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Product News

Isolators Named to Hot 100

NVE's new IL500-Series digital isolators have been named a **Hot 100 Product of 2008** in the latest issue of *EDN*.

According to *EDN*, the prestigious annual listing is compiled by its editors and highlights the electronics industry's most innovative and significant products.

Award-winning IL500 digital isolators pack in as many as four channels and operate as fast as 2 Mbps.

Designed to be cost-effective optocoupler replacements, IL500-Series isolators operate at two megabits per second, offer a dc-correct design, and have an external synchronization option on certain models.

Key specifications are:
- 2 Mbps; 10 ns PWD
- DC Correct
- External Clock Option (IL510; IL515)
- Output Enable (IL510; IL514; IL515)
- 1, 2, 3, or 4 Channels
- -40°C to 85°C Temp. Range
- 2.5 kVrms Isolation (1 min.)
- UL1577 and IEC 61010-2001 Approved
- MSOP and SOIC Packages

<More About Award-Winning IL500 Isolators>
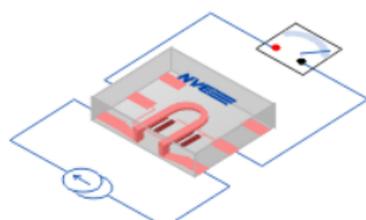
Buy Online $9.95 shipping

Current Sensor

The new AAV003-10E is a highly linear, extremely low hysteresis GMR current sensor with an on-chip current strap. A GMR bridge sensor element close to the strap senses the current. The output of the bridge voltage is bipolar and proportional to the current through the strap over a -80 to +80 mA input range.

Typical sensitivity is a remarkable 1 mV/mA with a 12 V supply and no amplification.

The parts come in an ultraminiature 2.5 mm by 2.5 mm 6-pin TDFN package.

AAV003-10E Current Sensor

AAV003-10E current sensors are targeted at circuit board current sensing for process control and instrumentation. Their sensitivity makes them ideal for 4-20 mA current loop detection.

<More About NVE's New Current Sensors>

Buy Online $9.95 shipping

Application Corner

Noncontact Current Measurement Using Analog Sensors
By **Jay Brown**
Vice President, Sensors

In addition to the new current sensor covered above, AA- or AAH-Series GMR magnetometers can determine dc current by measuring the magnetic field from a circuit board trace without a direct connection. This method can be used to measure large currents, and the accuracy is generally adequate for overcurrent protection.

The axis of magnetic sensitivity is along the package, so the configuration shown below is often used, with the current-carrying trace on the opposite side of circuit board from the sensor:
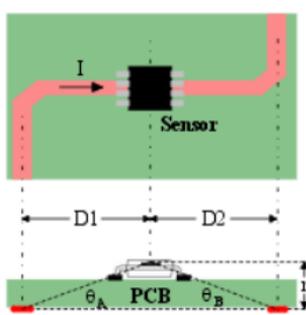
The magnetic field at the sensor element is approximated as:

$$H = \frac{I\,(\cos\theta_A + \cos\theta_B)}{4\pi r}$$

Where I is the current in conductor, r is the distance of the sensor from the center of the conductor, and H is the magnetic field at the sensor element in A/m using SI units (1 A/m = 0.0126 Oe in air).

For example, with a SOIC-packaged sensor on a 1.6 mm thick PCB with 3 oz plated copper, r = 2.94 mm. If D1 = D2 = 10 mm, the critical field strength at the sensor for a 10 A overcurrent would be 519 A/m or 6.54 Oe. A circuit can easily be designed with an AA002-2 sensor and a comparator to switch at 6.54 Oe or 10 A.

For more information on current measurement designs, including a detailed circuit for this example, see Application Bulletin No. SA-1 (.pdf). You can also download the recently updated Current Field Calculator (.xls).

<More Sensor Applications>

Sensor Part Numbering

NVE sensor part numbers have five alphanumeric fields as summarized below:

AA H 004 - 00 E

Base Part	Part Subtype
AA = Analog output magnetometer	(meaning depends on Base Part)
AB = Analog output gradiometer	
AD = Digital switch	
AF = Low-voltage digital switch	Package Type
AG = Evaluation kit or PCB	00 = MSOP8
AK = Digital output gradiometer	01 = Bare die
BA = Custom analog sensor	02 = SOIC8
BD = Custom digital sensor	07 = Non-IC such as eval. kit or PCB
DB = Digital signal processing IC	10 = 2.5 mm × 2.5 mm TDFN6
DC = Voltage regulator	11 = 3 mm × 3 mm PLLP6
DD = Analog signal processing IC	12 = 4.9 mm × 6.0 mm TDFN SO8

GMR Material	
Blank = Standard material	Part Package
H = High-sensitivity, high-temp. multilayer	Blank = Lead (Pb)
L = Low hysteresis, high-temp. multilayer	E = RoHS
V = Spin-valve material	