PCI Express® Timing Solutions

Comprehensive timing portfolio from the leader in PCI Express timing solutions
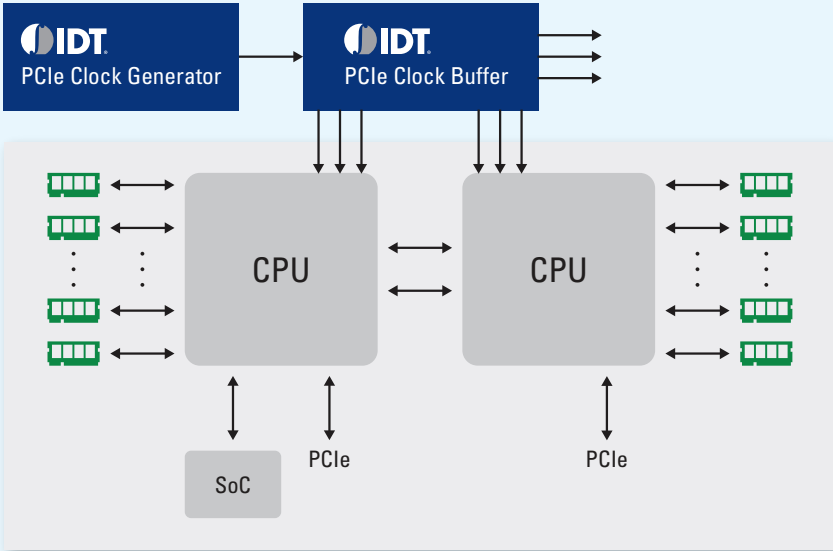
PERFORMANCE
- PCIe Gen5, 32 GT/s
- PCIe Gen4, 16 GT/s
- PCIe Gen3, 8 GT/s
- PCIe Gen2, 5 GT/s
- PCIe Gen1, 2.5 GT/s

INTEGRATION
- Integrated terminations save up to 130 mm² board area
- Integrated crystal load capacitors on programmable devices
- Integrated devices crystal options available

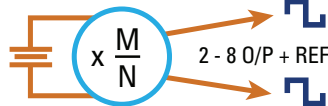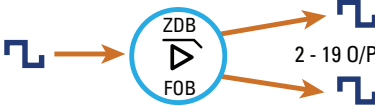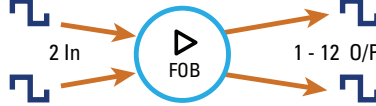### SECURITY
- SMBus security feature available

IDT's industry-leading PCIe® timing portfolio provides the most complete solution for networking, storage, compute, accelerator, and industrial applications.

Our PCIe clock generators, zero-delay / fanout buffers, and fanout multiplexers support PCIe Gen1 to Gen5 data rates and derivatives. These devices are all designed to work together to form a complete solution. IDT's patented LP-HCSL outputs with integrated terminations eliminate up to 4 resistors per differential output, saving board space and reducing output power by up to 90% over standard HCSL outputs.

Our extensive selection of timing devices allows designers to implement the most complex PCI Express clock trees Our extensive selection of timing devices allows implementation of the most complex PCI Express clock trees while maintaining timing margin, minimizing board space, and reducing power consumption, thus ensuring robust system operation.

PCI Express Timing Solutions

9FG Clock (Frequency) Generators	9ZX/9DB Zero-delay Fanout Buffers	9ZM/9DM Fanout Multiplexers
x $\frac{M}{N}$ 2 - 8 O/P + REF	ZDB / FOB 2 - 19 O/P	2 In FOB 1 - 12 O/P
• Eliminate up to 32 resistors	• Eliminate up to 76 resistors	• Eliminate up to 48 resistors
• Save up to 55 mm² of area†	• Save up to 130 mm² of area†	• Save up to 82 mm² of area†
• As small as 6.25 mm²	• As small as 16 mm²	• As small as 9 mm²
• 85Ω and 100Ω system support	• 85Ω and 100 Ω system support	• 85Ω and 100Ω system support
• SSC generation	• SSC compatible	• SSC compatible

† Compared to traditional HCSL outputs

PCI Express Timing Solutions

PCIe Clock Generators

Part Number				All parts support Spread Spectrum				
Prefix	Operating Voltage (V)	PCIe Outputs	Zout (Ω)	Ref Output	PCIe Gen Compliance	PCIe Architecture Support**	Package Type	Package Dimensions (mm)
9FG	U = 1.5	02 04 06 08	33, 100	Yes***	1 - 3	CC	QFN-16 QFN-24 QFN-32 QFN-40 QFN-48	2.5 x 2.5 4 x 4 5 x 5 5 x 5 6 x 6
	V = 1.8				1 - 4			
	L = 3.3		85, 100		1 - 5	CC, SRNS, SRIS		
9FGV1002*	1.8 - 3.3	4	85, 100	Yes	1 - 5	CC, SRnS, SRIS	QFN-24	4 x 4
9FGV1006*		2					QFN-16	3 x 3
5P49V6965*		4	27	Yes	1 - 4	CC, SRnS, SRIS	QFN-24	4 x 4
5P35023*		2	27	Yes	1 - 3	CC	QFN-24	4 x 4

PCIe Clock Zero-Delay (ZDB) Buffers with Fanout Buffer (FOB) Mode

Part Number				All parts support Spread Spectrum				
Prefix	Supply Voltage (V)	PCIe Outputs	Zout (Ω)	Pin Control of ZDB or Fanout Mode	PCIe Ge Compliance	PCIe Architecture Support**	Package Type	Package Dimensions (mm)
9DB	U = 1.5	02 04 06 08	33, 100	Yes	1 - 3	CC	QFN-24 QFN-32 QFN-40 QFN-48	4 x 4 5 x 5 5 x 5 6 x 6
	V = 1.8				1 - 3 (ZDB) 1 - 5 (FOB)	CC (ZDB) CC, SRNS, SRIS (FOB)		
	L = 3.3		85, 100		1 - 4 (ZDB) 1 - 5 (FOB)	CC (ZDB) CC, SRNS, SRIS (FOB)		
9ZX	L = 3.3	04 06 08 12 15 19	33, 85		1 - 5 (ZDB or FOB)	CC, SRNS, SRIS (ZDB or FOB)	QFN-32 QFN-40 QFN-48 QFN-64 QFN-72 GQFN-80	5 x 5 5 x 5 6 x 6 9 x 9 10 x10 6 x 6

PCIe Clock Fan-out Buffers

Part Number				All parts support Spread Spectrum				
Prefix	Supply Voltage (V)	PCIe Outputs	Zout (Ω)	Pin Control of ZDB or Fanout Mode	PCIe Gen Compliance	PCIe Architecture Support**	Package Type	Package Dimensions (mm)
9DB	U = 1.5	05 07 09	33, 100	N/A	1 - 3	CC	QFN-32 QFN-40 QFN-48	5 x 5 5 x 5 6 x 6
	V = 1.8	05 07 09	33, 100		1 - 5	CC, SRNS, SRIS	QFN-32 QFN-40 QFN-48	5 x 5 5 x 5 6 x 6
	L = 3.3	02 04 07 09	85, 100				QFN-16 QFN-20 QFN-40 QFN-48	3 x 3 4 x 4 5 x 5 6 x 6
9QX	L = 3.3	20	85				QFN-72 GQFN-80	10 x 10 6 x 6

PCIe Clock Mulitplexers

Part Number				All parts support Spread Spectrum				
Prefix	Supply Voltage (V)	PCIe Outputs	Zout (Ω)	Pin Control of ZDB or Fanout Mode	PCIe Gen Compliance	PCIe Architecture Support**	Package Type	Package Dimensions (mm)
9DM	U = 1.5	01 04	33, 100	N/A	1 - 3	CC	QFN-16 QFN-24	3 x 3 4 x 4
	V = 1.8	01 04	33, 100		1 - 5	CC, SRNS, SRIS	QFN-16 QFN-24	3 x 3 4 x 4
	L = 3.3	04	85, 100				QFN-24	4 x 4
9ZM	L = 3.3	12	33, 85, 100	Yes			QFN-72	10 x 10

* Integrated crystal options available for select programmable clock generators
** CC = Common Clock, SRNS = Separate Reference No Spread, SRIS = Separate Reference Independent Spread
*** The 9FGV0242 in the QFN16 package does not have a REF output

To request samples, download documentation or learn more visit: **idt.com/pcietiming** PCI EXPRESS TIMING SOLUTIONS OVERVIEW | 2