



California Micro Devices Product Release

CM2400-02/03/04/05
USB Transceivers



Market Overview

- The Universal Serial Bus (USB) has become an increasingly popular connectivity solution for mobile electronics today
- Current baseband/CPU chipsets with an integrated USB controller are running at core voltages under 2.8V
 - Future chipsets will have lower
- Therefore an analog IC, USB transceiver, is need to interface with the CPU chipset and the 3.3V USB signals


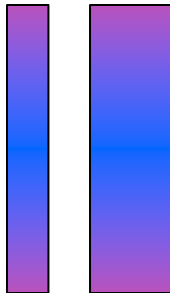


Mobile Connectivity Solutions



Features

- 1Mbps data rate transfer
- Wireless connection
- Chipsets still expensive
- Slow adoption amongst PC and mobile electronics



Features

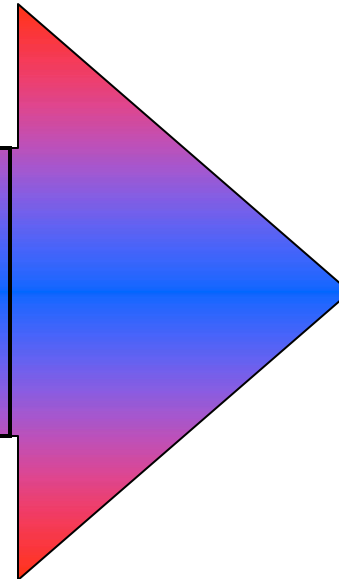
- Up to 12Mbps data rate transfer
- Widely used interface for PCs
- Multiple USB ports per PC
- Inexpensive to implement
- Adopted by many mobile electronic devices

RS232



Features

- 19.2kbps data rate transfer
- Widely used interface for PCs
- Inexpensive solution
- Only one data port on most PCs
- Mobile electronics moving away from this connectivity solution



Slow



Data Transfer Rate

Fast



Introduction

- California Micro Devices released four new members of the CM2400 USB transceiver family
 - CM2400-02: Dual-speed & Single-ended Mode
 - CM2400-03: Dual-speed & Differential Mode
 - CM2400-04: Dual-speed & Dual Mode
 - CM2400-05: Full-speed w/ bi-directional inputs
- Total of 5 members in CM2400 product family
- All members of the CM2400 product family are fully compliant with USB specification Rev. 2.0



Introduction (cont.)

- CM2400-02/03/04/05 compliment and completes our USB transceiver offering for mobile designs
- Addresses needs of the market for a broad family of products
- CM2400-05 is an advanced version of the other four USB transceivers
 - Cost effective solution by reducing pin-count and simplifying PCB layout



CM2400 Applications

■ Applications

- Interface between the CPU or baseband chipset and USB port
 - Level shifts USB signals from 3.3V to chipset's core voltage

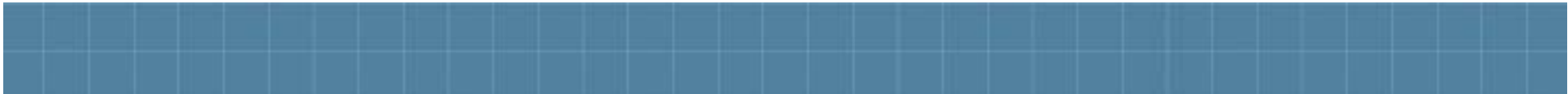
■ Product Applications

- Wireless Handsets
- Handheld PCs/PDAs
- Digital Still Cameras
- DV Camcorders
- MP3 Players



Features & Benefits

Feature	Benefit
Level Translator – 1.65V to 3.30V I/O Signal Voltages	<ul style="list-style-type: none"> ■ Supports a wide range of chipsets that have different core voltages which is less than 3.3V
Low Power Operation	<ul style="list-style-type: none"> ■ Conserves battery power to ensure longer operation of portable device
Input Modes	<ul style="list-style-type: none"> ■ Allows user flexibility to choose what signaling environment they want in their design
USB Detect Function	<ul style="list-style-type: none"> ■ Detects presence of USB cable – if VBUS > 4V then it is logic high and USB cable is present ■ Avoids need for additional circuitry ■ Function present in CM2400-01 and CM2400-05
HBCC and TQFN Package	<ul style="list-style-type: none"> ■ Low profile, small size package format that occupies less space than conventional packages such as 16-lead TSSOP package





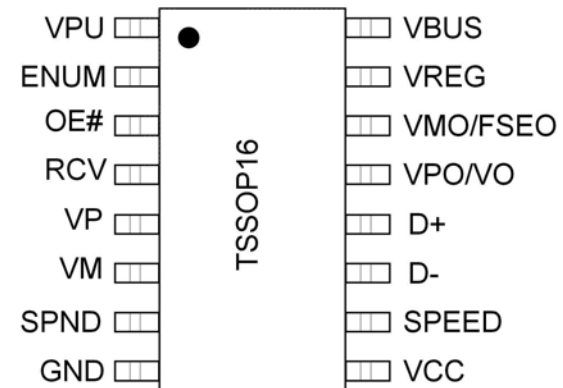
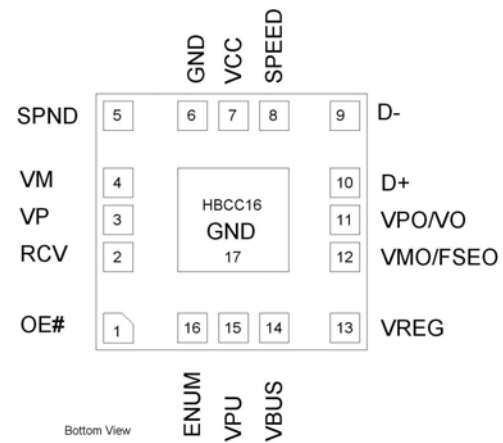
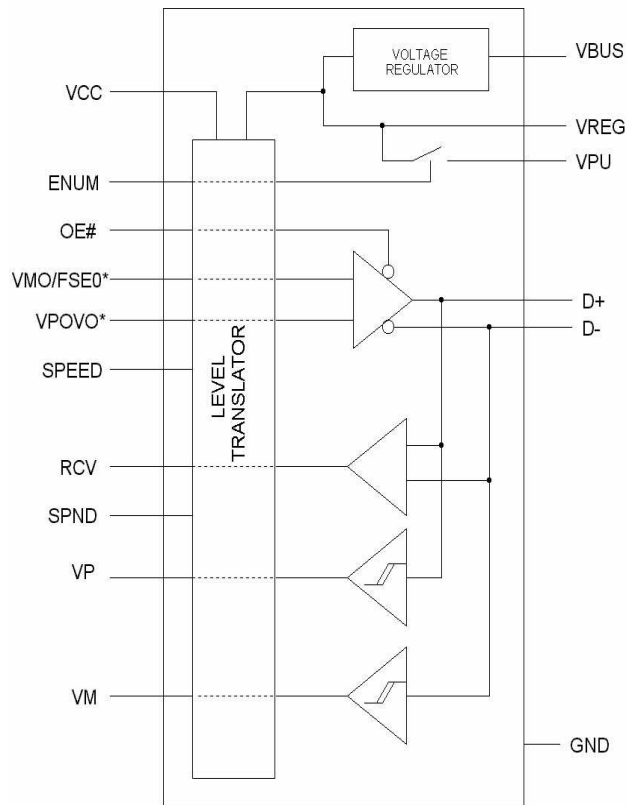
CM2400 Selector Table

Function	CM2400-01	CM2400-02	CM2400-03	CM2400-04	CM2400-05
Single-ended Output	✓	✓	✓	✓	N/A
Differential Output	✓	✓	✓	✓	✓
Driver Data Input	VPO/VO VMO/FSE0	VO FSE0	VPO VMO	VPO/VO VMO/FSE0	VPO/VP & VMO/VM are Bi-directional I/Os
Transmitter Enable	✓	✓	✓	✓	✓
Mode Select	✓	N/A	N/A	✓	✓
Suspend Control	✓	✓	✓	✓	✓
Full/Low Speed Select	Full-speed	✓	✓	✓	Full-Speed
Enumerate	✓	✓	✓	✓	✓
USB Detect	✓	N/A	N/A	N/A	✓
Package Type: TSSOP	N/A	16-lead	16-lead	N/A	N/A
HBCC	16-lead	16-lead	16-lead	16-lead	16-lead
TQFN	N/A	16-lead	16-lead	16-lead	16-lead



CM2400-02/03

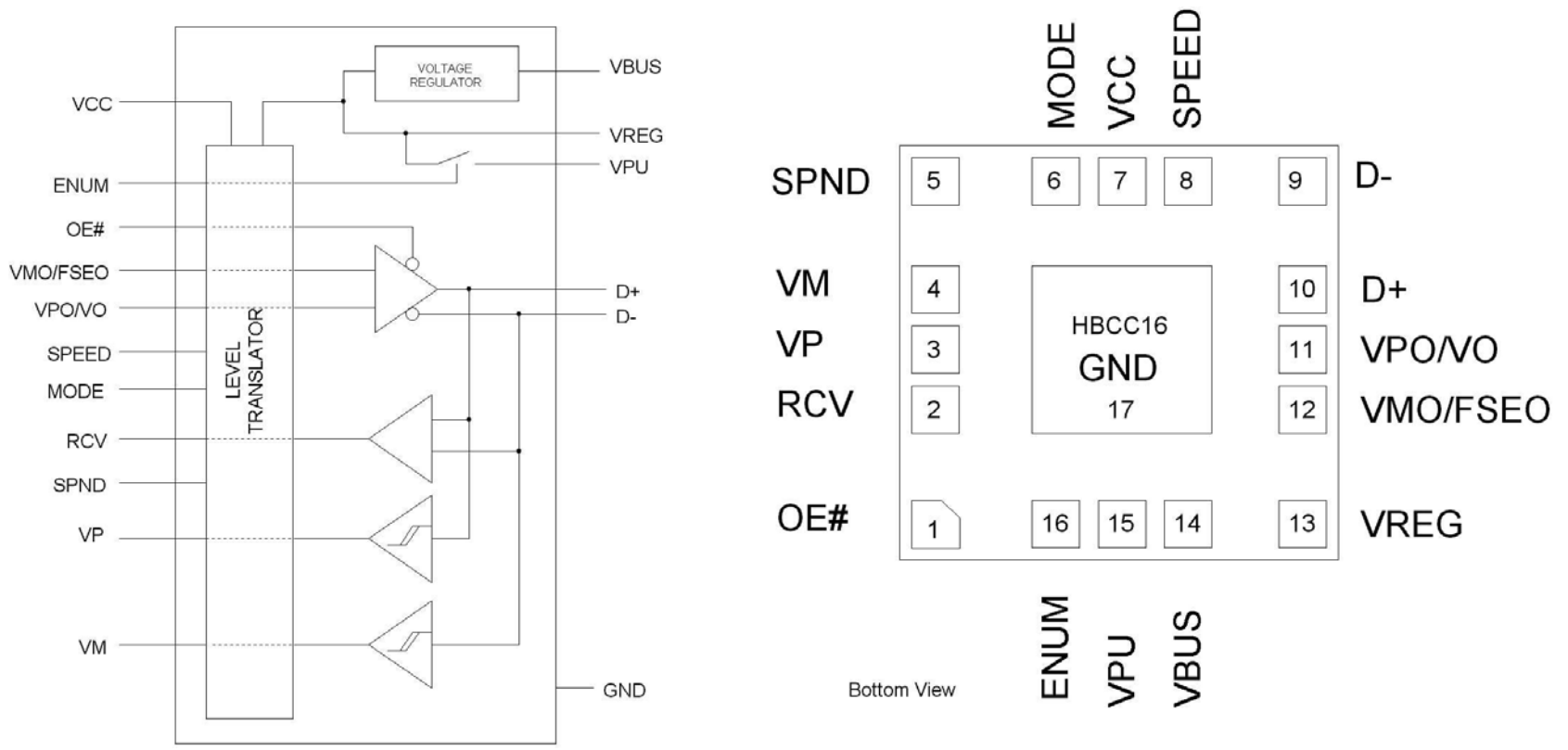
Functional & Pin-out Diagrams





CM2400-04

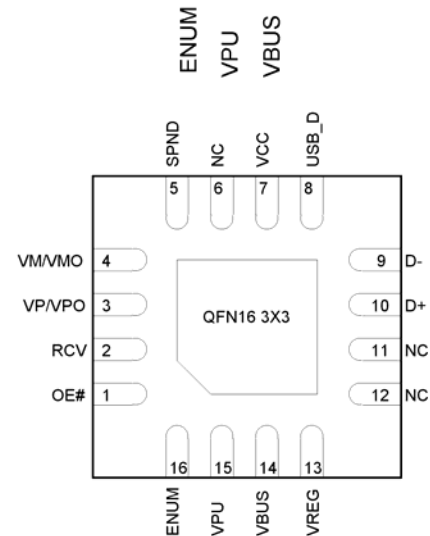
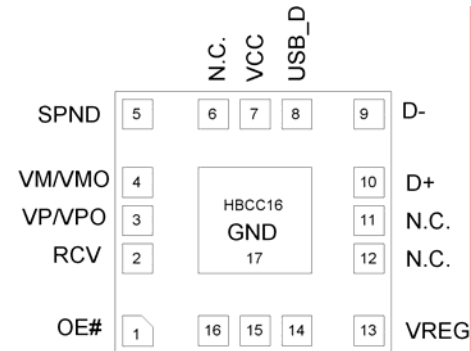
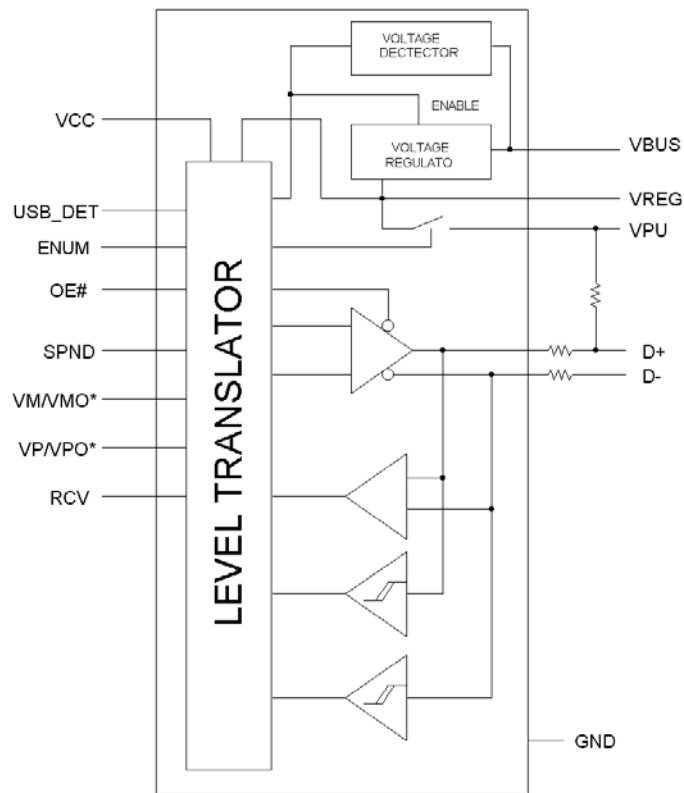
Functional & Pin-out Diagrams





CM2400-05

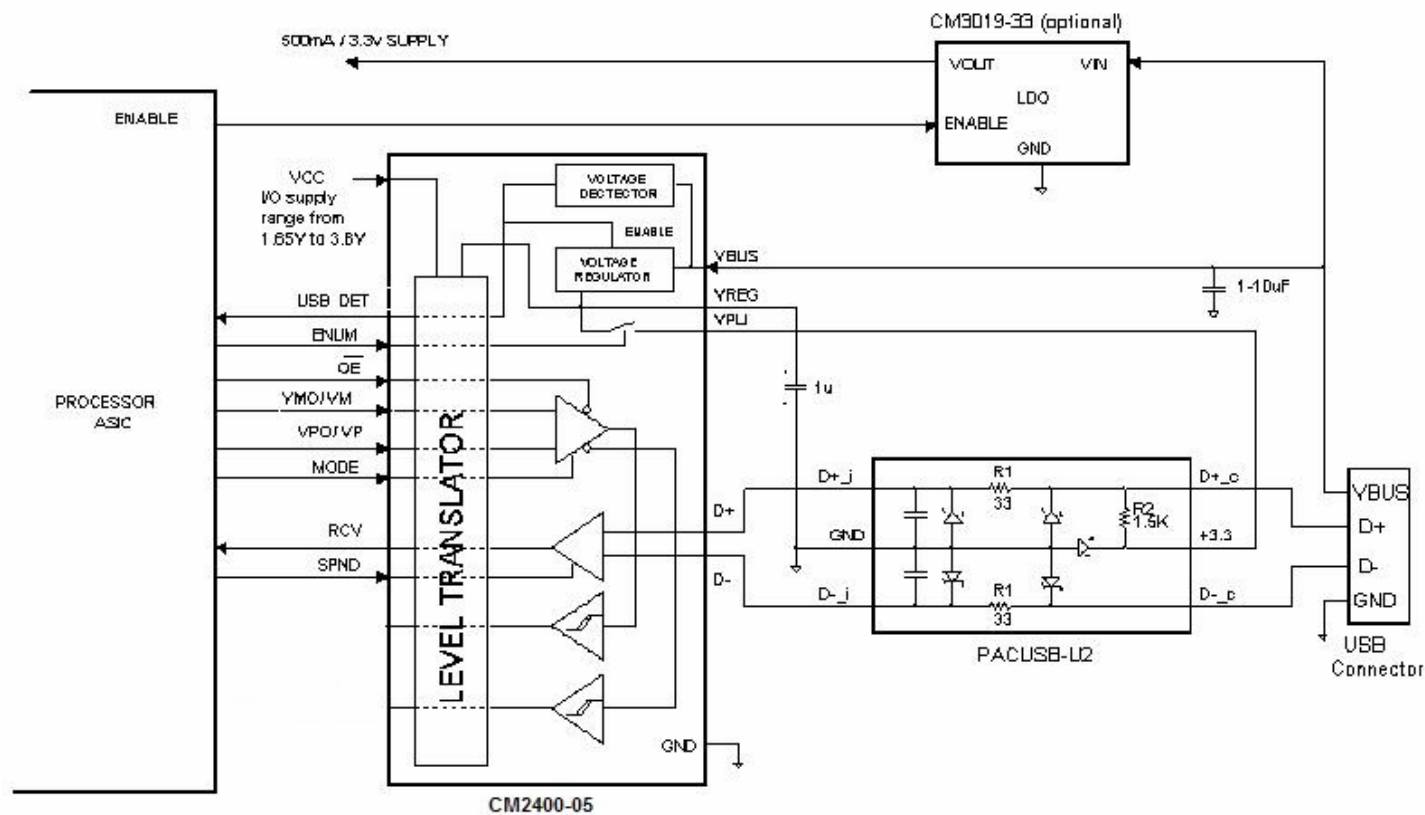
Functional & Pin-out Diagrams





Application Diagram

CM2400-05





Pricing & Availability

CAMD P/N	Package Type	Unit Price @ 1ku	Availability
CM2400-02HB	16-lead HBCC	\$1.15	Now
CM2400-02QF	16-lead TQFN	\$1.09	April 2004
CM2400-02TS	16-lead TSSOP	\$1.12	Now
CM2400-03HB	16-lead HBCC	\$1.15	Now
CM2400-03QF	16-lead TQFN	\$1.09	April 2004
CM2400-03TS	16-lead TSSOP	\$1.12	Now
CM2400-04HB	16-lead HBCC	\$1.15	Now
CM2400-04QF	16-lead TQFN	\$1.09	April 2004
CM2400-05HB	16-lead HBCC	\$1.15	Now
CM2400-05QF	16-lead TQFN	\$1.09	Now