

IsoLoop®

The Opto Alternative

Isolated High Speed Digital Couplers and Transceivers

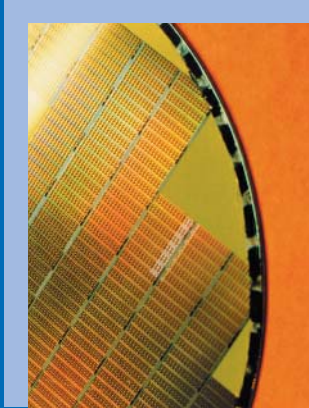


Figure 1

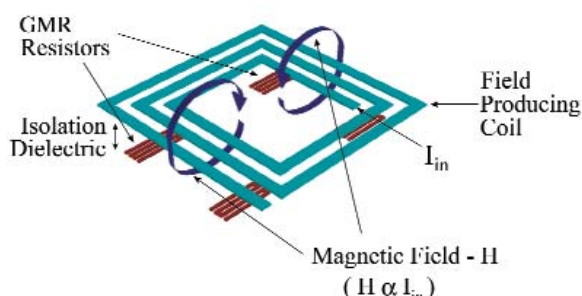


Figure 2

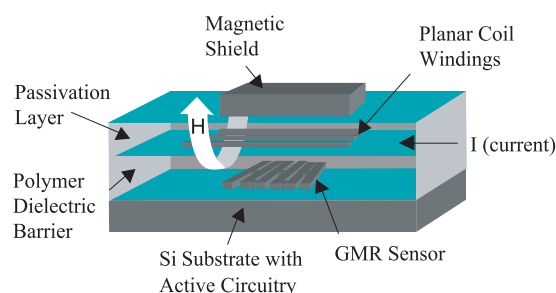
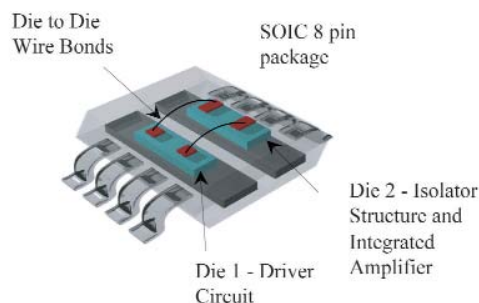


Figure 3



IsoLoop[®] is the trademark name for NVE's family of isolation products. IsoLoop devices are created from the combination of micro-machined coils fabricated over resistors made from giant magnetoresistive materials, or GMR. Highly dense, multi-channel, isolated interfaces can be fabricated when this semiconductor based isolation structure process is combined on-chip with integrated circuits.

The IsoLoop's unique resistors are fabricated from a thin film GMR material that has a bi-stable resistance value. Figure 1 illustrates that a current flowing through the on-chip coil generates a magnetic field. A change in the direction of the current switches the state of the GMR resistor bridge between its high and low value to create a logic 1 or 0. Power consumption is minimized because the IsoLoop requires a very short current pulse (~2 nsec.) to alter the resistor state.

The integrated "building block" IsoLoop structure cross section illustrated in Figure 2 includes a shield that protects the resistor bridge from external fields and also serves to concentrate the magnetic flux created by the coil current. This building block isolator is then used to build a wide range of standard isolated logic functions using the packaging technique shown in Figure 3. IsoLoop logic products include a variety of multi-channel and bi-directional logic buffers as well as a family of integrated, isolated transceivers. New products and configurations are featured on our web page at www.IsoLoop.com.

Advantages

In high speed data transmission systems, data integrity can only be maintained where there is low pulse width distortion. The IsoLoop[®] family of products has a 2 ns pulse width distortion specification giving them an unsurpassed performance advantage in this category. Propagation delays are less than 10 ns and propagation delay skews are 2 ns. No other commercially available isolator can meet these stringent specifications.

True logic functions are achieved in almost the same sized packages as the original non-isolated logic function, without the need for extra surrounding components required to complete the desired function. Only two additional power supply pins, needed on the isolated side, add to the total pin count. Small size, high performance, and low cost make the IsoLoop[®] technology highly versatile and adaptable for isolation applications.

Applications

IsoLoop products provide unsurpassed performance for today's high speed isolation requirements. IL710, IL485 and IL485W have been approved for PROFIBUS applications. The IL422 full-duplex transceiver provides the same performance as the IL485: low distortion and low propagation delay. The IL485 has 35 Mbaud transmission capability and the IL422 has 25 Mbaud capability, both at 10%PVD. The multi channel IL715, IL716 and IL717 devices offer the industry's highest available level of integration in any isolators currently available. The IL716 and IL717 offer bi-directional capability which is ideal for ADC interfaces, PGA gain control loops and multi-phase control systems. IsoLoop products have been used in industrial process control, instrumentation, telecommunications, automotive, medical, audio and other varied applications.

Regulatory Approval

UL1577: File # E207481
IEC6101-1: Report # 607057

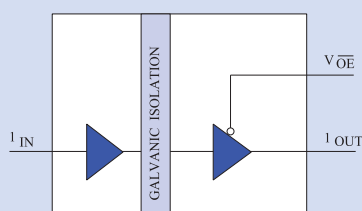
IL710, IL711 and IL712

Features:

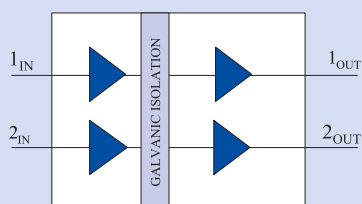
- 110 MBaud Data Rate
- 2 ns Pulse Width Distortion
- 10 ns Propagation Delay
- 20 kV/ μ s Transient Immunity
- 2500 Vrms Isolation (1 min.)
- Dip & SOIC Packages

Applications:

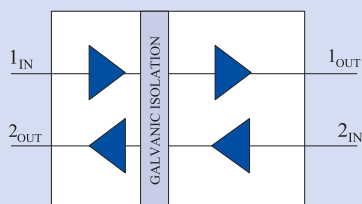
- Digital Fieldbus Isolation
- High Speed Data Transmission



IL710



IL711



IL712

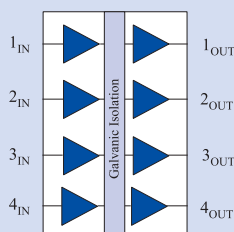
IL715, IL716 and IL717

Features:

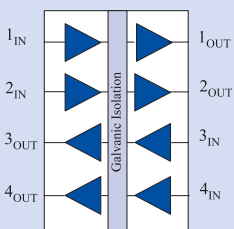
- 110 MBaud Data Rate
- 2 ns Pulse Width Distortion
- 10 ns Propagation Delay
- 2 ns Propagation Delay Skew
- 20 kV/ μ s Transient Immunity
- 2500 Vrms Isolation (1min.)
- 0.15" and 0.3" SOIC Packages

Applications:

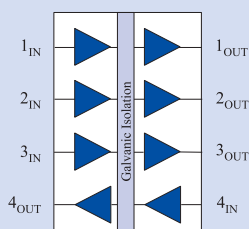
- Isolated ADCs, PGAs, DACs
- Computer Peripheral Interfaces
- Noise Reduction in Digital Systems



IL715



IL716



IL717

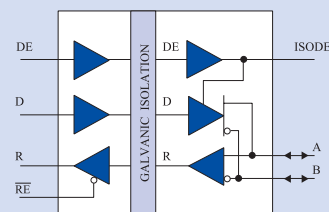
IL485, IL485W and IL422

Features:

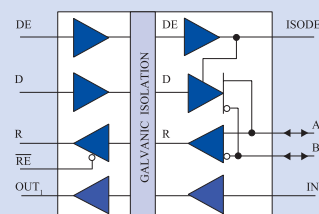
- 35/25 MBaud Data Rate
- 25 ns Propagation Delay
- 2500 Vrms Isolation (1min.)
- 20 kV/ μ s Transient Immunity
- 0.3" SOIC Package

Applications:

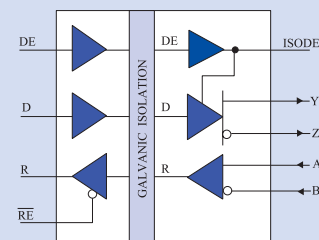
- PROFIBUS/RS 485
- RS 485 Systems
- Multipoint Data Transmission
- **IL485W** has an additional Isolated Data Channel
- **IL422** is a Full Duplex Transceiver.



IL485



IL485W



IL422

IsoLoop®

The Opto Alternative

NVE Corporation **An ISO 9001 Certified Company**

NVE Corporation designs and manufactures high technology semiconductor components. NVE has the unique capability to combine leading edge Giant Magnetoresistive (GMR) materials with integrated circuits to create some of the industry's most innovative electronic components. NVE is a world leader in GMR research and in 1994 introduced the world's first products using GMR material. The first IsoLoop® product was developed in 1997 and commercially introduced in 2000. NVE's GMR technology is currently licensed to world-class semiconductor manufacturers developing MRAM products. In addition to the IsoLoop® family isolators and MRAM technology, NVE's product portfolio includes Magnetic Field Sensors for positions measurement, wheel speed and current sensing.

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