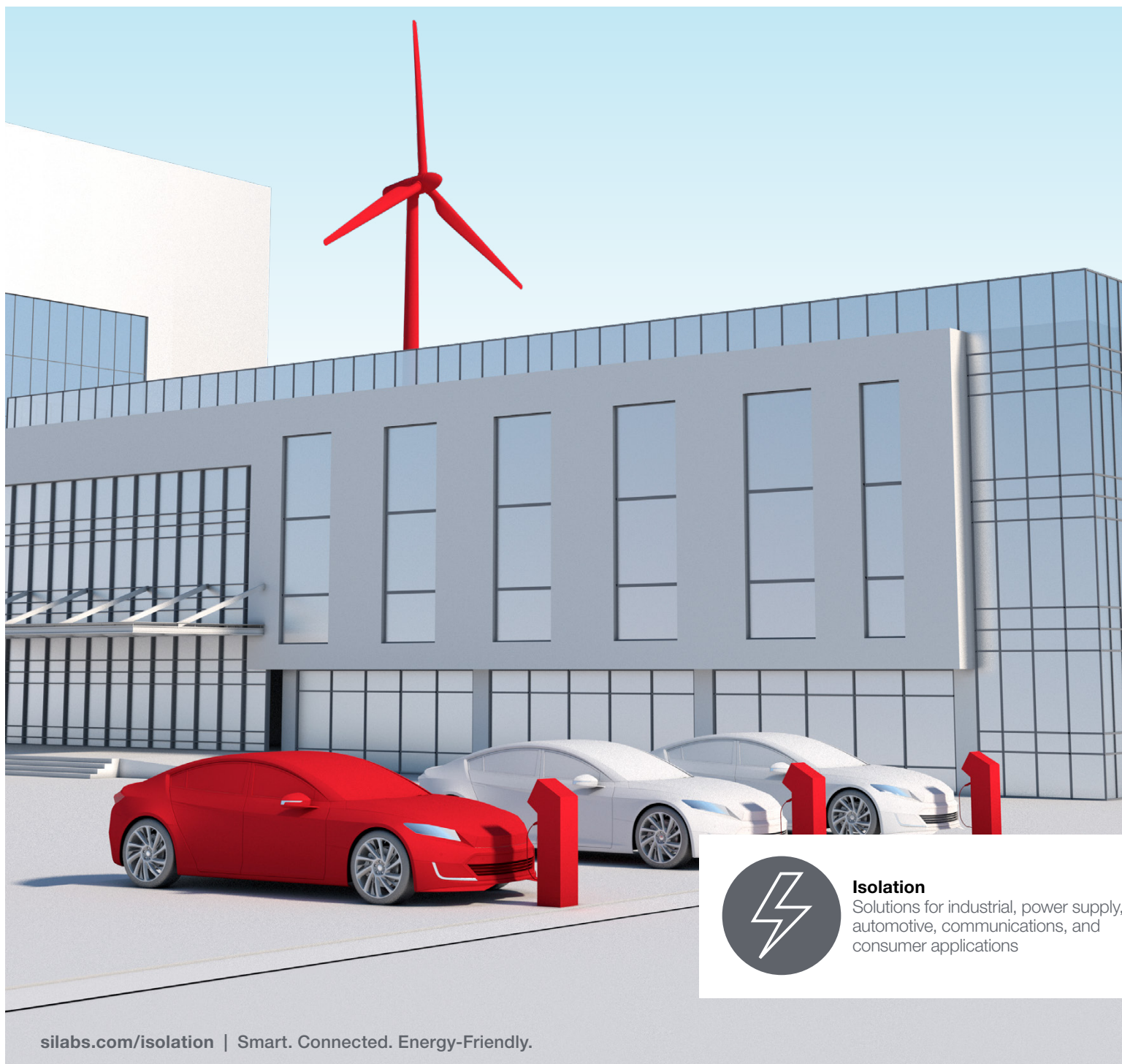




Isolation

PRODUCT SELECTOR GUIDE



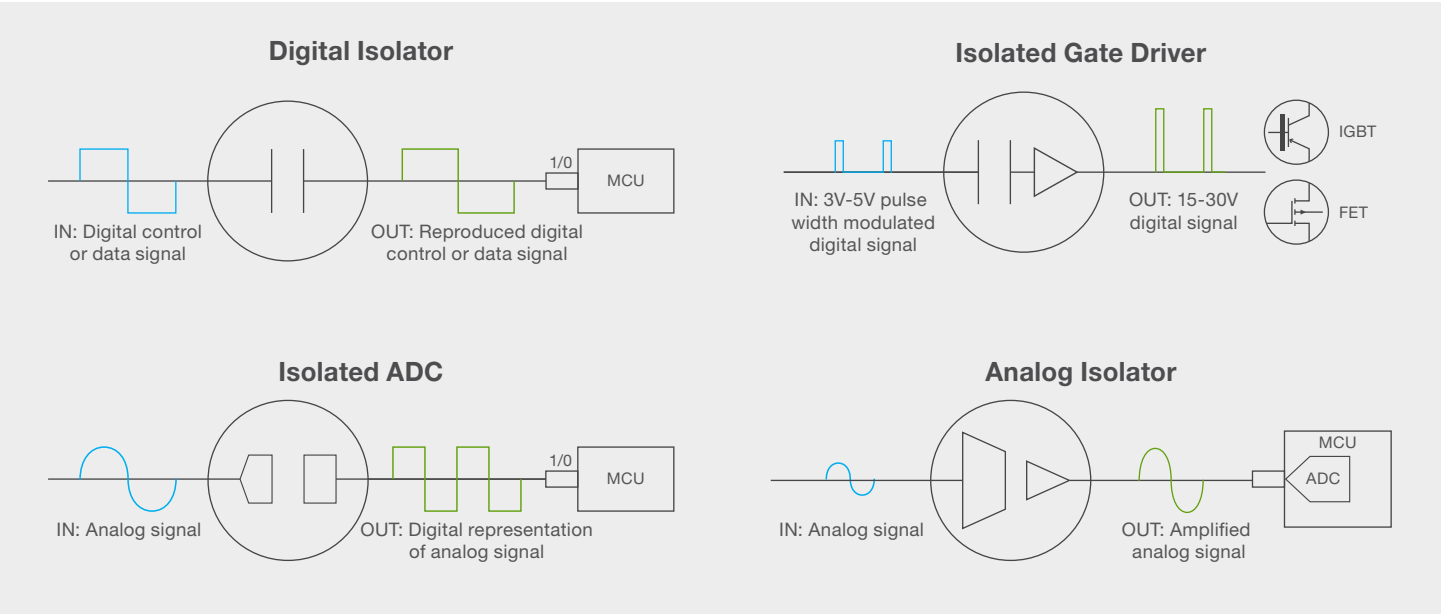
Isolation
Solutions for industrial, power supply,
automotive, communications, and
consumer applications



Isolation Solutions

The Silicon Labs’ 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 and isolated ADCs. Our family of isolators supports voltages up to 5 kV.

Isolation Product Families



Isolation Applications



Industrial

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



Automotive

- Battery management
- Isolated fieldbus
- Inverters and chargers



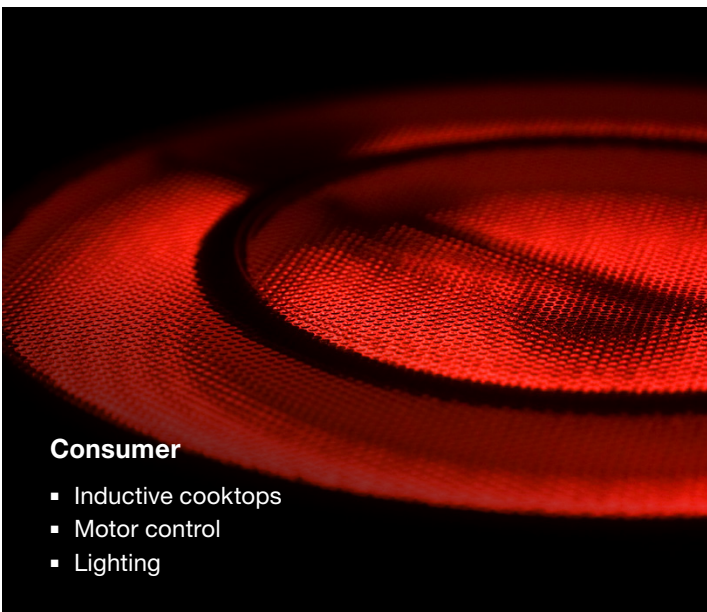
Solar Inverters

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



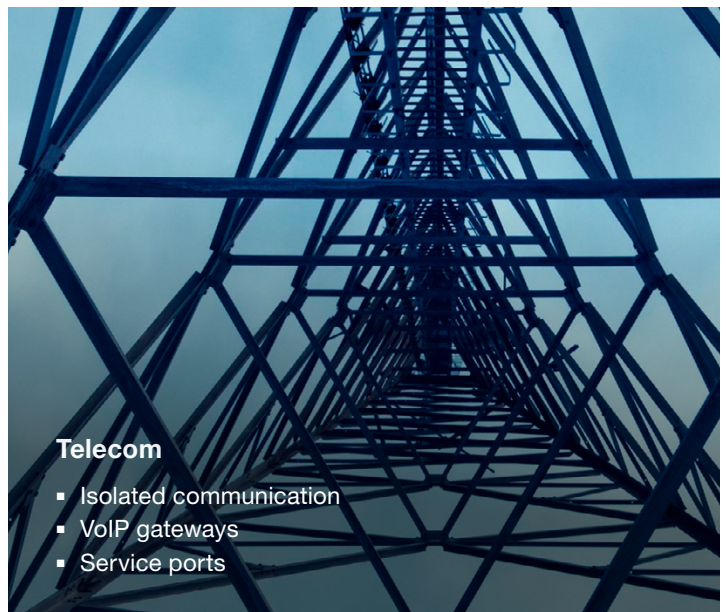
Power Supplies

- 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 developed to serve specific industry applications, and all of them ship with Silicon Labs’ proprietary CMOS capacitive isolation technology. Count on the lowest electro-magnetic emissions of all digital isolators on the market, the highest immunity to external fields, and robust, industrial-grade performance with high noise immunity and a temperature operating range of up to 125 °C.

Features

Si86xx/Si86xxT

- Best timing characteristics of any isolator, 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

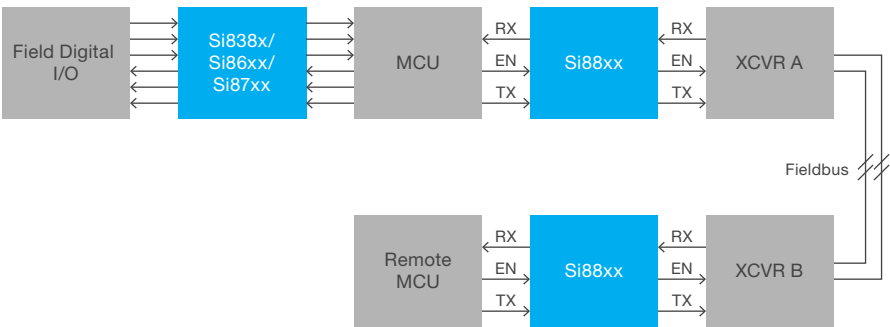
Si88xx

- Integrated DC-DC converter with feedback-controlled regulation

Si838x

- Unique 8-channel, bipolar input isolator for programmable logic controllers

Industrial Automation Application Example



Isolator Evaluation Kits

FAMILY	UNIDIRECTIONAL CHANNELS	BIDIRECTIONAL CHANNELS	ISOLATION RATING (KVRMS)	INPUT TYPE	PACKAGE TYPE	MAX DATA RATE (MBPS)	MAX PROPAGATION DELAY (NS)	INPUT SUPPLY (V)	OUTPUT SUPPLY (V)	FORWARD CHANNELS	REVERSE CHANNELS
Si80xx	3, 4, 5, 6	0	1	Digital	QSOP16		65	3.15 5.5	3.15 5.5	3, 4, 5, 6	0
Si838x	8	0	2.5	LED Emulator	QSOP20	200, 2000	4 µs, 4 µs/100 ns		2.25 5.5	8	0
Si86xx	0, 1, 2, 3, 4, 5, 6	0, 1, 2	1, 2.5, 3.75, 5	Digital	NB SOIC16, NB SOIC8, QSOP16, WB SOIC16	1.7, 150	13, 55	2.5 5.5	2.5 5.5	0, 1, 2, 3, 4, 5, 6	0, 1, 2, 3
Si86xxT	2, 3, 4	0	5	Digital	WB SOIC16	150	13	2.5 5.5	2.5 5.5	1, 2, 3, 4	0, 1, 2
Si87xx	1	0	3.75, 5	LED Emulator	GW DIP8, NB SOIC8, WB SOIC6	1, 15	50, 60		2.25 30	1	0
Si88xx	2, 4	0	3.75, 5	Digital, Low	WB SOIC16, WB SOIC20, WB SOIC24	100	23	3 5.5	3 5.5	0, 1, 2, 3, 4	0, 1, 2, 3, 4

Get More Information

Isolated Gate Drivers

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

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

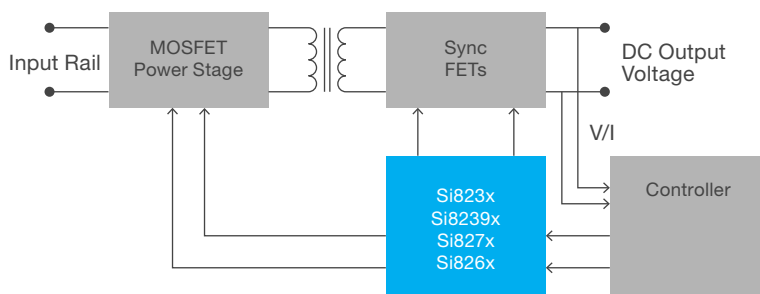
Si826x

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

Si828x

- IGBT drivers w/built in desaturation & 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 (KVRMS)	PACKAGE TYPE	OUTPUT CONFIGURATION	INPUT TYPE
Si828x	3.75, 5	WB SOIC16, WB SOIC20, WB SOIC24	Single Driver	PWM
Si827x	2.5	NB SOIC16, NB SOIC8	Dual Driver, High Side / Low Side, Single Driver, Separate Pull Up/Down	PWM, Single Input, VIA, VIB
Si8239x	5	WB SOIC16	Dual Driver, High Side / Low Side	PWM, VIA, VIB
Si822x/3x	1.5, 2.5, 3.75, 5	LGA14, NB SOIC16, NB SOIC8, QFN14, WB SOIC14, WB SOIC16	Dual Driver, High Side / Low Side, Single	LED emulator, PWM, VIA, VIB
Si826x	3.75, 5	GW DIP8, NB SOIC8, WB S06	Single Driver	LED emulator
Si88xx	High Data-rate, Isolators with Integrated	2, 4	0	3.75, 5
Si8065AA-B-IU	6	0	10	—
Si8641BA-B-IU	3	1	150	✓
Si8642BA-B-IU	2	2	150	✓

Get More Information

Current Sensors

The Silicon Labs Si890x/892x sensor families 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 is a good fit for isolated AC mains monitoring while the Si892x provides shunt resistor based current sensing solutions for a wide range of power applications.

Features

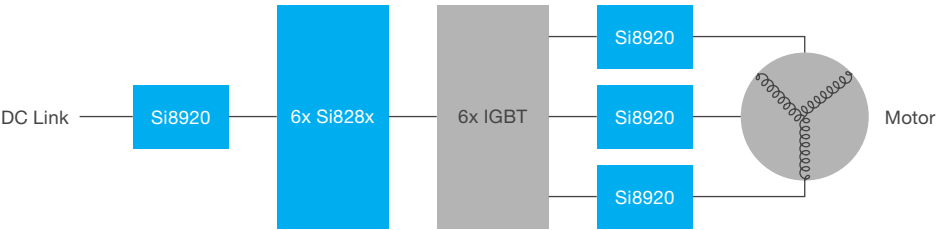
Si890x

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

Si8920

- 5kVrms analog isolator with the highest bandwidth, 450 kHz and lowest group delay of 750 ns
- 100mV or 200 mV inputs

Motor Control Application Example



Si8920 Isolated Amplifiers

PART NUMBER	EVALUATION KIT	PACKAGE TYPE	TEMPERATURE RANGE (°C)	OUTPUT MODE	ISOLATION RATING	INITIAL ACCURACY
Si8920AC-IP	Si8920ISO-KIT	GW DIP8	-40 125	Analog	3.75	1.50%
Si8920BC-IP	Si8920ISO-KIT	GW DIP8	-40 125	Analog	3.75	0.75%
Si8920BD-IS	Si8920ISO-KIT	WB SOIC16	-40 125	Analog	5	0.75%

Si890x Isolated ADCs

PART NUMBER	EVALUATION KIT	PACKAGE TYPE	TEMPERATURE RANGE (°C)	OUTPUT MODE	ISOLATION RATING (KV RMS)	FULL SCALE CURRENT (A)	INITIAL ACCURACY
Si8900B-GS	Si890PWR-EVB	WB SOIC16	-40 85	UART	2.5	10	0.10%
Si8900D-GS	Si890PWR-EVB	WB SOIC16	-40 85	UART	5	10	0.10%
Si8901B-GS	Si890PWR-EVB	WB SOIC16	-40 85	I2C/SMBus	2.5	10	0.10%
Si8901D-GS	Si890PWR-EVB	WB SOIC16	-40 85	I2C/SMBus	5	10	0.10%
Si8902B-GS	Si890PWR-EVB	WB SOIC16	-40 85	SPI	2.5	10	0.10%
Si8902D-GS	Si890PWR-EVB	WB SOIC16	-40 85	SPI	5	10	0.10%

Si8540 High-Side DC Current Sensor

PART NUMBER	EVALUATION KIT	PACKAGE TYPE	VCM (V)	ICC (MAX)	BIDIRECTIONAL
Si8540		SOT23-5	5 36	90	No

Get More Information

Isolated FET Drivers

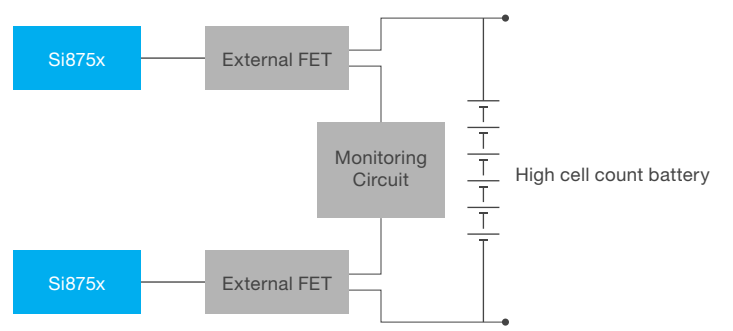
The Silicon Labs Si8751/52 FET drivers offers a simple way for customers to replace solid-state relays (SSRs) or electromechanical relays (EMRs). Versatile inputs provide digital CMOS pin control (Si8751) or diode emulation (Si8752) to best suit the application, plus flexible outputs to support driving AC or DC load configurations. The Si875x family eliminates the need for bulky mechanical relays, which can be difficult to assemble onto PCBs and add switching noise to the system. Furthermore, its 2.5 kVrms isolation rating forms the basis for full certification to UL, CSA, VDE, and CQC.

Features

Si875x

- Self-powered output to drive external FET enables solid state relay replacement
- LED emulator or digital pin input options

High Voltage Battery Monitoring Application Example



Si875x Product Matrix

PART NUMBER	EVALUATION KIT	ISOLATION RATING (KVRMS)	INPUT TYPE	PEAK OUTPUT CURRENT	MAX PROPAGATION DELAY (μS)	DRIVER SUPPLY RANGE (V)	PACKAGE TYPE	AEC-Q100
Si8751AB-IS	Si8751-KIT	2.5	Digital CMOS	External FET Specific	41	8 13	NB S0IC8	Yes
Si8752AB-IS	Si8752-KIT	2.5	Diode Emulation	External FET Specific	41	8 13	NB S0IC8	Yes

Get More Information

Environmental and Safety Compliance

Isolation Products Meet Safety Standard Compliance

Silicon Labs isolation products meet global requirements and standards for safety compliance and mechanical creepage and clearance. Digital isolator, AC current sensor and ISOdriver products support up to 8 mm of creepage and clearance through wide-body SOIC package to pass 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 AGENCY	COMPONENT STANDARD	ISOLATION RATINGS (KVRMS)	DIGITAL ISOLATORS				ISODRIVERS		ISOLATED AMPLIFIERS	
			SI827X	SI86XX	SI87XX	SI88XX	SI823X	SI826X	SI8239X	SI892X
UL	UL 1577	2.5	✓	✓			✓		✓	
		3.75		✓	✓			✓		✓
		5		✓	✓	✓	✓	✓	✓	✓
VDE/IEC	VDE-0884-10, IEC 60747-5-5	BASIC	✓	✓			✓		✓	
		REINFORCED			✓	✓		✓		✓

NOTE: ALL PRODUCTS ARE ALSO COMPLIANT TO CSA 5A AND CQC GB4943.1 COMPONENT STANDARDS. PLEASE SEE PRODUCTS DATASHEETS FOR COMPLIANCE TO END EQUIPMENT STANDARDS LIKE IEC 60950, 61010, 60601 ETC.

Online Support

Find the development tools you need for your isolation design



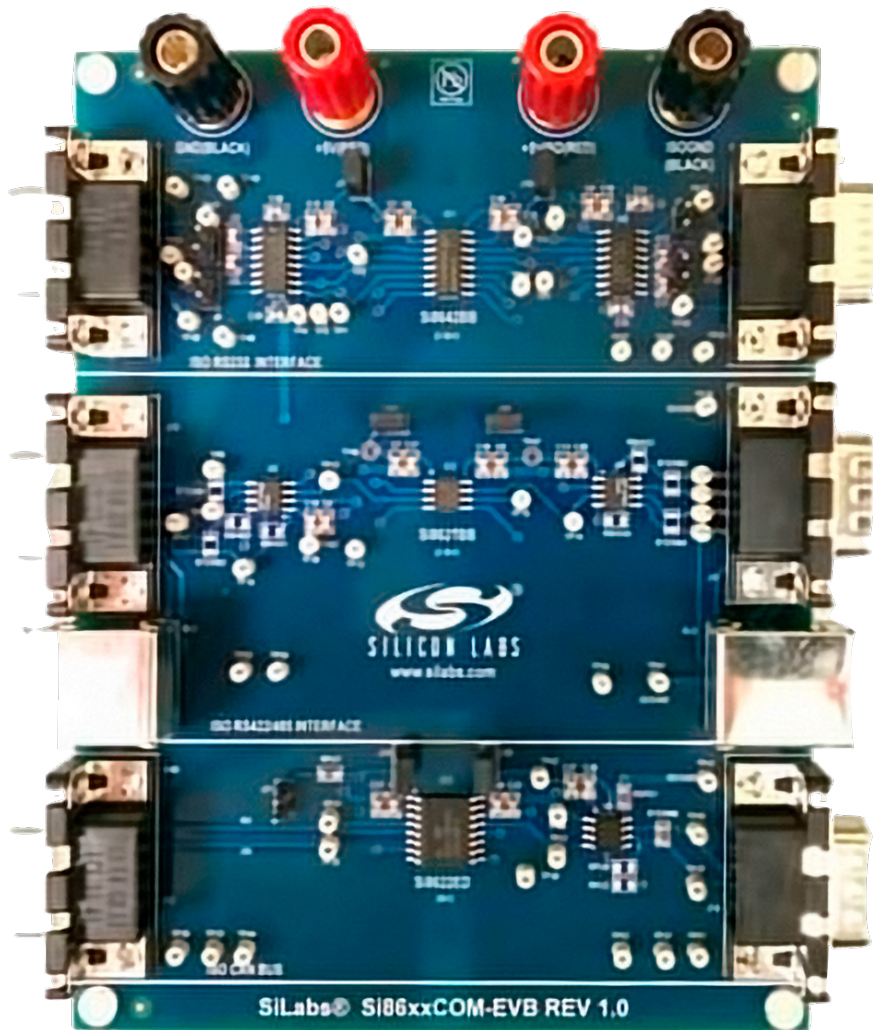
Isolation Bootstrap Calculator

The web-based 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.



Isolator Power Consumption Calculator

The Isolator Power Consumption Calculator web-based utility allows you to define basic information about your isolation set-up, and find out what your power budget will be. Simply choose the settings that match your design and get detailed power and current data.



Si86XXCOM-KIT

To help demonstrate the low power, reliability and performance of Silicon Labs' digital isolators, we offer the Si86xx Digital Isolated Communications reference design kit.



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