AC561R10

USB 3.0 / 3.1 Gen1 Active Paddle Card for TYPE-C

Introduction

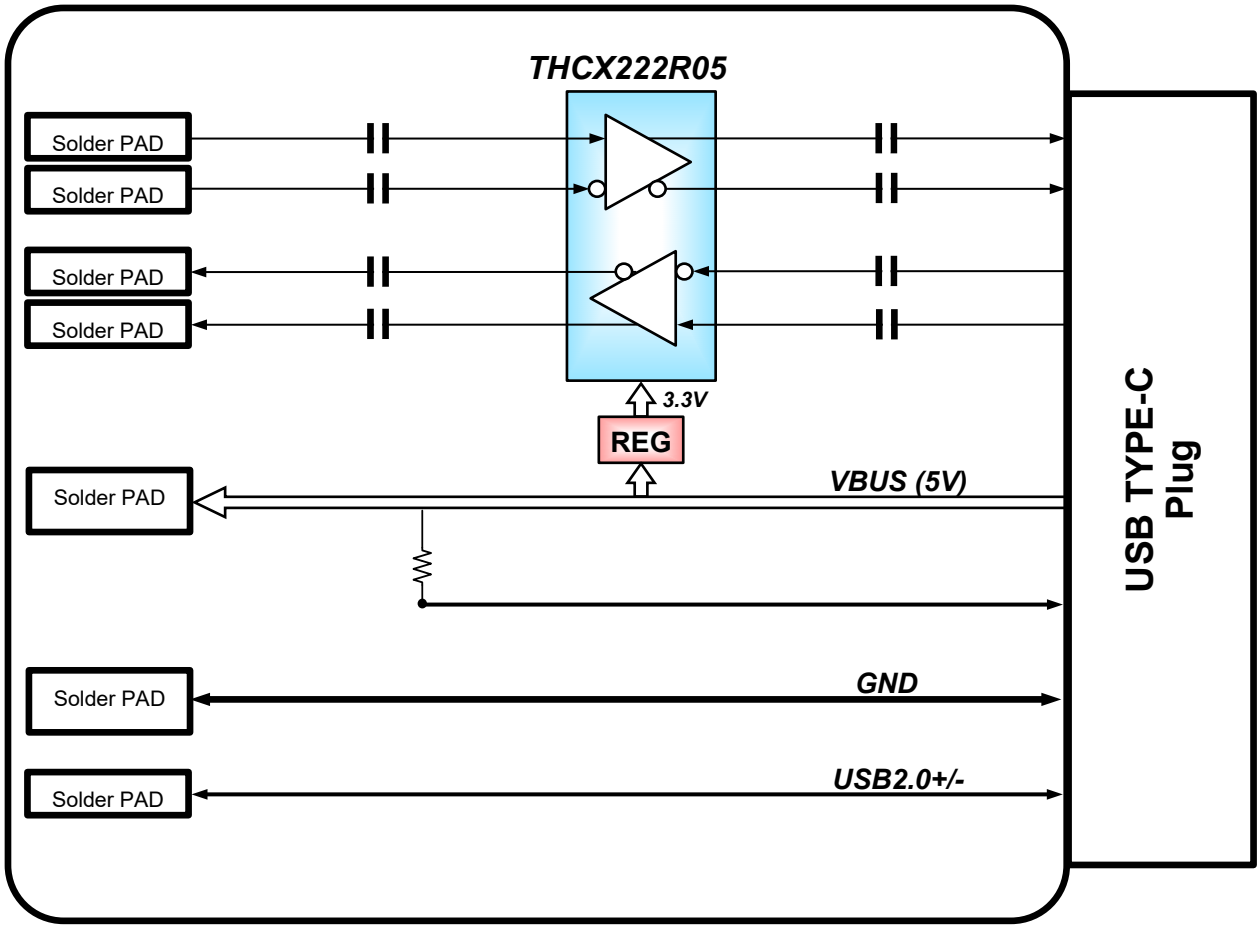
AC561R10 is a high performance active paddle card for USB 3.0/3.1 Gen1 up to 5Gbps and features a continuous time linear equalizer (CTLE) to provide a boost up to +11.6 dB. It opens an input eye due to inter-symbol interference (ISI) induced by long distance cable or thin wire cable.

Feature

- Supported USB Standard	:	USB 3.0 / USB3.1 Gen1 up to 5Gbps
- Interface Connector	:	TYPE-C PLUG & Cable soldering PAD
- Redriver IC	:	THCX222R05, THine Electronics, Inc.
- Equalizer Gain	:	+11.6dB
- Power Supply	:	VBUS (5V)
- Power Consumption	:	0.4W typical, Ultra Low-Power Architecture
- Temperature Range	:	0°C to 70°C
- Module Size	:	width 9.5mm * length 22.3mm

Note: The AC561R10 does not have an equalization configuration setting.

Block Diagram

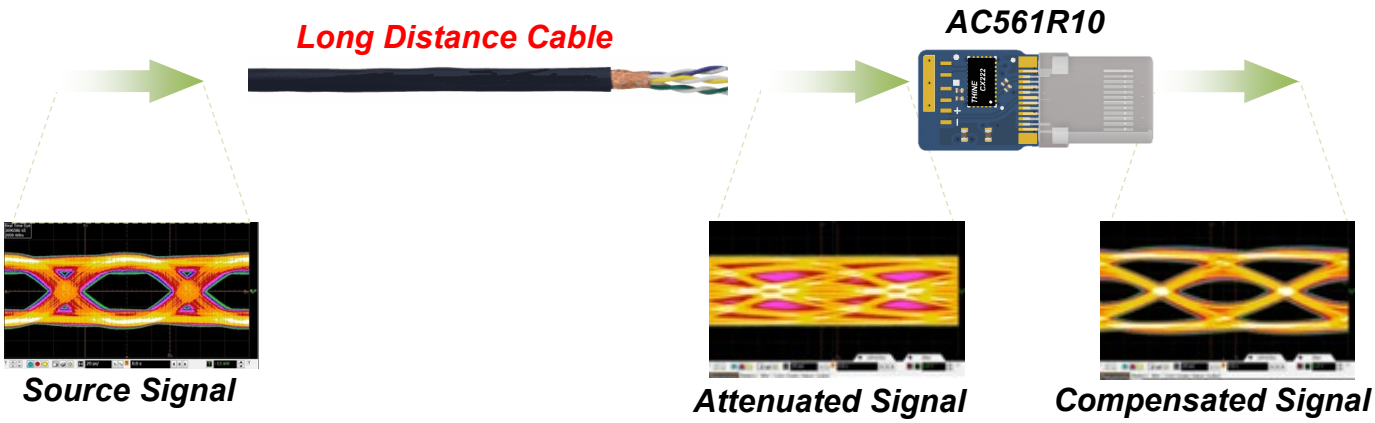


Condition

	Specification
Model	AC561R10
Supply Voltage	VBUS DC5V±10%
Power Consumption	0.4W Typ. (Reference data)
Operating Temperature	0℃～70℃
Storage Temperature	-40℃～125℃
Flammability	UL94V-0
Module Size	9.5mm * 22.3mm
PCB Color	Blue

How to use

Please solder your twist pair cable to AC561R10. It recovers attenuated signal via the cable.
Default equalizer setting is +6.7dB and it will recover attenuated signal by about 8m of AWG32 cable.
Please adjust equalizer level against the cable characteristics.



Cable Soldering PAD & Resistor

Positions of cable soldering PAD and resistor are indicated as below.

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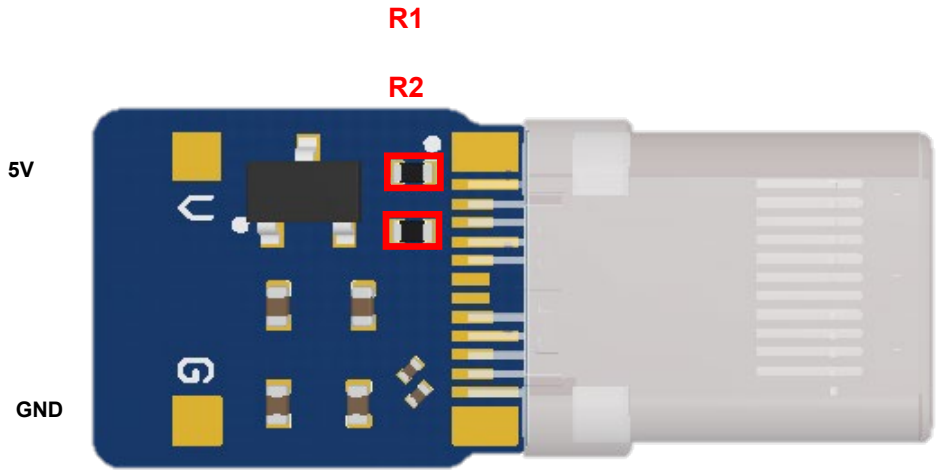
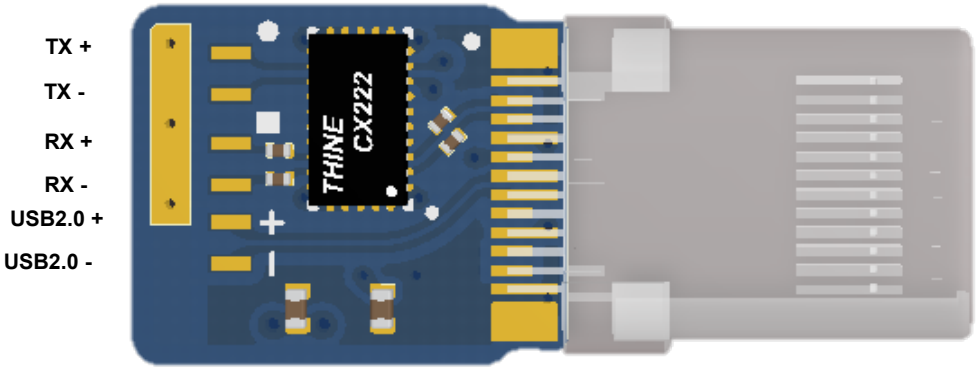




CABLE TYPE

AC561R10 is suitable for two type cables that are USB Type-C to USB3.1 Standard-A Cable and USB Type-C to USB3.1 Micro-B Cable.

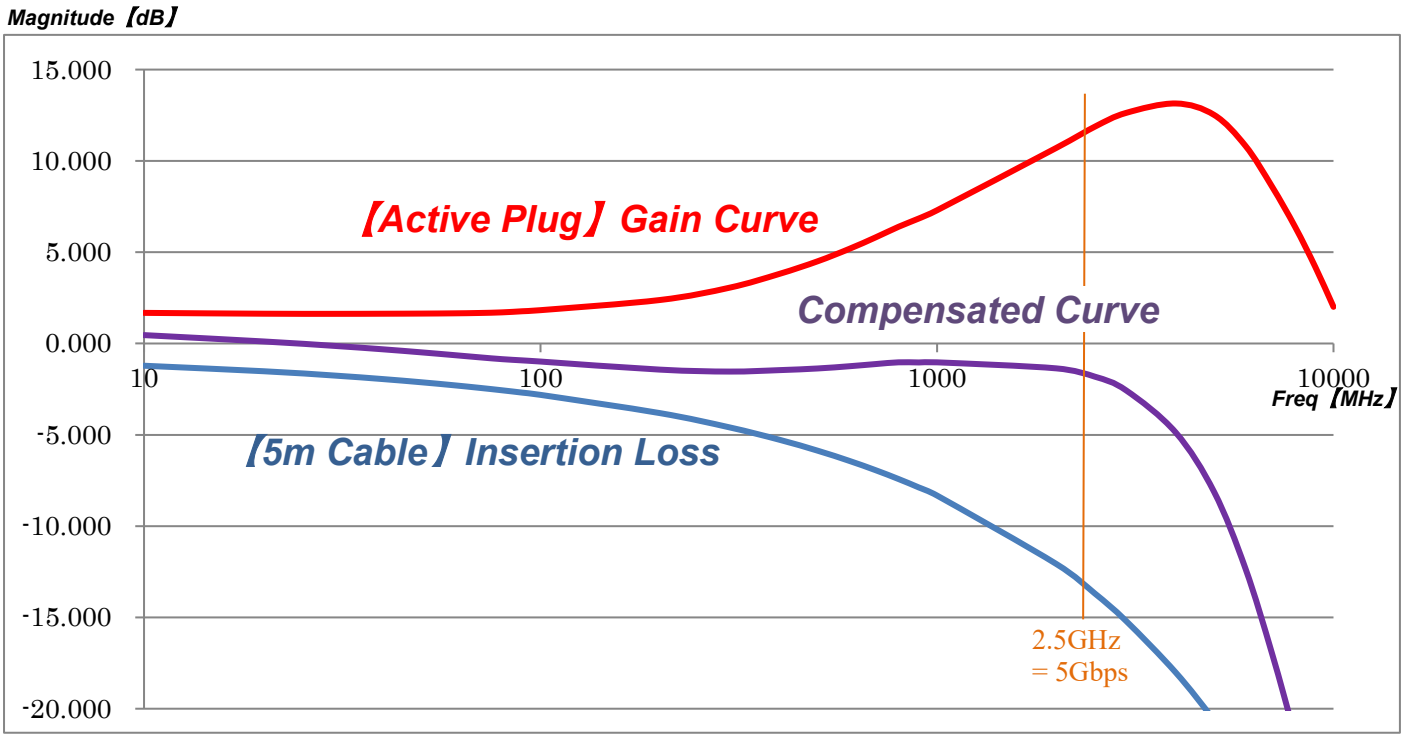
SETTING TABLE for USES CASE

SETTING	MODE	R1	R2
1	USB Type-C to USB3.1 Standard-A Cable	NC	5.1k
2	**USB Type-C to USB3.1 Micro-B Cable**	**56k**	**NC**

(default : SETTING-2)

Simulation Result for “Frequency Response”

A simulation result of “frequency response” is indicated as below.
X-AXIS is FREQUENCY [unit:MHz] and Y-AXIS is MAGNITUDE [unit:dB].
“Insertion Loss” is an attenuation characteristics of cable and **“Gain Curve”** is an amplitude characteristic of AC561R10.
On the other hand, **“Compensated Curve”** indicates a compensated characteristics of 5m cable.
It is an addition result of “Insertion Loss” and “Gain Curve”.
The compensated curve is flat characteristics until 5Gbps frequency range and it indicates the compensated cable can transmit signal without loss.



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