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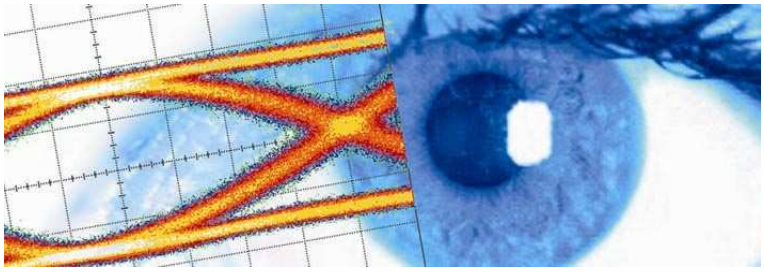
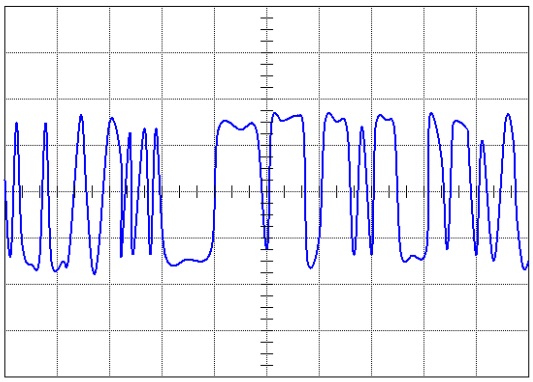
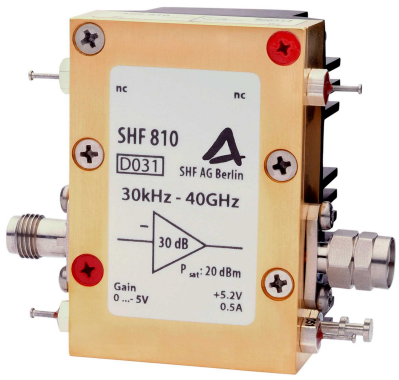


SHF Ultra Broadband Amplifiers





10, 20, 40, 80 Gbps Operation

Lithium Niobate Modulator Drivers

EA Modulator Drivers

Pre-amplifiers

Clock Amplifiers

SHF Communication Technologies AG
the bandwidth company

Introducing our range of amplifier

SHF amplifiers are versatile, easy to use and offer high performance with low power consumption. An extensive range of different gain, output power and bandwidth specifications are available. They are suitable for a wide variety of applications, including research & development, optical communications, satellite communications, high-speed pulse experiments, data transmission and antenna measurement.

For operation beyond 80 Gbps we offer the SHF 804TL and the new SHF 827 amplifier with a cutoff frequency of more than 65 GHz.

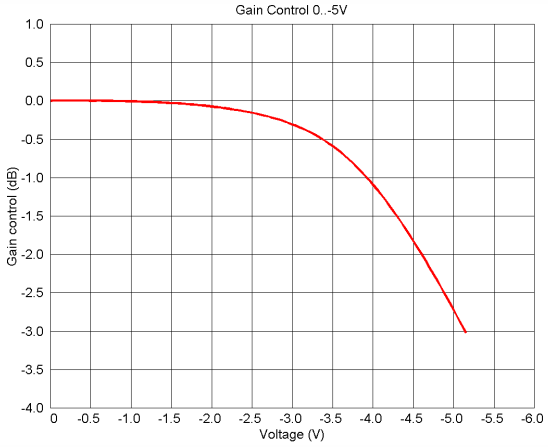
A new generation of broadband amplifiers is introduced by one of our recent developments (the SHF 826H). This high output amplifier for 20 Gbps applications is the first amplifier of a complete new series which will cover all applications in the laboratory environment featuring the well known SHF easy to use capabilities. Apart from this traditional application, system applications and applications where a hermetical sealing is required are addressed as well.

Ease of use

All that is needed to operate an SHF amplifier is a single power supply. Amplifiers from some manufacturers not only require two power supplies, but also bias tees at the input and output. This makes the amplifier hard to set up, and susceptible to damage through incorrect start- up sequencing, because so many parameters must be controlled by the user simply to make the amplifier work.

In contrast, with the SHF amplifier modules, all the necessary operating voltages are all generated internally. Therefore, only **one** single power supply is required. In addition, there are built-in safety features such as reverse-voltage protection and current regulators to eliminate the risk of accidental damage. Lastly, correct turn ON and turn OFF sequencing are automatically ensured by the internal regulation circuitry.

Special features



Typical output attenuation due to the gain control at a SHF 804EA

All SHF amplifiers have a gain control function to allow the gain to be reduced by up to 3 dB by the application of a negative voltage to an external connection pin. This is a useful feature since attenuators in the range of 1 dB to 2 dB are not available with good performance at high frequencies.

The SHF 810 has an additional control to enable the crossing point of the output eye to be adjusted upwards and downwards to help tuning an amplifier/modulator combination.

Options

All amplifiers could be tailored to the customer's particular application. For example: In standard configuration all amplifiers have AC coupled RF interfaces and are optimized for standard PRBS data. But if required; it is also possible the deliver the amplifiers with DC coupling and optimization for other input signals. This makes our amplifiers suitable for a variety of applications even apart from the digital communication.

Furthermore the following options are available:

Bias tees

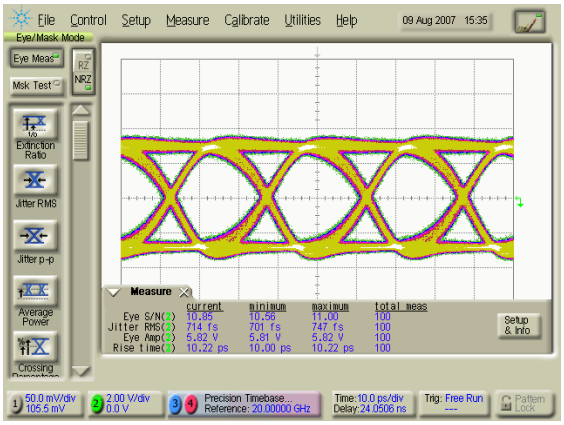
An internal bias tee can be fitted to the input or output (or both) of the amplifier. This is useful, for example, for providing the voltage to bias a photo-detector.

DC Return

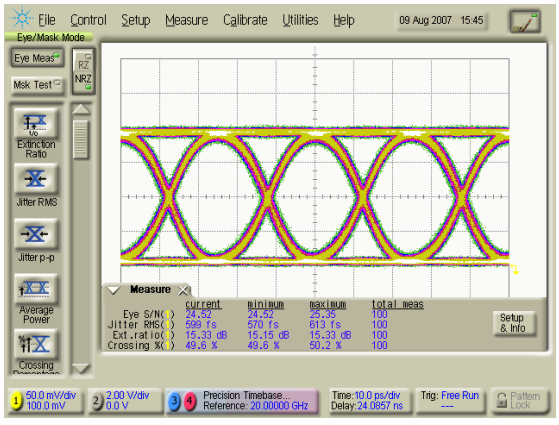
Sometimes, it is necessary to provide a return to ground so that a DC bias current can flow. For this case, we offer the DC return option, which provides a matched 50Ω path to ground inside the amplifier.

Modulator Tuning

Optical modulators typically have a frequency response which slowly slopes downwards over the frequency range. To compensate for this, SHF amplifiers can be specially tuned with the modulator tuning option so that there is a positive gain slope. The resulting flat frequency response of the amplifier/modulator combination ensures the best optical output signal.



40G electrical output of a SHF 806E optimized for a optical modulator



40G optical output signal

Matched Pair

Since many modulators require two drivers operating in push- pull mode, it is essential that, in addition to output amplitude matching, the phase response of such a driver pair is very similar to ensure good performance. The matched pair option offers amplifiers with closely matched phase responses.

Overview of SHF amplifiers

Type	Bandwidth	Gain (dB)	Output Power (dBm / V_{pp})
10 Gbps amplifiers (up to 12 GHz)			
SHF 100 APP	30 kHz…12 GHz	19	18 / 5
SHF 100 BPP	30 kHz…12 GHz	17	22 / 8
20 Gbps amplifiers (up to 25 GHz)			
SHF 100 AP	30 kHz…25 GHz	19	18 / 5
SHF 100 BP	30 kHz…25 GHz	17	22 / 8
SHF 115 AP	50 kHz…20 GHz	27	18 / 5
SHF 826 H	50 kHz... 25 GHz	25	26 / 13
40 Gbps amplifiers (up to 45 GHz)			
SHF 104 P	50 kHz…40 GHz	15	13 / 2.8
SHF 803 P	35 kHz…40 GHz	17	22 / 8
SHF 804 EA	30 kHz…45 GHz	20	15 / 3.6
SHF 806 E	40 kHz…38 GHz	26	22 / 8
SHF 810	30 kHz…40 GHz	30	20 / 6.3
80 Gbps amplifier (up to 65 GHz)			
SHF 801 P	15 kHz…62 GHz	8	13 / 2.8
SHF 804 TL	30 kHz…58 GHz	20	13 / 2.8
SHF 827	50 kHz... 65 GHz	11	15 / 3.6
Clock amplifiers			
SHF 816	17…27 GHz	32 typ.	31 / 22
SHF 818	36…41 GHz	32 typ.	29 / 17.8