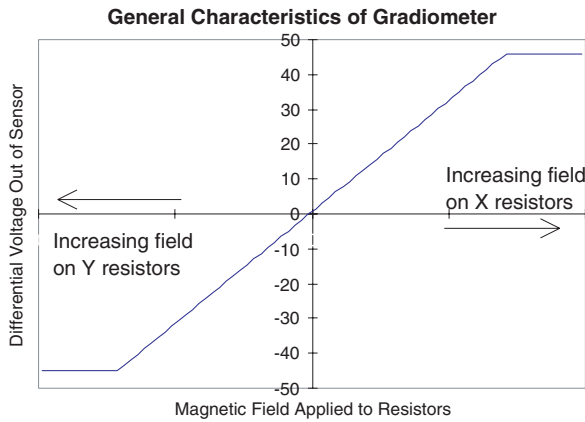


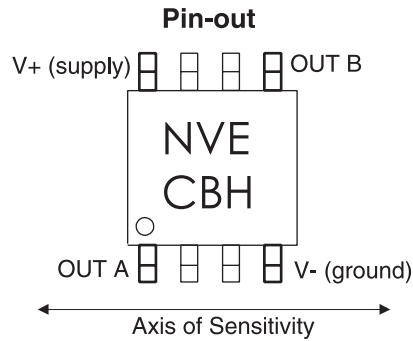
NVE's Giant Magnetoresistive Field Gradient Sensor (Gradiometer) offers unique and unparalleled magnetic gradient sensing capabilities. Two pairs of unshielded GMR bridge resistors provide for directional sensing of small gradients in large and small magnetic fields. The ability to detect only magnetic gradients allows low sensitivity to external sources of constant magnetic noise.

NVE's Sensors have been applied to:

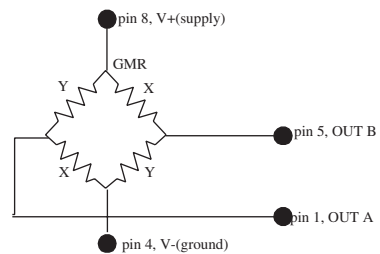
- Ferrous Gear Tooth Detection
- Noise Cancellation
- Motion, Speed, and Position Sensing
- Synchronization
- Anomaly Detection



The figure above is a simulated output from an NVE Gradiometer. The output / gradient correlation shown assumes one pair of resistors is held at zero field. Note the omnipolar output.



Functional Block Diagram



Magnetic Characteristics

Part Number	Saturation Field (Oe)	Specified Linear Range (Oe)		Resistor Separation (mm)	Package ²	Die ³ Size (μm)	Marking
		min	max				
ABH001-00	70	0	40	0.5	TSSOP	651X1231	NVE CBH

General Characteristics of Gradiometers

Property	Min	Nominal	Max	Unit
Input Voltage Range			±10 ⁴	V
Operating Frequency	DC		>1 ⁵	MHz
Temperature Range	-50		150 ⁴	°C
Offset Voltage			4	mV/V
Nonlinearity			4 ⁶	% (unipolar)
Hysteresis			15 ⁶	% (unipolar)
Single Resistor Sensitivity		.090		%R/Oe
Max Output	35 ¹			mV/V
TCR		+0.30		% / K
TCOI		-0.28		% / K
TCOV		-0.40		% / K
Bridge Resistance		1.2		kΩ
Off-axis Characteristic		Cos. β ⁷		
ESD		400		V pin to pin HBM

Notes:

1. The output is differential. The use of a common ground for power and output will result in an output that is not within specifications.
2. For SO8 package dimensions, see package dimension bulletin.
3. Sensors can be provided in die/wafer form by special request.
4. See Fig 1.
5. GMR has been tested to 1 MHz.
6. Output measured at bipolar saturation. Normal unipolar use will result in significantly smaller values.
7. Beta (β) is any angle from sensitive axis.