Fairchild MUS
Micro USB Switch(USB 2.0 accessory switch)

- *'**China's Minister** of Information and Industry(MII) announced the "Technical Requirements and Test Method of Charger and Interface for Mobile Telecommunication Terminal Equipment" (YD/ T 1591).' – 2009*

- *'**the European Commission** and in close co-operation with the Commission services, major producers of mobile phones have agreed in a **Memorandum of Understanding ("MoU")** to harmonize chargers for data-enabled mobile phones sold in the EU'* - Enterprise & Industry Jun. 2009

- *'**the GSM Association** has now come out and announced that it and 17 of its partner companies are indeed working on such a solution, and that they plan to have a common format in place by 2012'* – Engadget Feb. 2009

- ***OMTP*** *: Specification for Common Charging and Data, 'This document recommends using the USB Forum Micro-USB connector for the charging and data connector on compliant Terminals.'*

- ***MCPC*** *: Definning new specification for Japanese mobile phone connector standard which is moving forward with Micro USB connector and release in April*
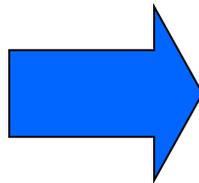
- Design trends
  - In every region, micro-USB is used for charging and data transmission
  - Cell phone manufacturers are moving to using micro-USB connector for both charging and audio and data transmission
- Consumer and environmental trends
  - Ease-of-use in having one USB connector as opposed to many connectors
  - One USB connector eliminates many types of chargers and contributes to global sustainability
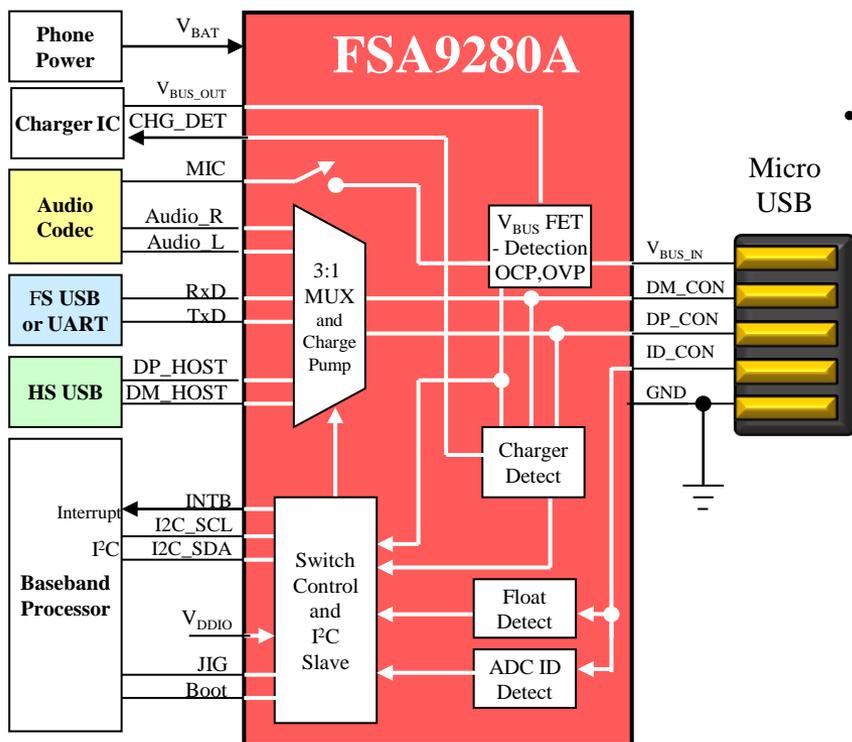
- The FSA9280A was developed to replace existing Cell phone manufacturer's propriority connector with a industry standard Mini / Micro USB Connector.
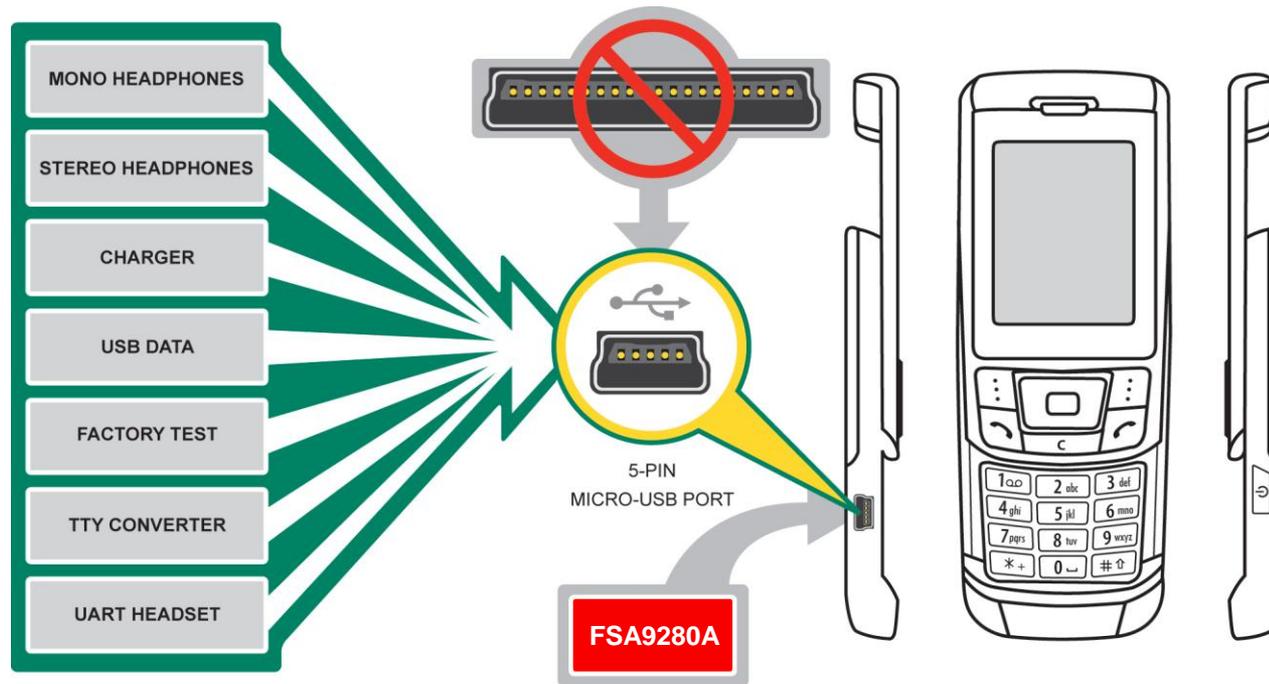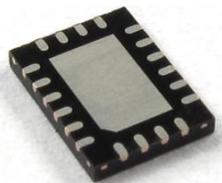

- The FSA9280A will enable multiple accessories and signals to utilize a single USB port, saving space, improving standardization and lowering costs

FSA9280A

• Engineering Samples – Now
• Release – Mid March

Phone Power — V_BAT

Charger IC — V_BUS_OUT / CHG_DET

Audio Codec — MIC / Audio_R / Audio_L

FS USB or UART — RxD / TxD

HS USB — DP_HOST / DM_HOST

Baseband Processor — Interrupt / INTB / I2C_SCL / I²C / I2C_SDA / V_DDIO / JIG / Boot

3:1 MUX and Charge Pump

V_BUS FET - Detection OCP,OVP

Charger Detect

Switch Control and I²C Slave

Float Detect

ADC ID Detect

Micro USB — V_BUS_IN / DM_CON / DP_CON / ID_CON / GND
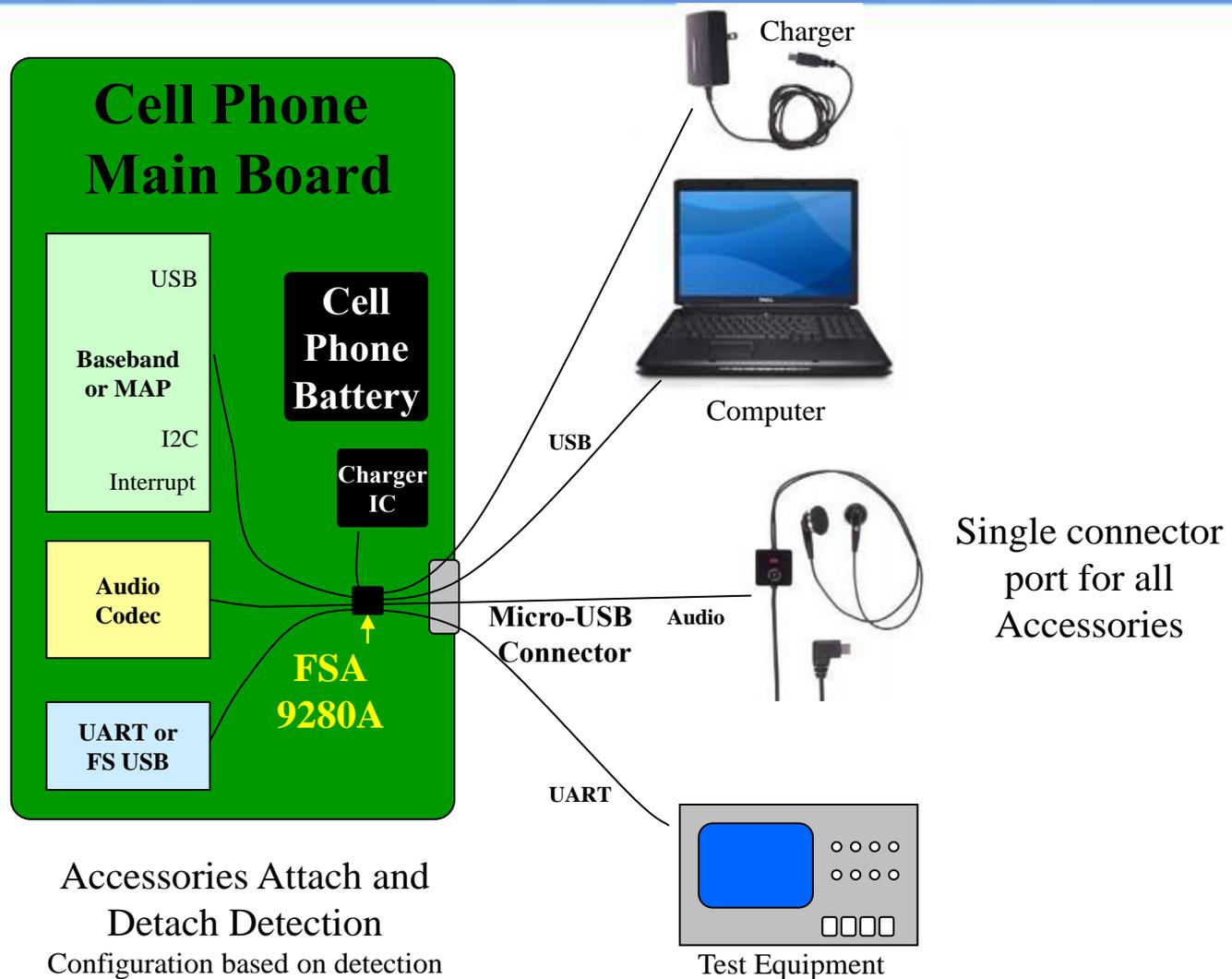
• 3 x 4 mm
MLP package

• Function:
  • Multi mode USB accessory switch that is enables USB data, stereo and mono Audio, UART data and charging to use a common connector port and autometically detect and change mode
  • Has charger detector , OVP , OCP and FET integrated

• Application:
  • Mobile phone, MP3 player, PMP, PDA

Features:
  • **Auto Accessory Detect and switching (6accessories + 5 reserved)**
  • Audio Headsets w/ upto 12 button detection
  • UART, HS USB, TTY
  • 4 unique factory modes
  • 4 different charger types(Carkit type1, Carkit type2, Wall charger, USB charger)
  • 5 User definable accessories(Reserved)
  • Integrated Charger FET + 28V OVP
  • Automatic Low-Power mode when No accessory is attached
  • USB Charger detection and indication
  • Negative-swing-capable audio channel
  • Built-in termination resistors for audio-pop reduction
  • Over voltage indicator for charger IC control

• Availability
  • Samples and Demo board are now available
  • Design support from Apps engineer

FAIRCHILD SEMICONDUCTOR®

Cell Phone Main Board

USB

Baseband or MAP

I2C

Interrupt

Audio Codec

UART or FS USB

Cell Phone Battery

Charger IC

FSA 9280A

Micro-USB Connector

Accessories Attach and Detach Detection
Configuration based on detection

Charger

Computer

USB

Audio

Single connector port for all Accessories

UART

Test Equipment

USB Accessory Switch Roadmap

Present

| Q1 '10 | Q2 '10 | Q3 '10 | Q4 '10 | Q1 '11 |

Production

Development

Definition

FSA9481UCX
w/ BC 1.1
Full version

FSA94XXUCX
Full version
Upgrade
w/ Verizon spec

FSA9280AUMX

FSA9280ASUMX
w/ BC 1.1
w/ 3x3 MLP option

FSA92XXASUMX
Upgrade
w/ Verizon spec

FSA9288UMX
w/ 8V OVP for
EMP platform

FSA9XXX
New version for
targeting ULC
models

FSA800UMX
3:1 Multi media
Switch w/ charger
Detect

FSA805UMX
3:1 Multi media
Switch

FSA801/806
3:1 Multi media
Switch w/ low Pwr
w/ BC1.1

•Engineering Samples – Now
•Release – Q2

FSA9481

Phone Power — V_{BAT}

Charger IC — V_{BUS_OUT} / CHG_DET

MIC

Audio Codec — Audio_R / Audio_L

3:1 MUX and Charge Pump

V_{BUS} FET - Detection OCP,OVP

FS USB or UART — RxD / TxD

HS USB — DP_HOST / DM_HOST

Charger Detect

INTB

Interrupt

I²C — I2C_SCL / I2C_SDA

Baseband Processor

Switch Control and I²C Slave

V_{DDIO}

JIG / Boot

Float Detect

ADC ID Detect

VIDEO

Video

Micro USB

V_{BUS_IN}
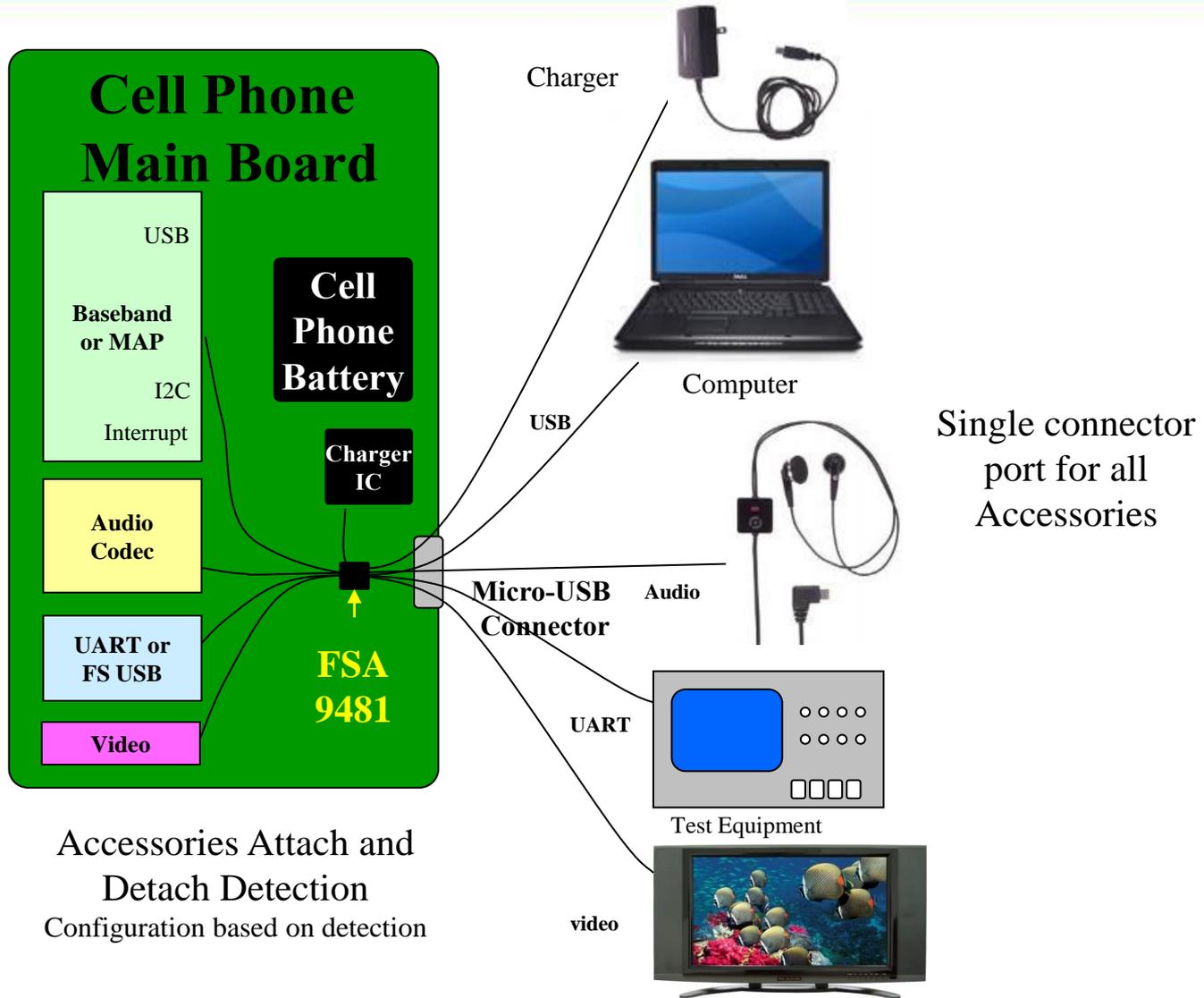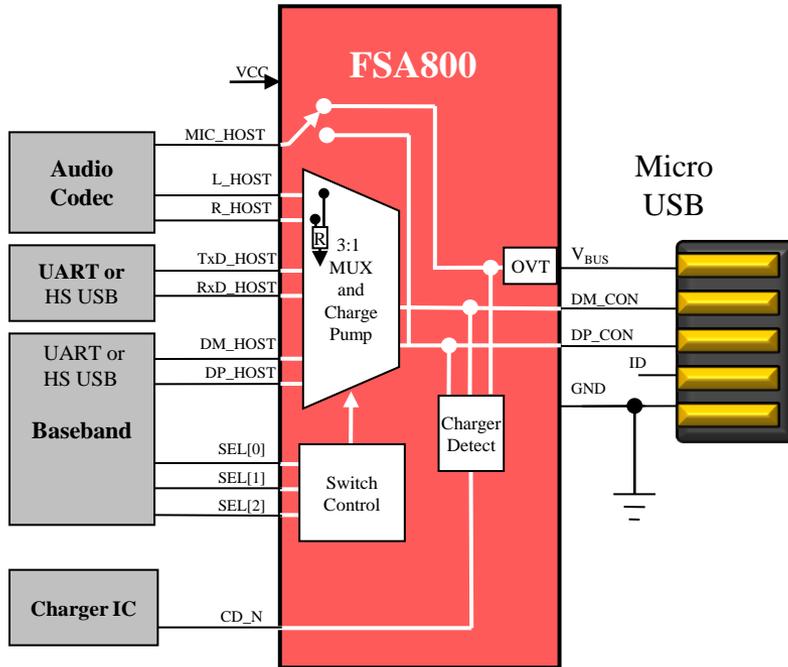DM_CON
DP_CON
ID_CON
GND

• 2.1x2.1 WLCSP

- **Function:**
  - Multi mode USB accessory switch that is enables USB data, stereo and mono Audio, UART data, **Video** output and changing to use a common connector port and autometically detect and change mode
  - Has charger detector , OVP , OCP and FET integrated

- **Application:**
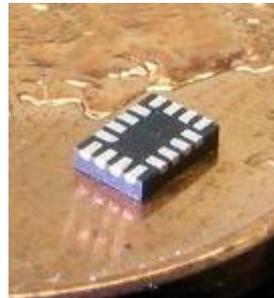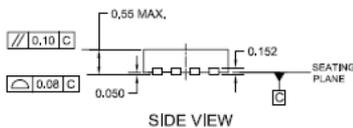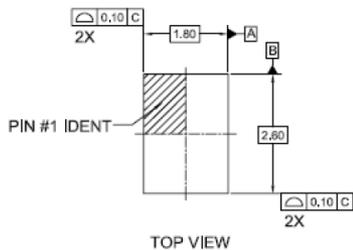 - Mobile phone, MP3 player, PMP, PDA

- **Features:**
  - **Auto Accessory Detect and switching (10accessories + 5 reserved)**
  - Audio Headsets w/ upto 12 button detection
  - UART, HS USB, TTY
  - 4 unique factory modes
  - 4 different charger types(Carkit type1, Carkit type2, Wall charger, USB charger)
  - 5 User definable accessories(Reserved)
  - **Video, USB OTG, PPD(Phone Powered Device), Audio Type2**
  - Integrated Charger FET + 28V OVP
  - Automatic Low-Power mode when No accessory is attached
  - USB Charger detection and indication
  - Negative-swing-capable audio channel
  - Built-in termination resistors for audio-pop reduction
  - Over voltage indicator for charger IC control

- **Availability**
  - Only engineering samples available
  - Evaluation support available

FSA9481 Application

Cell Phone Main Board

USB

Baseband or MAP

I2C

Interrupt

Cell Phone Battery

Charger IC

Audio Codec

UART or FS USB

Video

FSA 9481

Charger

Computer

USB

Micro-USB Connector

Audio

UART

Test Equipment

video

Single connector port for all Accessories

Accessories Attach and Detach Detection
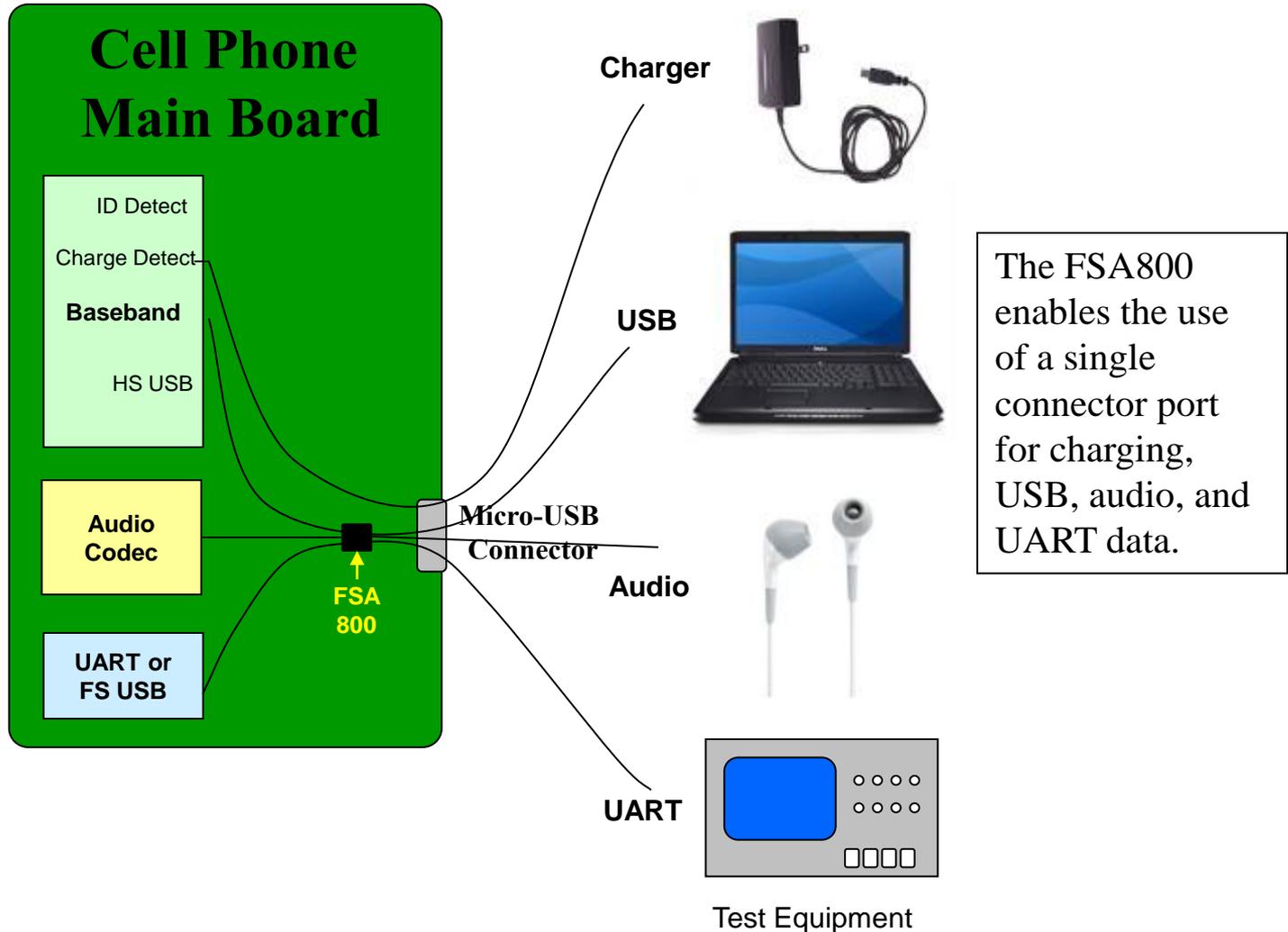Configuration based on detection

FSA800

- **Function:**
  - 3:1 USB accessory switch that enables USB data, stereo and mono Audio and UART data to use a common connector port.

- **Application:**
  - Mobile phone, MP3 Player, PDA

- **Features:**
  - 3:1 Switch handles:
    - Audio Headsets
    - UART
    - High and Low Speed USB Data
    - USB Charger detection and indication
    - Negative-swing-capable audio channel
    - Built-in termination resistors for audio-pop reduction
    - Simple switch control using three select pins
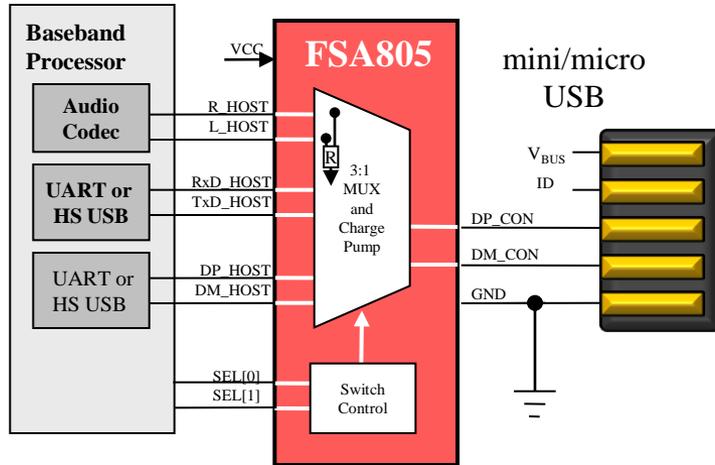   - 28V Over-voltage tolerance on VBUS.

• 2.6 x 1.8 mm MLP package

The Solution: FSA800

The FSA800 enables the use of a single connector port for charging, USB, audio, and UART data.

FAIRCHILD
SEMICONDUCTOR®

•Engineering Samples – Now
•Release – Q1 2010

Baseband Processor — Audio Codec, UART or HS USB, UART or HS USB — FSA805 3:1 MUX and Charge Pump / Switch Control — mini/micro USB
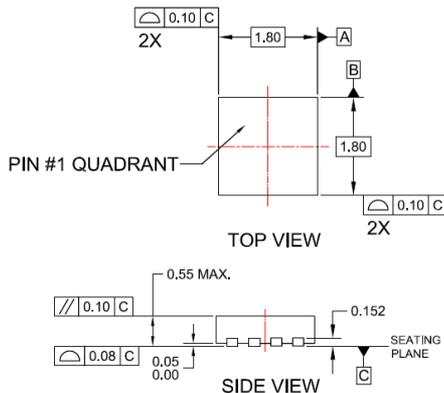
• 1.8 x 1.8 mm 12 pin UMLP package

- Function:
  - 3:1 USB accessory switch that is enables USB data, stereo and mono Audio and UART data to use a common connector port.

- Application:
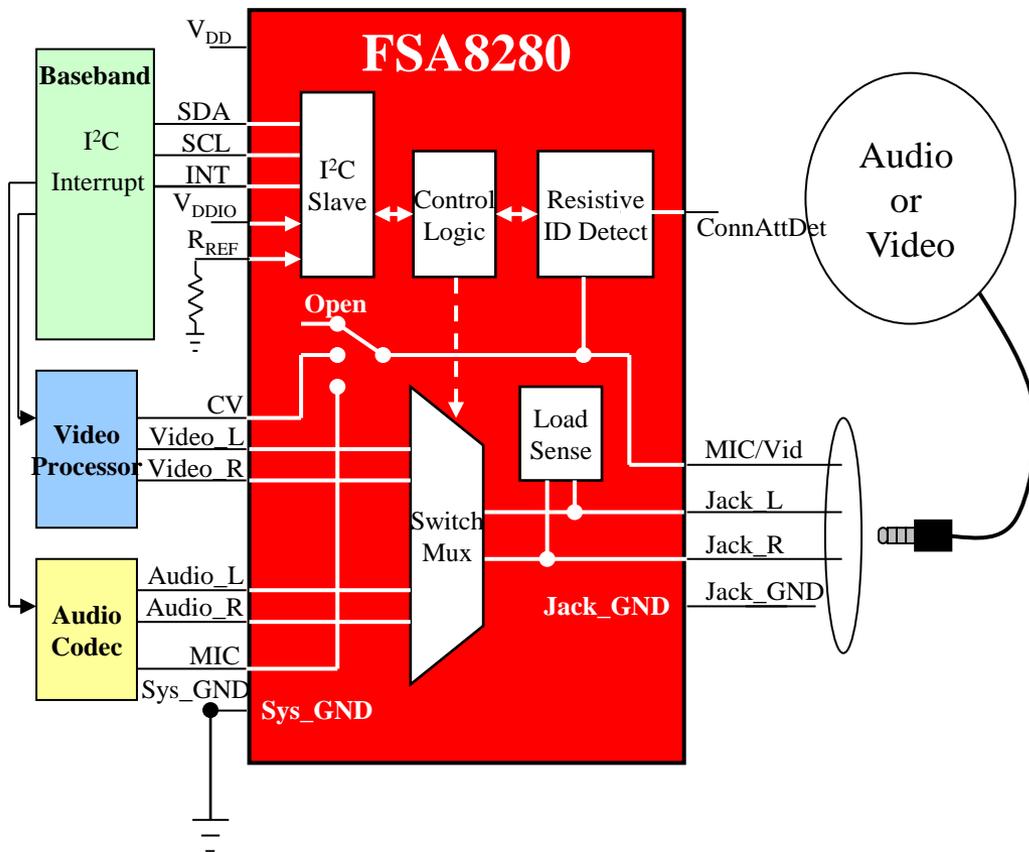 - Mobile phone, MP3 Player, PDA

- Features:
  - 3:1 Switch handles:
    - Audio Headsets
    - UART
    - High and Low Speed USB Data
    - Negative-swing-capable audio channel
    - Built-in termination resistors for audio-pop reduction
    - Simple switch control using two select pins

FSA8280

New product concept

Block diagram labels:

- V_{DD}
- **FSA8280**
- **Baseband** — I²C Interrupt
- SDA
- SCL
- INT
- V_{DDIO}
- R_{REF}
- I²C Slave
- Control Logic
- Resistive ID Detect
- ConnAttDet
- **Open**
- **Video Processor** — CV, Video_L, Video_R
- Load Sense
- Switch Mux
- **Audio Codec** — Audio_L, Audio_R, MIC, Sys_GND
- **Sys_GND**
- MIC/Vid
- Jack_L
- Jack_R
- **Jack_GND**
- Jack_GND
- Audio or Video

• 2.2 x 2.6 mm MLP package

- **Function:**
  - Audio Jack accessory detector and Switch that is fully controlled using 2C™ and enables stereo and mono audio, microphone and video signals to use a common connector port.

- **Application:**
  - Mobile phone, MP3 player, PMP, PDA

- **Features:**
  - Detects these Audio Jack Accessories:
    - Headsets
    - Video
  - Detects push button remote control presses
  - Automatic Low-Power Mode When No Accessory is attached
  - Negative-Swing-Capable Audio Channel.

- **Availability**
  - Samples in 2H, 2010
  - Code S in 1H, 2011

USB/Audio/Video Detection and Switch Products

Product Offering	Application Interface	Accessories Detected											
		HS USB	Audio	Remote	UART	Factory mode	Carkit 1&2	OTG	Audio type2	Video	TTY	PPD	BC Detect
FSA9481	Mini/Micro-USB	X	X	X	X	X	X	X	X	X	X	X	BC 1.1
FSA9280A	Mini/Micro-USB	X	X	X	X	X	X (Charger only)				X		BC 1.0
FSA800	Mini/Micro-USB	X	X		X								BC 1.0
* FSA805	Mini/Micro-USB	X	X		X								
FSA8280	3.5mm Jack		X	X									

* FSA805 all 3 paths support HS USB

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