

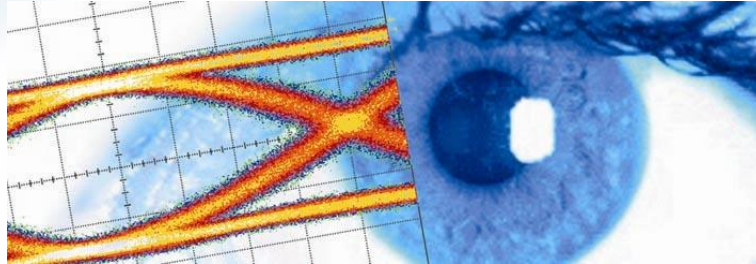


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














Datasheet

SHF 58215 A

Multi-Channel Amplifier

 **SHF 58215 A** Multi-Channel Amplifier Power 

Data

		Ch1 In 1 Vpp Max 	Ch1 Out < 4 Vpp	Ch2 In 1 Vpp Max 	Ch2 Out < 4 Vpp	Ch3 In 1 Vpp Max 	Ch3 Out < 4 Vpp	Ch4 In 1 Vpp Max 	Ch4 Out < 4 Vpp			
Ch1  On / Off	Ch2  On / Off										Ch3  On / Off	Ch4  On / Off
50 Ω / 2.92 mm Female 												



Description

The SHF 58215 A is a plug-in intended to amplify the output signals from the 33G output channels of a SHF 12103/4 A Bit Pattern Generator.

This plug-in module is part of the SHF modular measurement series and needs to be installed in a mainframe. In case the plug-in is fitted into a right hand side mainframe slot on top of the BPG it can be connected by short jumper cables from the BPGs data ports to the input ports of the amplifier.

Features

- All settings are computer controlled and adjustable via the BCC (BERT Control Center) software package
- Adjustable output voltage
- Adjustable crossing

Configurations

- Option DC Adjust: Output offset voltage can be varied by software



Specifications

Data Output Specification

All specifications below are only applicable if the SHF 58215 A is driven by and delivered together with a SHF 12103/4 A in configuration Dual 33, Quad 33 or Oct 33. For existing SHF 12103/4 A Bit Pattern Generators the Amplifier Plug-In needs to be calibrated together with the BPG.

Parameter	Symbol	Unit	Min.	Typ.	Max.	Comment
Maximum Bit Rate		Gbps	33			
Minimum Bit Rate		Gbps			3	
Input Level	V_{in}	V	0.48	0.5	0.52	Out of SHF 12103/4 A 33 Gbps Data Output; Calibrated output amplitude and crossing adjustment only valid with input level = 0.5 V
Maximum Output Level	$V_{out\ max}$	V	2.5			Adjustable via BCC ¹ ; Eye Amplitude
Minimum Output Level	$V_{out\ min}$	V			1.0	Adjustable via BCC ¹ ; Eye Amplitude
Jitter (RMS)	J_{RMS}	fs		600	800	on scope display ² @ 50 % Crossing; @ Full output amplitude
Rise/Fall Time	t_r/t_f	ps		12	14	20 % ... 80 % on scope display ²
Maximum Output Offset Voltage	$V_{off\ max}$	V	+2			Adjustable via BCC; Calibrated output offset voltage only valid with 50 Ohm load at the RF output port
Minimum Output Offset Voltage	$V_{off\ min}$	V			-2	Adjustable via BCC; Calibrated output offset voltage only valid with 50 Ohm load at the RF output port
Maximum Crossing		%	60			Adjustable via BCC ³
Minimum Crossing		%			40	Adjustable via BCC ³
Connector Type		Ω		50		2.92 mm (K) female

¹ Output Amplitude value may deviate up to ± 150 mV from the BCC-setting

² Measured with Agilent 86100C with 70 GHz sampling head and precision time base triggered by Clk or Clk/2 output, using PRBS 2³¹-1

³ Crossing value may deviate up to $\pm 5\%$ from the BCC-setting



General Plug-In Specifications

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Max. RF Input Power	$P_{in\ max}$	dBm V			4 1	Peak to peak voltage
High Frequency 3 dB Point	f_{HIGH}	GHz	33	38		
Low Frequency 3 dB Point	f_{LOW}	kHz		70	80	
Gain	S_{21}	dB	16	17	18	Non-inverting; Measured at $P_{in}=-27$ dBm
Input Return Loss	S_{11}	dB		-10	-9	< 25 GHz
Output Return Loss	S_{22}	dB		-10	-9	< 25 GHz

Absolute Maximum Ratings

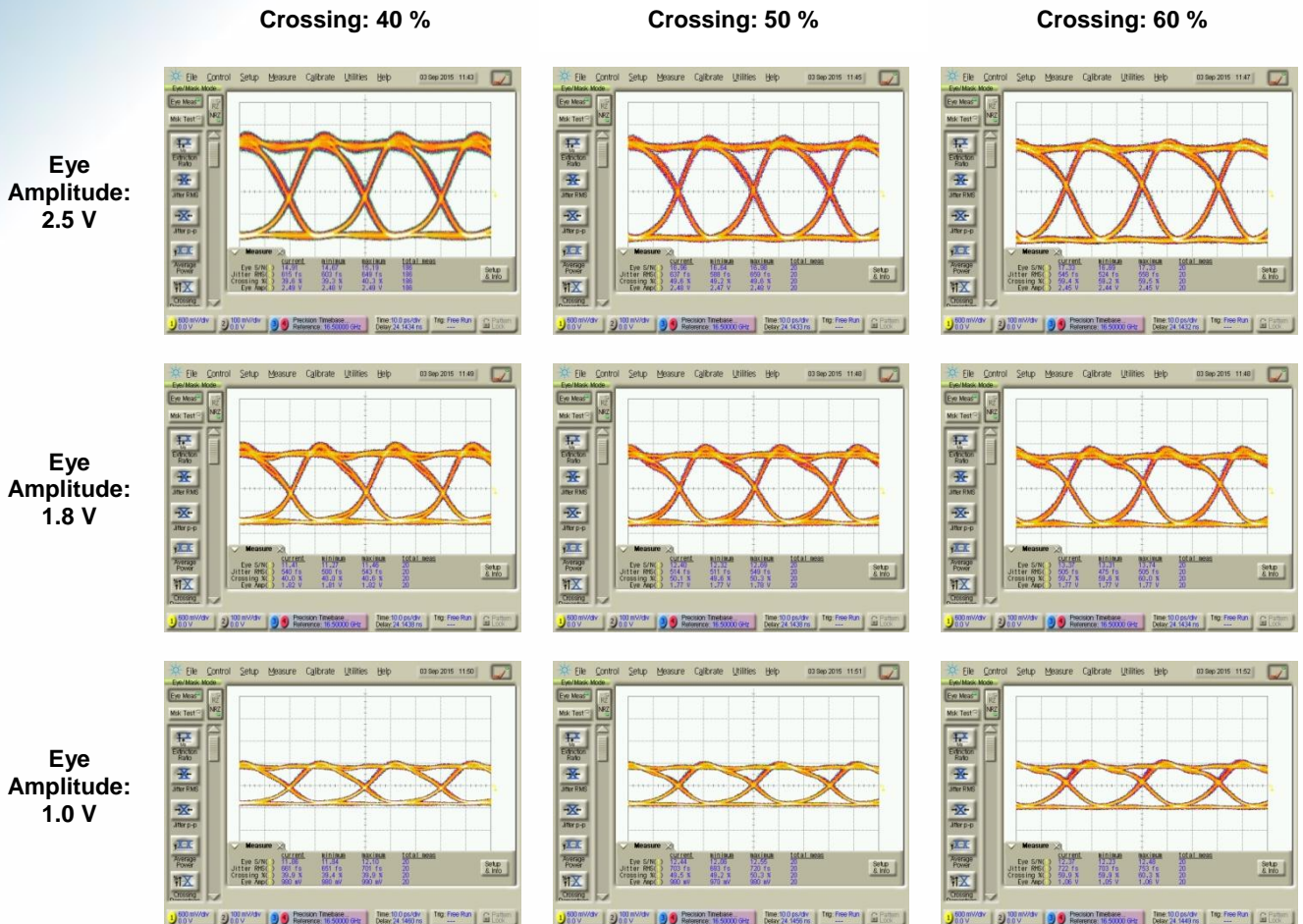
Parameter	Symbol	Unit	Min.	Typ.	Max.	Comment
Input Parameters						
Data Input Voltage	$V_{data\ in}$	mV			1000	Peak to peak voltage
External DC Voltage on RF Input Ports	V_{DCin}	V	-9		+9	AC coupled input
Output Parameters						
External DC Voltage on RF Output Ports	V_{DCout}	V	-6		+6	AC coupled output; W/o 'Option DC Adjust'
Sink or Source Current by external voltage source on RF Output Ports	I_{ext}	mA	-30		+30	Applies to 'Option DC Adjust'
Max allowable sink or source current during hot swap of DC loads	$I_{hotswap}$	A	-40		+40	Applies to 'Option DC Adjust'



Typical Output Waveforms

Data Output Signals @ 33 Gbps

All measurements had been performed by using a SHF 12104 A Bit Pattern Generator in Config Quad 33, an Agilent 86100C DCA with Precision Time Base Module (86107A) and a 70 GHz Sampling Head (86118A) directly connected to the output of the SHF 58215 A.





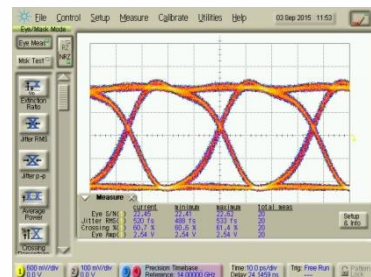
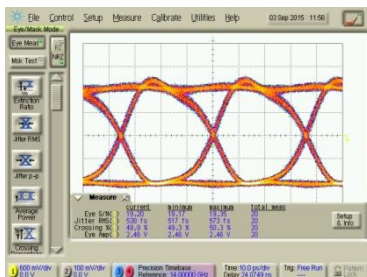
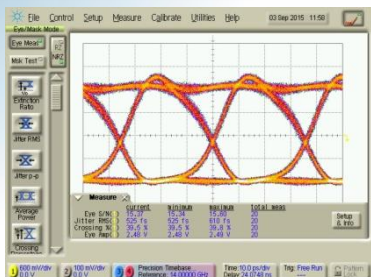
Data Output Signals @ 28 Gbps

Crossing: 40 %

Crossing: 50 %

Crossing: 60 %

Eye Amplitude: 2.5 V



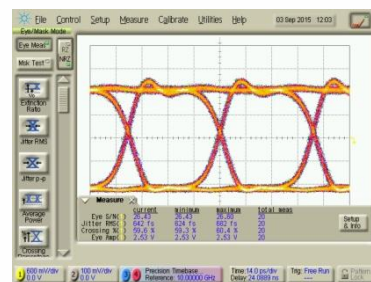
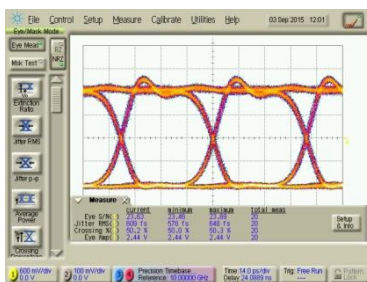
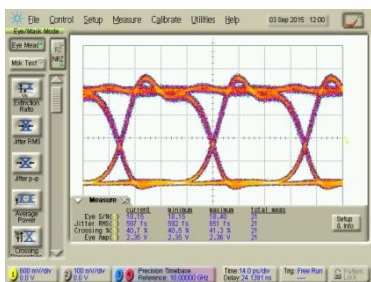
Data Output Signals @ 20 Gbps

Crossing: 40 %

Crossing: 50 %

Crossing: 60 %

Eye Amplitude: 2.5 V



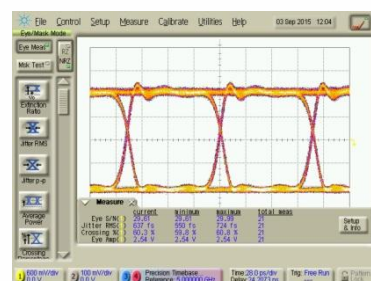
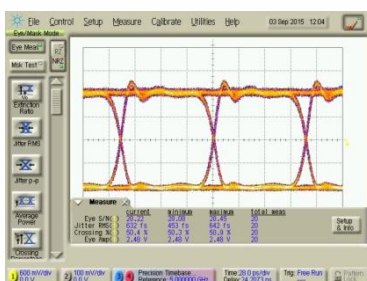
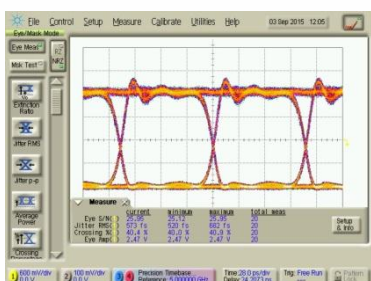
Data Output Signals @ 10 Gbps

Crossing: 40 %

Crossing: 50 %

Crossing: 60 %

Eye Amplitude: 2.5 V





Output Offset Voltage

The output offset voltage is calibrated from into a 50 Ohm load. If the output load resistance varies, the offset voltage of the output port varies with the internal DC-resistance of ~4 Ohm.

