

64 Gbaud PAM4 Signal Generation

64 Gbaud 2-bit DAC with MUX G0361A

Signal Quality Analyzer-R MP1900A

Signal Quality Analyzer MP1800A

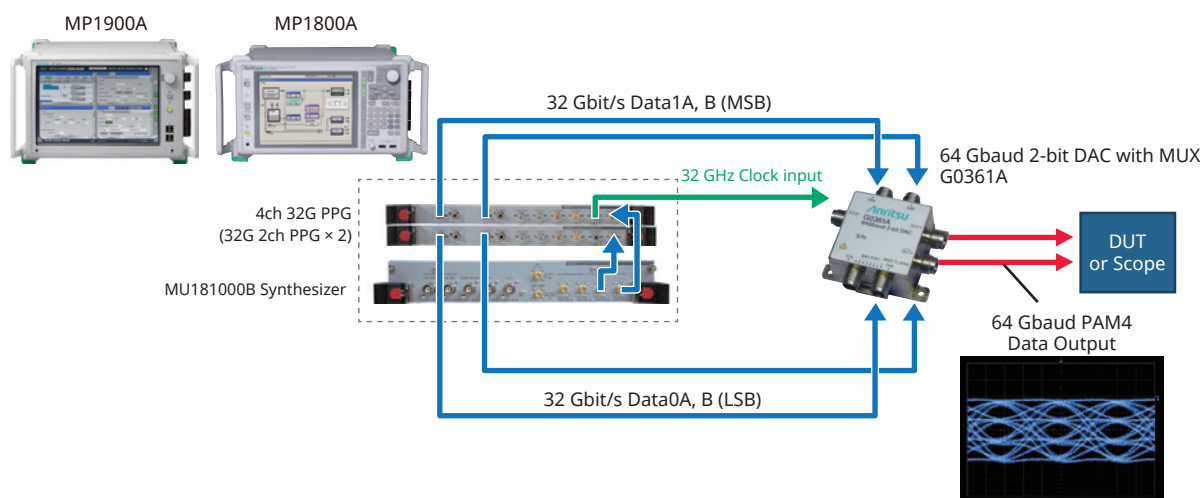
Data center traffic is growing explosively with the spread of Cloud computing services. As a result, new high-speed standards, such as OIF CEI-56G and 400 GbE CDAUI interfaces, are being investigated as a means for speeding-up processing and communications between servers and networks. Under these conditions, in addition to speeding-up symbol rates of the conventional NRZ technology, various new technologies, such as Pulse Amplitude Modulation (PAM), are being adopted to increase transfer speeds without raising symbol rates.

Using the 64Gbaud 2-bit DAC with MUX G0361A in combination with a Signal Quality Analyzer-R MP1900A or Signal Quality Analyzer MP1800A series PPG supports generation of wideband analog signals, such as high-baud-rate PAM4 signals, for developing next-generation communications standards.

[Target Applications] 400 GbE, 100GBASE-KP4, CEI-56G, High-Speed Interconnects

Features

- Wideband Operating Range: DC to 64 Gbaud
- Half-Rate Data Input DAC using Built-in 4:2 MUX Function
(Generates 64 Gbaud PAM4 signal using half-rate 32 Gbit/s \times 4 input signal rather than 64 Gbit/s \times 2)
- 1.4 Vp-p (Differential, typ.) Output and >6 dB Analog Amplitude Control Functions
- Excellent Output Jitter Performance of only 300 fs rms
- NRZ, PAM4, and Emphasis Signal Control and Jitter Addition by combining MU183020A/MU183021A 32G PPG



Typical Specifications

Ta = 25°C, VEE = -3.7 V, Vamp1, 2 = -3.4 V, Zin = 50Ω, Zout = 50Ω

Items	Conditions	Units	Specifications		
			Min.	Typ.	Max.
Baud Rate		Gbaud	DC*1		64
Data Input Bit Rate	D0A/B, D1A/B	Gbit/s			32
Data Input Voltage	V _{TH} = 0 V	Vp-p	0.3	0.5	1
Clock Input Frequency	CLK	GHz			32
Clock Input Voltage	V _{TH} = 0 V	Vp-p	0.3	0.5	1
Output Voltage*2	DC Coupling	Vp-p	0.5	0.7	0.9
Jitter*2, *3	NRZ	fs rms		300	500
Rise Time/Fall Time*2, *3	NRZ, 20%/80%	ps		8	10
Amplitude Control		dB		6	
Supply Voltage	VEE (Power supply)	V	-3.9	-3.7	-3.5
	Vamp1, 2 (Gain control)			-3.4	
Supply Current	IEE	mA		530	600
	Iamp1, 2			23	
Power Consumption		W		2.1	

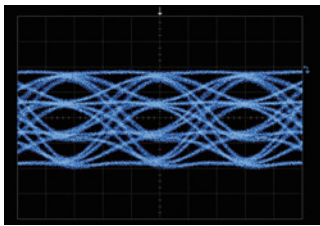
*1: Lower limit of 4.8 Gbaud when used in combination with either MU183020A or MU183021A

*2: Value observed at sampling oscilloscope with intrinsic jitter of <200 fs rms and 70-GHz bandwidth

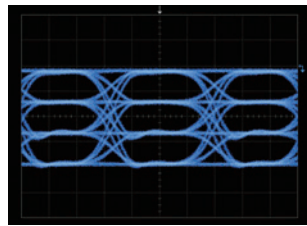
*3: Value observed when output pattern set to 0101

Typical Output Waveforms

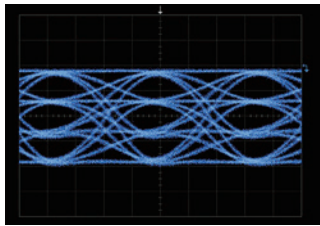
64 Gbaud (PAM4)



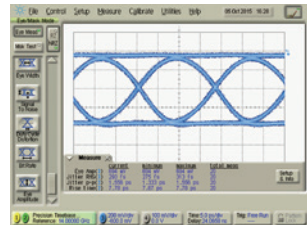
28 Gbaud (PAM4)



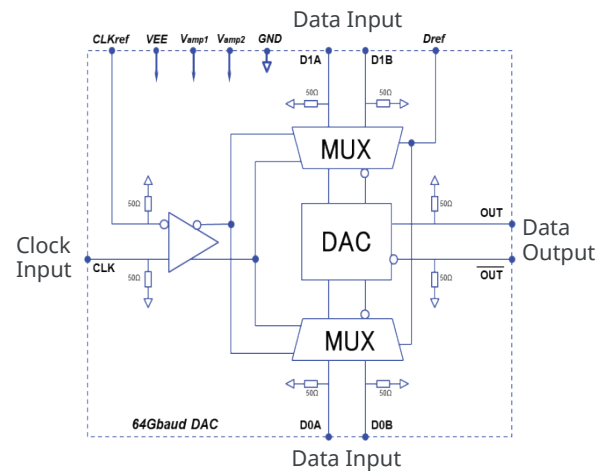
56 Gbaud (PAM4)



56 Gbaud (NRZ)



Block Diagram



Ordering Information

Please specify the model/order number, name and quantity when ordering.

The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

Model	Name
G0361A	64 Gbaud 2-bit DAC with MUX
MP1900A	Signal Quality Analyzer-R
MP1800A	Signal Quality Analyzer

Model	Name
MU195020A	21G/32G bit/s SI PPG
MU183020A	28G/32G bit/s PPG
MU183021A	28G/32G bit/s 4ch PPG

The contents of this document may change without prior notice.