

**SKYWORKS®**



# Isolation

PRODUCT SELECTOR GUIDE

# Isolation Solutions



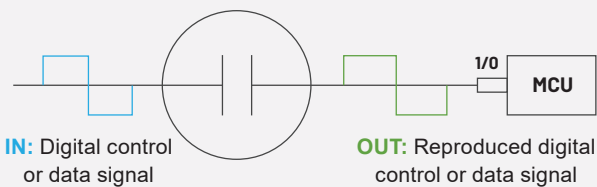
The Skyworks' digital isolation product portfolio leverages our superior isolation and high-voltage expertise to enhance system performance, flexibility, and reliability while reducing system size and cost. Our family of products includes CMOS digital isolators, isolated gate drivers, isolated analog amplifiers, industrial I/Os and isolated ADCs. Our family of isolators supports voltages up to 5 kV.



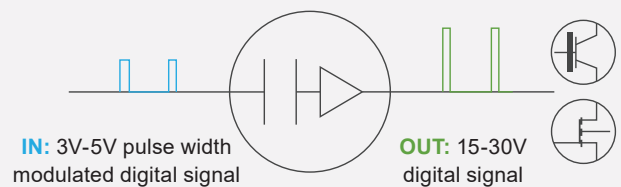
**Isolation**  
Solutions for industrial, power supply, automotive, communications, and consumer applications.

## Isolation Product Families

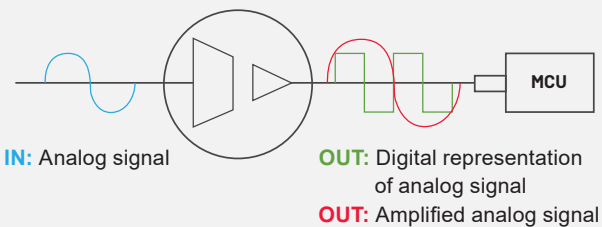
### Digital Isolator



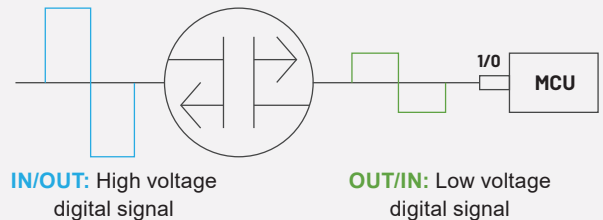
### Isolated Gate Driver



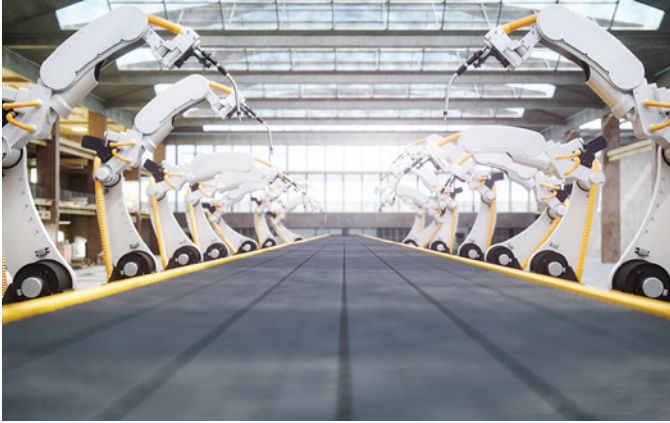
### Isolated Analog



### Industrial I/O



# Isolation Applications



## Industrial

- Motor control
- Factory automation
- Programmable logic controllers (PLCs)



## Automotive

- Battery management
- Isolated fieldbus
- Inverters and chargers



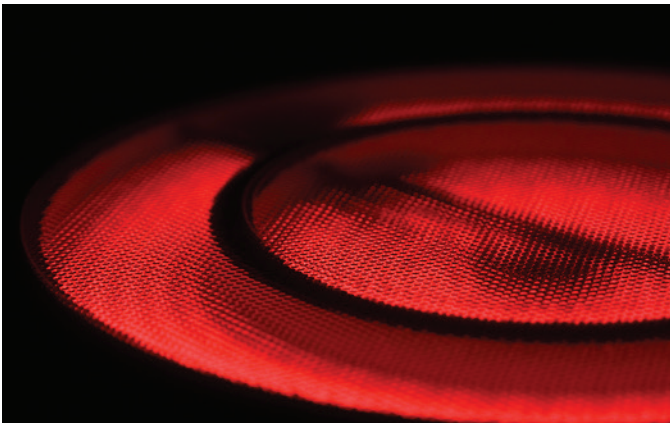
## Solar Inverters

- Isolated communication
- DC-AC inverters
- DC-DC converter



## Power Supplies

- UPS
- Server supplies
- Communications supplies



## Consumer

- Inductive cooktops
- Motor control
- Lighting



## Telecom

- Isolated communication
- VoIP gateways
- Service ports

# Digital Isolators

Each of our digital isolator product families is designed and continuously adapted to serve specific industry applications. Each ship with Skyworks' proprietary CMOS capacitive isolation technology. Customers can trust in low electro-magnetic emissions, high immunity to external fields, and robust, industrial-grade performance with high noise immunity, with a temperature operating range of up to 125 °C.

## Features

### Si86xx/Si86xxT

- Exceptional isolator timing characteristics with a typical latency of under 10 ns
- 150 Mbps-capable, 1-6 channels of signal isolation in compact QSOP packages or wide creepage SOIC, > 8 mm

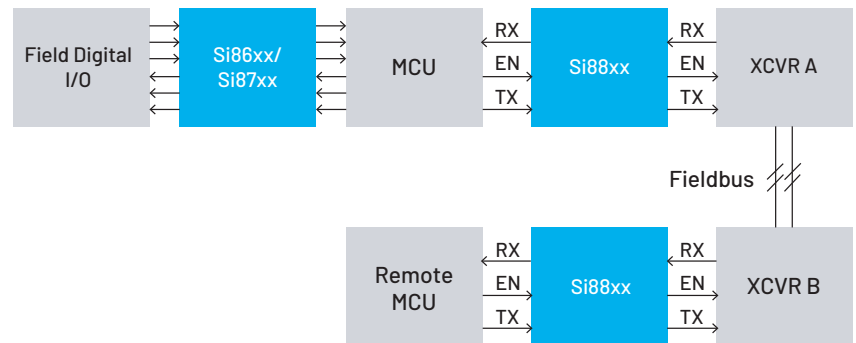
### Si87xx

- Unique pin-to-pin compatibility for drop-in upgrades to popular optocouplers

### Si88xx

- Integrated DC-DC converter with feedback-controlled regulation

## Industrial Automation Application Example



## Digital Isolators

Family	Unidirectional Channels	Bidirectional Channels	Isolation Rating	Input Type	Package Type	Max Data Rate	Max Propagation Delay	Input Supply	Output Supply	Forward Channels	Reverse Channels
<a href="#">Si80xx</a>	3, 4, 5, 6	0	1 kV <sub>RMS</sub>	Digital	QSOP-16	—	65 ns	3.15-5.5 V	3.15-5.5 V	3, 4, 5, 6	0
<a href="#">Si86xx</a>	0, 1, 2, 3, 4, 5, 6	0, 1, 2	1-5 kV <sub>RMS</sub>	Digital	NB SOIC-16, NB SOIC-8, QSOP-16, WB SOIC-16	1.7, 150 Mbps	13-55 ns	2.5-5.5 V	2.5-5.5 V	0, 1, 2, 3, 4, 5, 6	0, 1, 2, 3
<a href="#">Si86xxT</a>	2, 3, 4	0	5 kV <sub>RMS</sub>	Digital	WB SOIC-16	150 Mbps	13 ns	2.5-5.5 V	2.5-5.5 V	1, 2, 3, 4	0, 1, 2
<a href="#">Si87xx</a>	1	0	3.75-5 kV <sub>RMS</sub>	LED Emulator	GW DIP8, NB SOIC-8, WB SOIC-6	1, 15 Mbps	50-60 ns	—	2.25-30 V	1	0
<a href="#">Si88xx</a>	2, 4	0	3.75-5 kV <sub>RMS</sub>	Digital	WB SOIC-16, WB SOIC-20, WB SOIC-24	100 Mbps	23 ns	3-5.5 V	3-5.5 V	0, 1, 2, 3, 4	0, 1, 2, 3, 4

[Learn More](#)

[Documents](#)

# Isolated Gate Drivers

With utilitarian and highly integrated safety features, Skyworks defined the industry standard for isolated gate drivers—high-side, low-side, and dual. In addition to each of the benefits of our proprietary CMOS capacitive isolation technology, which include signature low electro-magnetic emissions, high immunity to external fields, and robust industrial grade performance, Skyworks’ gate drivers also include several safety-integrated features: dead-time programmability, overlap protection, power status pin positioned on the isolated side, and asynchronous shutdown protection.

## Features

### Si823x/Si8239x

- Industry-defining high-side/low-side, or dual drivers in compact LGA/QFN packages or wide creepage SOIC, > 8 mm
- Driver-side power status pin on isolated logic side

### Si827x

- High gate driver noise immunity for driving fast-switching GaN/SiC FETs, > 300 kV/us
- Low UVLO options for driving GaN/SiC FETs

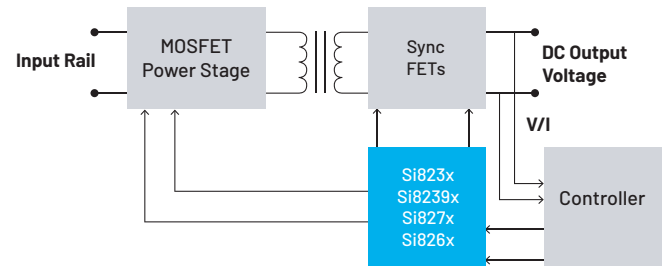
### Si826x

- Unique pin-to-pin compatibility for drop-in upgrades to popular opto drivers
- Available in wide-SOIC and compact, 6-pin packages for 5 kVrms applications

### Si828x

- IGBT drivers with built-in desaturation and auto soft shutdown
- Integrated DC-DC converter with feedback control for tight load and line regulation

## Power Supply Application Example



## Isolated Gate Drivers

Family	Isolation Rating	Package Type	Input Type	Input Voltage Range	Output Configuration	Output Voltage Range	Peak Output Current
<a href="#">Si828x</a>	3.75-5 kV <sub>RMS</sub>	WB SOIC-16, WB SOIC-20, WB SOIC-24	Complementary Digital	3 - 5.5 V	Separate Pull-Up/Pull-Down, Single Output	10 - 30 V	4 A
<a href="#">Si827x</a>	1 - 2.5 kV <sub>RMS</sub>	DFN-14, NB SOIC-16, NB SOIC-8	PWM, Single, Dual	3 - 5.5 V	Dual Driver, High-Side / Low-Side, Separate Pull- Up/Pull-Down	4 - 30 V	4 A
<a href="#">Si822x/3x</a>	1-5 kV <sub>RMS</sub>	LGA-14, NB SOIC-16, DFN-14, WB SOIC-14, WB SOIC-16	LED emulator, PWM, Dual	None, 3 - 5.5 V	Dual Driver, High-Side / Low-Side	6 - 24 V	0.5 - 4 A
<a href="#">Si823Hx</a>	2.5 - 5 kV <sub>RMS</sub>	DFN-14, NB SOIC-8, NB SOIC-16, WB SOIC-14	PWM, Single, Dual	3 - 5.5 V	Dual Driver, High-Side / Low-Side, Separate Pull- Up/Pull-Down	6 - 30 V	4 A
<a href="#">Si825x</a>	5 kV <sub>RMS</sub>	WB SOIC-14	Dual	4.5 - 20 V	High-Side / Low-Side	5 - 30 V	4 A
<a href="#">Si826x</a>	3.75-5 kV <sub>RMS</sub>	GW DIP8, NB SOIC-8, WB S06	LED emulator	None	Separate Pull-Up/Pull- Down, Single Output	5 - 30 V	0.6 - 4 A

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# Isolated Analog

Skyworks Si890x/Si892x isolated analog and isolated ADCs are ideal for a broad range of applications, including AC-DC switching power supplies, isolated DC-DC supplies, UPS systems and inverters for motor control. The Si890x enables isolated AC mains monitoring while the Si892x provides shunt resistor-based current sensing solutions for a wide range of power applications.

## Features

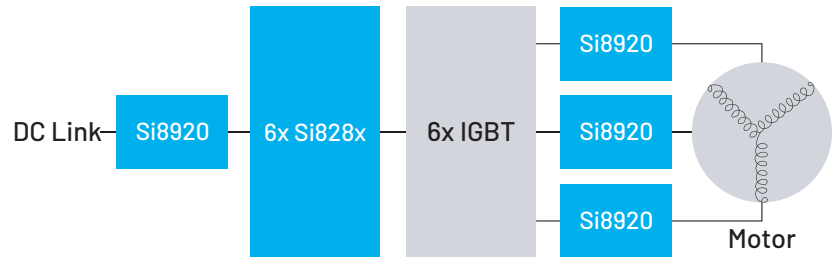
### Si890x

- 10-bit ADC with 3-channel muxed analog input and I2C, SPI or UART digital output formats
- Ideal for line monitoring

### Si8920

- Up to 5 kV<sub>RMS</sub> 1-channel isolated analog amplifier with 400 kHz bandwidth and group delay of 750 ns
- Ideal for current measurements

## Motor Control Application Example



## Si892x Isolated Amplifiers

Part Number	Package Type	Input Range	Output Gain	Output Range	Initial Accuracy	Isolation Rating
<a href="#">Si8920Ax</a>	GW DIP8, WB SOIC-16	±100 mV	16x	±1.6 V	1.50%	3.75 - 5 kV <sub>RMS</sub>
<a href="#">Si8920Bx</a>	GW DIP8, WB SOIC-16	±200 mV	8x	±1.6 V	0.75%	3.75 - 5 kV <sub>RMS</sub>

## Si890x Isolated ADCs

Part Number	Package Type	Output Mode	Full Scale Current	Initial Accuracy	Isolation Rating
<a href="#">Si8900x</a>	WB SOIC-16	UART	10 A	0.10%	2.5 - 5 kV <sub>RMS</sub>
<a href="#">Si8901x</a>	WB SOIC-16	I2C/SMBus	10 A	0.10%	2.5 - 5 kV <sub>RMS</sub>
<a href="#">Si8902x</a>	WB SOIC-16	SPI	10 A	0.10%	2.5 - 5 kV <sub>RMS</sub>

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# Industrial I/O

Skyworks offers a complete set of I/O solutions for the industrial automation market. The Si838x isolated bipolar digital input offers eight sourcing or sinking channels in a compact package. This is ideally suited for a wide range of industrial voltage levels including the IEC 61131-2 standard of 24 V. The Si834x Isolated Smart Switch combines four low RON high-side or low-side switches with robust diagnostics and channel protection. The Si875x Isolated FET driver offers a simple method for customers to replace solid-state relays (SSRs) or electromechanical relays (EMRs) with a compact device requiring only one power supply. Flexible outputs support driving AC or DC load configurations. All industrial I/O products include Skyworks cutting-edge safety-rated isolation qualifications certified by UL, CSA, VDE and CQC.

## Features

### Si838x

- Unique 8-channel, bipolar LED input isolator ideal for programmable logic controllers
- SPI interface enables daisy chaining up to 128 channels with just four MCU pins

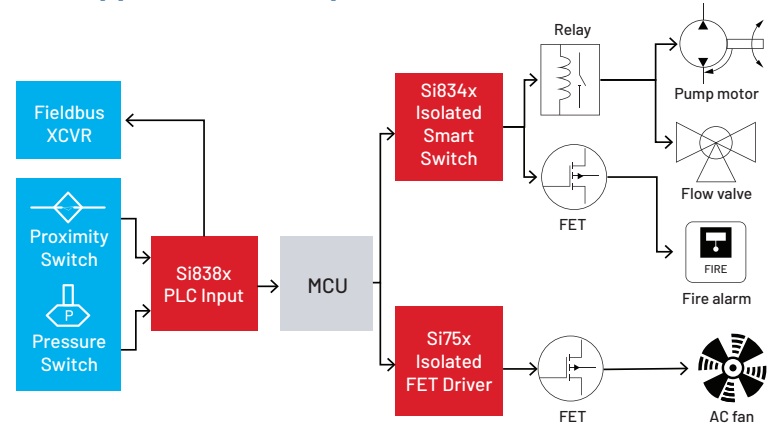
### Si834x

- Built-in over-current and inductive kick protection
- Up to eight different channel and device diagnostics

### Si875x

- Self-powered output to drive external FET
- LED emulator or digital pin input options

## PLC Application Example



## Si838x Isolated PLC Input

Part Number	Channels	Output Interface	Low Pass Filter Delay	Package Type	Isolation Rating
<a href="#">Si8380Sx</a>	8	SPI	0 - 100 ms	20-QSOP	2.5 kV <sub>RMS</sub>
<a href="#">Si838xPx</a>	8	Parallel	0 - 100 ms	20-QSOP	2.5 kV <sub>RMS</sub>

## Si834x Isolated Smart Switch

Part Number	Output Switch	Input Interface	Channels	Output Current	Channel Indicators	Package	Isolation Rating
<a href="#">Si834x4xAAx</a>	Sourcing, Sinking	Parallel	4	0.7 A	Yes	9x9 DFN-32	1.5 kV <sub>RMS</sub>
<a href="#">Si834x8xDAx</a>	Sourcing, Sinking	SPI	4	0.7 A	Yes	9x9 DFN-32	1.5 kV <sub>RMS</sub>
<a href="#">Si834x8xFAx</a>	Sourcing, Sinking	Parallel/SPI	4	0.7 A	No	9x9 DFN-32	1.5 kV <sub>RMS</sub>

## Si875x Isolated FET Driver

Part Number	Input Type	Driver ON Resistance	Max Propagation Delay	Driver Supply Range	Package Type	Isolation Rating
<a href="#">Si8751AB-IS</a>	Digital CMOS	Adjustable (1500 - 162 kΩ)	41 μs	8 - 13 V	NB SOIC-8	2.5 kV <sub>RMS</sub>
<a href="#">Si8752AB-IS</a>	Diode Emulation	Adjustable (2700 - 168 kΩ)	41 μs	8 - 13 V	NB SOIC-8	2.5 kV <sub>RMS</sub>

Learn More

Documents

# Environmental and Safety Compliance

## Isolation Products Meet Safety Standard Compliance

Skyworks isolation products adhere to global requirements and standards for safety compliance and mechanical creepage and clearance. Digital isolator, AC current sensor and ISO driver products support up to 8 mm of creepage and clearance using a widebody SOIC package to meet the industry's most stringent requirements. The devices also adhere to worldwide safety standards through Underwriter Laboratories (UL), CSA, CQC and VDE certification with devices specifying up to 5 kV isolation.

Testing Authority	Component Standard	Isolation Rating	Digital Isolators				ISO Drivers			Isolated Amplifiers
			Si827X	Si86XX	Si87XX	Si88XX	Si823X	Si826X	Si8239X	Si892X
UL	UL 1577	2.5 kV <sub>RMS</sub>	✓	✓			✓		✓	
		3.75 kV <sub>RMS</sub>		✓	✓		✓	✓	✓	✓
		5 kV <sub>RMS</sub>		✓	✓	✓	✓	✓	✓	✓
VDE/IEC	VDE-0884-10, IEC 60747-5-5	BASIC REINFORCED	✓	✓			✓		✓	✓

NOTE: All products are also compliant with CSA 5A and CQC GB4943.1 component standards. Please see product datasheets for compliance to equipment standards such as IEC 60950, 61010, 60601, etc.

## Online Support

### Identify the development tools you need for your isolation design

[skyworksinc.com/en/Products/Isolation](http://skyworksinc.com/en/Products/Isolation)



### Isolation Bootstrap Calculator

The web-based Isolation Bootstrap Calculator helps you determine the required CB recharge current at MAX and MIN duty cycle, and provides the information required to determine the best fit bootstrap module.

[skyworksinc.com/tools/bootstrap-calculator](http://skyworksinc.com/tools/bootstrap-calculator)

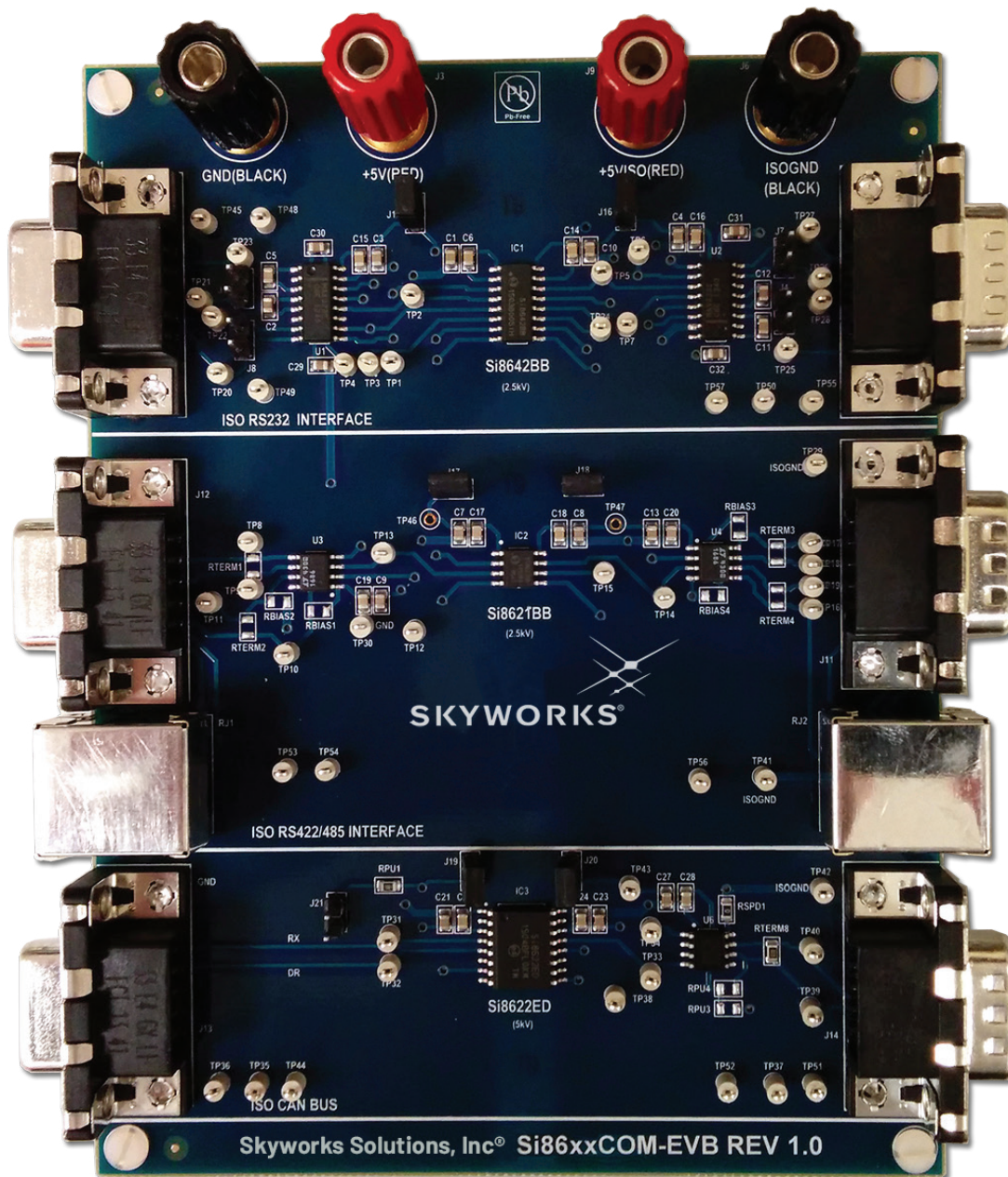


### Isolator Power Consumption Calculator

The web-based Isolator Power Consumption Calculator utility helps you define basic information about your isolation set-up, and determine your power budget. Simply select the settings that match your design and obtain detailed power and current data.

[skyworksinc.com/tools/isolator-power-calculator](http://skyworksinc.com/tools/isolator-power-calculator)





### Si86xxCOM-KIT

To demonstrate the low power, reliability and performance of Skyworks' digital isolators, we offer the Si86xx digital isolated communications reference design kit.



## Isolation Portfolio

[www.skyworksinc.com/ia/isolation](http://www.skyworksinc.com/ia/isolation)

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