	HE244 series
Advised supply current		0,1 to 2,0 mA recommended 1,0 mA*	0,2 to 4,0 mA recommended 2,0 mA*
Open-circuit Hall voltage B=1 T		typical 200 mV @ I=1 mA	typical 200 mV @ I=2 mA
Temperature coefficient of open-circuit Hall voltage B=1 T, @25°C		typical -0,015 %/K @ I=1 mA	typical -0,015 %/K @ I=2 mA
Ohmic offset voltage B=0 T		≤± 12 mV @ I=1 mA typical 10 mV **	≤± 250 μV @ I=1 mA ≤± 500 μV @ I=2 mA
Temperature coefficient of ohmic offset voltage B=0 T		typical 6,7 μT/K @ I=1 mA	typical <± 0,5 μV/K @ I=2 mA
Linearity of Hall voltage at advised currents	B=± 0 to 1 T	≤± 0,2 % typical ≤± 0,1 %	≤± 0,2 % typical ≤± 0,1 %
	B=± 1 to 2,4 T	Limit not specified typical ≤± 0,2 %	Limit not specified typical ≤± 0,2 %
Supply side internal resistance B=0 T		900 to 1250 Ω typical 1000 Ω	450 to 650 Ω typical 500 Ω
Hall side internal resistance B=0 T		900 to 1700 Ω typical 1000 Ω	450 to 850 Ω typical 500 Ω
Thermal conductivity in air		≥ 1,5 mW/K	≥ 1,5 mW/K
Thermal conductivity soldered		≥ 2,2 mW/K	≥ 2,2 mW/K
Bandwidth		Tested up to 200 kHz	Not specified yet

* Optimal signal to noise ratio

** Variations within the same production batch are very small.

Absolute maximum ratings		HE144 series	HE244 series
Supply current		5 mA	10 mA
Operating temperature	P-version	-40 to +170 °C	N/A
	T-version, SH-version	-40 to +125 °C	-40 to +125 °C
	HT-version	-40 to +200 °C	-40 to +200 °C

For low temperature applications, contact us for more information.