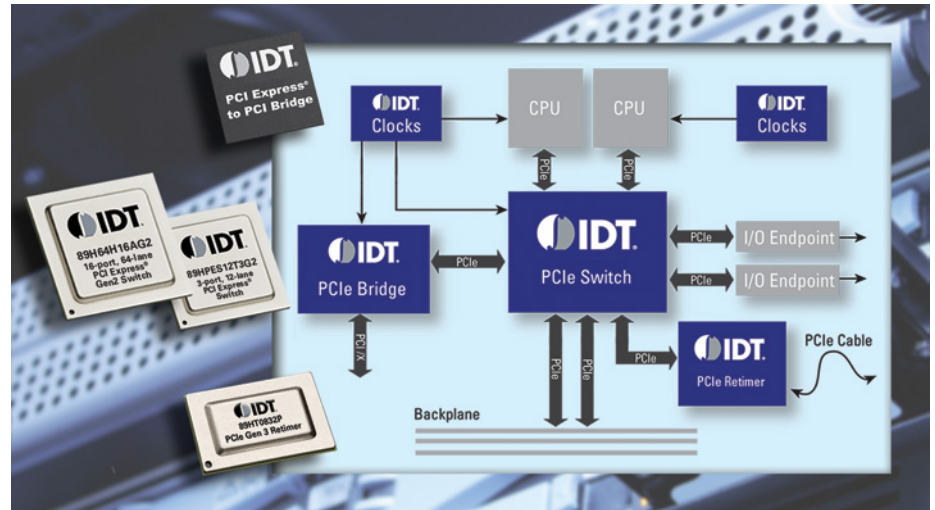# PCI Express® Gen2/Gen3 Signal Integrity, Switching and Bridging Products

IDT PCIe® Gen2/Gen3 devices drive long on-board traces, backplane traces and cables to external devices ensuring optimum system performance

PCI Express Signal Integrity Products for PCIe Gen2 and Gen3 Standard

Increased signal speeds in computing, storage and communications applications present signal integrity challenges for system designers. IDT Signal Integrity Product (SIP) components provide signal conditioning for PCI Express 3.0 applications up to 8 Gbps to deliver optimum system performance over extended distances.

Our devices incorporate advanced receive equalization and transmit de-emphasis capabilities, as well as diagnostic features which helps customers achieve a simplified design and faster time-to-market. In addition, IDT devices offer power saving modes for the lowest-possible power consumption.

SIGNAL CONDITIONER BENEFITS

- Extends trace over 60 inches, and cable over 10 meters

- Eliminates Deterministic Jitter (Dj), Random Jitter (Rj) and Inter-Symbol Interference (ISI)

- Optimizes system performance by reducing lost packets

- Better system reliability with increased signal voltage and timing margins

- Simplifies system design and time-to-market

To request samples, download documentation or learn more visit: **idt.com/PCIeSIP**

PCIe Retimers and Repeaters

Part Number	Channels	Pin Config	I²C Config	Package (mm)	Contact Pitch (mm)
PCIe 3.0 Retimers					
89HT0808P	8	N	Y	9 x 9 BGA	0.8
89HT0816AP	16	N	Y	15 x 15 BGA	1.0
89HT0832P	32	N	Y	13 x 20 BGA	0.8
89HT0832P	32	N	Y	16 x 24 BGA	1.0
PCIe 2.1 Repeaters					
89HP0504P	4	N	Y	4 x 7.5 QFN	0.5
89HP0504P	4	Y	Y	9 x 9 BGA	1.0
89HP0504PB	4	Y	N	4 x 7.5 QFN	0.5
89HP0508P	8	N	Y	9 x 9 BGA	1.0

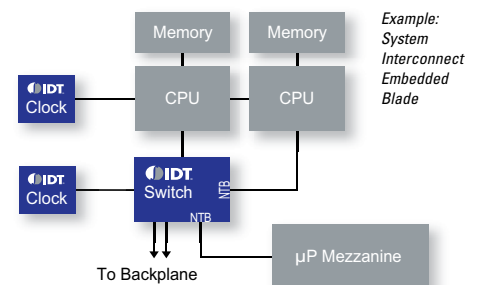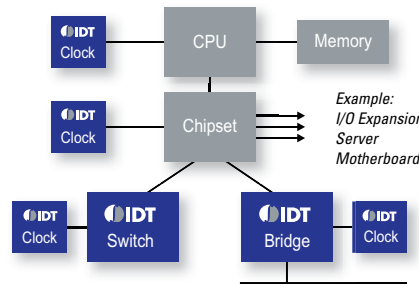# PCI Express Gen2/Gen3 Switching Products

PCI EXPRESS SWITCH BENEFITS

- Most advanced switching architecture available
  - Switch partitioning
  - Adaptive cut-through latency
  - Request metering
  - Large flow control credits and buffers

- Enables multi-domain communication in multi-root applications
  - Multiple non-transparent bridge functions
  - Multi-port timing domain and spread spectrum clock support
  - Multicast
  - Dual DMA controllers

PCI Express Switches

IDT provides the industry's most comprehensive family of high performance, scalable PCI Express switching solutions.

Example: I/O Expansion Server Motherboard

Example: System Interconnect Embedded Blade

To request samples, download documentation or learn more visit: **idt.com/PCIeSwitches**

| Part Number	PCIe Spec	Lanes	Ports	Switch Partitions (Multi-root)	Multicast	NTB Ports	DMA Controllers	Multi-Domain Clocking	Package Size (mm)
89H32NT24AG2	2	32	24	8	Yes	8	2	8	23 x 23
89H32NT8AG2	2	32	8	8		8	2	8	23 x 23
89H24NT6AG2	2	24	6	6		6	2	6	23 x 23
89H24NT24G2	2	24	24	8		8	2	2	19 x 19
89H16NT16G2	2	16	16	4		4	2	2	19 x 19
89H12NT12G2	2	12	12	3		3	2	2	19 x 19
89H64H16G2	2	64	16	16					35 x 35
89H48H12G2	2	48	12	12					27 x 27
89H32H8G2	2	32	8	8		N/A	N/A	N/A	23 x 23
89HPES24T6G2	2	24	6						19 x 19
89HPES24T3G2	2	24	3						19 x 19
89HPES16T4AG2	2	16	4						19 x 19
89HPES12T3G2	2	12	3	N/A	N/A				19 x 19
89HPES6T6G2	2	6	6						19 x 19
89HPES8T5A	1	8	5						15 x 15
89HPES5T5	1	5	5						15 x 15
89HPES4T4	1	4	4						15 x 15
89HPES3T3	1	3	3						10 x 10

PCI Express Gen2|Gen3 Bridging Products

PCI EXPRESS BRIDGE FEATURES

- Compliant to PCIe 1.1 specification

- Low latency and high throughput features

- Proven interoperability

- Small footprint packages

- Simple power supply requirements

- Comprehensive design tools

PCI Express Bridges

To complement the switch products, IDT offers bridges to connect PCIe® to the PCI and PCI-X bus standards. A PCIe bridge is used to bridge devices that use the PCI/X interface to provide a PCIe connection to a host processor or root complex. Applications include PCIe adapter cards, embedded computing, and motherboards to provide connection to PCI/X devices or additional PCI/X expansion slots.

Example: Motherboard Application
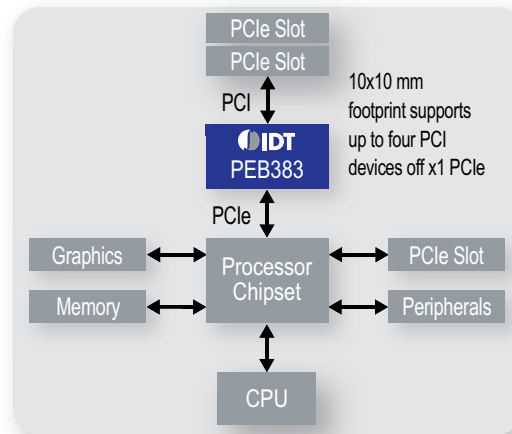
Bridge	Part Number	PCIe I/F	PCI Speed (MHz)	External Master Support	Power	Package (mm)
PCIe to PCI	89HPEB383	x1 Gen1	32/66	4	450mW	14 x 14 QFP 10 x 10 QFN
PCIe to PCI	Tsi381	x1 Gen1	32/66	4	700mW	13 x 13 PBGA
PCIe to PCI	Tsi382	x1 Gen1	32/66	4	700mW	10 x 10 PBGA
PCIe to PCI-X	Tsi384	x4 Gen1	64/133	4	1.3W	28 x 28 QFP

Contact an IDT representative for details on pin-compatibility with comparable solutions.

To request samples, download documentation or learn more visit: **idt.com/PCIeBridges**