

NVE
NVE CORPORATION

NEW!
7 kV Isolators



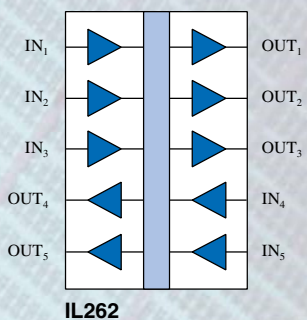
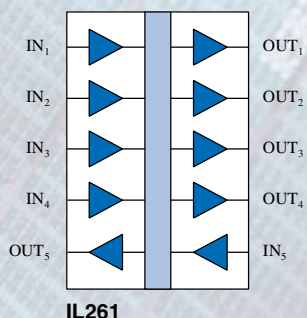
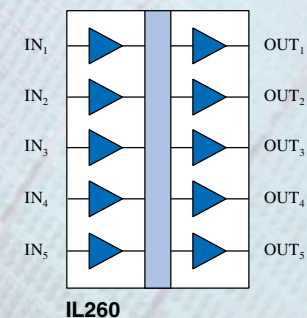
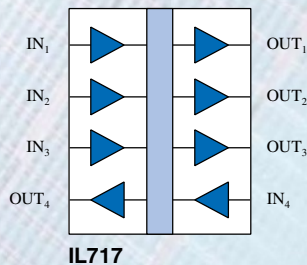
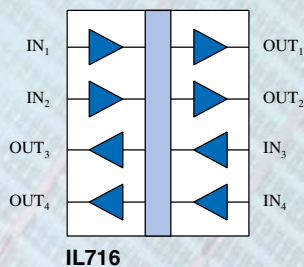
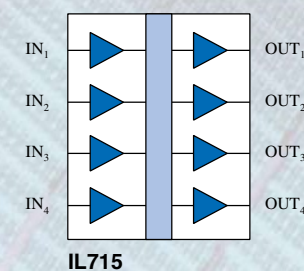
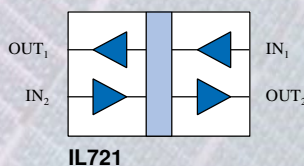
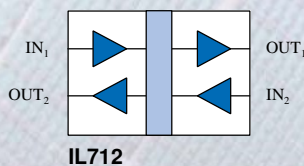
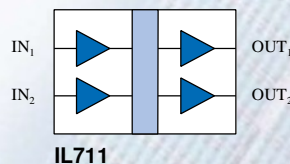
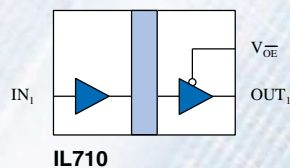
Isolation Products

Short-Form Catalog

Best-in-Class Digital Isolators and Transceivers

IL7xx / IL2xx / IL76xx High-Performance Isolators

Versatile Workhorse Isolators



Our award-winning flagship Isolators provide performance and flexibility, including highest data rates, smallest packages, lowest distortion, low power consumption, and 44000-year barrier life.

**Best-in-Class
7 kV
Isolation**

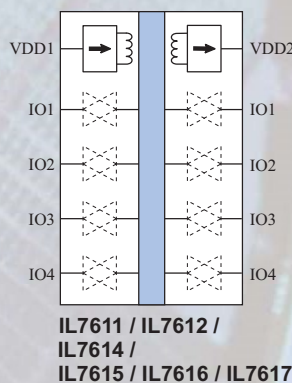
IL76xx parts have integrated 3.3-to-3.3 volt DC-to-DC converters.

VE-Series versions have extremely high isolation voltages of up to 7 kV_{RMS} and 12.8 kV surge immunity, and are ATEX and IECEx certified as Intrinsically Safe.

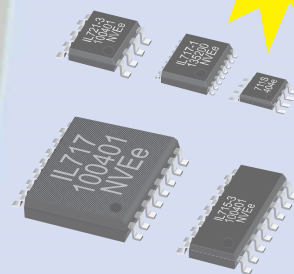
Popular applications include serial interfaces, isolated SPI, and switch-mode power supplies.

Features:

- Low EMI emissions
- Excellent magnetic immunity
- World's smallest isolators available (MSOP8 and QSOP16)
- Highest isolation voltage (up to 7 kV_{RMS})
- Optional integrated DC-to-DC converters (IL76xx)
- Fastest (to 150 Mbps) and lowest PWD (300 ps)



**Exclusive!
MSOPs**



Parameter	Min.	Typ.	Max.	Units
Data Rate (Std./S-Series)	100 / 130	110 / 150		Mbps
PWD (Std./S-Series)		3 / 0.3	3	ns
Pulse Jitter		100		ps
Quiescent Supply Current		1.2	1.75	mA/ch
Isolation (Standard/VE-Series)	2.5 / 6			kV _{RMS}

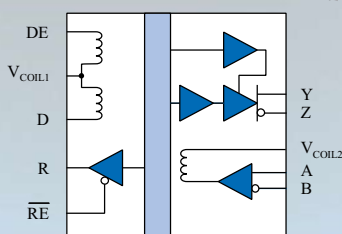
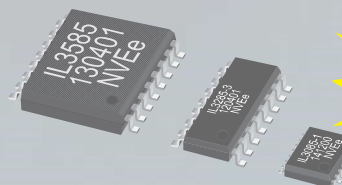
IL4xx, IL3xxx, and IL41050xx

Single-Chip Isolated Network Transceivers

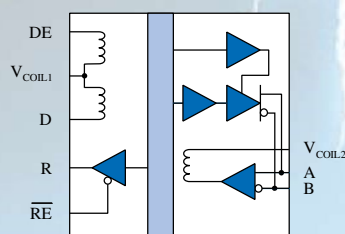
NVE offers a broad range of isolated RS-422, RS-485 and CAN network transceivers. “VE” versions have best-in-class six kilovolt isolation and are ATEX and IECEx certified as Intrinsically Safe. Extended temperature “TE” versions operate to 125°C.

The IL4622 and IL4822 combines an isolated RS-485 transceivers with integrated 3.3-volt or five-volt DC-to-DC converters.

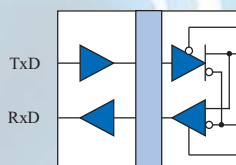
Versions are available in unique 0.15-inch SOICs and true eight-millimeter creepage 0.3-inch SOICs, as well as exclusive QSOPs.



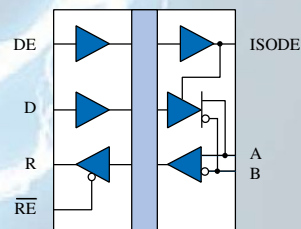
IL3122 / IL3222 / IL3422



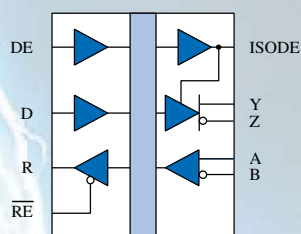
IL3185 / IL3285 / IL3485



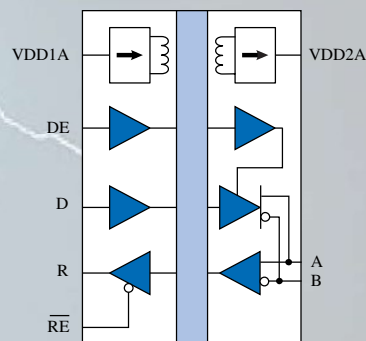
IL41050xx



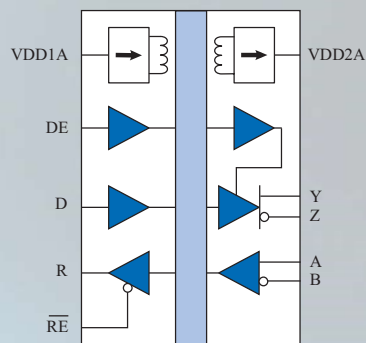
IL485 / IL2985 / IL3085 / IL3585 / IL3685



IL422 / IL3522



IL4685

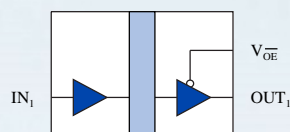


IL4622 / IL4822

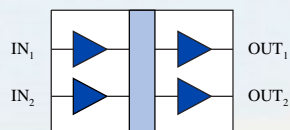
Model	Bus	Inputs	Mbps	Nodes	Bus ESD	Key Features	Available Packages
IL41050TT	CAN	Digital	1	110	4 kV	Low Cost	0.3" SOIC16
IL41050TA	CAN	Digital	1	110	4 kV	125°C; Silent Mode	QSOP16; 0.15" SOIC16; 0.3" SOIC16
IL41050TFD	CAN-FD	Digital	5	110	4 kV	CAN-FD	QSOP16; 0.15" SOIC16; 0.3" SOIC16
IL3122	RS-422	Passive	5	32	15 kV	Low Cost	0.15" SOIC16; 0.3" SOIC16
IL3185	RS-485	Passive	5	32	15 kV	Low Cost	0.15" SOIC16; 0.3" SOIC16
IL3222	RS-422	Passive	5	256	15 kV	1/8 Unit Load	0.15" SOIC16; 0.3" SOIC16
IL3285	RS-485	Passive	5	256	15 kV	1/8 Unit Load	0.15" SOIC16; 0.3" SOIC16
IL3422	RS-422	Passive	20	32	15 kV	High Speed	0.15" SOIC16; 0.3" SOIC16
IL3485	RS-485	Passive	20	32	15 kV	High Speed	0.15" SOIC16; 0.3" SOIC16
IL422	RS-422	Digital	25	32	15 kV	Legacy Standard	0.3" SOIC16
IL485	RS-485	Digital	35	32	2 kV	Legacy Standard	0.3" SOIC16
IL485W	RS-485	Digital	35	32	2 kV	Handshake Line	0.3" SOIC16
IL3022	RS-422	Digital	4	32	7.5 kV	Low Cost	0.3" SOIC16
IL2985	RS-485	Digital	4	32	15 kV	Low Power	0.3" SOIC16
IL3085/3085T	RS-485	Digital	4	32	15 kV	Low Cost; 125°C	QSOP16; 0.15" SOIC16; 0.3" SOIC16
IL3522	RS-422	Digital	40	50	15 kV	Very High Speed	0.3" SOIC16
IL3585	RS-485	Digital	40	50	15 kV	Very High Speed	0.15" SOIC16; 0.3" SOIC16
IL3685/3685T	RS-485	Digital	40	50	15 kV	PROFIBUS; 125°C	QSOP16; 0.15" SOIC16; 0.3" SOIC16
IL3685P	RS-485	Digital	40	160	16.5 kV	3.3 V bus; 1/5 U.L.	QSOP16; 0.3" SOIC16

IL5xx and IL8xx Data Couplers

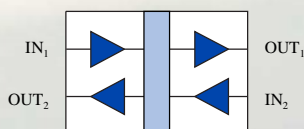
DC-Correct Isolation



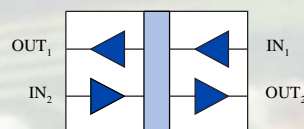
IL510 / IL810



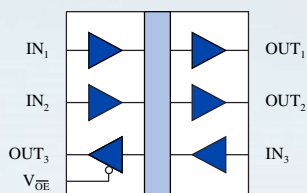
IL511 / IL811



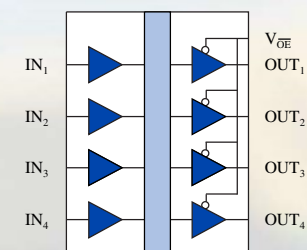
IL512 / IL812



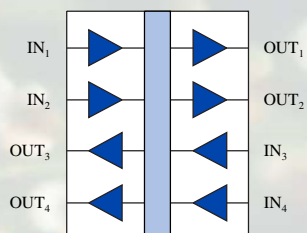
IL521 / IL821



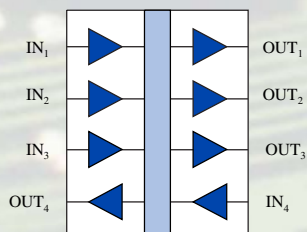
IL814



IL515 / IL815



IL516 / IL816



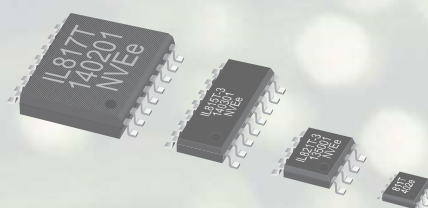
IL817

IL500 and IL800T Isolators have internal refresh clocks to ensure DC-correct operation and that the output follows the input on power-up. Parts are available in one, two, three, or four channel configurations, and in SOIC or unique MSOP packages.

The top-of-the-line IL800-Series isolators are specified to 110 Mbps and 125°C. The cost-effective IL500-Series is rated to 2 Mbps and 85°C.

Features:

- DC correct
- 2 Mbps (IL500-Series) or 110 Mbps (IL800-Series)
- 2500 V_{RMS} isolation
- 85°C (IL5xx) or 125°C (IL8xx) operating temperature
- 44000-year barrier life
- MSOP and SOIC packages



Parameter	Min.	Typ.	Max.	Units
Data Rate (IL5xx)	2			Mbps
Data Rate (IL8xx)	100	110		Mbps
PWD (IL5xx / IL8xx)			10 / 3	ns
Pulse Jitter (IL8xx)		100		ps
Quiescent Supply Current		1.3	1.8	mA/ch
Transient Immunity	30	50		kV/μs
Isolation Voltage	2.5			kV _{RMS}
Temperature (IL5xx / IL8xx)	-40		85 / 125	°C

IL6xx Passive-Input Isolators

Ultrahigh Common Mode Transient Immunity

Unique IL600 and IL600A Series Isolators have passive inputs for flexibility similar to LED-input optocouplers. But unlike optocouplers they have virtually unlimited barrier life. And unlike other nonoptical isolators, they have ultrahigh Common-Mode Transient Immunity, making them ideal for H-bridges, floating supply applications, or noisy environments.

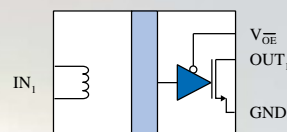
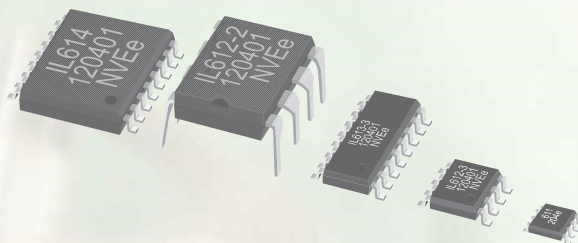
“IL6xxCMTI” grade parts are 100% tested to ensure each part has at least 200 kV/μs CMTI. Simple external deglitch circuitry can extend the CMTI to an extraordinary 350 kV/μs typical. CMTI grade also has an extended supply range of up to 6.6 volts for compatibility to directly drive a range of power MOSFETs or gate driver ICs.

The IL600-Series has CMOS outputs and the IL600A-Series has open-drain outputs.

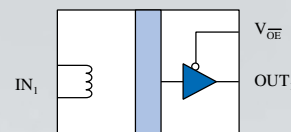
Default HIGH or default LOW (“F” suffix) versions are available.

Features:

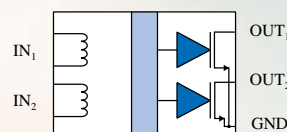
- Up to 350 kV/μs CMTI (IL6xxCMTI)
- 3 to 6.6 V supply range (IL6xxCMTI)
- 5 mA input current
- No carrier or clock for low EMI emissions and susceptibility
- Inherently failsafe
- DC correct
- Default HIGH or default LOW versions
- 2500 V_{RMS} isolation
- 44000-year barrier life
- MSOP, SOIC, PDIP, or bare die



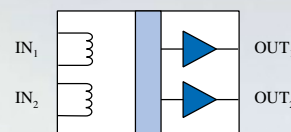
IL610A



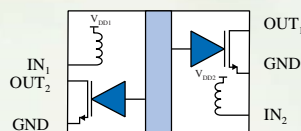
IL610



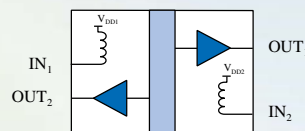
IL611A



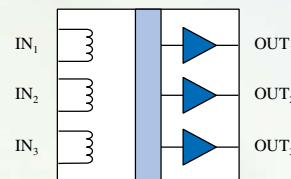
IL611



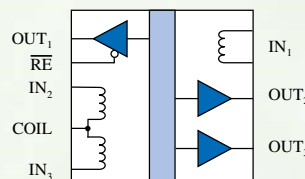
IL612A



IL612



IL613



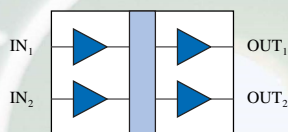
IL614

Parameter	Min.	Typ.	Max.	Units
Data Rate (Standard / A-Series)	100 / 10			Mbps
Common Mode Transient Immunity				
Standard grade	15	20		kV/μs
“CMTI” versions	200	220		
“CMTI” versions; external deglitch)	300	350		
Pulse Width Distortion		3	5	ns
Propagation Delay		8	15	ns
Propagation Delay Skew		4	6	ns
Operating Temperature	-40		85	°C

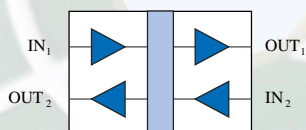
**Best-in-Class
350 kV/μs CMTI**

IL01x Ultralow-Power Isolators

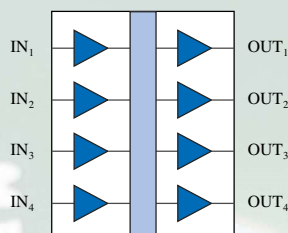
Unique TMR Technology



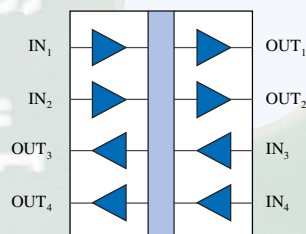
IL011



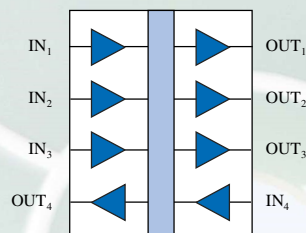
IL012



IL015



IL016



IL017

IL01x-Series Tunneling Magnetoresistance (TMR) low-power isolators use NVE's patented low-power spintronic Tunneling Magnetoresistance (TMR) technology. Total quiescent current of just 0.3 milliamps per channel is one-fourth the power of NVE's flagship isolators.

Like all NVE isolators, a unique ceramic/polymer composite barrier provides excellent isolation, best-in-class barrier resistance, and virtually unlimited barrier life.

Even with the low power, the new parts provide remarkable **performance**:

- 0.3 mA/channel total power consumption
- 10 Mbps guaranteed data rate
- No carriers or clocks for low electromagnetic interference
- 2500 V isolation
- 44000 year barrier life
- ATEX and IECEx certified Intrinsically Safe
- -40 to 100°C

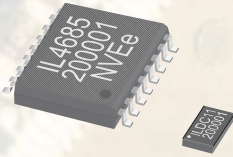
Applications:

- 4-to-20 mA loop-powered controls
- Battery-powered instruments
- SPI interfaces

Parameter	Min.	Typ.	Max.	Units
Quiescent power ($I_{DD1} + I_{DD2}$)		0.3	0.5	mA/channel
Data Rate	10			Mbps
Temperature Range	-40		100	°C

DC-DC Convertors

The World's Smallest DC-DC Convertors



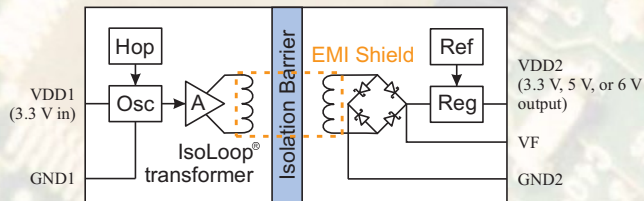
We've extend out award-winning isolation technology to ultraminiature DC-to-DC converters and isolators with integrated DC-to-DC converters.

ILDC1x parts are 3.3 volt input, quarter-watt stand-alone DC-to-DC converters that are ideal for generating a second isolated supply in isolator systems. They are available in either a 16-pin wide-body SOIC, or a six-pin 3 mm by 5.5 mm DFN package. The DFN versions are the world's smallest isolated DC-to-DC converters.

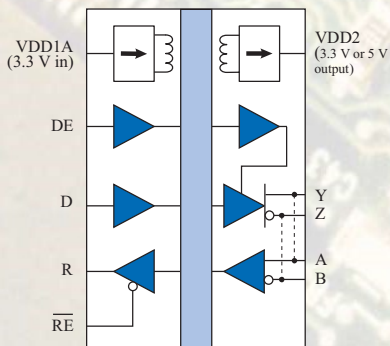
IL46xx transceivers combine RS-485 or RS-422 interface with a DC-to-DC converter to create its own isolated bus supply, dramatically reducing board space and parts count.

The IL76xx-Series combines high-speed two-, three-, or four-channel datacouplers with integrated DC-to-DC converters.

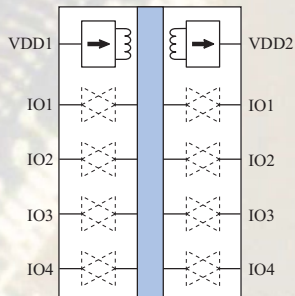
The DC-to-DC converters require no additional regulation and there is no minimum load. Frequency hopping and shielding reduce EMI, and ferrite beads are not necessary for EMI mitigation. Integrated short-circuit protection avoids excessive power dissipation.



ILDC11 / ILDC12 / ILDC13
3.3 V input;
3.3 V, 5 V, or 6 V output DC-to-DC convertor



IL4xxx
RS-485 / RS-422 transceivers
with integrated DC-to-DC converters



**IL7611 / IL7612 / IL7614 /
IL7615 / IL7616 / IL7617**
2-, 3-, or 4-channel data couplers
with integrated DC-to-DC converters

DC-to-DC Converter Features:

- Quarter-watt output
- 3.3 V input
- 3.3 V (ILDC11), 5 V (ILDC12), or 6 V (ILDC13) output
- Fully-regulated output
- Short-circuit protection
- No minimum load
- Low EMI without ferrite beads
- 2500 V_{RMS} (DFN) or 6000 V_{RMS} isolation (SOIC)
- -40°C to 125°C

Parameter	Min.	Typ.	Max.	Units
Output Voltage Ripple		1	5	mV _{P-P}
Line Regulation		32	40	mV/V
Load Regulation		5	6	%
Capacitive Load			1000	μF

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On the Cover

IsoLoop Isolation Products help make a digital world practical. Approximately 750 actual-size IsoLoop 8-pin MSOP Isolators form the image on the front and back spine of this catalog. NVE is the leader in isolator miniaturization with a full line of MSOP, QSOP, and narrow-body parts.