

ISOLATION PRODUCT SELECTOR GUIDE



www.silabs.com



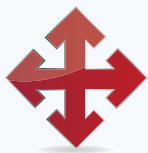
The Lowest Power Consumption

Based on our patented RF isolation architecture, the Si84xx isolator family is engineered to support the lowest power consumption across data rates ranging from DC to 150 Mbps.



Robust and Reliable Operation

The isolator family excels in even the harshest environments and leads the industry in propagation delay, jitter performance, RF immunity, emissions and ESD.



Multi-Channel and Bi-Directional Communications

The isolator family of digital isolators is designed for a wide range of demanding applications. With a small footprint, up to 5 kV isolation and up to 6 channels, we've got a solution perfect for all of your digital isolation needs.

FALL 2010

Solutions for industrial, communications, consumer and medical applications

www.silabs.com/isolation



SILICON LABS®

Isolation Products

REQUEST SAMPLES AND DOWNLOAD DOCUMENTATION AT www.silabs.com/isolation

Isolated Current Sensors

PART NUMBER	FULL SCALE CURRENT (A)	INITIAL ACCURACY %	TEMP RANGE	OUTPUT MODE	ISOLATION RATING	PIN 7 FUNCTION	PACKAGE(S)	
							QFN12	SOIC20
Si8501	5	± 5%	-40 to 125 °C	Single	1 or 5 kV rms ¹	Integrator Reset Time Programming Input	•	•
Si8502	10	± 5%	-40 to 125 °C	Single	1 or 5 kV rms ¹	Integrator Reset Time Programming Input	•	•
Si8503	20	± 5%	-40 to 125 °C	Single	1 or 5 kV rms ¹	Integrator Reset Time Programming Input	•	•
Si8511	5	± 5%	-40 to 125 °C	Ping-Pong	1 or 5 kV rms ¹	Integrator Reset Time Programming Input	•	•
Si8512	10	± 5%	-40 to 125 °C	Ping-Pong	1 or 5 kV rms ¹	Integrator Reset Time Programming Input	•	•
Si8513	20	± 5%	-40 to 125 °C	Ping-Pong	1 or 5 kV rms ¹	Integrator Reset Time Programming Input	•	•
Si8517	5	± 5%	-40 to 125 °C	Ping-Pong with FAULT output	1 or 5 kV rms ¹	Fault Output	•	•
Si8518	10	± 5%	-40 to 125 °C	Ping-Pong with FAULT output	1 or 5 kV rms ¹	Fault Output	•	•
Si8519	20	± 5%	-40 to 125 °C	Ping-Pong with FAULT output	1 or 5 kV rms ¹	Fault Output	•	•
Si8540	Programmable	± 2%	-40 to 85 °C	Programmable			5 or 8-pin SOIC	

¹5 kV isolation available in 20-pin SOIC package

¹NB = Narrow-Body, WB = Wide Body

Multi-Channel Unidirectional Digital Isolators (1.0 kVrms)

PART NUMBER	FORWARD CHANNELS	REVERSE CHANNELS	MAXIMUM DATA RATE (MBPS)	ENABLE OUTPUT	ISOLATION RATING	VOLTAGE RANGE (V)	TEMPERATURE RANGE	PACKAGE
								NB SOIC16
Si8440AA-D-IS1	4	0	1	•	1.0 kVrms	2.7 - 5.5	-40 to +125 °C	•
Si8440BA-D-IS1	4	0	150	•				•
Si8441AA-D-IS1	3	1	1	•				•
Si8441BA-D-IS1	3	1	150	•				•
Si8442AA-D-IS1	2	2	1	•				•
Si8442BA-D-IS1	2	2	150	•				•
Si8445BA-D-IS1	4	0	150	•				•
Si8450AA-B-IS1	5	0	1	•	1.0 kVrms	-40 to +125 °C	•	
Si8450BA-B-IS1	5	0	150	•			•	
Si8451AA-B-IS1	4	1	1	•			•	
Si8451BA-B-IS1	4	1	150	•			•	
Si8452AA-B-IS1	3	2	1	•			•	
Si8452BA-B-IS1	3	2	150	•			•	
Si8455BA-B-IS1	5	0	150	•			•	
Si8460AA-B-IS1	6	0	1	•	1.0 kVrms	-40 to +125 °C	•	
Si8460BA-B-IS1	6	0	150	•			•	
Si8461AA-B-IS1	5	1	1	•			•	
Si8461BA-B-IS1	5	1	150	•			•	
Si8462AA-B-IS1	4	2	1	•			•	
Si8462BA-B-IS1	4	2	150	•			•	
Si8463AA-B-IS1	3	3	1	•			•	
Si8463BA-B-IS1	3	3	150	•			•	

Multi-Channel Unidirectional Digital Isolators (2.5 kVrms)

PART NUMBER	FORWARD CHANNELS	REVERSE CHANNELS	MAXIMUM DATA RATE (MBPS)	ENABLE OUTPUT	ISOLATION RATING	VOLTAGE RANGE (V)	TEMPERATURE RANGE	PACKAGE(S)		
								NB SOIC8	WB SOIC16	NB SOIC16
Si8410AB-D-IS	1	0	1		2.5 kVrms	2.7 - 5.5	-40 to +125 °C	•		
Si8410BB-D-IS	1	0	150					•		
Si8420AB-D-IS	2	0	1		2.5 kVrms	2.7 - 5.5	-40 to +125 °C	•		
Si8420BB-D-IS	2	0	150					•		
Si8421AB-D-IS	1	1	1		2.5 kVrms	2.7 - 5.5	-40 to +125 °C	•		
Si8421BB-D-IS	1	1	150					•		
Si8422AB-B-IS	1	1	1		2.5 kVrms	2.7 - 5.5	-40 to +125 °C	•		
Si8422BB-B-IS	1	1	150					•		
Si8423AB-B-IS	2	0	1					•		
Si8423BB-B-IS	2	0	150					•		
Si8430AB-D-IS(1)	3	0	1	•	2.5 kVrms	2.7 - 5.5	-40 to +125 °C		•	•
Si8430BB-D-IS(1)	3	0	150	•						
Si8431AB-D-IS(1)	2	1	1	•						
Si8431BB-D-IS(1)	2	1	150	•						
Si8435BB-D-IS(1)	3	0	150							

Multi-Channel Unidirectional Digital Isolators (2.5 kVrms) cont.

PART NUMBER	FORWARD CHANNELS	REVERSE CHANNELS	MAXIMUM DATA RATE (MBPS)	ENABLE OUTPUT	ISOLATION RATING	VOLTAGE RANGE (V)	TEMPERATURE RANGE	PACKAGE(S)		
								NB SOIC8	WB SOIC16	NB SOIC16
Si8440AB-D-IS(1)	4	0	1	•	2.5 kVrms	2.7 - 5.5	-40 to +125 °C		•	•
Si8440BB-D-IS(1)	4	0	150	•					•	•
Si8441AB-D-IS(1)	3	1	1	•					•	•
Si8441BB-D-IS(1)	3	1	150	•					•	•
Si8442AB-D-IS(1)	2	2	1	•					•	•
Si8442BB-D-IS(1)	2	2	150	•					•	•
Si8445BB-D-IS(1)	4	0	150						•	•
Si8450AB-B-IS1	5	0	1	•	2.5 kVrms	2.7 - 5.5	-40 to +125 °C			•
Si8450BB-B-IS1	5	0	150	•						•
Si8451AB-B-IS1	4	1	1	•						•
Si8451BB-B-IS1	4	1	150	•						•
Si8452AB-B-IS1	3	2	1	•						•
Si8452BB-B-IS1	3	2	150	•						•
Si8455BB-B-IS1	5	0	150							•
Si8460AB-B-IS1	6	0	1	•	2.5 kVrms	2.7 - 5.5	-40 to +125 °C			•
Si8460BB-B-IS1	6	0	150	•						•
Si8461AB-B-IS1	5	1	1	•						•
Si8461BB-B-IS1	5	1	150	•						•
Si8462AB-B-IS1	4	2	1	•						•
Si8462BB-B-IS1	4	2	150	•						•
Si8463AB-B-IS1	3	3	1	•						•
Si8463BB-B-IS1	3	3	150	•			•			

Multi-Channel Unidirectional Digital Isolators (5 kVrms)

PART NUMBER	FORWARD CHANNELS	REVERSE CHANNELS	MAXIMUM DATA RATE (MBPS)	ENABLE OUTPUT	ISOLATION RATING	VOLTAGE RANGE (V)	TEMPERATURE RANGE	PACKAGE(S)		
								NB SOIC8	WB SOIC16	NB SOIC16
Si8410AD-A-IS (2)	1	0	1		5 kVrms	2.7 - 5.5	-40 to +125 °C		•	
Si8410BD-A-IS (2)	1	0	150						•	
Si8420AD-A-IS (2)	2	0	1						•	
Si8420BD-A-IS (2)	2	0	150						•	
Si8421AD-B-IS (2)	1	1	1						•	
Si8421BD-B-IS (2)	1	1	150						•	
Si8422AD-B-IS	1	1	1						•	
Si8422BD-B-IS	1	1	150						•	
Si8423AD-B-IS	2	0	1						•	
Si8423BD-B-IS	2	0	150						•	

Bidirectional Digital Isolators (2.5 kV and 1.0 kV)

PART NUMBER	SERIAL DATA	SERIAL CLOCK	UNIDIRECTIONAL CHANNELS	MAX. I ² C CLOCK RATE	ISOLATION RATING	PACKAGE(S)	
						NB SOIC8	NB SOIC16
Si8400AA-B-IS	•	•	0	1.7 MHz	1.0 kVrms	•	
Si8400AB-B-IS	•	•	0	1.7 MHz	2.5 kVrms	•	
Si8401AA-B-IS	•		Clock	1.7 MHz	1.0 kVrms	•	
Si8401AA-B-IS	•		Clock	1.7 MHz	2.5 kVrms	•	
Si8405AB-B-IS1	•	•	1 forward and 1 reverse	1.7 MHz	1.0 kVrms		•
Si8405AB-B-IS1	•	•	1 forward and 1 reverse	1.7 MHz	2.5 kVrms		•

Isolated Gate Drivers

PART NUMBER	INPUTS	CONFIGURATION	OVERLAP PROTECTION	PROGRAMMABLE DEAD TIME	PK IOUT	PACKAGE(S)			
						SOIC8	NB SOIC16	WB SOIC16	LG414
Si8220	Opto (Passive)	Single Driver			2.5 A	•		•	
Si8221	Opto (Passive)	Single Driver			0.5 A	•		•	
Si8230	VIA/ VIB	High-Side/Low-Side	•	•	0.5 A		•	•	
Si8231	PWM	High-Side/Low-Side	•	•	0.5 A		•	•	
Si8232	VIA/ VIB	Dual Channel Driver			0.5 A		•	•	
Si8233	VIA/ VIB	High-Side/Low-Side	•	•	4.0 A		•	•	•
Si8234	PWM	High-Side/Low-Side	•	•	4.0 A		•	•	•
Si8235	VIA/ VIB	Dual Channel Driver			4.0 A		•	•	•
Si8236	VIA/ VIB	Dual Channel Driver with Thermal Pad			4.0 A				•

Turnkey Support

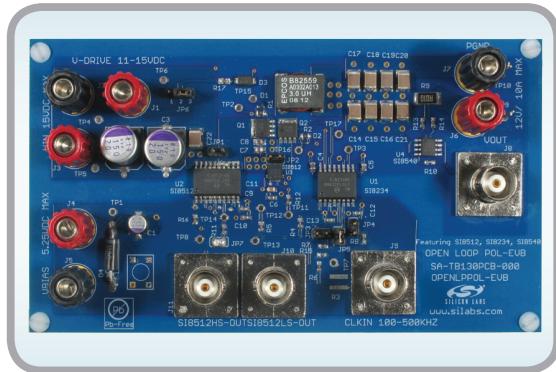
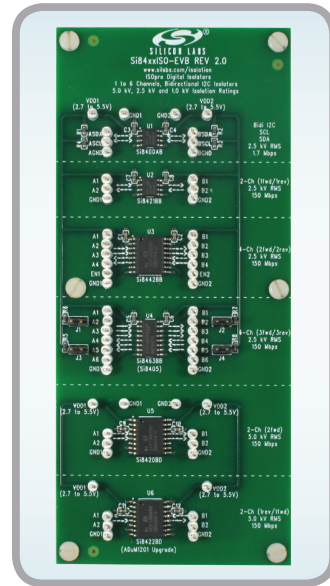
FIND THE EVALUATION TOOLS AND REFERENCE DESIGNS TO HELP YOU GET STARTED: www.silabs.com/whydigitalisolators

Si84xxISO-KIT

The Si84xxISO-KIT evaluation kit is intended for basic functional testing and engineering validation of various 2.5 kV and 5 kV isolator product configurations. The board offers an overview of the Si84xx product family with five different isolators (2, 4 and 6-channel) as well as a bi-directional I²C compliant isolator.

Si84xxISO-KIT evaluation kit includes the following:

- Si8400 2.5 kV bi-directional I²C digital isolator
- Si8421 2-channel 2.5 kV isolator with one reverse channel
- Si8442 4-channel 2.5 kV isolator with two reverse channels
- Si8463 6-channel 2.5 kV isolator with three reverse channels
- Si8420 2-channel 5.0 kV isolator with all forward channels
- Si8422 2-channel 5.0 kV isolator with one reverse channel

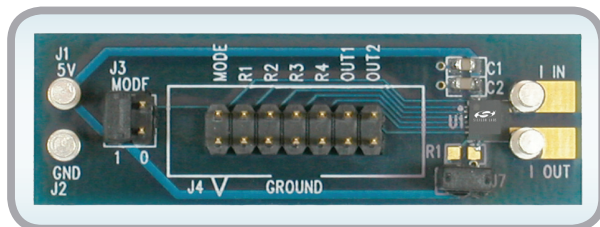


Point-of-Load Reference Design

The Open Loop POL reference design provides a convenient platform to fully evaluate multiple isolation products typically found in a point-of-load application. The reference design implements a single-phase POL whose switching frequency can be varied from 100 kHz to 500 kHz and the duty cycle from 20 percent to 80 percent. The reference design includes a 100 kHz to 500 kHz single-phase POL, Si8234 ISOdriver, Si8512 AC current sensor and Si8540 DC current sensor.

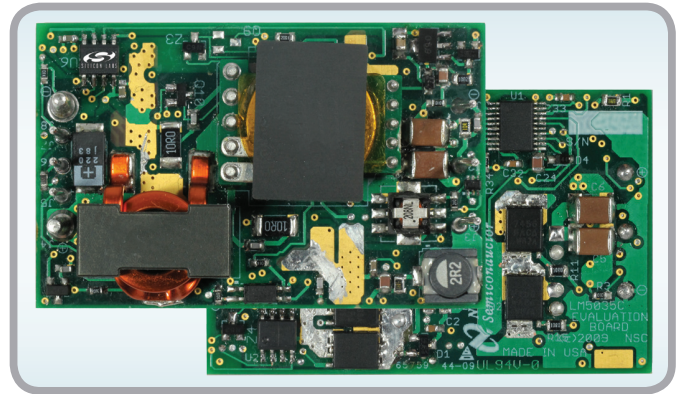
Si85xx Unidirectional AC Current Sensor EK

The Si85xx Evaluation Board provides a means to evaluate the ac current sensor in an existing application. It is meant to be soldered directly into the user's power supply current path. The target board comes with the Si8512 installed and provides a 10 Amp full scale input sense range and a 2.0 V full scale output voltage.



Isolated dc-dc SMPS Reference Design

The reference design features Silicon Labs' SI8420 digital isolator and National Semiconductor's LM5035C pulse-width modulation (PWM) controller. The isolated dc-dc converter evaluation board provides power converter designers with a highly efficient 100 W reference design in a quarter-brick form factor. The board reduces the time required for product characterization and design adaptation to the customer's specific requirements. The reference design demonstrates a viable 36 V to 75 V input half-bridge converter for power module or embedded power applications. The design survives input transients up to 100 V as commonly required in communications equipment and protects the power distribution system with hiccup-mode fault protection.







IS0driver Challenge Web Utility

Are you ready to evaluate your current digital isolator technology? Having problems with your current opto + driver combination? Or just interested in seeing how Silicon Labs stacks up against the competition? Take the IS0driver Challenge and compare our stats against similar solutions on the market today.

TAKE THE IS0driver CHALLENGE!

What isolation solution are you currently using?

- Optocoupler or opto+driver isolator? 
- Digital Isolator? 
- Starting a new design? 
- Need more information? 

Take the IS0driver Challenge: www.silabs.com/IS0driverChallenge

Buy or Sample Isolation Products

QUICKLY BUY OR SAMPLE PRODUCTS ON OUR WEBSITE AT www.silabs.com/buy

Find Your Part

Silicon Labs offers easy-to-use parametric search for Isolator and ISOdriver products. Click the buttons to filter as you search for the features you require and find the perfect part to meet your needs. You can then buy or sample parts, view datasheets, view certification reports or export your results into a sortable Excel spreadsheet.

Isolators Parametric Search *Click the controls below to filter your search

Channel Type	<input type="button" value="Unidirectional"/> <input type="button" value="Bidirectional"/> <input type="button" value="Unidirectional+Bidirectional"/>	Isolation Rating (kV)	<input type="button" value="2.5"/> <input type="button" value="1.0"/>
Unidirectional Channels	<input type="button" value="6"/> <input type="button" value="5"/> <input type="button" value="4"/> <input type="button" value="3"/> <input type="button" value="2"/> <input type="button" value="1"/>	Maximum Data Rate (Mbps)	<input type="button" value="150"/> <input type="button" value="1"/> <input type="button" value="1.7"/>
Bidirectional Channels	<input type="button" value="2"/>	Maximum Propagation Delay (ns)	<input type="button" value="9.5"/> <input type="button" value="20"/> <input type="button" value="35"/> <input type="button" value="40"/>
Forward Channels	<input type="button" value="6"/> <input type="button" value="5"/> <input type="button" value="4"/> <input type="button" value="3"/> <input type="button" value="2"/> <input type="button" value="1"/>	Enable Control	<input type="checkbox"/>
Reverse Channels	<input type="button" value="3"/> <input type="button" value="2"/> <input type="button" value="1"/> <input type="button" value="0"/>	Package Type	<input type="button" value="WB SOIC-16"/> <input type="button" value="NB SOIC-8"/> <input type="button" value="NB SOIC-16"/>
<input type="button" value="RESET ALL"/>			

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 and VDE certification with devices specifying up to 5 kV isolation.

TESTING AGENCY	STANDARD	ISOLATION RATING(S) (kVrms)	DIGITAL ISOLATORS (UNI- AND BIDIRECTIONAL) Si840x/1x/2x/3x/4x/5x/6x	ISOdrivers Si823x	AC CURRENT SENSORS Si850x, Si851x
UL	UL 1577	2.5, 5.0 kVrms	•	•	•
CSA	CSA 5A (60950, 61010, 60601)	2.5, 5.0 kVrms	•	•	•
VDE	IEC 60747-5-2, 60950*	2.5, 5.0 kVrms	•	•	

*Pending

Environmental Data Part Number Search

The environmental data part number search provides detailed device composition and test results for Silicon Labs part numbers. You can also download the following documents for each part number:

- Detailed Device Composition (MDDS Data)
- Halogen-Free Certificate of Compliance
- IPC 1752-1 (XML format)
- PFOS Certificate of Compliance
- RoHS Certificate of Compliance
- REACH Declaration

Silicon Labs' products are designed and manufactured to ISO 9001, ISO 14001 and ISO/TS 16949 standards.



ISO 9001

Quality Management System
Design and Manufacture of Integrated Circuits
Certificate Registration No: 951 08 4762



ISO 14001

Environmental Management System
Design and Manufacture of Integrated Circuits
Certificate Registration No: 951 09 4998



ISO/TS 16949

Quality Management System for
Manufacture of Integrated Circuits and Related
Products for Automotive Applications
Certificate Registration No.: 12 111 33114 TMS
IATF Certificate No.: 0080212



