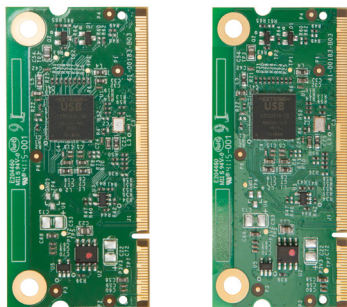# USB 2.0 RG2300A/RG2310A Core Series
## Embedded USB 2.0 Extender Modules

The USB 2.0 RG2300A/2310A Core Series of extenders offers OEM developers the world's most reliable and advanced USB 2.0 extension technology in an easy-to-integrate pluggable SO-DIMM form factor. These daughterboard modules support USB 2.0 extension up to 10km and are capable of advanced features such as boosting bulk data transfer rates, switching USB signaling over a LAN, blocking certain USB device types, and enabling a virtual hub for simultaneous user interaction.

RG2300A        RG2310A

## Features

The RG2300A is a highly reliable and robust core module SO-DIMM daughterboard for point-to point USB 2.0 extension applications while the RG2310A also features networking, switching and other advanced capabilities allowing developers to customize their OEM configurations. Both models are ideal for applications to extend USB peripherals such as flash drives, web cameras, microphones, speakers, touch screens, keyboards and mice. Key features of the series include:

■ USB 2.0 extension over copper, LAN, or fiber up to 10km
■ Direct connectivity in MII, GMII, RGMII or TBI modes
■ Interoperability with other ExtremeUSB® based 23xx extension solutions
■ Advanced capabilities such as Mass Storage Acceleration, SwitchableUSB™, Device Class Filtering, Hot Key support, Vendor Lock and Simultaneous User Interaction

Includes the ExtremeUSB suite of features:

■ Transparent USB extension
■ True plug and play; no software drivers required
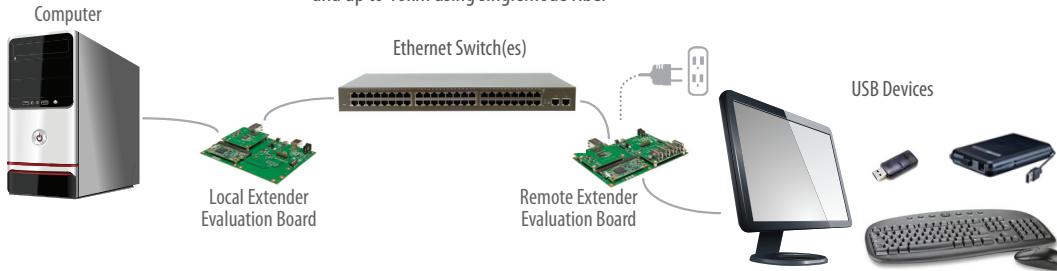■ Works with all major operating systems: Windows®, OS X®, and Linux®

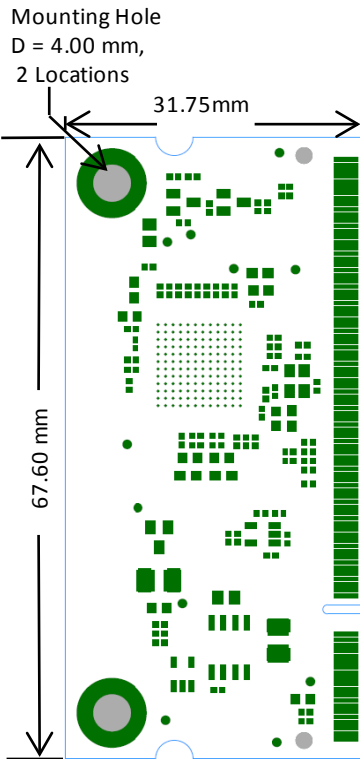| Summary of Features | RG2300A | RG2310A |
|---|---|---|
| Maximum Throughput Rate: | | |
|     Hi-speed (480 Mbps) | ✓ | ✓ |
|     Full-speed (12 Mbps) | ✓ | ✓ |
|     Low-speed (1.5 Mbps) | ✓ | ✓ |
| Point-to-Point Connection ▸ *extend USB devices over CAT 5e or fiber* | ✓ | ✓ |
| Mass Storage Acceleration ▸ *significantly boosts bulk data transfer rates* | ✓ | ✓ |
| USB over LAN ▸ *leverage existing in-building LAN cabling* | | ✓ |
| SwitchableUSB™ ▸ *switch local and remote USB extender pairings over a LAN* | | ✓ |
| Vendor Lock ▸ *customized configuration to protect OEM brand* | | ✓ |
| Device Class Filtering ▸ *block mass storage and other devices* | | ✓ |
| Hot Keys ▸ *support OEM defined key sequences to initiate various system actions* | | ✓ |
| Simultaneous User Interaction ▸ *enable up to 4 different users in 4 various locations to collaboratively view and make changes to documents/images at the same time* | | ✓ |
| Transmission Media: | | |
|     CAT 5e (up to 100m) | ✓ | ✓ |
|     Multimode fiber (up to 500m) | ✓ | ✓ |
|     Singlemode fiber (up to 10km) | ✓ | ✓ |

## Applications

- Medical devices
- Interactive video matrices
- KVM extension
- Networked  educational kiosks

Up to 100m between network devices and extenders over CAT 5e (or better) and up to 10km using singlemode fiber

Computer

Ethernet Switch(es)

USB Devices

Local Extender Evaluation Board

Remote Extender Evaluation Board

## USB 2.0 RG2300A/2310A Core Series Specifications

Mounting Hole D = 4.00 mm, 2 Locations

31.75mm

67.60 mm

Module Dimensions

**EXTREME USB®**

Specifications subject to change without notification.
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#90-01363-A03

### MAXIMUM RANGE

| | |
|---|---|
| CAT 5e (or better): | 100m |
| Local Area Network (LAN): | 100m between nodes |
| Fiber: | 500m (Multimode) and 10km (Singlemode) |

### PHYSICAL

| | |
|---|---|
| PCB Dimensions: | 67.60mm x 31.75mm |
| PCB Thickness: | 1.00mm (+/- 0.10mm) |
| Max PCBA Height: | Top: 2.50mm (+/- 0.20mm), Bottom: 1.10mm (+/- 0.10mm) |
| Mounting Holes: | Diameter: 4.00mm (+/- 0.10mm) |
| Connector: | 1.8V Standard Keyed 200-pin SO-DIMM |

### ENVIRONMENTAL

| | |
|---|---|
| Temperature: | Operating:  0°C to 50°C (32°F to 122°F)<br>Storage:  -20°C to 70°C (-4°F to 158°F) |
| Humidity (non-condensing): | Operating:  20% to 80% Relative Humidity, non-condensing<br>Storage:  10% to 90% Relative Humidity, non-condensing |

### POWER

| | |
|---|---|
| Power Supply: | 3.3V (Ask your sales representative for full product specifications) |

### USB SUPPORT

| | |
|---|---|
| USB Speeds: | Low-speed, Full-speed, High-speed |
| Max Throughput: | Up to 480 Mbps |
| Device Compatibility: | All device types and hubs |
| Host Compatibility: | OHCI, UHCI, EHCI, xHCI |

### CONNECTIVITY

| | |
|---|---|
| Link Interfaces: | IEEE 802.3-2000 (MII, GMII, RGMII), Ten-Bit Interface (TBI) |
| Network (RG2310A Core): | Ethernet (USB link only), UDP/IP (SwitchableUSB) |

### INTERFACES

| | |
|---|---|
| Interface PHYs: | Broadcom BCM54810, BCM54616 (GMII),<br>Realtek RTL8211(GMII, RGMII),<br>Texas Instruments TLK1221  (TBI) |
| USB Hub: | SMSC/Microchip 251x, 251xB,  Cypress CYUSB314 |

### SUPPORT

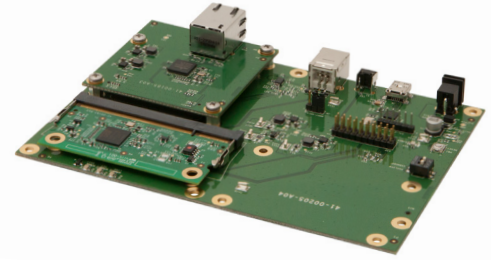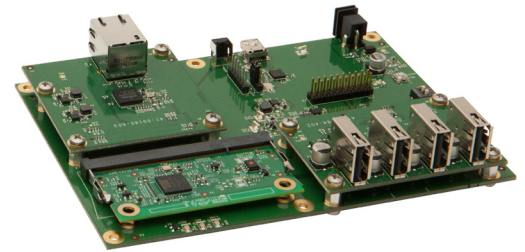| | |
|---|---|
| Warranty: | 2-year |

## Developer Kits

The USB 2.0 RG2300A/2310A Core Series Developer Kits provide a rapid means to evaluate the RG2300A/2310A Core Series of extenders in your application and to prototype custom solutions. The deverloper kits come with:

- Two evaluation boards with power supply
- One USB hub module (Cypress)
- One set of local and remote RG2300A or RG2310A Core daughterboard modules
- Choice of link interface modules (GMII, RGMII, TBI-MMF, or TBI-SMF)
- Choice of power cord (NA, EU, AU, UK, JP)
- Full documentation and instructions (specifications, drawings, schematics, etc.) provided on a USB stick

The modular design of the evaluation boards allow you to test your preferred USB or PHY chipsets with the core modules, while facilitating easy reversion to troubleshoot or prototype.
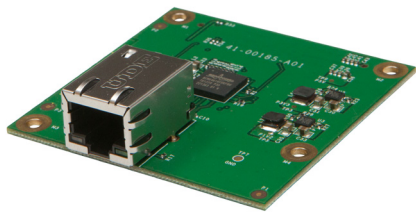
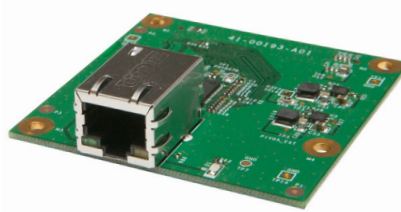*Local Extender Evaluation Board
with GMII and Core Modules*

*Remote Extender Evaluation Board
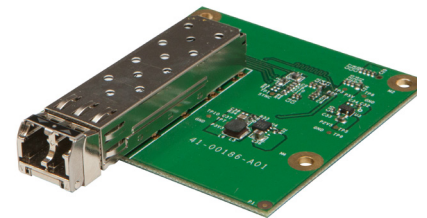with GMII, USB Hub and Core Modules*

## Link Interface Module Options
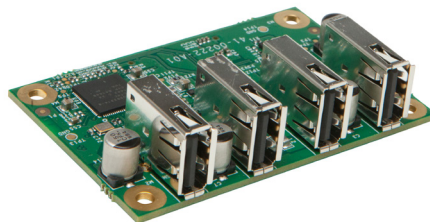
*GMII Link Interface Module*
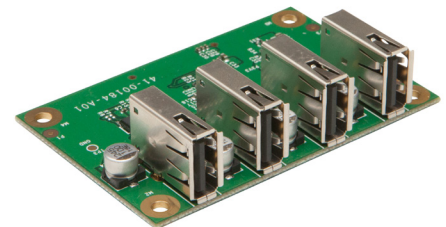
*RGMII Link Interface Module*

*TBI Link Interface Modules*

## USB Hub Module Options

**EXTREME
USB®**

*Default: Included in Kit
4-Port USB Hub Module (Cypress)*

*4-Port USB Hub Module
(SMSC/Microchip)*

All USB 2.0 RG2300A/2310A Core daughterboard modules and related products feature a 2-year warranty.
For more information email sales@icron.com or call +1 604 638 3920.

| PART # | NAME | DESCRIPTION |
|---|---|---|
| **CORE MODULES** | | |
| 02-00074 | USB 2.0 RG2300A Core Local Extender Module | USB 2.0 RG2300A local extender core daughterboard module (SO-DIMM) for MII, GMII, RGMII, and TBI modes over CAT X or fiber optics. |
| 02-00075 | USB 2.0 RG2300A Core Remote Extender Module | USB 2.0 RG2300A remote extender core daughterboard module (SO-DIMM) for MII, GMII, RGMII, and TBI modes over CAT X or fiber optics. |
| 02-00076 | USB 2.0 RG2310A Core Local Extender Module | USB 2.0 RG2310A local extender core daughterboard module (SO-DIMM) for LAN/SwitchableUSB™ over MII, GMII or RGMII, and direct connect over MII, GMII, RGMII or TBI using CAT X or fiber optics. |
| 02-00077 | USB 2.0 RG2310A Core Remote Extender Module | USB 2.0 RG2310A remote extender core daughterboard module (SO-DIMM) for LAN/SwitchableUSB™ over MII, GMII or RGMII, and direct connect over MII, GMII, RGMII or TBI using CAT X or fiber optics. |
| **DEVELOPER KITS** | | |
| 00-00374 | USB 2.0 RG2300A Core Developer Kit | Base developer kit for RG2300A core modules. Includes: 1 RG2300 core series local extender evaluation motherboard, 1 RG2300 core series remote extender evaluation motherboard, 1 RG2300A core local extender module, 1 RG2300A core remote extender module, 1 Cypress USB hub module, 1 international power supply, 1 USB A to B cable, 1 USB A to Mini B programming cable, USB stick with documentation and instructions. ***Requires:*** *2 matching link interface modules, 1 power cord.* |
| 00-00375 | USB 2.0 RG2310A Core Developer Kit | Base developer kit for RG2310A core modules. Includes: 1 RG2300 core series local extender evaluation motherboard, 1 RG2300 core series remote extender evaluation motherboard, 1 RG2310A core local extender module, 1 RG2310A core remote extender module, 1 Cypress USB hub module, 1 international power supply, 1 USB A to B cable, 1 USB A to Mini B programming cable, USB stick with documentation and instructions. ***Requires:*** *2 matching link interface modules, 1 power cord.* |
| **PICK 2 MATCHING LINK INTERFACE MODULES (Refer to product specifications for list of chipset(s) supported)** | | |
| 02-00050 | Link Interface Module: GMII | Modular component for evaluating the specified supported GMII chipset |
| 02-00051 | Link Interface Module: RGMII | Modular component for evaluating the specified supported RGMII chipset |
| 02-00052 | Link Interface Module: TBI-MMF | Modular component for evaluating TBI mode over multimode fiber |
| 02-00063 | Link Interface Module: TBI-SMF | Modular component for evaluating TBI mode over singlemode fiber |
| **PICK 1 POWER CORD (For appropriate region)** | | |
| 21-00055 | NA Power Cord | IEC320-C7/C8 2-pin power cord for North America |
| 21-00056 | EU Power Cord | IEC320-C7/C8 2-pin power cord for European Union |
| 21-00057 | UK Power Cord | IEC320-C7/C8 2-pin power cord for United Kingdom |
| 21-00058 | AU Power Cord | IEC320-C7/C8 2-pin power cord for Australia |
| 21-00109 | JP Power Cord | IEC320-C7/C8 2-pin power cord for Japan |
| **DEVELOPER KIT ADDITIONAL ACCESSORIES / REPLACEMENT ITEMS** | | |
| 02-00049 | USB Hub Module (SMSC/Microchip) | Module component for evaluating the specified supported USB hub chipset (Refer to product specifications for list of chipset(s) supported) |
| 02-00078 | USB Hub Module (Cypress) | Module component for evaluating the specified supported USB hub chipset (Refer to product specifications for list of chipset(s) supported) Note: Use with the new RG2300A and RG2310A only |
| 21-00002 | USB A to B Cable | USB 2.0/1.1 A to B, 2.0m, 24AWG |
| 21-00102 | USB A to Mini B Programming Cable | USB 2.0/1.1 A to Mini B, 1.8m, 26/28 AWG |
| 21-00111 | 5V 3A International Power Supply | 5V 3A DC, Lvl6, 100-240VAC input power supply with 1.7mm (ID) plug, and IEC320-C7/C8 2-pin connector |
| 10-00393 | Test Enclosure | Aluminum enclosure for evaluating emissions and immunity with standard developer kit. Includes: top and bottom enclosures with faceplates matching configurations ordered. |
| 02-00053 | USB 2.0 RG2300 Core Series Local Extender Evaluation motherboard | Local extender evaluation motherboard for RG2300/2310 or RG2300A/2310A core modules. |
| 02-00054 | USB 2.0 RG2300 Core Series Remote Extender Evaluation motherboard | Remote extender evaluation motherboard for RG2300/2310 or RG2300A/2310A core modules. |