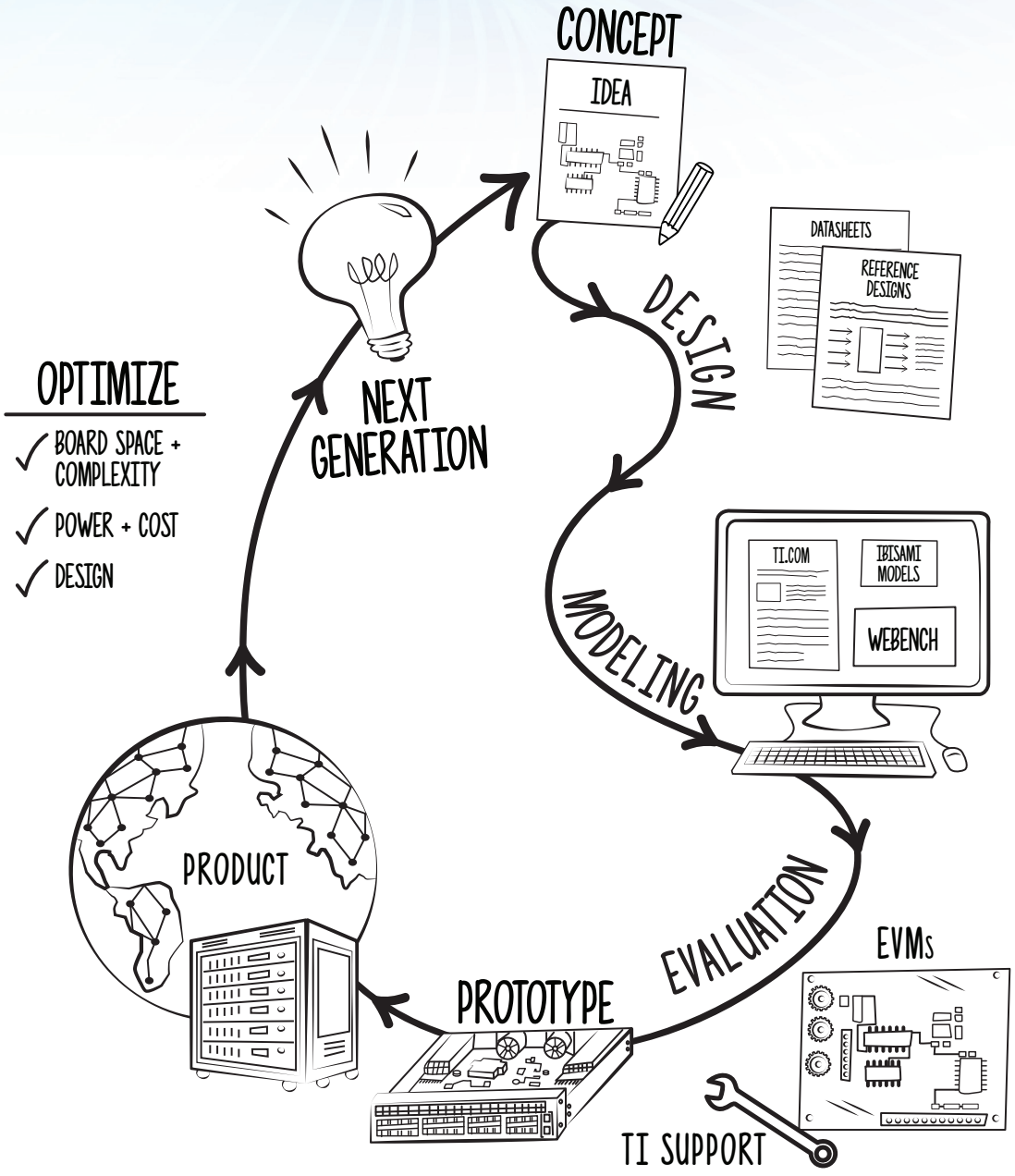
Extend Reach • Distribute Signals

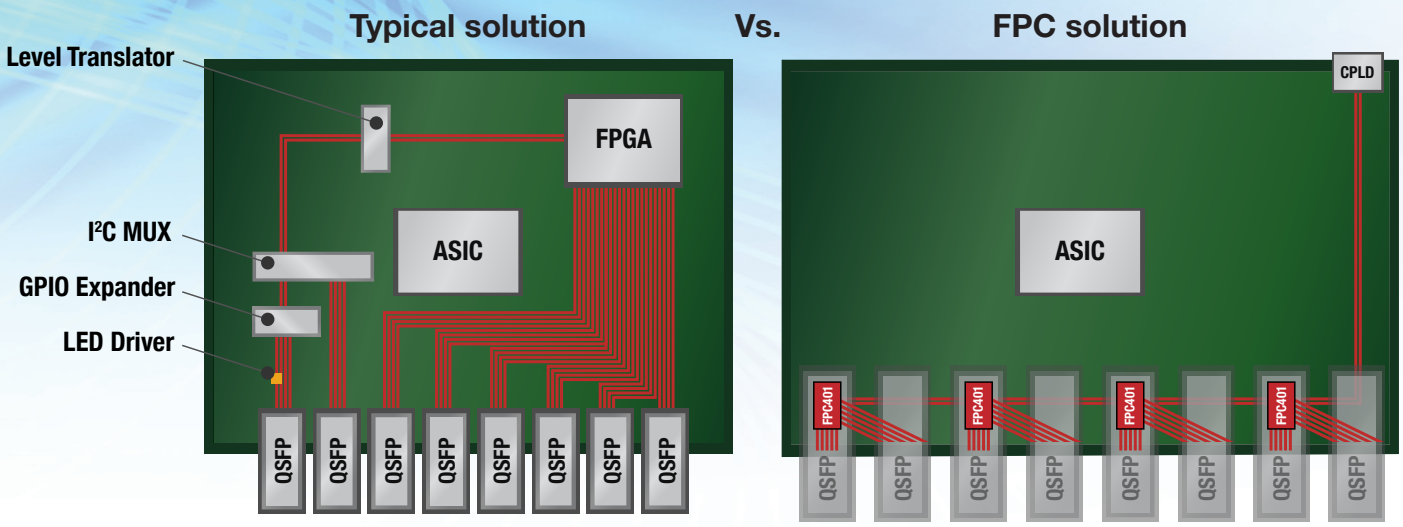
Advanced signal conditioning made easy and efficient

Texas Instruments



Optimize Board Space and Complexity

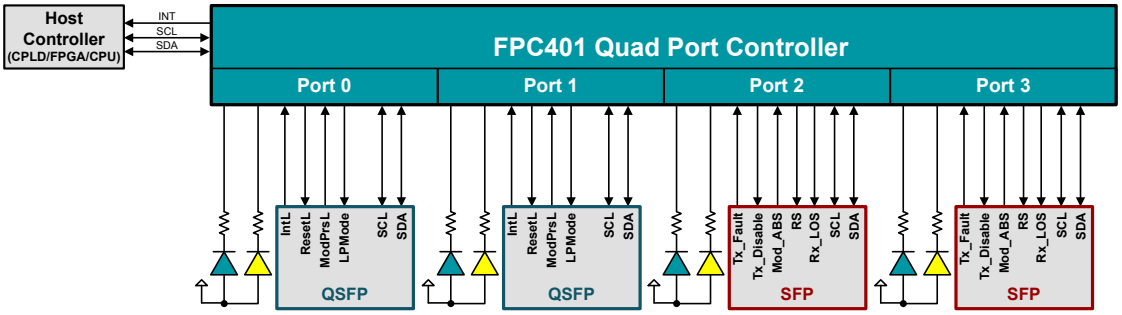
with Front Port Controllers (FPC) for SFP, QSFP, and Mini-SAS HD



- ✔ **Improve routing congestion and simplify layout**
- ✔ **Reduce FPGA I/O requirements and cost**
- ✔ **Simplify BOM and eliminate logic, I/O expander devices**

How FPC401 works

Aggregates all low speed control and I²C signals across four ports into a single bus (I²C or SPI) to your host.
Combines multiple front port controllers to manage up to 56 ports with a single two-wire interface.
Enables direct addressing to every port and eliminates the need for polling.

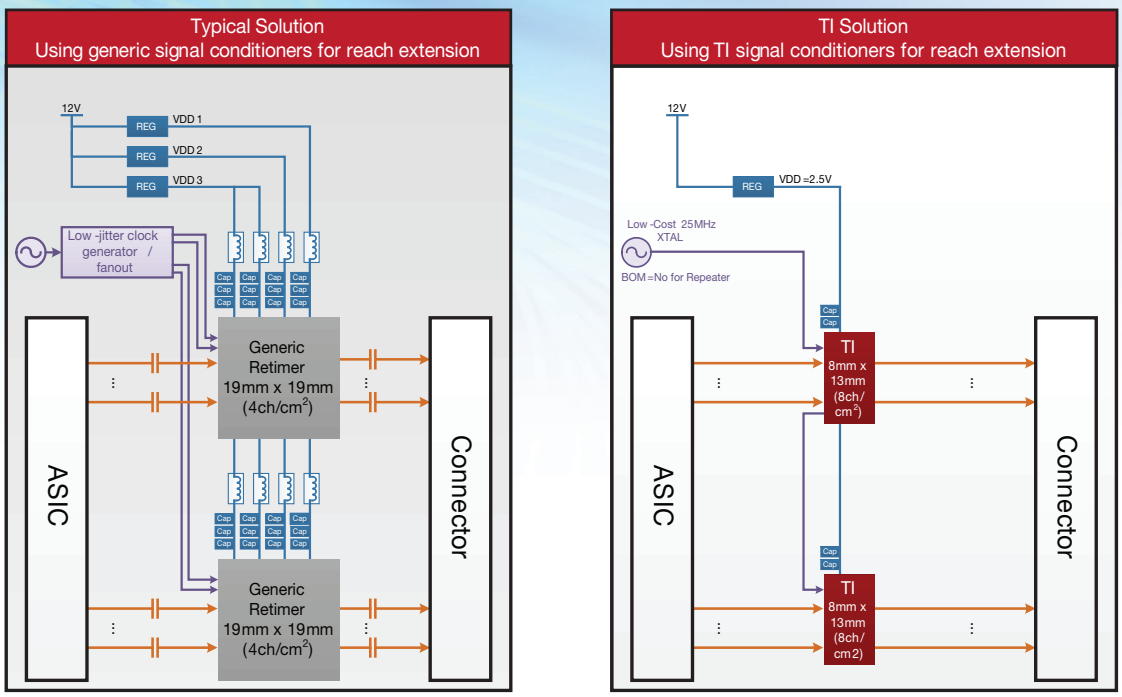


Features

- Selectable SPI (up to 10 MHz) or I²C (up to 1 MHz) host control interface
- Integrated host-side level shifters: 1.8 V to 3.3 V, LED drivers
- Small package fits underneath SFP cage
- Automatic pre-fetch of key SFP+/QSFP+ data
- Daisy chainable: send minimum number of signals to host
- Eliminate discrete shift registers, I²C muxes, LED drivers, and I/O expanders

Optimize Power and Cost

with pin-compatible 10/40/100 GbE signal conditioners



Simple and flexible design

TI's pin-compatible portfolio of linear repeaters, retimers, and mux buffers enable performance and cost optimization in a common footprint. TI solutions use a single power supply, integrated AC coupling capacitors, and operate without a precision reference clock to simplify board design.

Featured products for 10/40/100 GbE interfaces

Device	Function	Channels	Speed	Package	Pin-compatible
DS280BR810	Repeater	8	Up to 28 Gbps	13 x 8 BGA	
DS280BR820	Repeater	8	Up to 28 Gbps	13 x 8 BGA	
DS280MB810	Mux Buffer	8	Up to 28 Gbps	13 x 8 BGA	✔
DS250DF810	Retimer	8	20.6 to 25.8 Gbps	13 x 8 BGA	
DS280DF810	Retimer	8	20.2 to 28.4 Gbps	13 x 8 BGA	
DS250DF210	Retimer	2	20.6 to 25.8 Gbps	6 x 6 BGA	
DS250DF410	Retimer	4	20.6 to 25.8 Gbps	6 x 6 BGA	✔

Optimize Design Time and Effort

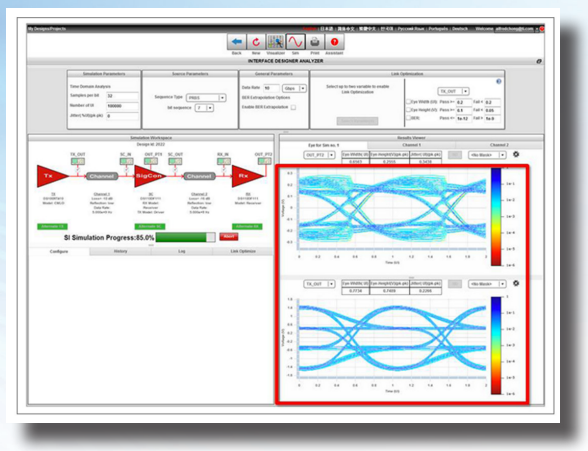
with TI design tools and reference materials

Design Tools

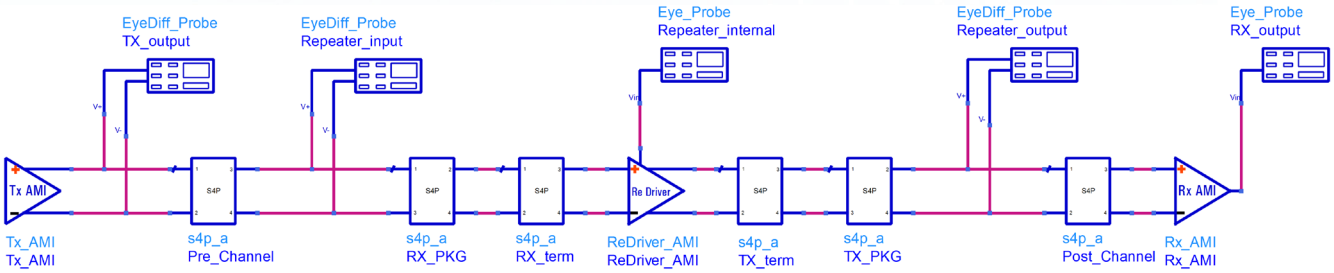
Use WEBENCH®, a free simulator that can run on any machine. The Interface Designer allows you to:

- Easily create new high-speed serial interface systems
- Analyze and enhance integrity for existing designs
- Select the right interface devices for your requirements

ti.com/webenchinterface



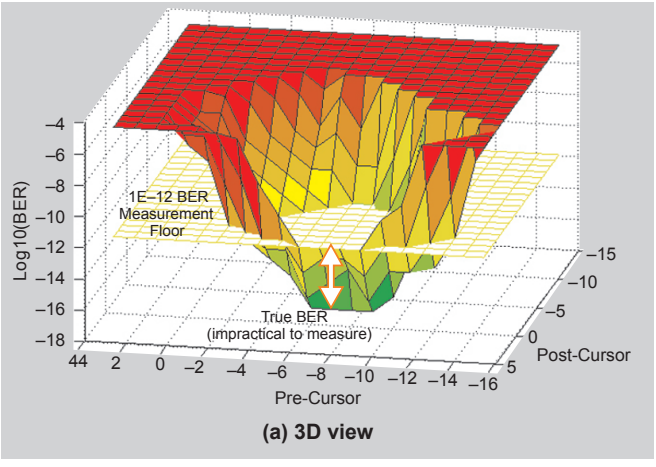
Use TI retimer and repeater IBIS-AMI models to optimize your channel design



Design Reference Materials

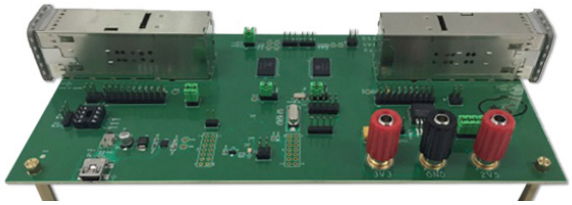
Find out how to optimize your high-speed serial links using green-box testing at: **ti.com/lit/slyt678**

Check out more technical documents, tools & software, and signal conditioner applications at: **ti.com/sigcon**

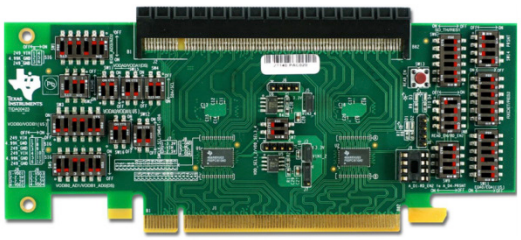


TIDesigns

Accelerate system design and layout using TI Reference Designs - available now! Find our 2-port 100GbE/40GbE/10GbE QSFP28 signal conditioner reference design at: **ti.com/tool/TIDA-00427**



Find our high-speed front-end reference design for PCIe Gen-3 cards at: **ti.com/tool/TIDA-00423**

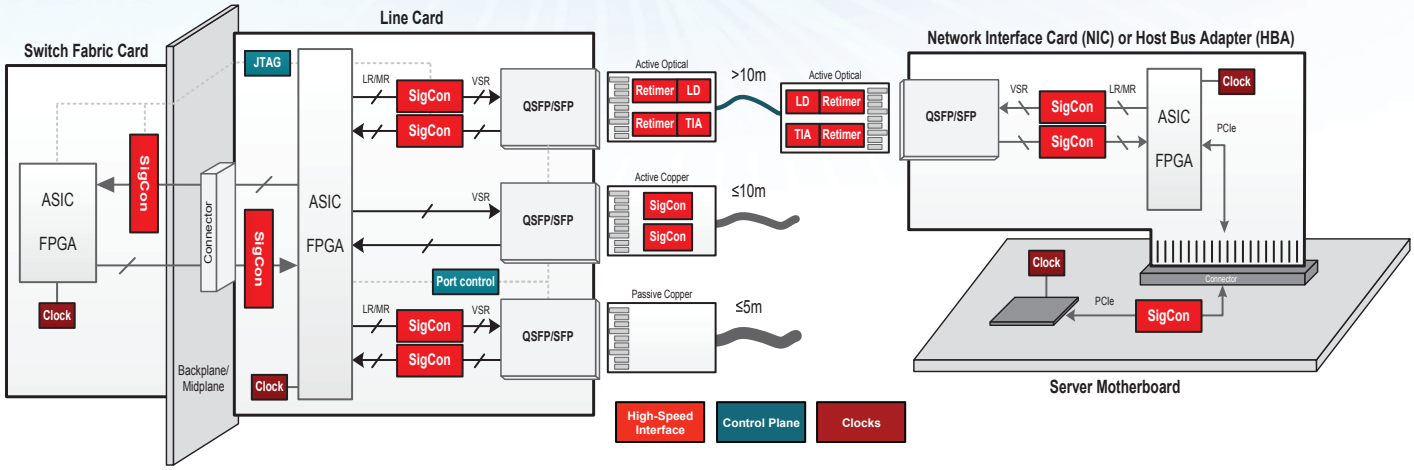


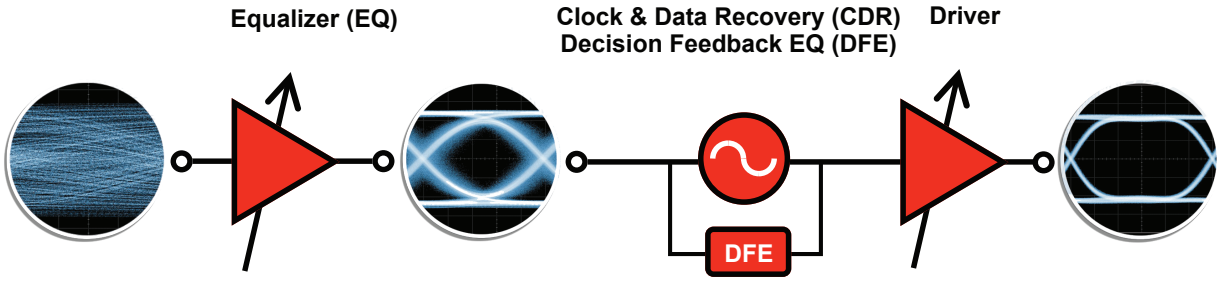
Advanced Signal Conditioning Made Easy and Efficient

Extend reach, eliminate jitter, and distribute signals

Combining cutting-edge silicon process technology with advanced analog circuit design, TI is the market leader for enterprise class signal conditioning solutions. With a comprehensive portfolio of easy-to-use products for front port, backplane, peripheral I/O, optical and active cables applications TI enables complex architectures of advanced data communication systems while reducing the overall system cost. Additionally, TI's reference designs, on-line simulation (WEBENCH®) tools, application notes, and quality support reduces your time to market.

Industry-leading interface solutions – backplane, front port, optical, active cables





Product	Function	Application	Standards
Retimer	EQ, CDR, DFE, Driver	Extend reach, eliminate jitter	10/40/100/200/400GbE PCIe, CPRI, Infiniband
Repeater/ Redriver	EQ, Driver	Extend reach	10/40/100/200/400GbE PCIe, SAS, SATA, CPRI
Crosspoint, Mux Buffer	EQ, Switch, Driver	Extend reach, distribute signals	10/40/100/200/400GbE PCIe, SAS, SATA, CPRI
Port Controller	Aggregate and manage	Simplify port management	SFP, QSFP
Optical Transceiver, Laser Driver, Limiting Amplifier, TIA	EQ, CDR, Driver, Amp	Optical module	1/10/100 GbE, 1/2/4/8/10 GFC, CPRI, 10G EPON

Stay tuned to new developments at: **ti.com/sigcon**

TI E2E Community

E2E Interface Forum
ti.com/e2einterface

Learn more about TI's high speed signal conditioning family of products at ti.com/sigcon
See the entire TI interface portfolio at ti.com/interface

TI Worldwide Technical Support

Internet

TI Semiconductor Product Information Center Home Page
support.ti.com

TI E2E™ Community Home Page
e2e.ti.com

Product Information Centers

Americas Phone +1(512) 434-1560

Mexico Phone 0800-670-7544
Internet/Email ti.com/lsds/ti/csc/support_Americas.page

Europe, Middle East, and Africa
Phone

European Free Call	00800-ASK-TEXAS (00800 275 83927)
International	+49 (0) 8161 80 2121
Russian Support	+7 (4) 95 98 10 701

Note: The European Free Call (Toll Free) number is not active in all countries. If you have technical difficulty calling the free call number, please use the international number above.

Internet	www.ti.com/asktexas
Direct Email	asktexas@ti.com

Japan

Fax	International	+81-3-3344-5317
	Domestic	0120-81-0036
Internet/Email	International	ti.com/lsds/ti.csc/support_Japan.page
	Domestic	www.tij.co.jp/pic

Asia

Phone	Toll-Free Number
Note: Toll-free numbers may not support mobile and IP phones.	
Australia	1-800-999-084
China	800-820-8682
Hong Kong	800-96-5941
India	000-800-100-8888
Indonesia	001-803-8861-1006
Korea	080-551-2804
Malaysia	1-800-80-3973
New Zealand	0800-446-934
Philippines	1-800-765-7404
Singapore	800-886-1028
Taiwan	0800-006800
Thailand	001-800-886-0010
International	+86-21-23073444
Fax	+86-21-23073686
Email	tiasia@ti.com or ti-china@ti.com
Internet	support.ti.com/sc/pic/asia.htm
Technical forums	www.deyisupport.com

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