

Quad Digital Isolators

Silicon Lab's family of digital isolators are CMOS devices that employ an RF coupler to transmit digital information across an isolation barrier. Very high speed operation at low power levels is achieved. These parts are available in a 16-pin wide body SOIC package. Three speed grade options (1, 10, 100 Mbps) are available over the full temperature range and achieve typical propagation delay of less than 10 ns.

- High-speed operation: DC – 150 Mbps
- Low propagation delay: <10 ns
- Wide operating supply voltage: 2.375-5.5V
- Low power: $I_1 + I_2 < 12 \text{ mA/channel}$ at 100 Mbps
- Precise timing:
 - 2 ns pulse width distortion
 - 1 ns channel-channel matching
 - 2 ns pulse width skew
- 2500 V_{RMS} isolation
- Tri-state outputs with ENABLE control
- DC correct
- No start-up initialization required
- < 10 μs startup time
- Wide body SOIC-16 package
- Safety regulatory approvals pending

Supply Voltage: 2.375 to 5.5 V

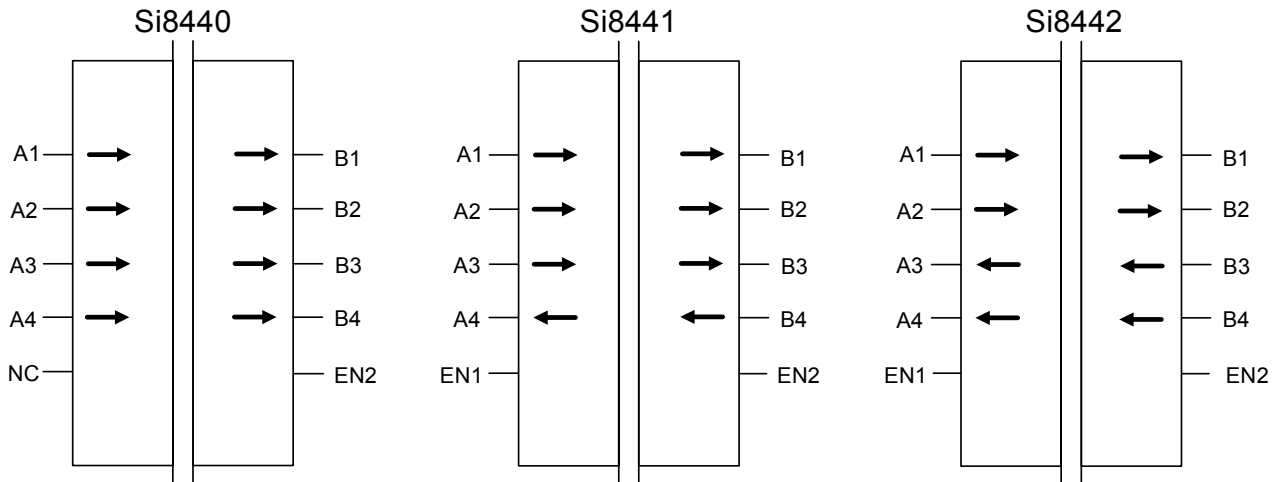
Applications

- Example circuit applications:
 - Isolation
 - Level shifting
 - Ground loop elimination
- Example end applications:
 - Isolated analog data acquisition
 - Operator interface controls
 - AC-DC and DC-DC switching supplies
 - Plasma TVs
 - Ethernet/CAN Networks
 - Isolated point-to-point communications
 - Motor Control
 - UPS systems

16-Pin Wide Body SOIC

Operating Temperature: +125 °C at 100 Mbps

+100 °C at 150 Mbps



Selected Electrical Specifications

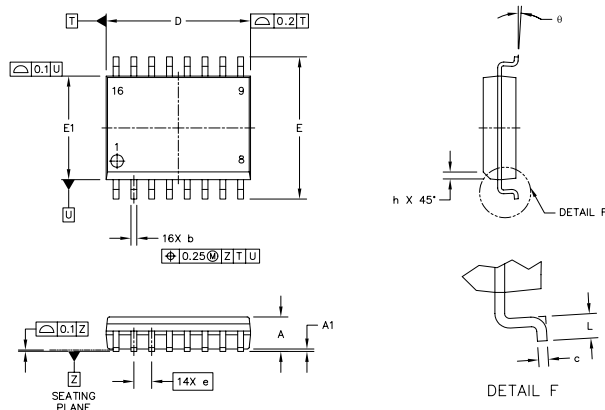
($T_A = 25\text{ }^\circ\text{C}$, $V_{DD} = 5.0\text{ V}$ unless otherwise specified)

Parameter	Conditions	Min	Typ	Max	Units
Global Characteristics					
Supply Voltage		2.375	—	5.5	V
Supply Current (Si8440)	I1 at 10 Mbps	—	13	—	mA
	I2 at 10 Mbps	—	8	—	mA
	I1 at 100 Mbps	—	10	—	mA
	I2 at 100 Mbps	—	32	—	mA
Isolator Specifications					
Bit Rate		dc	—	150	Mbps
Transient Immunity at logic low output		—	30	—	kV/ μs
Transient Immunity at logic high output		—	7.5	—	kV/ μs
Propagation Delay		—	7.5	—	ns
Pulse Width Distortion		—	2	—	ns
Channel-to-Channel Matching		—	1	—	ns
Pulse Width Skew		—	2	—	ns

Ordering Part Number	Number of Inputs V_{DD1} Side	Number of Inputs V_{DD2} Side	Maximum Data Rate	Temperature	Package Type
Si8440-A-IS	4	0	1	-40 to 125 $^\circ\text{C}$	SOIC-16
Si8440-B-IS	4	0	10	-40 to 125 $^\circ\text{C}$	SOIC-16
Si8440-C-IS	4	0	100	-40 to 125 $^\circ\text{C}$	SOIC-16
Si8441-A-IS	3	1	1	-40 to 125 $^\circ\text{C}$	SOIC-16
Si8441-B-IS	3	1	10	-40 to 125 $^\circ\text{C}$	SOIC-16
Si8441-C-IS	3	1	100	-40 to 125 $^\circ\text{C}$	SOIC-16
Si8442-A-IS	2	2	1	-40 to 125 $^\circ\text{C}$	SOIC-16
Si8442-B-IS	2	2	10	-40 to 125 $^\circ\text{C}$	SOIC-16
Si8442-C-IS	2	2	100	-40 to 125 $^\circ\text{C}$	SOIC-16

Note: All packages Pb-free and RoHS Compliant.

Package Information—Wide Body SOIC



Symbol	Millimeters		Symbol	Millimeters	
	Min	Max		Min	Max
A	—	2.65	c	0.20	0.33
A1	0.1	0.3	e	1.27 BSC	
D	10.3 BSC		h	0.25	0.75
E	10.3 BSC		L	0.4	1.27
E1	7.5 BSC		θ	0 $^\circ$	7 $^\circ$
b	0.31	0.51			