

2004/8/20

Bluetooth® Module

Product By TAIYO YUDEN

No matter how far apart— several devices can be operated at the same time. The module is available worldwide, since the use of the 2.4 GHz band is license free in every country of the world.

Global standard that guarantees compatibility with products of all brands.

TAIYO YUDEN CO., LTD. with customer with a reliable & small-sized module of low power consumption in the best harmony of core technologies: Multi-layer technology, High frequency designing technology & Mounting technology.

- EYSF2CAXX ; RF+B.B, UART, Ver.1.2*1, RoHS Available(from Sep, '04)
- EYSF2CAXX-XX ; RF+B.B, UART, Embedded SPP, RoHS Available(from Sep, '04)
- EYSF2CSXX ; RF+B.B, USB, Ver.1.2*1, RoHS Available(from Sep, '04)
- EYMF2CAXX ; ANT+RF+B.B, UART, Ver.1.2*1, RoHS Available(from Jan, '05)
- EYMF2CAXX-XX ; ANT+RF+B.B, UART, Embedded SPP, RoHS Available(from Jan, '05)
- EYMF2CSXX ; ANT+RF+B.B, USB, Ver.1.2*1, RoHS Available(from Jan, '05)
- EYTF2CSTT ; RF+B.B, USB, Connector Type, Ver.1.2*1, RoHS Available(from Jan, '05)
- Up!! •EYSFCCSXX ; RF+B.B, USB, Connector Type, Ver.1.2, RoHS Available
- Up!! •EYSFDCSXX ; ANT+RF+B.B, USB, Connector Type, Ver.1.2, RoHS Available
- EWSCASQXX ; RF,CDMA I/F,5.1x5.1mm, RoHS Available
- New!! •EWSCBBQXX ; RF,CDMA I/F,5.0x4.0mm, RoHS Available
- New!! •EYSF1UAXX(-XX) ; RF+B.B, UART, Class1,(Embedded SPP), Ver.1.2, RoHS Available
- EYSF2CSUU ; USB Adaptor (Dongle)
- Evaluation Kit, Evaluation Board

*All modules mentioned above are Class 2 unless stated.

*Ver. 1.2*1 ; Ver. 1.2 Mandatory Available (include Faster Connection, AFH)

*RoHS ; Restriction of the use of certain hazardous substances in electrical and electronic equipment.

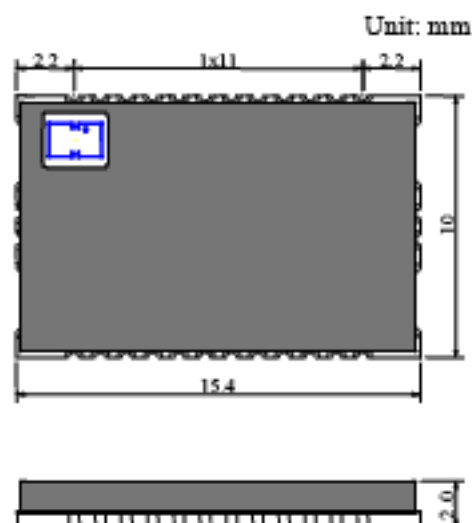
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TAIYO YUDEN



TAIYO YUDEN**Bluetooth® Module****Class2 UART Full Module****EYSF2CAXX****Features**

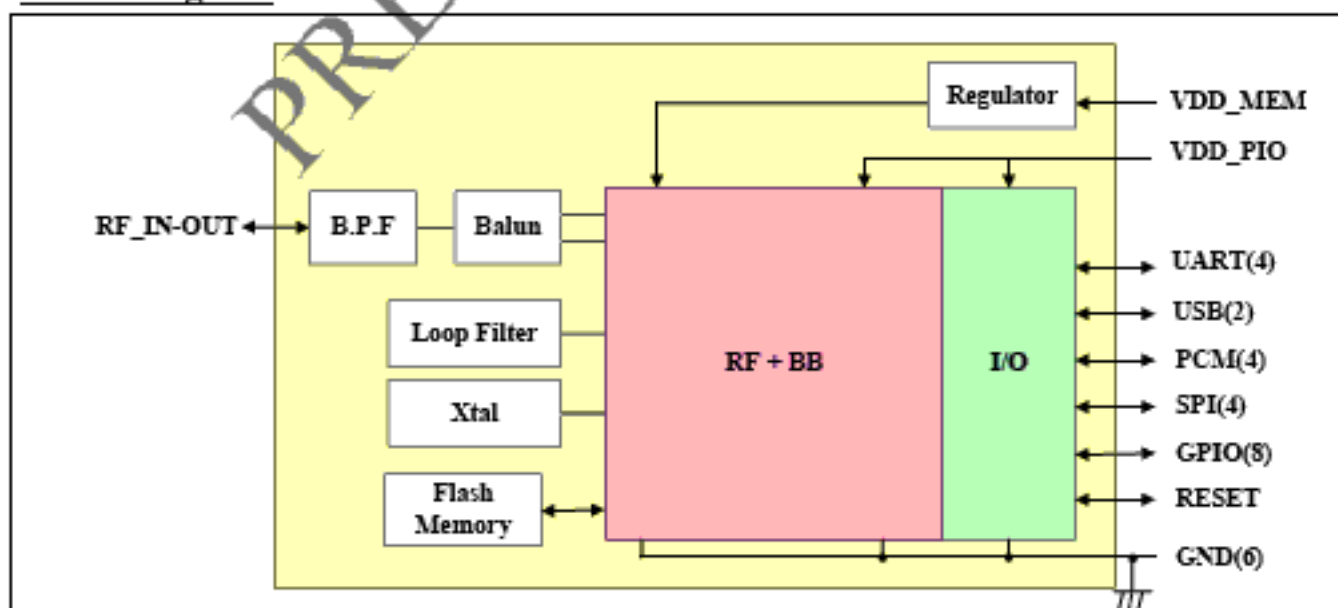
- The module is a Max.4dBm(Class2) module.
- Bluetooth® standard Ver. 1.2 conformity.
- Internal baseband clock oscillator.
- Internal 1.8V regulator
- Low current consumption
- Support functions
SCO links,ACL links,Piconet<7>,Hold,Sniff,Park, AFH, Faster connection
- Interface:EYSF2CAXX:UART&PCM(for voice CODEC)
- Protocol stack:Under HCI firmware
- Small outline. **15.4 x 10 x 2.0 mm**

Outline**Applications**

- Notebook PC
- PDA
- Cellular Phone

General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Operating Voltage (VDD_MEM)		3.00	3.30	3.60	V
Operating Voltage (VDD_PIO)		3.00	3.30	3.60	V
RF Output Power	measured in 50 ohm	-6	0	4	dBm
RX Sensitivity			-83	-70	dBm
Load Impedance	No abnormal Oscillation			5:1	-
Input Low Voltage	RESET, UART, GPIO, PCM	-0.30	-	0.80	V
Input High Voltage	RESET, UART, GPIO, PCM	0.70VDD_PIO	-	VDD_PIO+0.30	V
Output Low Voltage	UART, GPIO, PCM	-	-	0.40	V
Output High Voltage	UART, GPIO, PCM	VDD_PIO-0.40	-	-	V
Average Current Consumption	Receive DM1		46	-	mA

Block Diagram

TAIYO YUDEN

Bluetooth® Module

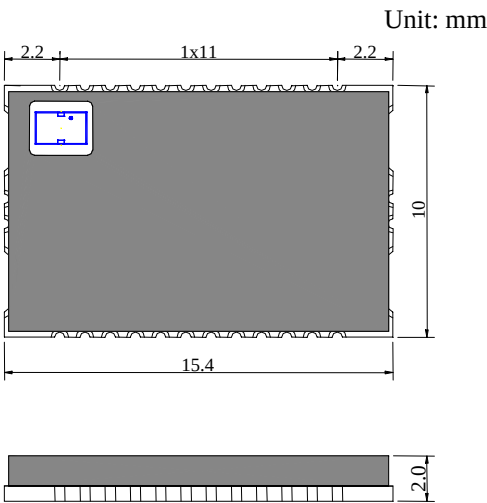
Simple Cable Replacement

EYSF2CA**-**

Features

- The module is a Max.4dBm(Class2) module.
- Bluetooth® standard Ver1.1 conformity.
- Internal baseband clock oscillator.
- Internal 1.8V regulator
- Low current consumption
- Support functions
- Serial Port Emulation (Point-To-Point)
- Interface: UART
- Protocol Stack/Profile (L2CAP,RFCOMM,SDP,GAP,SPP)
- Small outline. 15.4 x 10 x 2.0 mm

Outline



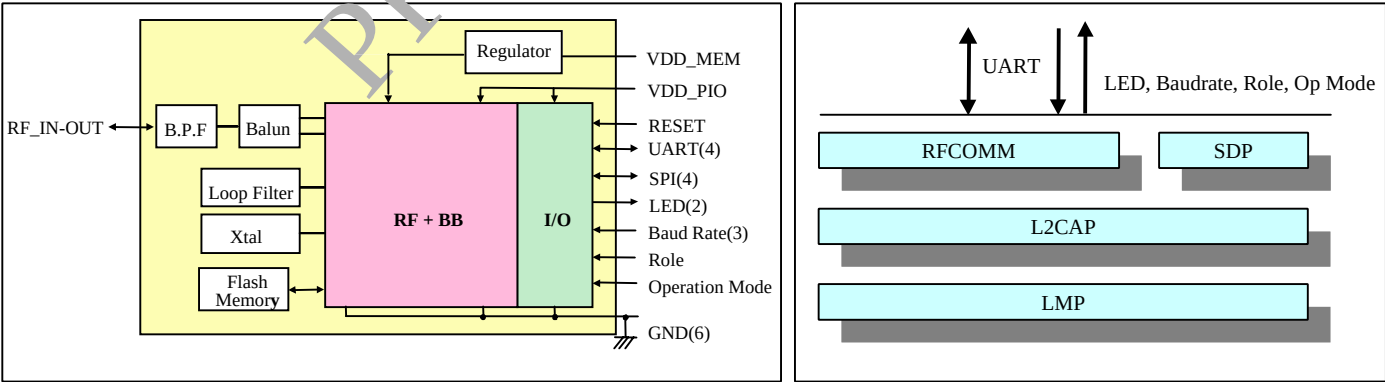
Applications

- POS,Barcode Reader,FA equipments

General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Operating Voltage (VDD_MEM)		3.00	3.30	3.60	V
Operating Voltage (VDD_PIO)		3.00	3.30	3.60	V
RF Output Power	measured in 50 ohm	-6	0	4	dBm
RX Sensitivity			-83	-70	dBm
Load Impedance	No abnormal Oscillation			5:1	-
Input Low Voltage	RESET, UART, GPIO	-0.30	-	0.80	V
Input High Voltage	RESET, UART, GPIO	0.70VDD_PIO	-	VDD_PIO+0.30	V
Output Low Voltage	UART, GPIO	-	-	0.40	V
Output High Voltage	UART, GPIO	VDD_PIO-0.40	-	-	V
Average Current Consumption	Receive DM1 Packet		TBD	-	mA

Block Diagram



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Bluetooth® Module

Class2 USB Full Module

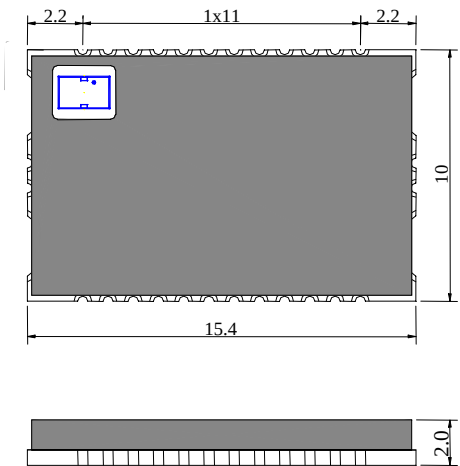
EYSF2CSXX

Features

- The module is a Max.4dBm(Class2) module.
- Bluetooth® standard Ver. 1.2 conformity.
- Internal baseband clock oscillator.
- Internal 1.8V regulator
- Low current consumption
- Support functions
SCO links,ACL links,Piconet<7>,Hold,Sniff,Park, AFH, Faster connection
- Interface:EYSF2CSXX: USB(for data and voice)
- Protocol stack:Under HCI firmware
- Small outline. 15.4 x 10 x 2.0 mm

Outline

Unit: mm



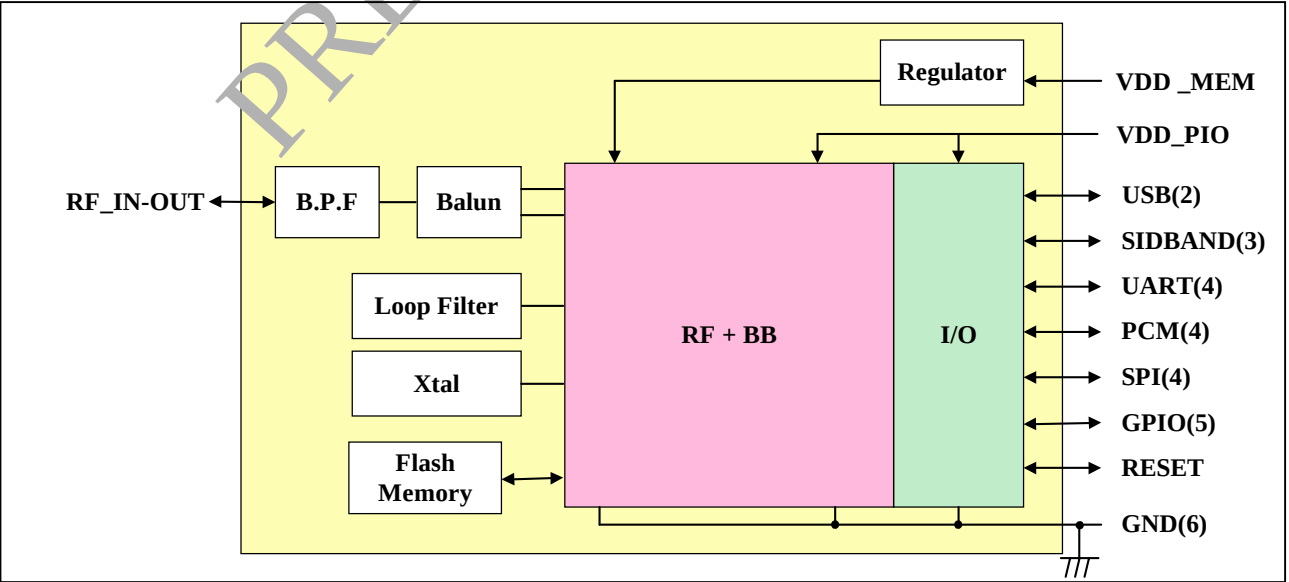
Applications

- Notebook PC
- PDA

General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Operating Voltage (VDD_MEM)		3.10	3.30	3.45	V
Operating Voltage (VDD_PIO)		3.10	3.30	3.45	V
RF Output Power	measured in 50 ohm	-6	0	4	dBm
RX Sensitivity			-83	-70	dBm
Load Impedance	No abnormal Oscillation			5:1	-
Input Low Voltage	RESET, SIDBAND, GPIO	-0.30	-	0.80	V
Input Low Voltage	D+, D-	-		0.80	V
Input High Voltage	RESET, SIDBAND, GPIO	0.70VDD_PIO	-	VDD_PIO+0.30	V
Input High Voltage	D+, D-	2.00	-	-	V
Output Low Voltage	SIDBAND, GPIO	-	-	0.40	V
Output Low Voltage	D+, D-	-	-	0.30	V
Output High Voltage	SIDBAND, GPIO	VDD_PIO-0.40	-	-	V
Output High Voltage	D+, D-	2.80	-	-	V
Average Current Consumption	Receive DM1		48	-	mA

Block Diagram



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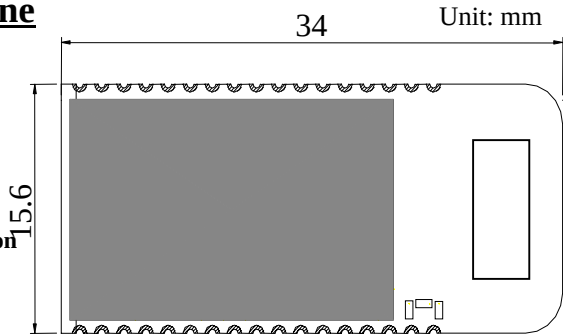
Bluetooth® Module

Class 2 UART All In One(ANT+RF+BB) EYMF2CAMM

Features

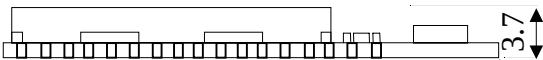
- Antenna is provided on board
- The module is Max.4 dBm(Class2)module
- Bluetooth® standard Ver. 1.2 conformity
- Internal baseband clock oscillator
- Low current consumption
- Support functions
ACL links, Piconet<7>, Hold, Sniff, Park, AFH, Faster connection
- Interface: UART
- HCI module
- Outline: 34.0 x 15.6 x 3.7 mm

Outline



Applications

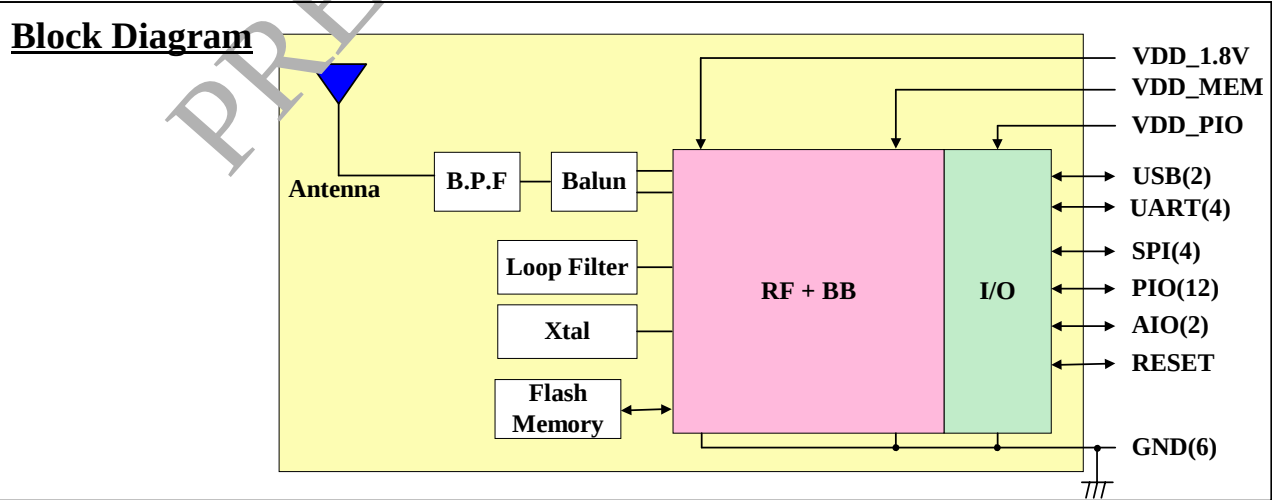
- PC & peripheral



General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Operating Voltage(VDD_MEM)	VDD_MEM = VDD_PIO	3.0	3.3	3.6	V
Operating Voltage(VDD_PIO)	VDD_MEM = VDD_PIO	3.0	3.3	3.6	V
Operating Voltage(VDD_1.8)		1.75	1.8	1.9	V
RF Output Power	Measured in 50 ohm	-6	0	4	dBm
RX Sensitivity		-	-83	-70	dBm
Load Impedance	No abnormal Oscillation	-		5:1	-
Operation temperature range		0	25	70	Degree C
Input Low Voltage	PIO, AIO, SPI	-0.3		0.8	V
Input Low Voltage	UART_RX, UART_GTS	-0.3		0.8	V
Input Low Voltage	RESET	-0.3		0.8	V
Input High Voltage	PIO, AIO, SPI	0.7VDD_PIO		VDD +0.3	V
Input High Voltage	UART_RX, UART_CTS	0.7VDD_PIO		VDD +0.3	V
Input High Voltage	RESET	0.7VDD_PIO		VDD +0.3	V
Output Low Voltage	PIO, AIO, SPI	-		0.4	V
Output Low Voltage	UART_TX, UART_RTS	-		0.4	V
Output High Voltage	PIO, AIO, SPI	VDD -0.4		-	V
Output High Voltage	UART_TX, UART_RTS	VDD -0.4		-	V
Average Current Consumption	Receive DM1(VDD_MEM,VDD_PIO)		14	-	mA
	Receive DM1(VDD_1.8)		35	-	

Block Diagram



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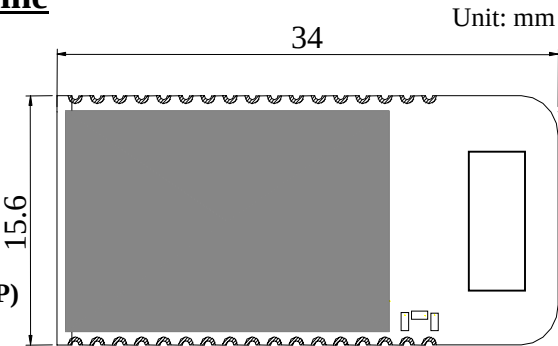
Simple Cable Replacement

EYMF2CA**-**

Features

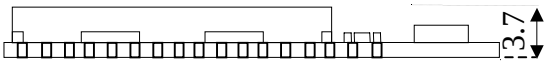
- Antenna is provided on board
- The module is Max.4 dBm(Class2)module
- Bluetooth® standard Ver.1.1 conformity
- Internal baseband clock oscillator
- Low current consumption
- Support functions
Serial Port Emulation (Point-To-Point)
- Interface: UART
- Protocol Stack/Profile (L2CAP,RFCOMM,SDP,GAP,SPP)
- Outline: 34.0 x 15.6 x 3.7 mm

Outline



Applications

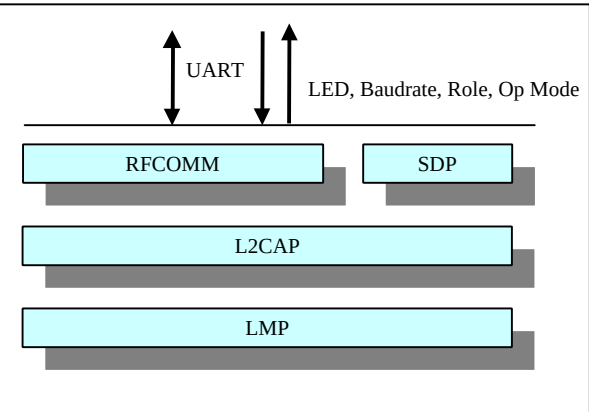
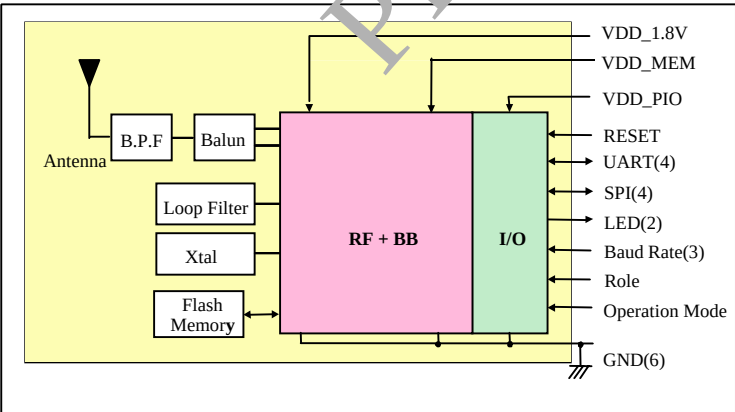
- POS,Barcode Reader,FA equipments



General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Operating Voltage(VDD_MEM)		3.0	3.3	3.6	V
Operating Voltage(VDD_PIO)		3.0	3.3	3.6	V
Operating Voltage(VDD_1.8V)		1.7	1.8	1.9	V
RF Output Power	Measured in 50 ohm	-6	0	4	dBm
RX Sensitivity		-	-83	-70	dBm
Load Impedance	No abnormal Oscillation	-		5:1	-
Operation temperature range		0	25	70	Degree C
Input Low Voltage	PIO, AIO, SPI	-0.3		0.8	V
Input Low Voltage	UART_RX, UART_CTS	-0.3		0.8	V
Input Low Voltage	RESET	-0.3		0.8	V
Input High Voltage	PIO, AIO, SPI	0.7VDD_PIO		VDD +0.3	V
Input High Voltage	UART_RX, UART_CTS	0.7VDD_PIO		VDD +0.3	V
Input High Voltage	RESET	0.7VDD_PIO		VDD +0.3	V
Output Low Voltage	PIO, AIO, SPI	-		0.4	V
Output Low Voltage	UART_TX, UART_RTS	-		0.4	V
Output High Voltage	PIO, AIO, SPI	VDD -0.4		-	V
Output High Voltage	UART_TX, UART_RTS	VDD -0.4		-	V
Average Current Consumption 1	Receive DM1 Packet		TBD	-	mA

Block Diagram



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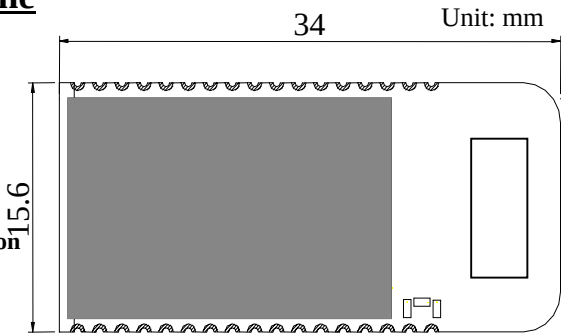
Bluetooth® Module

Class 2 USB All In One(ANT+RF+BB) EYMF2CSMM

Features

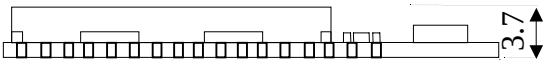
- Antenna is provided on board
- The module is Max.4 dBm(Class2)module
- Bluetooth® standard Ver. 1.2 conformity
- Internal baseband clock oscillator
- Low current consumption
- Support functions
ACL links, Piconet<7>, Hold, Sniff, Park, AFH, Faster connection
- Interface: USB
- HCI module
- Outline: 34.0 x 15.6 x 3.7 mm

Outline



Applications

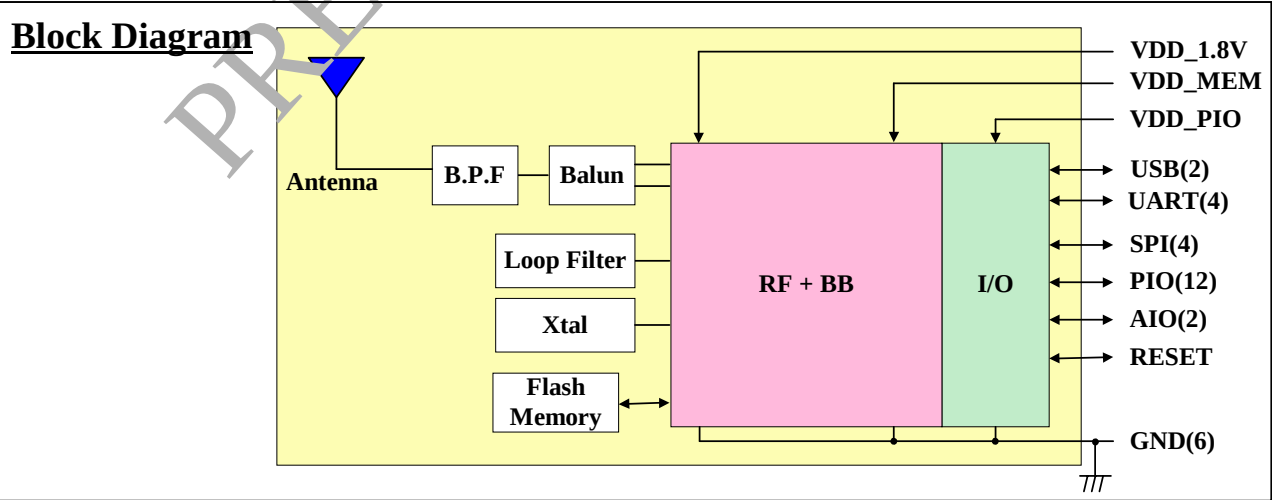
- PC & peripheral



General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Operating Voltage(VDD_MEM)		3.1	3.3	3.45	V
Operating Voltage(VDD_PIO)		3.1	3.3	3.45	V
Operating Voltage(VDD_1.8V)		1.7	1.8	1.9	V
RF Output Power	Measured in 50 ohm	-6	0	4	dBm
RX Sensitivity		-	-83	-70	dBm
Load Impedance	No abnormal Oscillation	-		5:1	-
Operation temperature range		0	25	70	Degree C
Input Low Voltage	PIO, AIO, SPI	-0.3		0.8	V
Input Low Voltage	D+, D-	-		0.8	V
Input Low Voltage	RESET	-0.3		0.8	V
Input High Voltage	PIO, AIO, SPI	0.7VDD_PIO		VDD +0.3	V
Input High Voltage	D+, D-	2.0		-	V
Input High Voltage	RESET	0.7VDD_PIO		VDD +0.3	V
Output Low Voltage	PIO,AIO,SPI	-		0.4	V
Output Low Voltage	D+, D-	-		0.3	V
Output High Voltage	PIO, AIO, SPI	VDD_PIO-0.4		-	V
Output High Voltage	D+, D-	2.8		-	V
Average Current Consumption	Receive DM1(VDD_MEM,VDD_PIO)		14	-	mA
	Receive DM1(VDD_1.8)		37	-	

Block Diagram



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Bluetooth® Module

Class 2 USB Connector Type Full Module EYTF2CSTT

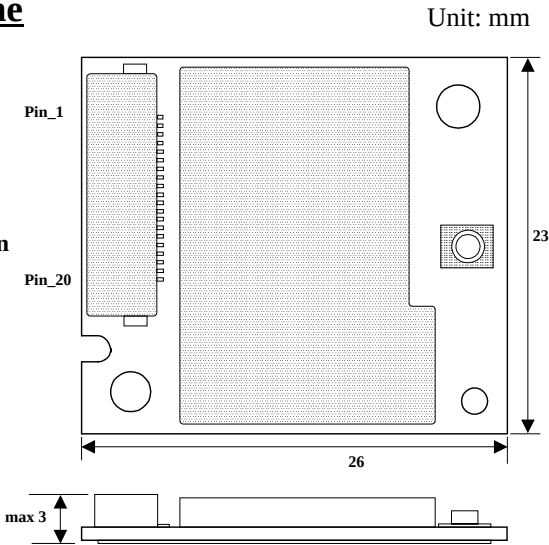
Features

- The module is a Max.4dBm(Class2) module.
- Bluetooth® standard Ver. 1.2 conformity.
- Internal baseband clock oscillator.
- Internal 1.8V regulator.
- Low current consumption.
- Support functions
ACL links, Piconet<7>, Hold, Sniff, Park, AFH, Faster connection
- USB Interface
- Protocol stack: Under HCI firmware.
- Outline: 26.0 x 23.0 x 3.0 mm.

Applications

- Notebook PC
- PDA

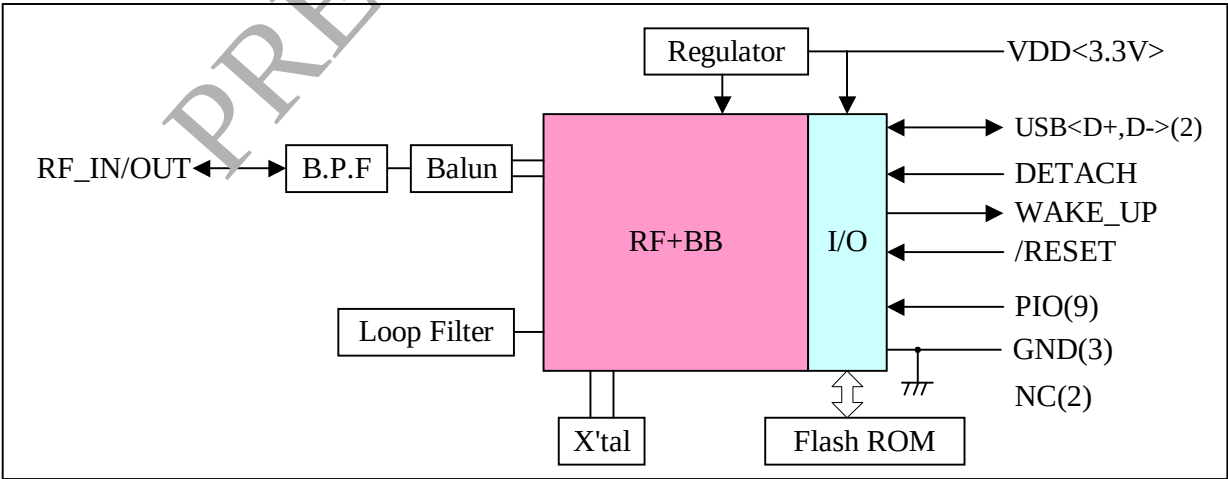
Outline



General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Operating Voltage(VDD)		3.15	3.3	3.45	V
RF Output Power	Measured in 50 ohm	-6	0	4	dBm
RX Sensitivity		-	-83	-70	dBm
Load Impedance	No abnormal Oscillation	-		5:1	-
Input Low Voltage	DETACH, PIO	-0.3		0.56	V
Input Low Voltage	D+,D-	-		0.8	V
Input Low Voltage	/RESET	0		0.6	V
Input High Voltage	DETACH, PIO	2.47		VDD +0.3	V
Input High Voltage	D+, D-	2.0		-	V
Input High Voltage	/RESET	High-Z		-	V
Output Low Voltage	WAKE_UP	-		0.4	V
Output Low Voltage	D+, D-	-		0.3	V
Output High Voltage	WAKE_UP	2.31		-	V
Output High Voltage	D+, D-	2.8		-	V
Average Current Consumption	Receive DM1		52.5	-	mA

Block Diagram



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TAIYO YUDEN

Bluetooth® Module

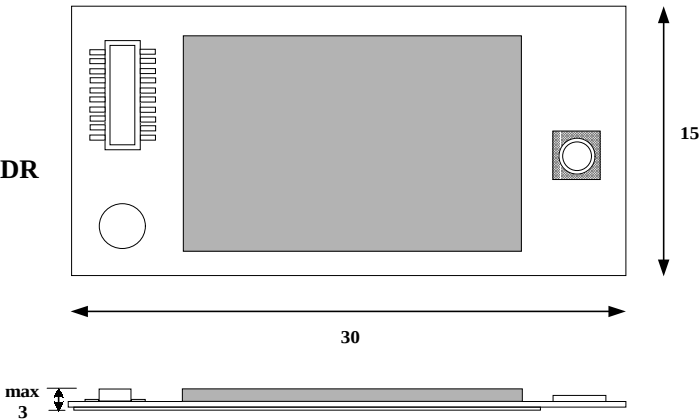
Class 2 Full Module (RF Connector Type) EYSFCCSXX

Features

- The module is a Max.4dBm(Class2) module.
- Bluetooth® standard Ver. 1.2 conformity.
- Internal baseband clock oscillator.
- Support functions
 - Bluetooth
 - ACL links, Piconet<7>, Scatternet <2.5>, Hold, Sniff, Park, AFH & Coexistence, Faster connection , eSCO , EDR
 - Others
 - Selective Suspend, Dual Boot.
- USB Interface
- Protocol stack: Under HCI firmware.
- Outline: 30 x 15 x 3 mm.
- Complete Lead Free
- RoHS Available

Outline

Unit: mm



Applications

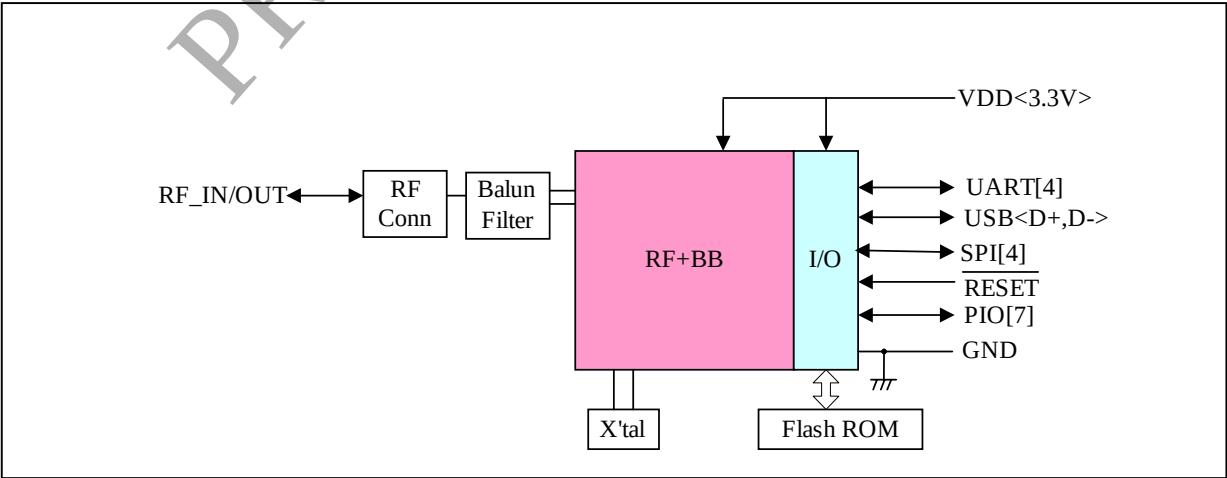
- Notebook PC

Board to Board Connector

General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Operating Voltage (VDD)	USB Interface	3.15	3.3	3.45	V
RF Output Power	Measured in 50 ohm	-6	0	4	dBm
RX Sensitivity		-	-83	-70	dBm
Load Impedance	No abnormal Oscillation	-		5:1	-
Input Low Voltage	/RESET, PIO	-0.3		0.8	V
Input Low Voltage	D+,D-	-		0.8	V
Input High Voltage	/RESET, PIO	0.7 x VDD		VDD +0.3	V
Input High Voltage	D+, D-	2.0		-	V
Output Low Voltage	PIO	-		0.4	V
Output Low Voltage	D+, D-	-		0.3	V
Output High Voltage	PIO	0.8 x VDD		-	V
Output High Voltage	D+, D-	2.8		-	V
Average Current Consumption	Receive DM1		T.B.D	-	mA

Block Diagram



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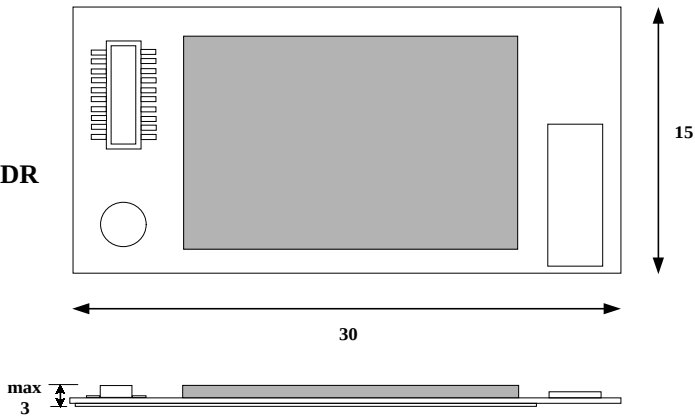
Class 2 Full Module (Antenna Type) EYSFDCSXX

Features

- The module is a Max.4dBm(Class2) module.
- Bluetooth® standard Ver. 1.2 conformity.
- Internal baseband clock oscillator.
- Support functions
 - Bluetooth
 - ACL links, Piconet<7>, Scatternet <2.5>, Hold, Sniff, Park, AFH & Coexistence, Faster connection , eSCO , EDR
 - Others
 - Selective Suspend, Dual Boot.
- USB Interface
- Protocol stack: Under HCI firmware.
- Outline: 30 x 15 x 3 mm.
- Complete Lead Free
- RoHS Available

Outline

Unit: mm



Applications

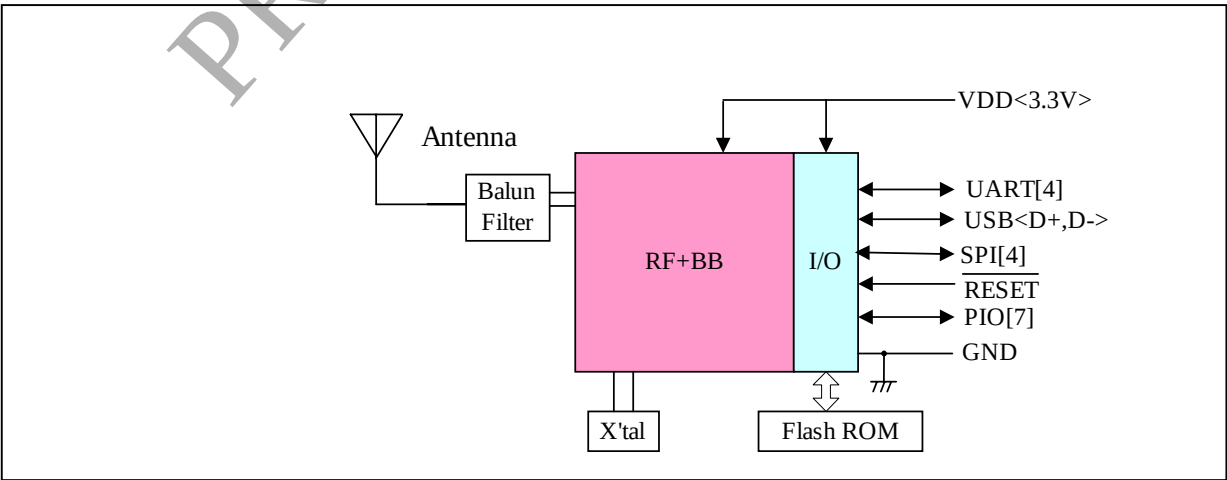
- Notebook PC

Board to Board Connector

General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Operating Voltage (VDD)	USB Interface	3.15	3.3	3.45	V
RF Output Power	Measured in 50 ohm	-6	0	4	dBm
RX Sensitivity		-	-83	-70	dBm
Load Impedance	No abnormal Oscillation	-		5:1	-
Input Low Voltage	/RESET, PIO	-0.3		0.8	V
Input Low Voltage	D+,D-	-		0.8	V
Input High Voltage	/RESET, PIO	0.7 x VDD		VDD +0.3	V
Input High Voltage	D+, D-	2.0		-	V
Output Low Voltage	PIO	-		0.4	V
Output Low Voltage	D+, D-	-		0.3	V
Output High Voltage	PIO	0.8 x VDD		-	V
Output High Voltage	D+, D-	2.8		-	V
Average Current Consumption	Receive DM1		T.B.D	-	mA

Block Diagram



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TAIYO YUDEN

Bluetooth® Module

Class2 Bluetooth® RF Module

EWSCBBQXX

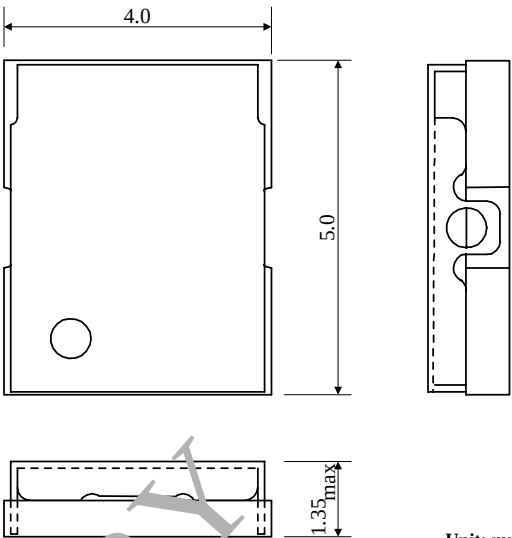
Features

- The module is a Max.4dBm (Class2) module.
- Bluetooth® standard Ver1.1, 1.2 conformity.
- Compatible with CDMA Interface.
- Support the 19.2MHz host reference clock input.
- Shield case type.
- Small outline by LTCC substrate built-in RF function.
- Outline : 5.0 x 4.0 x 1.35max mm Pin pitch 0.75mm (Min)
- 16 pin LGA package.
- Lead Free
- RoHS Available

Applications

- Cellular Phone

Outline

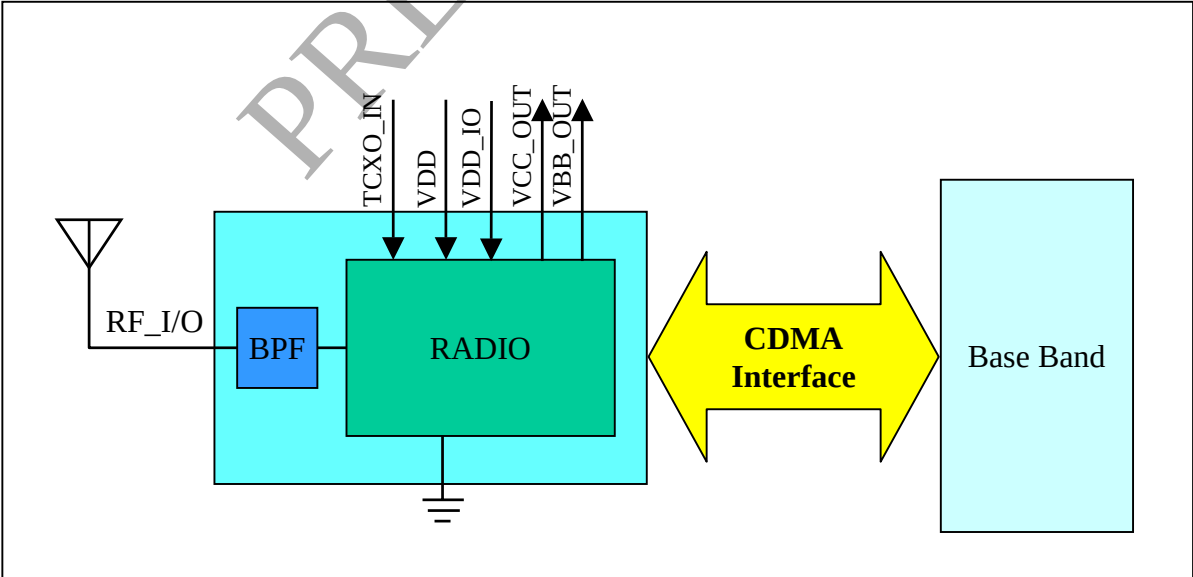


Unit: mm

General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Supply Voltage	VDD	1.9		3.6	V
Supply Voltage	VDD_IO	1.62		2.92	V
RF Output Power	Measured in 50 ohm	-6		4	dBm
RX Sensitivity			-86	-70	dBm
TX Peak Current Consumption	Worst Case Transmit Mode		37		mA
RX Peak Current Consumption	Worst Case Receive Mode		38		mA
General Operating Temperature condition		-30	25	80	deg-C

Block Diagram



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TAIYO YUDEN

Bluetooth® Module

Class1 UART Full Module

EYSF1UA**, EYSF1UA**-**

Features

- The module is a Max.20dBm(Class1) module.
- Bluetooth® standard Ver1.2(Mandatory) conformity.
(Ready for Optional Ver1.2 features)
- Internal baseband clock oscillator.
- Support functions
SCO links,ACL links,Piconet<7>,Hold,Sniff,Park,
Power Control
- Interface:UART,PCM,GPIO
- Protocol stack:
Under HCI firmware Type,
GAP+SDP+SPP+DUN+FAX+OPP+GOEP+HSP,
A2DP+AVRCP+AVDTP+GAVDP+AVCTP+(HSP),
HCRP+BIP +OPP+GOEP Stacked Type , etc
- Small outline. 34.0 x 15.6 x 2.4 mm
- RoHS regulation substance (Pb.Cd.Hg,Cr+6.PBB.PBDE) :

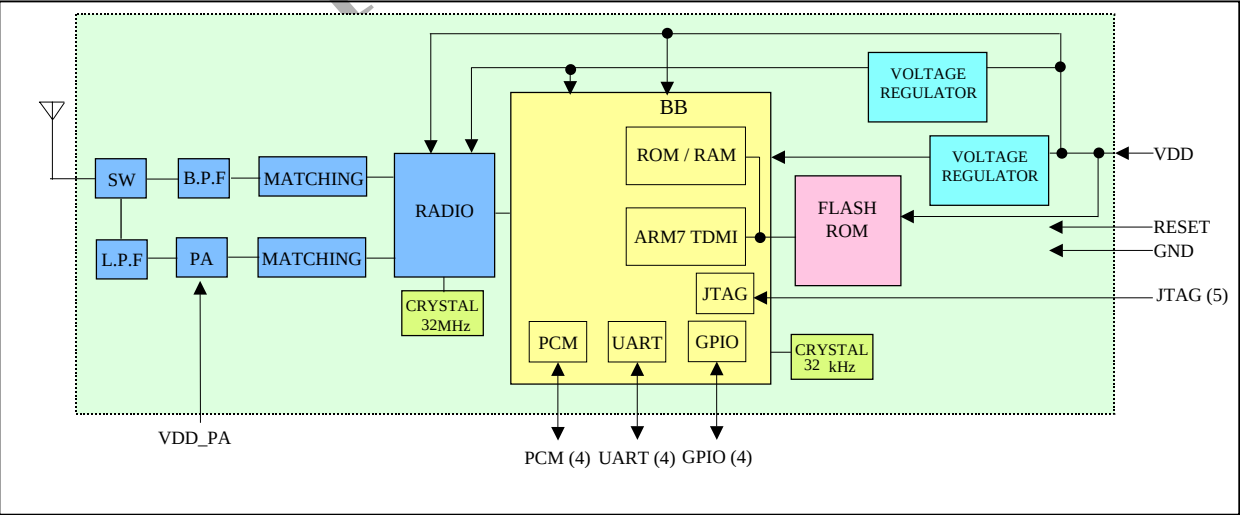
Applications

- PC peripheral equipment
- Home Network , AV
- Access Point , FA etc

General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Operating Voltage (VDD_PA)		3.2	3.3	3.4	V
Operating Voltage (VDD)		3.2		VDD_PA	V
RF Output Power	measured in 50 ohm,VDD_PA=VDD=3.3V		+17	+20	dBm
RX Sensitivity			-81	-70	dBm
Load Impedance	No abnormal Oscillation			5:1	-
Input Low Voltage	UART,PCM,GPIO	-	-	0.2VDD	V
Input High Voltage		0.8VDD	-	-	V
Output Low Voltage			-	0.4	V
Output High Voltage		VDD-0.6	-	-	V
Peak Current	Continues TX, ,VDD=3.3V		135	180	mA
Average Current Consumption 1	Audio with HV3 ,VDD=3.3V , TX=Max Power, Slave		43		mA
Average Current Consumption 2	Send ,(Master) DH5 packet , 921.6kbps,HCI,		95		mA
Average Current Consumption 3	Receive, (Slave) TX=Max Power,VDD=3.3V		56		mA
Average Current Consumption 4	Deep Sleep ,VDD=3.3V		0.9		mA
General Operating temperature condition		-20		+70	deg-C

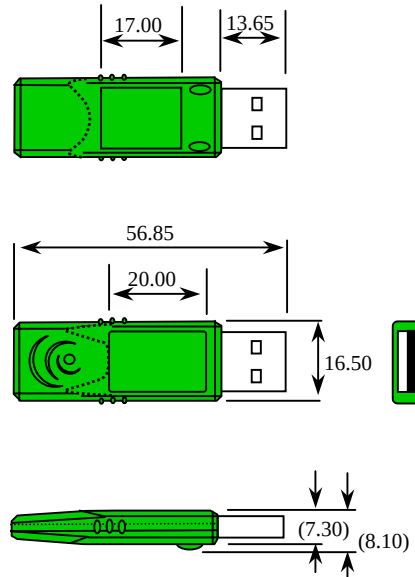
Block Diagram



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TAIYOYUDEN**Bluetooth® Module****USB Adaptor (Dongle)****EYSF2CSUU****Features**

- All in one solution
- The module is a Max.4dBm(Class2) module.
- Bluetooth® standard Ver1.1 conformity.
- Internal baseband clock oscillator.
- Low current consumption
- Support functions
SCO links,ACL links,Piconet<7>,Hold,Sniff,Park,Deep Sleep
- Interface: **USB**
- Protocol stack:Under HCI firmware
- Small outline. **16.50 x 56.85x 8.10mm**(typ)
- Strong Housing-case

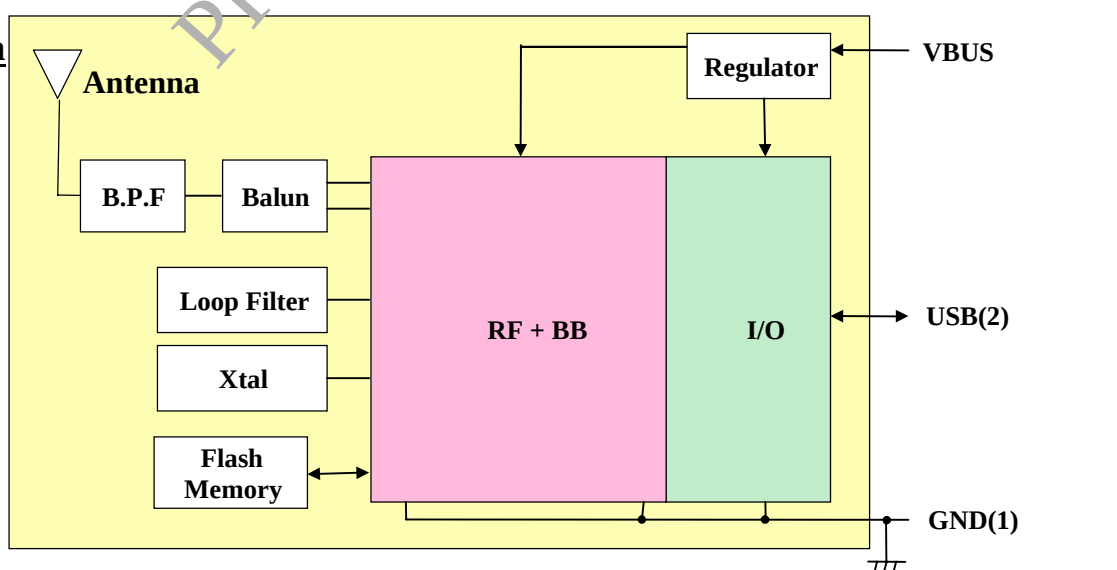
Outline**Applications**

- PC(Windows)

Profiles

(Current) GAP, SPP, Fax, LAP, GOEP, OPP, FTP, DNP, SyncP
Audio Gateway / Headset, PAN, HCRP, HID total 14 profiles

Parameter	Description	Min.	Typ.	Max.	Units
Carrier Frequency		2.402		2.480	GHz
Operating Voltage (VBUS)		4.5	-	5.5	V
RF Output Power	measured in 50 ohm	-6	-1	4	dBm
RX Sensitivity		-	-80	-70	dBm
Input Low Voltage	D+,D-	-		0.80	V
Input High Voltage	D+,D-	0.70VDD_PIO	-	-	V
Output Low Voltage	D+,D-	-	-	0.30	V
Output High Voltage	D+,D-	3.1	-	-	V
Average Current Consumption 1	transmitter		-	68	mA
Average Current Consumption 2	Receiver		-	75.5	mA

Block Diagram

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