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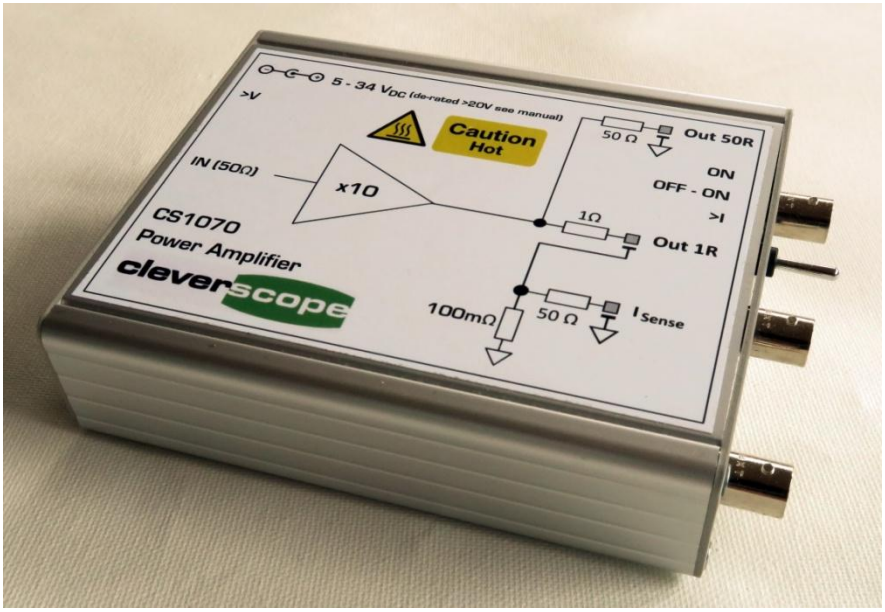
CS1070 Power Amplifier Data Sheet

Summary

The CS1070 Power Amplifier is an accessory for the signal generators CS700A or CS701 to provide larger signal with more output current. It has >50 MHz Bandwidth, and 1 A output drive capability. The amplifier has a fixed gain of x10 (20dB). Output swing is 36Vpp with a ≥20VDC supply, and it can be used asymmetrically up to a +29V output voltage. The Amplifier also includes an internal inverting power supply to provide the negative rail, simplifying power supply requirements. Output impedance is 50 ohm or 1 ohm.



Power Supply

The CS1070 is provided with a 19V DC power supply connected via a 5.5mm (OD) 2.5mm centre pin plug. The power supply is internally inverted to produce the negative rail. The inverting supply tracks the DC input for voltages between 5 and 20VDC, and then limits the differential voltage across the Amplifier to 40VDC for DC input voltages between 20 and 34VDC.

Some examples:	DC input = +6V	Negative supply = -6V.	Output ±4V
	DC input = +18V	Negative supply = -18V.	Output ±16V
	DC input = +32V	Negative supply = -8V.	Output -6V to +30V.

Reverse polarity and over voltage protection for voltages from 34V to 60V are also included.

Link Port

The CS1070 includes a CS328A link port connection and cable which is used by the application to enable or disable the amplifier. The link port is optically isolated from the rest of the system (300V rms Class II).

Control and Indicators

The CS1070 includes a toggle switch with momentary up to disable the amplifier, and momentary down to enable it. A green led indicates the amplifier is enabled. A red led indicates the amplifier is disabled - either through using the toggle switch, or over current, or over temperature.

The rear panel includes a red over voltage led which disables the power supply if the input voltage is >36V.

Derating

If the amplifier is used with a power supply of >20V, maximum short circuit duration is 10 seconds, otherwise it is continuous. The unit does include thermal protection.

Input

The Amplifier Input BNC socket is 50 ohm terminated. With a 50 ohm terminated source such as the CS701, the overall gain is x5. If the CS300 application has Use CS1070 50 ohm selected, the output amplitude (Vpp) is as set in the Sig Gen Amp field.

Outputs

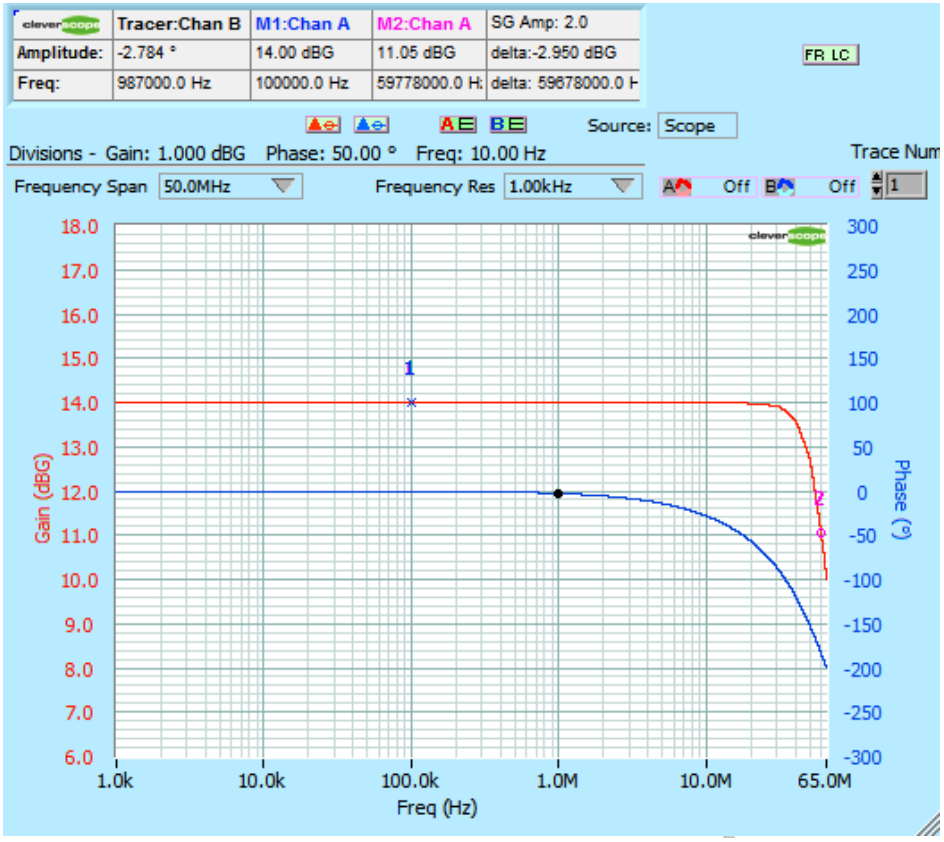
The CS1070 includes three outputs:

- 50 Ohm signal output. This output allows matching to 50 ohm coaxial cables.
- 1 Ohm signal output. This output can deliver high current with low voltage drop. It is useful for direct driving power supplies for PSRR and Input Impedance testing. It can also be used to simulate a power supply with super-imposed noise.
- I sense. This 50 ohm output senses the voltage across a 100 mOhm current sense resistor in series with the 1 Ohm output BNC ground. It therefore has a sensitivity of 100mV/A high impedance, or 50mV/A into 50 ohm. Note that the 1 ohm output and I sense output do not share grounds.

In case of an overload condition the Amplifier output is disabled and the >I LED turns on. The Amplifier output can be re-enabled with the ON switch.

Bandwidth

Here is the measured bandwidth using a CS32A-FRA with Probe Corrected 50 ohm terminations:



Gain is 14 dB (x5 with 50 ohm termination).

-3dB Bandwidth is 59.7MHz.

Vout = 2V p-p

Isolated Use

If the CS1070 is used with an isolated power supply (such as 12V gel cell), it may be driven using the isolated CS701 signal generator, and provide an isolated signal referenced to signals other than ground. In this case it is important that the CS1070 be physically isolated from ground (using a plastic bin for example). Note that the Link Port is internally isolated from the CS1070 to meet Class II operation at 300V RMS.

Specifications

Item	Value
Frequency Range:	0 - 52 MHz (-3 dB)
Gain:	x10
Slew Rate:	1700 V/µs (Vsupply = ±20V Vout = 20Vp-p)
Noise:	2.1 nV/√Hz (input referred)
Harmonic Distortion:	Vsupply = ±20V Vout = 20Vp-p 100 kHz: -95 dB 1 MHz: -75 db 10 MHz: -45 dB 30 MHz: -38 dB
Input Impedance:	50 Ω
Output Impedance:	50 Ω and 1 Ω
Output current:	1A
Current Sense Out:	100 mV/A open, 50 mV/A into 50 Ω
Output Voltage Range:	± (Vsupply -2V) to ±18V, then to -6V to +30V with Vsupply = 34V.
Power Supply Range:	5 – 34 VDC, 1 Amp minimum. Over voltage protection: 34 to 60 VDC. Reverse protection: 0 to -60 VDC.
Power Supply Connector:	2.1 or 2.5mm ID, 5.5mm OD, center +Ve.
Power Supply Included:	In line adaptor with US, UK, EU plugs. Input: 90-264 VAC, 47-63 Hz. Output: 19 VDC, 2 Amp, 2.1x5.5mm DC Jack.
Enclosure Size:	146 mm (l) x 103 mm (w) x 34 mm (h) including connectors.
Amp Enable Switch:	Down = Amp Enable, Up = Amp Disable.
LED Indicators:	Over Voltage, Over Current, Amp On.