

# AC568G2

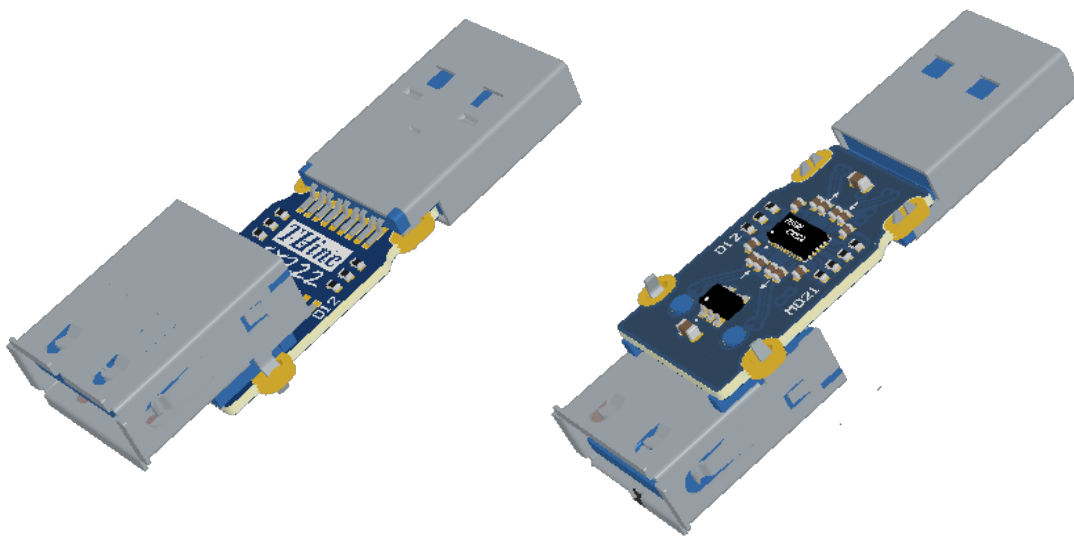
## USB 3.1 Gen2 Active Plug for TYPE-A

### Introduction

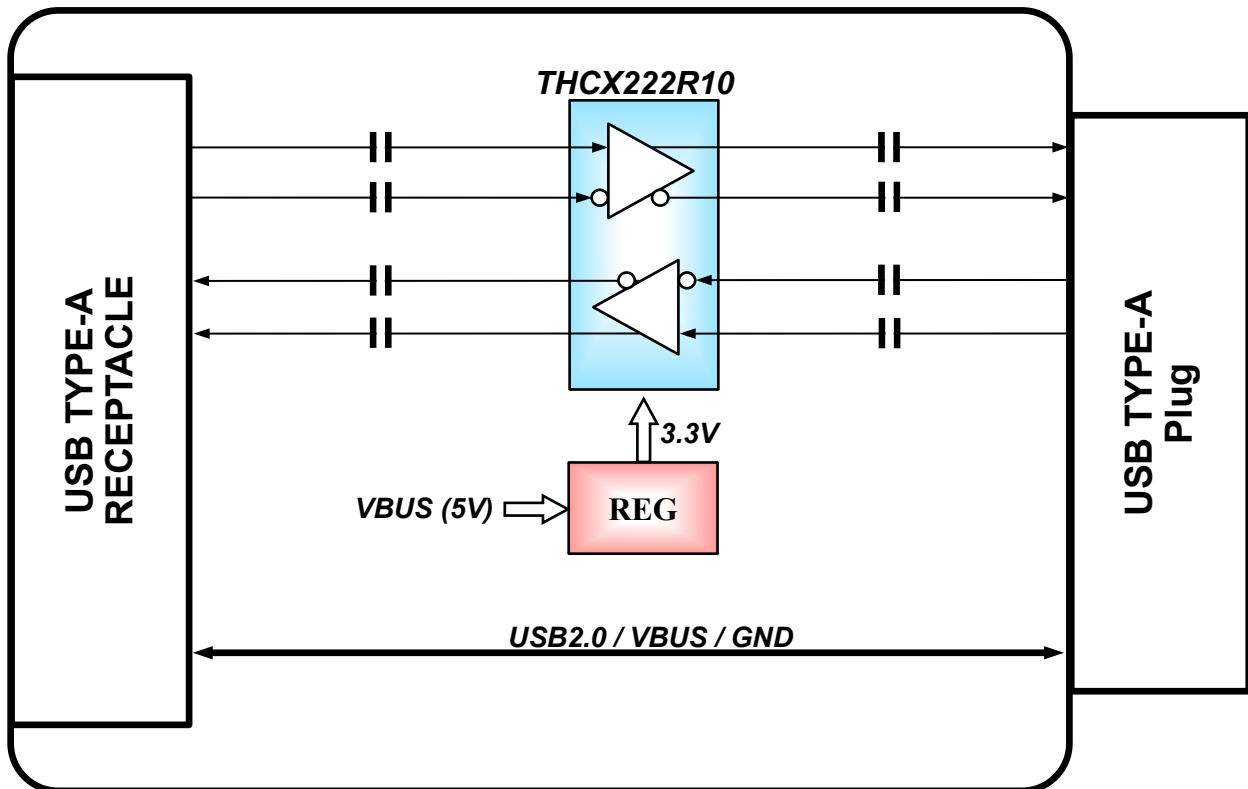
AC568G2 is a high performance bi-directional active plug for USB 3.1 Gen2 up to 10Gbps and features a continuous time linear equalizer (CTLE) to provide a boost up to +11.6 dB. It opens an input eye due to inter-symbol interference (ISI) induced by long distance cable or thin wire cable.

### Feature

- Supported USB Standard : USB3.1 Gen2 up to 10Gbps
- Interface Connector : TYPE-A (RECEPTACLE) ⇔ TYPE-A (PLUG)
- Re-driver IC : THine Electronics, Inc. THCX222R10
- Adjustable Gain : 8 settings by resistor for up to +15.6dB (default +13.2dB)
- Power Supply : VBUS 5V
- Power Consumption : 0.4W typical, Ultra Low-Power Architecture
- Temperature Range : 0°C to 70°C
- Module Size : width 15mm \* length 45mm



## Block Diagram



## Condition

	Specification
<b>Model</b>	AC568G2
<b>Supply Voltage</b>	VBUS DC5V±10%
<b>Power Consumption</b>	0.4W Typ. (Reference data)
<b>Operating Temperature</b>	0°C~70°C
<b>Storage Temperature</b>	-40°C~125°C
<b>Flammability</b>	UL94V-0
<b>Module Size</b>	15mm * 45mm
<b>PCB Color</b>	Blue

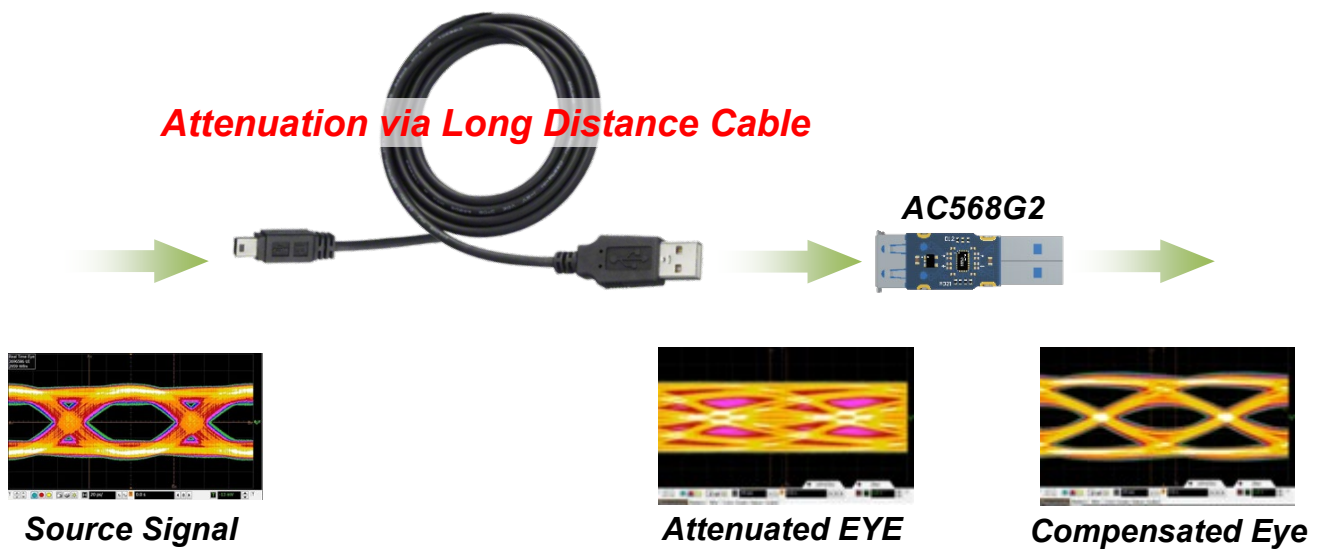
## How to use

Please connect AC568G2 to your long distance cable or thin wire cable.

AC568G1 recover attenuated signal via the cable.

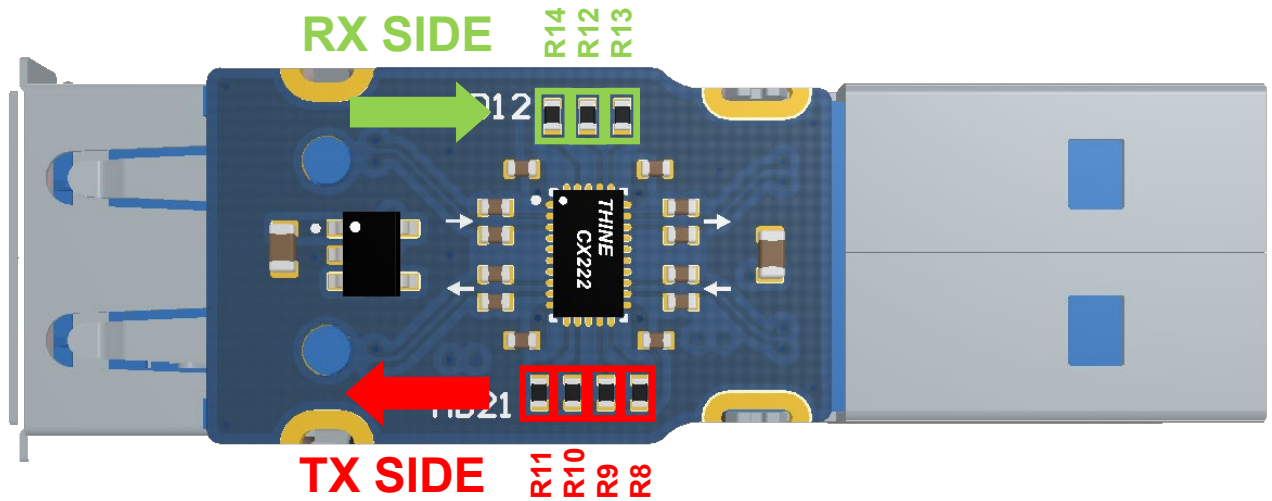
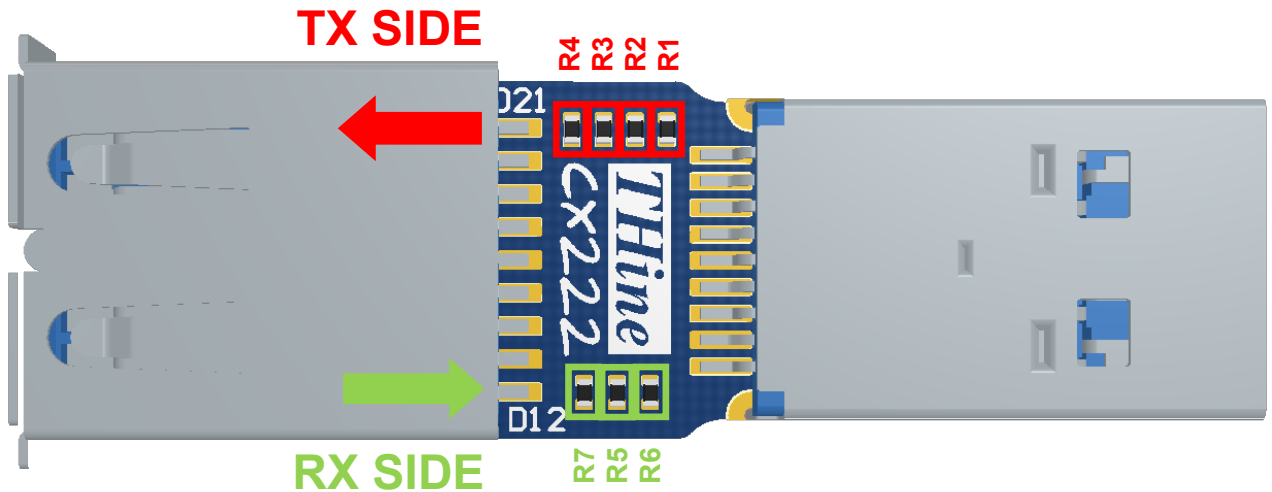
Default equalizer setting is +6.7dB and it can recover attenuated signal with 6–8m for general USB cable.

Please adjust equalizer settings by your cable characteristics.



## Resistor Position for SETTING

AC568G2 has two kinds of gain settings (AC gain & DC gain) for each channel TX/RX and one detect mode setting. They can be adjusted by resistors as below.



## AC GAIN SETTING

AC GAIN is a function to recover high frequency characteristics of USB signal.

Please adjust the AC GAIN to open eye diagram enough using 8 level gain settings as below.

**SETTING TABLE for AC GAIN**

LEVEL	GAIN [dB]	RX				TX			
		R5	R6	R12	R13	R1	R2	R8	R9
<b>1</b>	7.6	0	0	N.C.	N.C.	0	0	N.C.	N.C.
<b>2</b>	9.2	180k	0	N.C.	N.C.	180k	0	N.C.	N.C.
<b>3</b>	10.2	N.C.	0	N.C.	N.C.	N.C.	0	N.C.	N.C.
<b>4</b>	11.4	N.C.	0	0	N.C.	N.C.	0	0	N.C.
<b>5</b>	12.3	0	180k	N.C.	N.C.	0	180k	N.C.	N.C.
<b>6</b>	<b>13.2</b>	<b>180k</b>	<b>180k</b>	<b>N.C.</b>	<b>N.C.</b>	<b>180k</b>	<b>180k</b>	<b>N.C.</b>	<b>N.C.</b>
<b>7</b>	13.9	N.C.	180k	N.C.	N.C.	N.C.	180k	N.C.	N.C.
<b>8</b>	14.4	N.C.	180k	0	N.C.	N.C.	180k	0	N.C.

(default : LEVEL6)

## DC GAIN SETTING

DC GAIN is an adjustment function for DC LEVEL.

Please adjust the DC GAIN to be eye-shaped diagram.

Recommendation setting is level 2 or level3 in case of USB 3.1 Gen2.

**SETTING TABLE for DC GAIN**

LEVEL	DC Gain [dB]	RX		TX	
		R7	R14	R3	R10
1	-2.6	0Ω	N.C	0Ω	N.C
2	-1.7	180kΩ	N.C	180kΩ	N.C
3	<b>-0.2</b>	<b>N.C</b>	<b>N.C</b>	<b>N.C</b>	<b>N.C</b>
4	+3.8	N.C	0Ω	N.C	0Ω

(Default : LEVEL 3)

## DETECT MODE SELECT

AC568G2 has two detection mode, SIGNAL-DETECT and RX-DETECT.

SIGNAL-DETECT is automatic detect function for input signal level.

Each channel operates fully independently. The channel's input signal level determines whether the output is active.

RX-DETECT is automatic receiver detect function.

It will move to low power mode due to inactivity if receiver is not detected.

**SETTING TABLE for DETECTION MODE**

<b>LEVEL</b>	<b>MODE</b>	<b>R4</b>
<b>1</b>	RX-DETECT Enable, SIGNAL-DETECT Enable	0
<b>2</b>	RX-DETECT Enable, SIGNAL-DETECT Disable	180k
<b>3</b>	<b>RX-DETECT Disable, SIGNAL-DETECT Disable</b>	<b>N.C</b>

(default : LEVEL3)

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[THine@cel.com](mailto:THine@cel.com)