

USB333x/334x USB Transceiver Family

Hi-Speed USB 2.0 Transceiver Family Featuring RapidCharge Anywhere™
for Smartphones and Other Portable Devices



SMSC's USB333x/334x family of Hi-Speed USB 2.0 transceivers delivers enhanced USB functionality for the portable market with support for the latest USB-IF Battery Charging 1.1 (BC 1.1) specification. This family of devices dramatically reduces the time required for battery charging and system bill-of-material (BOM) costs by up to 60% over competitive solutions. SMSC has positioned itself as a leader in providing innovative solutions in support of BC 1.1. The new USB333x/334x provides an excellent compliment to USB charging ports by enabling portable devices to negotiate up to three times the charging current compared to a standard USB port, resulting in faster battery charging. The USB333x/334x is designed in a small footprint package and reduces the number of external components through the integration of voltage regulators and other discretes. Additionally, SMSC's complimentary and confidential USBCheck™ online design review service is available for customers who select the USB333x/334x for their application design-in*.

Highlights

- Highly-integrated, Hi-Speed USB 2.0 transceivers
 - Integrated VBUS over-voltage protection (up to +30V)
 - Integrated USB switch enables connector as a single port for data, charging and audio
- Extremely high ESD performance in a Hi-Speed USB transceiver
 - ±8kV HBM with up to ±25kV IEC (contact/air)
- Supports a wide variety of common reference clock frequencies
- USB-IF Battery Charger revision 1.1 support
- Ultra-low standby current
- "Wrapper-less" architecture for optimized timing performance
- Hi-Speed USB On-The-Go (OTG) revision 2.0 compliant
- Link Power Management (LPM)
- Industrial (-40° to 85°C) temperature range options available
- WLCSP, RoHS-compliant package (USB333x)
- QFN, RoHS-compliant package (USB334x)

Target Applications

- Digital Still/Video Cameras
- Smartphones/Cell Phones
- GPS Personal Navigation Devices
- MP3/Portable Media Players (PMPs)
- External Hard Disk Drives
- Gaming Consoles

Features

| | |
|---|--|
| Single supply operation | Eliminates need for external regulators |
| Integrated VBUS over-voltage protection (OVP) | Eliminates need for costly external OVP IC |
| Integrated USB switch and ESD protection | Enables lower BOM part count and smaller PCB footprint area |
| flexPWR® technology providing extremely low power consumption | Longer battery life and variable I/O voltage capability |
| Multiple clock input frequencies supported | Allows USB PHY to operate from the system clock, eliminating the need for an external crystal oscillator for the USB PHY |
| Extremely small package footprint | Efficient PCB board space utilization |

Benefits





SMSC RapidCharge Anywhere Provides:

- 3X the charging current through a USB port over traditional solutions
- USB-IF Battery Charging 1.1 support to any portable device
- Charging current up to 1.5Amps via compatible USB host or dedicated charger
- Dedicated Charging Port (DCP), Charging (CDP) and Standard (SDP) Downstream Port support
- Complete USB charging ecosystem between device and host

USB333X/334X FAMILY INTEGRATES EIGHT FUNCTIONS INTO ONE SOLUTION!

| FUNCTION | COMPETITION | SMSC SOLUTION |
|--------------------------------------|----------------|---|
| | | |
| USB PHY | Discrete | <div style="text-align: center; background-color: #f4a460; padding: 20px;"> <h1>SINGLE SOLUTION!</h1> <p>Only 1.0uF Required</p> </div> |
| USB Switch** | Discrete | |
| 1.8V Regulator | Discrete | |
| 3.3V Regulator | Discrete | |
| Battery Charger 1.1 Detection | Discrete | |
| ESD Protection | External | |
| VBUS OVP | External | |
| Crystal Oscillator | External | |
| Capacitors | 4.7uF Required | |

USB333X FAMILY SELECTOR GUIDE

| Part Number | Package | Reference Frequency*** | I/O Voltage | Integrated Switch |
|-------------|---------|------------------------|-------------|-------------------|
| USB3330 | WLCSP | Multi | 1.8V | No |
| USB3331 | | 26MHz | 1.8V | Yes |
| USB3333 | | 19.2/26MHz | 1.8 - 3.3V | No |
| USB3336 | | 19.2MHz | 1.8V | Yes |
| USB3338 | | 38.4MHz | 1.8V | No |

USB334X FAMILY SELECTOR GUIDE

| Part Number | Package | Reference Frequency*** | I/O Voltage | Integrated Switch |
|-------------|---------|------------------------|-------------|-------------------|
| USB3340 | QFN | Multi | 1.8 - 3.3V | Yes |
| USB3341 | | 26MHz | 1.8V | Yes |
| USB3343 | | 26MHz Crystal | 1.8 - 3.3V | No |
| USB3346 | | 19.2MHz | 1.8V | Yes |

*USBCheck online design review service requires an SMSC e-Services account and is subject to the terms and conditions listed on SMSC's website

** Integrated USB switch available on select part numbers

*** All parts support ULPI clock 60MHz in mode

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