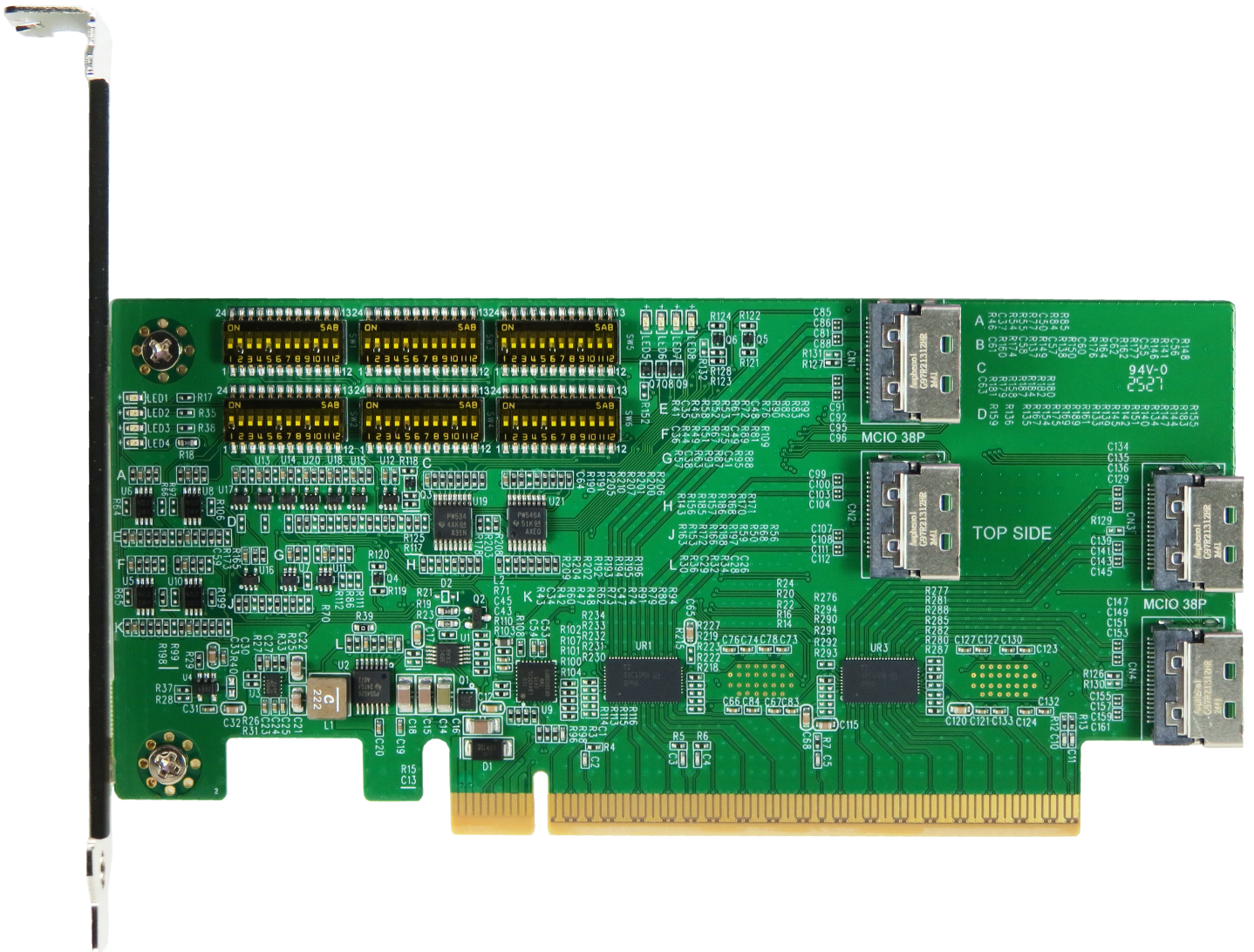


Innocard Minerva

EP6104

PCIe x16 Gen5 with ReDriver to MCIO 38P
(SFF-TA-1016) quad port AIC



PCIe x16 Gen5 with ReDriver to MCIO 38P Quad port

Features

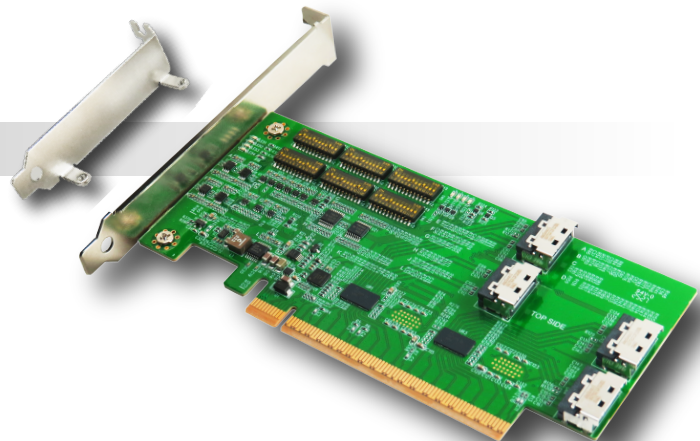
- ※ MCIO 38P to PCIe x16 Gen5 convert
- ※ Built-in MCIO 38P quad port connectors with 30u"(0.38um) min Au mating area plating
- ※ Input PCIe CEM +12V power with TVS protection, 400W Peak Pulse Power Dissipation
- ※ PCIe CEM +12V power with high side protection controller to enable N-MOS FET for 12V, 5A output
- ※ PCIe CEM +12V PWM buck to 3.3V, 5A output with Eco-mode Power controller
- ※ 3.3V, 5A Load Switch With Automatic Restart after Supervisor Fault Detection when Enabled to protect PCIe 5.0 ReDriver controller
- ※ Input PCIe CEM power 3.3Vaux with Load Switch protection for Bus Buffer IC.
- ※ Built-in ReDriver controller to extend PCIe 5.0, 32GT/s 16 lanes signals and may provide programmable linear equalization, flat gain.
- ※ ReDriver CTLE boosts up to 22 dB at 16 GHz
- ※ The PCIe 16 lanes can be bifurcated into four x4 link width to support different system topologies
- ※ Built-in PCIe 100MHz clock buffer(Address: 0x6C) for MCIO 38P dual port to drive PCB more trace reach and longer cable length.
- ※ Built-in SMBus Switch(Address: 0x70) with Reset function for MCIO 38P quad port SMBus communication
- ※ Built-in SMBus I/O Expander(Address: 0x20) for OOB(out of band) management to remote MCIO 38P dual port Reset signals
- ※ Built-in PERST# Bus Buffer Gate to be used in PCB more trace reach and longer cable length.
- ※ Supports PCIe PERST# for OOB(out of band) management to remote MCIO 38P dual port Reset signals.
- ※ Built-in WAKE# Bus Buffer Gate to be used in PCB more trace reach and longer cable length.
- ※ Built-in CLKREQ# Bus Buffer Gate to be used in PCB more trace reach and longer cable length.
- ※ LED1 Green ON indicates +12V ready
- ※ LED2 Green ON indicates +3.3V ready
- ※ LED3 Green ON indicates Vaux ready
- ※ LED4 Red ON indicates Input +12V Error
- ※ LED5 Green ON to OFF indicates PERST# Normal (Function intentionally inverted)
- ※ LED6 Green ON to OFF indicates WAKE# Normal (Function intentionally inverted)
- ※ LED7 Green ON to OFF indicates CLKREQ# Normal (Function intentionally inverted)
- ※ LED8 Green ON indicates Add-in card present

Specifications

- ※ PCI Express Base Specification Rev 5.0
- ※ PCIe_CEM_R5.1_V1.0_08072023_NCB
- ※ SFF-TA-1016 Rev 1.3

Applications

- ※ Rack server
- ※ Microserver and Tower server
- ※ High performance computing
- ※ Hardware accelerator
- ※ Storage Controller HBA(Host Bus Adapter)
- ※ Desktop PC/motherboard



PCIe x16 Gen5 with ReDriver to MCIO 38P Qual port

EP6104 AIC Switch Setting for Equalization, Flat Gain as below:

Equalization Control Settings					
				INDEX	EQ Gain
SW1 For UR1	1-24	on	EQ1 BANK1 Settings	L0	
	2-23	on		L1	
	3-22	on		L2	
	4-21	on		L3	
				L4	
	5-20	on	EQ0 BANK1 Settings	L0	
	6-19	on		L1	
	7-18	on		L2	
	8-17	on		L3	
				L4	
	9-16	on	EQ1 BANK0 Settings	L0	
	10-15	on		L1	
11-14	on	L2			
12-13	on	L3			
			L4		

Equalization Control Settings					
				INDEX	EQ Gain
SW2 For UR1	1-24	on	EQ0 BANK0 Settings	L0	
	2-23	on		L1	
	3-22	on		L2	
	4-21	on		L3	
			L4		
SW2 For UR2	5-20	on	EQ1 BANK1 Settings	L0	
	6-19	on		L1	
	7-18	on		L2	
	8-17	on		L3	
			L4		
SW3 For UR2	9-16	on	EQ0 BANK1 Settings	L0	
	10-15	on		L1	
	11-14	on		L2	
	12-13	on		L3	
			L4		

Equalization Control Settings						
				INDEX	EQ Gain	
SW3 For UR2	1-24	on	EQ1 BANK0 Settings	L0		
	2-23	on		L1		
	3-22	on		L2		
	4-21	on		L3		
				L4		
	5-20	on	EQ0 BANK0 Settings	L0		
	6-19	on		L1		
	7-18	on		L2		
	8-17	on		L3		
				L4		
	SW3 For UR1, UR2	Flat Gain Settings			INDEX	Flat Gain
		9-16	on		L0	-6 dB
10-15		on		L1	-4 dB	
11-14		on		L2	-2 dB	
				L3	2 dB	
				L4 (float)	0 dB	

Equalization Control Settings					
				INDEX	EQ Gain
SW4 For UR3	1-24	on	EQ1 BANK1 Settings	L0	
	2-23	on		L1	
	3-22	on		L2	
	4-21	on		L3	
				L4	
	5-20	on	EQ0 BANK1 Settings	L0	
	6-19	on		L1	
	7-18	on		L2	
	8-17	on		L3	
				L4	
	9-16	on	EQ1 BANK0 Settings	L0	
	10-15	on		L1	
11-14	on	L2			
12-13	on	L3			
			L4		

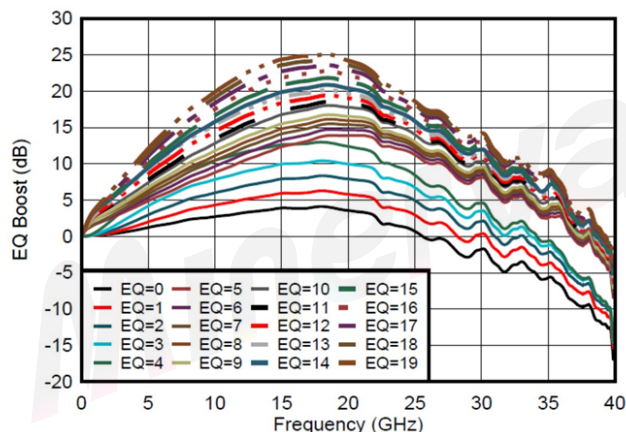
Equalization Control Settings					
				INDEX	EQ Gain
SW5 For UR3	1-24	on	EQ0 BANK0 Settings	L0	
	2-23	on		L1	
	3-22	on		L2	
	4-21	on		L3	
			L4		
SW5 For UR4	5-20	on	EQ1 BANK1 Settings	L0	
	6-19	on		L1	
	7-18	on		L2	
	8-17	on		L3	
			L4		
SW6 For UR4	9-16	on	EQ0 BANK1 Settings	L0	
	10-15	on		L1	
	11-14	on		L2	
	12-13	on		L3	
			L4		

Equalization Control Settings						
				INDEX	EQ Gain	
SW6 For UR4	1-24	on	EQ1 BANK0 Settings	L0		
	2-23	on		L1		
	3-22	on		L2		
	4-21	on		L3		
				L4		
	5-20	on	EQ0 BANK0 Settings	L0		
	6-19	on		L1		
	7-18	on		L2		
	8-17	on		L3		
				L4		
	SW6 For UR3, UR4	Flat Gain Settings			INDEX	Flat Gain
		9-16	on		L0	-6 dB
10-15		on		L1	-4 dB	
11-14		on		L2	-2 dB	
				L3	2 dB	
				L4 (float)	0 dB	

EQ Setup Default: EQ1/L1 & EQ0/L0

Flat Gain Setup Default: Float/L4

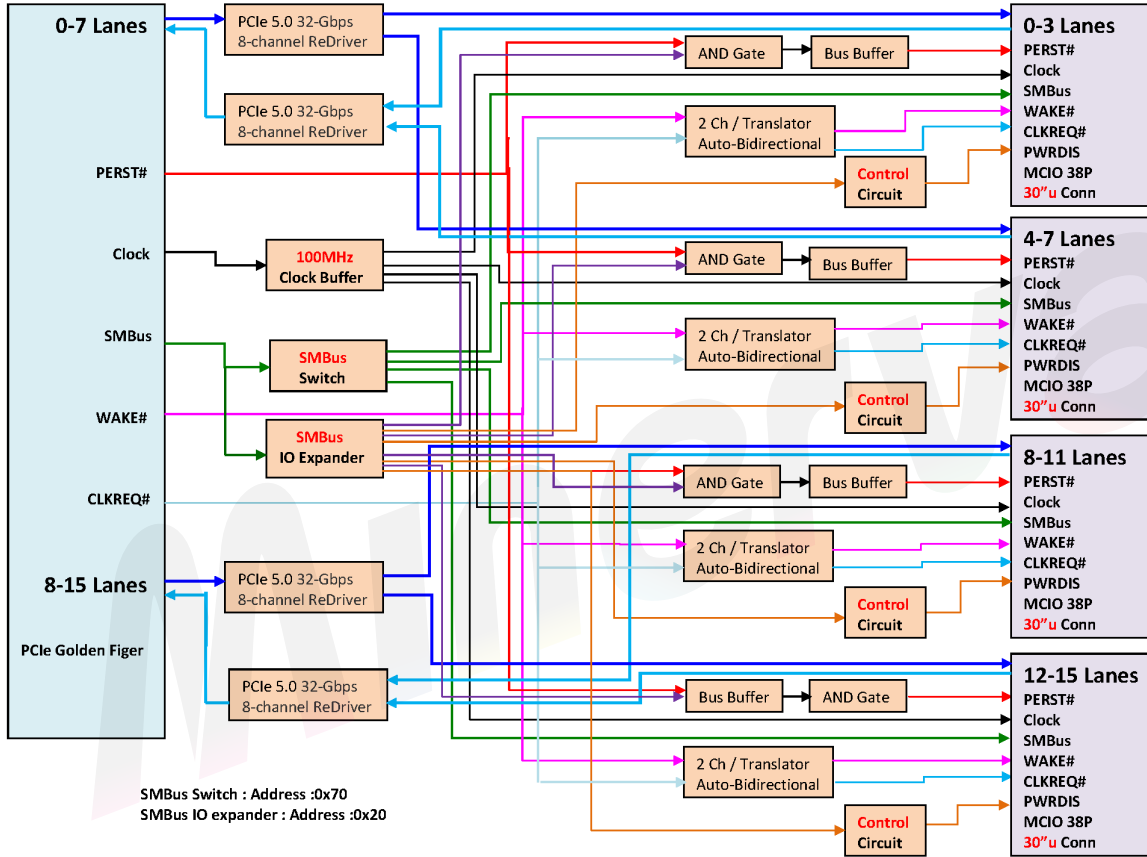
Equalization Control Settings				
EQ INDEX	EQUALIZATION SETTING		TYPICAL EQ BOOST (dB)	
	EQ1	EQ0	At 8 GHz	At 16 GHz
0	L0	L0	3.0	4.0
1	L0	L1	4.0	6.0
2	L0	L2	5.5	8.0
5	L1	L0	6.5	10.5
6	L1	L1	7.0	11.5
7	L1	L2	7.5	12.5
8	L1	L3	8.5	13.0
9	L1	L4	9.0	14.0
10	L2	L0	10.0	15.0
11	L2	L1	10.5	15.5
12	L2	L2	11.0	16.5
13	L2	L3	12.0	17.0
14	L3	L4	12.5	18.0
15	L3	L0	13.0	19.0
16	L3	L1	14.0	19.5
17	L3	L2	14.5	20.5
18	L3	L3	15.5	21.0
19	L3	L4	16.0	22.0



Typical EQ Boost vs Frequency

PCIe x16 Gen5 with ReDriver to MCIO 38P Quad port

EP6104 PCIe x16 Gen5 with ReDriver to MCIO 38P Quad Port Block Diagram



EP6104 PCIe x16 Gen5 with ReDriver to MCIO 38P Quad Port Power Tree

