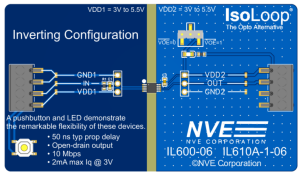
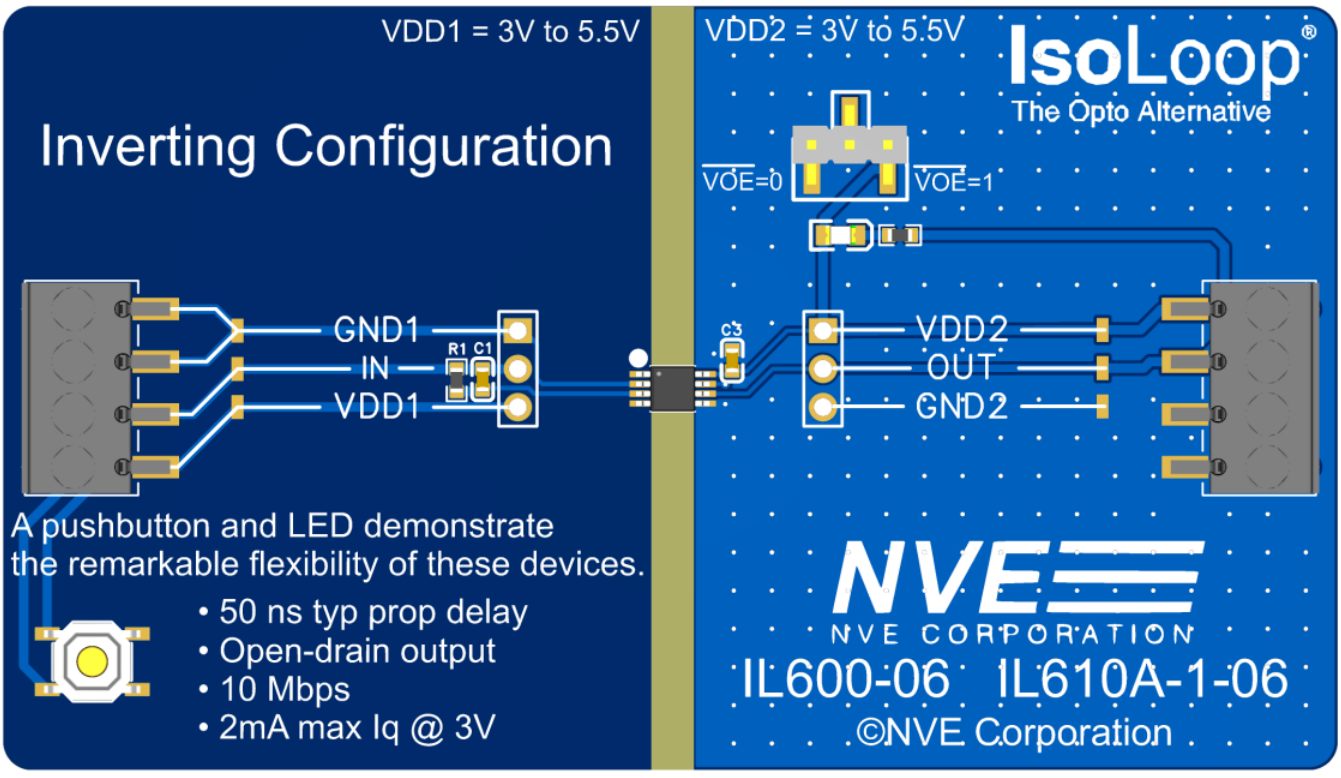


Alcom IL610A-1E IsoLoop Isolator Evaluation Board Instruction Manual

Alcom IL610A-1E IsoLoop Isolator Evaluation Board



Contents

About These Evaluation Boards

The 2 x 3.5-inch (50 x 90 mm) boards contains the unique IL610A-1E passive-input, open drain MSOP8 isolator. A pushbutton and LED demonstrate the remarkable flexibility of these devices. The evaluation board also has an input resistor, input capacitor, power-supply bypass capacitor as recommended, as well as screw connections, test pads, and provisions for header pins.

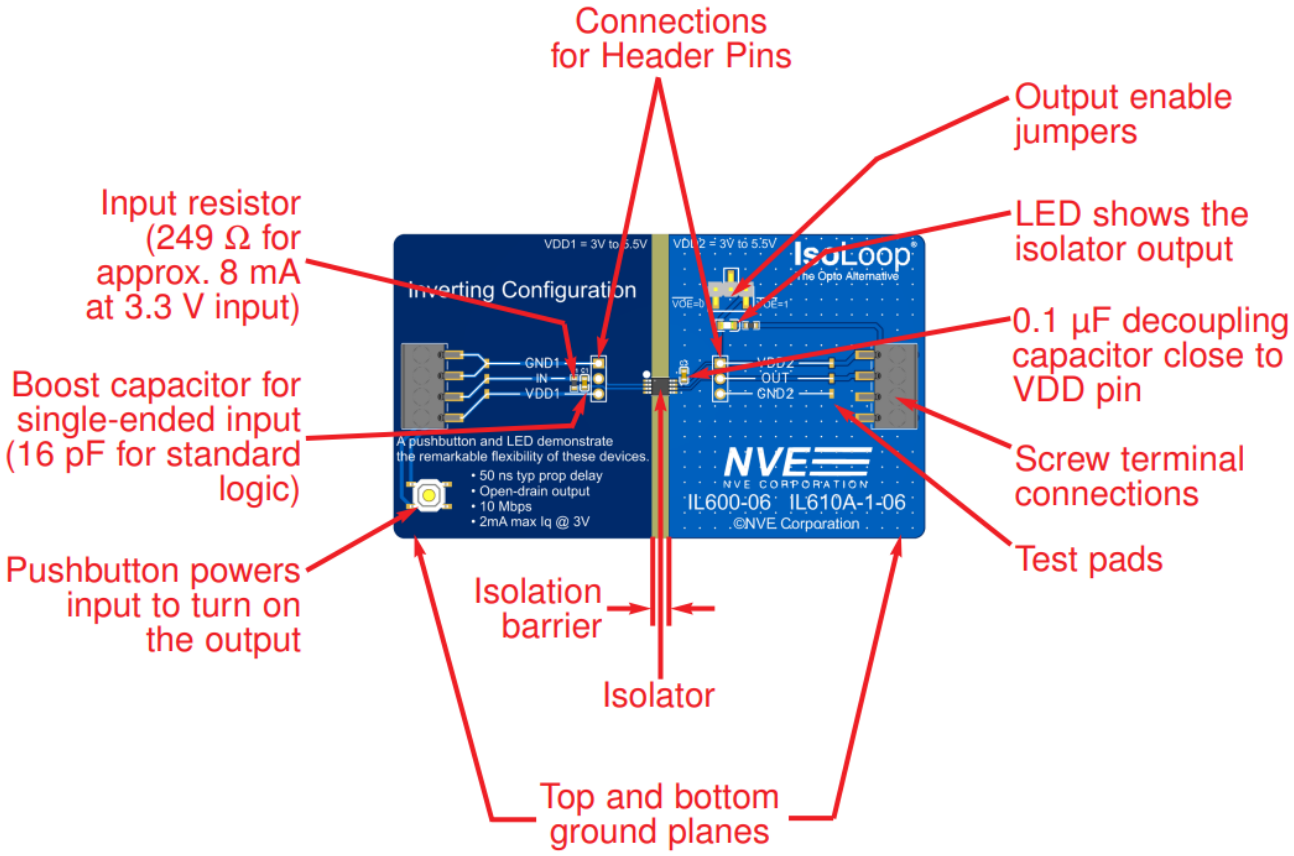
Award-winning IL600 and IL600A Isolators provide unique passive inputs for flexibility similar to LED-input optocouplers but with better performance and higher package density. The devices are manufactured with NVE's patented IsoLoop spintronic Giant Magneto resistive (GMR) technology for small size, high speed, and low power.

Available MSOP packages are the world's smallest isolators.

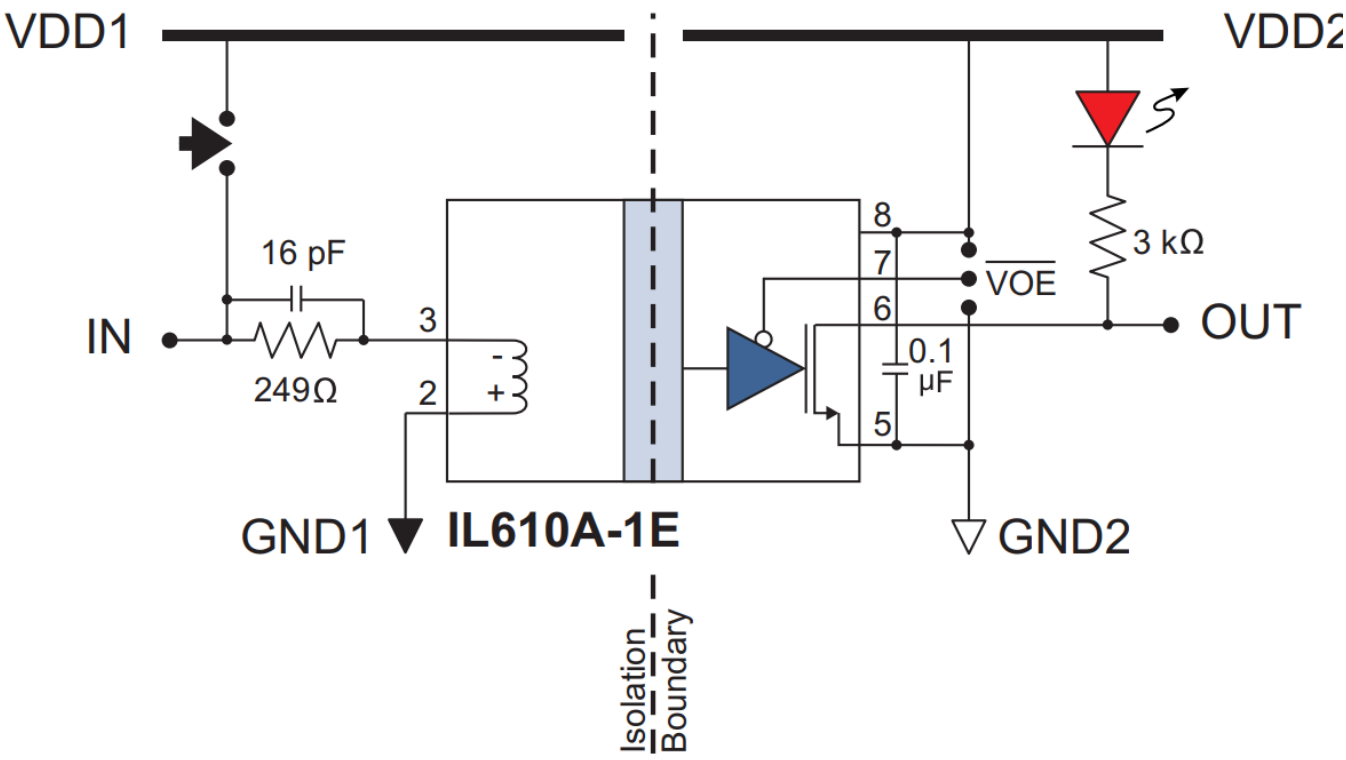
IL600-Series Specification Highlights

- Up to 100 Mbps Data Rate
- Wide Input Voltage Range
- Open Drain or CMOS Outputs
- Fail-Safe Output
- 3.3 V or 5 V Power Supply
- No Input-Side Power Supply Required
- 100 ps Pulse Jitter
- Up to 300 kV/µs CMTI (IL61xCMTI versions)
- Low Power Dissipation
- Minimal EMC Footprint
- 2.5 kVrms Isolation
- 44000 Year Barrier Life
- IEC 60747-17 (VDE 0884-17):2021-10 Certified and UL1577 Approved

Evaluation Board Layout



Evaluation Board Schematic

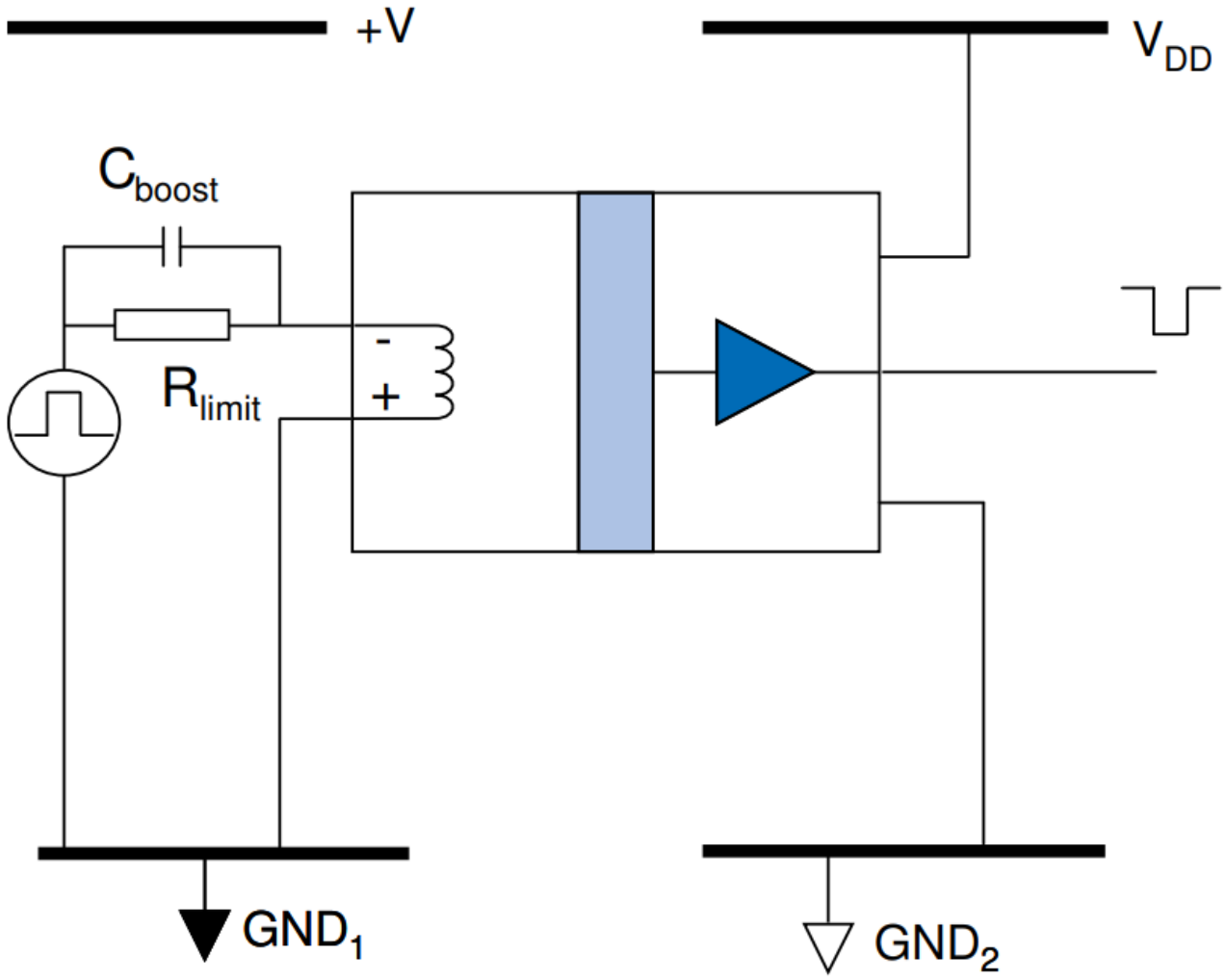


Device Operation

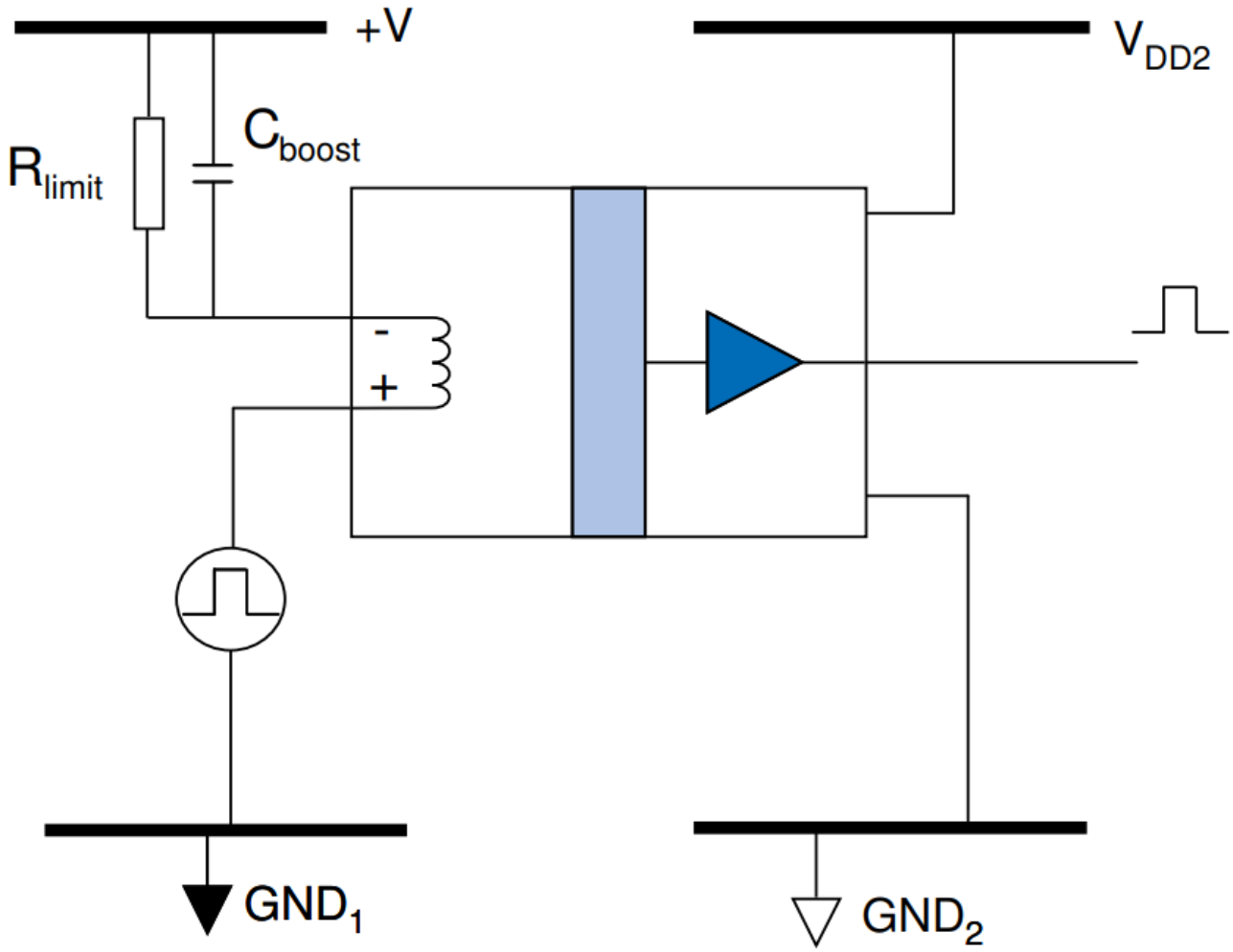
IL600-Series Isolators are current mode devices. Changes in current flow into the input coil drive output logic state changes. The output is high with no signal present. Current flow from In- to In+ switches the output low. The worst-case logic low threshold current is 5 mA. An input current of at least 8 mA ensures fail-safe operation, meaning the output powers up in the correct state. The absolute maximum coil current is 25 mA.

The inputs can be configured as either inverting , non-inverting, or differential, as shown in the following diagrams:

Inverting Configuration



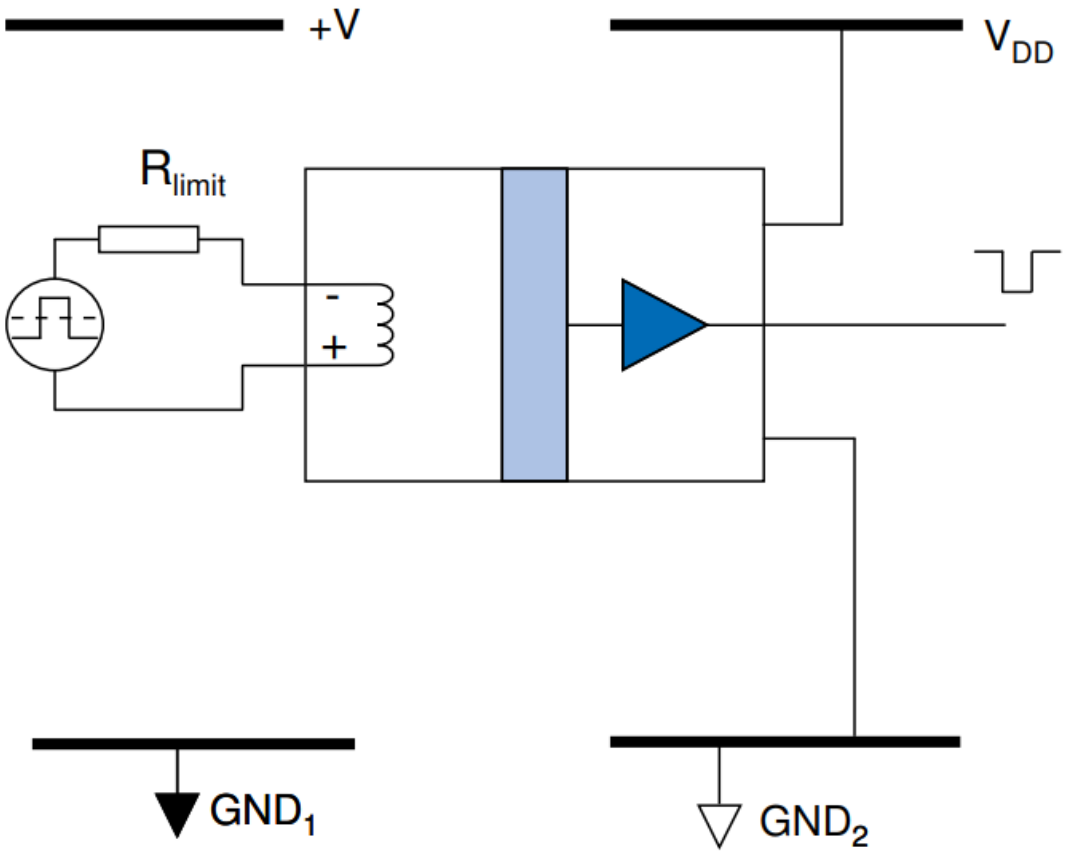
Non-inverting Configuration



For single-ended operation (that is, the coil current does not reverse), a boost capacitor in parallel with the current-limiting resistor is used to induce bidirectional coil current. For standard logic signals with rise times less than 10 ns, a 16 pF boost capacitor is recommended. The capacitor should be larger for slower rise time inputs.

The isolators can also be used with differential inputs as shown in the figure at right. No boost capacitor is needed if the coil current reverses in this configuration. Unlike optocouplers, the input current can be negative without reverse bias protection.

Differential Configuration



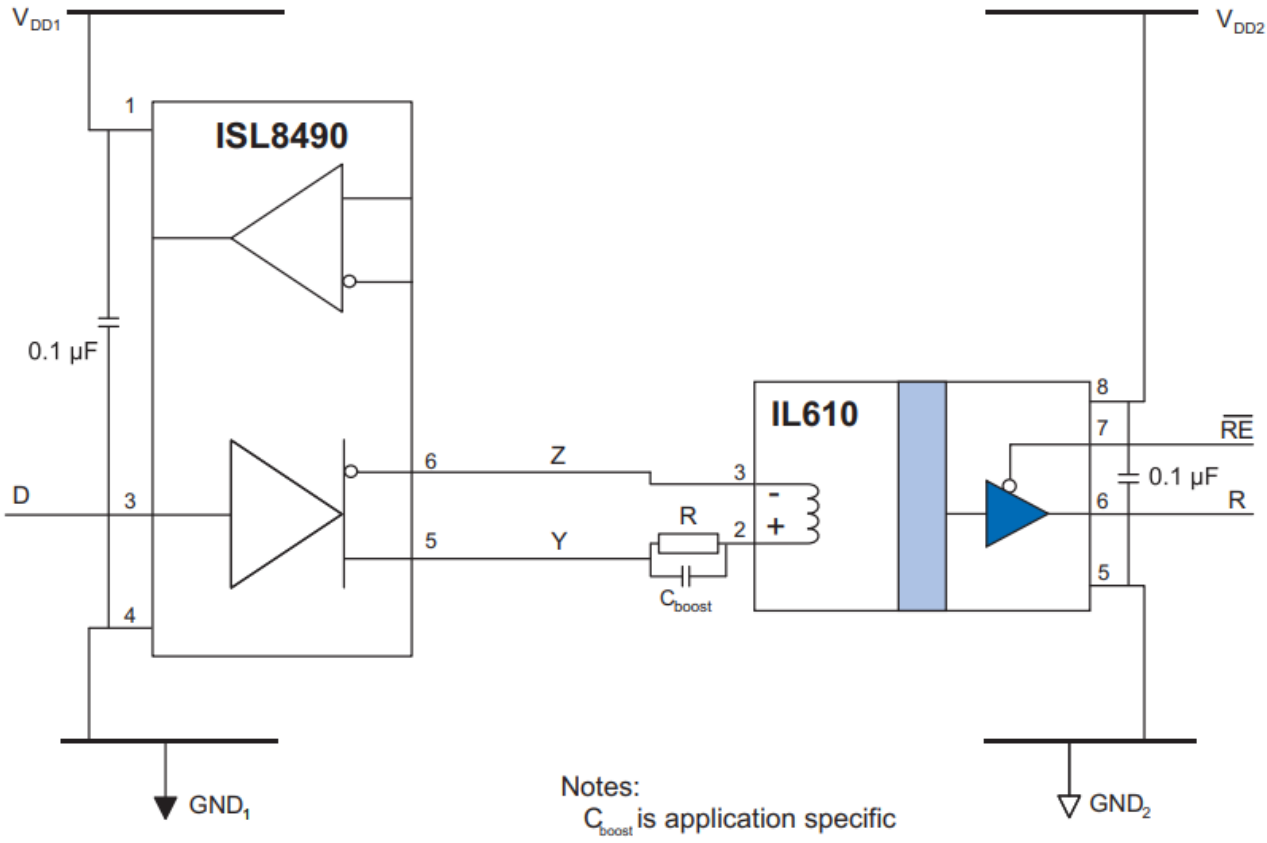
There is no limit to the input voltage as long as the input current is appropriately limited.

Illustrative Applications

Simple RS-485 Receiver

An IL610 can be used as a simple isolated RS-485/RS-422 receiver.

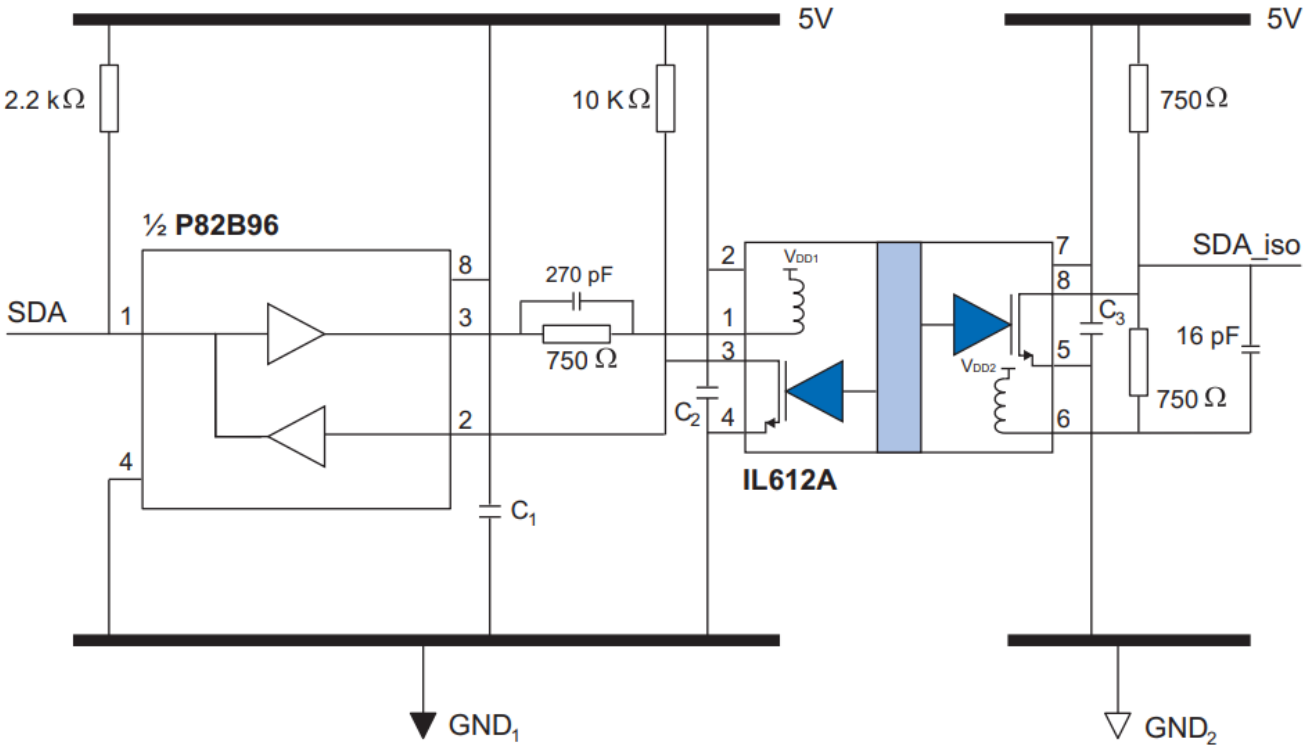
Cabling is simplified by eliminating the need to power the receiving board input side. No current-limiting resistor or capacitor is needed for a single receiver because it draws less than the driver maximum current. Termination resistors are usually unnecessary because the 85 Ω typical coil resistance is similar to cable impedances.



Isolated I²C Using IL612A

This circuit provides bidirectional isolation of I²C bus signals with no restrictions on data rate and none of the I²C bus latch up problems common with other isolation circuits.

The SDA section is shown here; the SCL section is similar, and uses the other half of the P82B96.



Notes:
C1, C2, and C3 are 0.1 F
Resistor values change for 3.3 V operation

IL600-Series Isolators

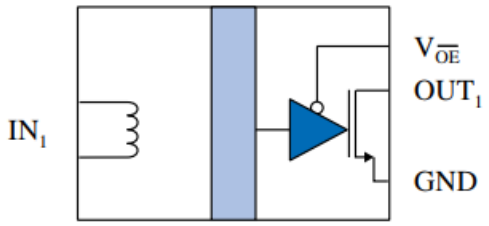
Award-Winning Flexibility

Award-winning IL600 and IL600A Series Isolators provide unique passive inputs. The IL600-Series has CMOS outputs and the IL600A-Series has open-drain outputs.

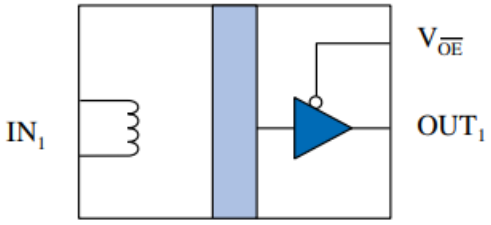
Unlike other isolators, the IL600 and IL600ASeries can be configured for inverting or noninverting inputs.

IL61xCMTI versions have ultra-high common mode transient immunity (up to 300 kV/µs) and an extended supply range of up to 6.6 V, making them ideal for FET drivers and H-bridges.

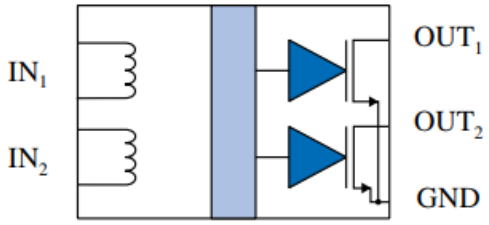
IL600 and IL600A-Series Isolators are available in PDIP, SOIC, and unique MSOP packages. Parts are also available as bare die for chip-on-board assembly.



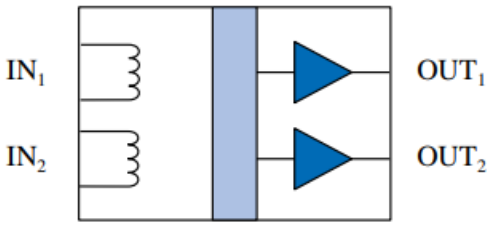
IL610A



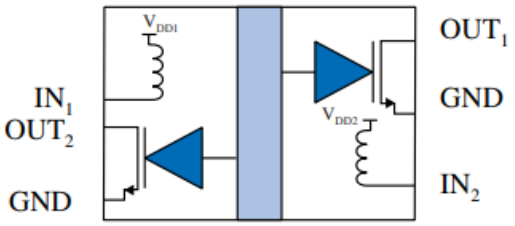
IL610



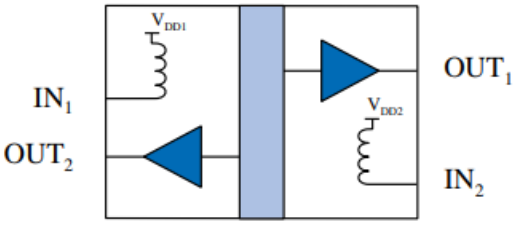
IL611A



IL611



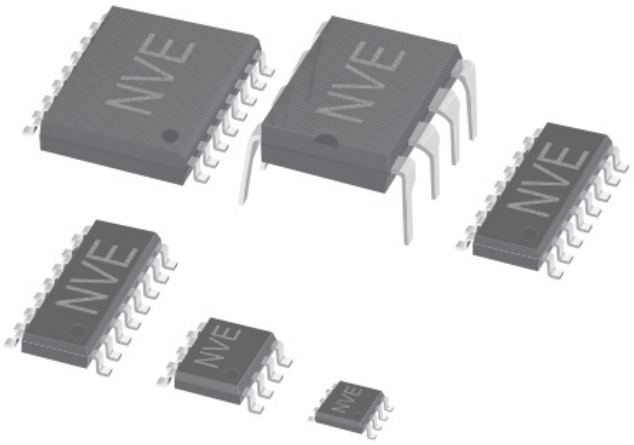
IL612A

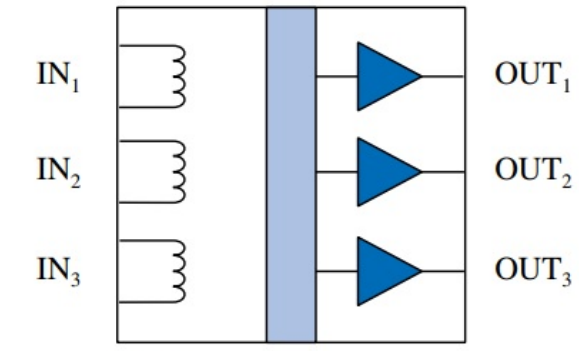


IL612

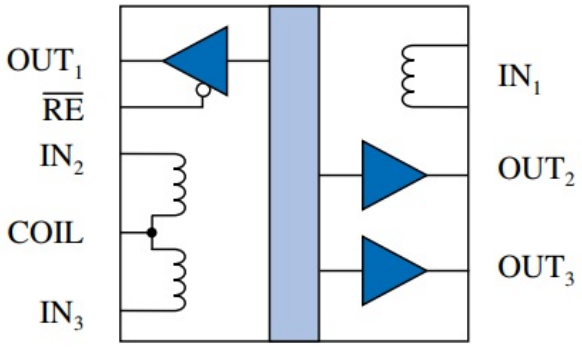
Applications

IsoLoop Isolators are faster and more reliable, than optocouplers. Popular applications include optocoupler replacements, differential line receivers, FET drivers, and H-bridges.





IL613



IL614

Parameter	Min.	Typ.	Max.	Units
Data Rate (A-Series)	100 (10)			Mbps
Pulse Width Distortion		3	5	ns
Propagation Delay		8	15	ns
Propagation Delay Skew		4	6	ns
Pulse Jitter			100	ps
Transient Immunity	15	20		kV/µs
Temperature Range	–40		+85	°C

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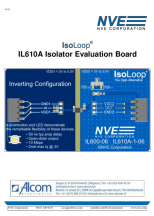	Alcom IL610A-1E IsoLoop Isolator Evaluation Board [pdf] Instruction Manual IL610A-1E IsoLoop Isolator Evaluation Board, IL610A-1E, IsoLoop Isolator Evaluation Board, Isolator Evaluation Board, Evaluation Board, Board

References

- User Manual

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