

Preliminary



DLBM-CS222

DLBM-CS222

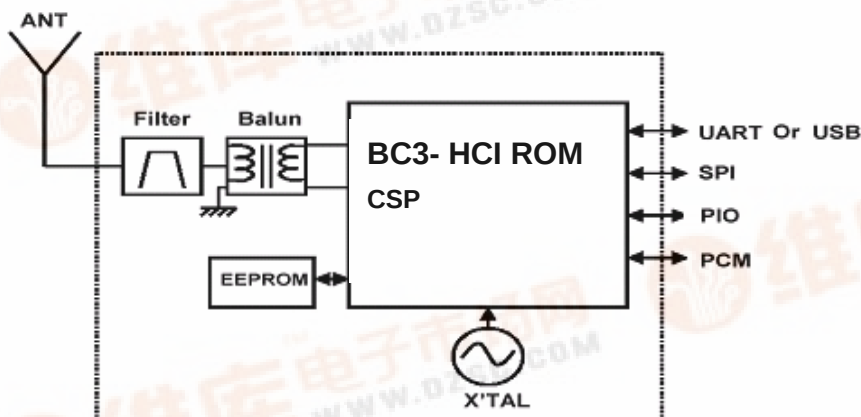
Bluetooth™ Module Class 2

**Wireless communication
module compliant with
Bluetooth™ Specification V1.2.**

FEATURES:

- **Suitable for Cellular Phones, PDAs, Digital Cameras,**
- **Small size and Low Profile using high-density packaging technology for space critical applications.**
- **High sensitivity for better reception.**
- **Various interfaces: UAR or USB.**
- **Wide operating temperature range: -30~+85 .**

Device diagram



Preliminary



DLBM-CS222

General Specification

Bluetooth Specification	Version 1.2
Frequency	2402~2480MHz
Modulation	FHSS/GFSK
Transmission Rate	721kbps
Receive Sensitivity	Typ. -80dBm
Maximum Output Power	+4dBm(Class 2)
Operating Voltage	See Power Supply Diagram
Operating Temperature	-30~+85
Antenna Impedance	50 Ω
Package Size	6.5*5.2*1.6 (mm)

Power Supply Diagram

Terminal	3.0V Power Supply	1.8V Power Supply
VDD_1.8V	Bypass Capacitor	1.7 to 1.9V
VDD_IO	1.7 to 3.6 V	1.7 to 1.9V
VREG_IN	2.7 to 4.2 V	NC



Interface

Interface	Description
Antenna	External Antenna 50 Ω
UART Interface	TX, RX, RTS, CTS(9600bps~1.5Mbps)
SPI Interface	Synchronous Serial Interface for firmware download
PCM Interface	Supports continuous transmission and reception of PCM encoded audio data over Bluetooth
PIO Interface	6 terminals
AIO Interface	1 terminals

RF Characteristics

Operating Condition: +25 , VDD=1.8V

RF Characteristics	Min.	Typ.	Max.	Unit
1. Frequency Range	2400 ~ 2483.5			MHz
2. Output Power	-6	0	4	dBm
3. Sensitivity at 0.1% BER				
1) 2402MHz	-70	-80		dBm
2) 2441MHz	-70	-80		dBm
3) 2480MHz	-70	-80		dBm
4. Maximum Input Level (BER 0.1%)	-20	0		dBm
5. Adjacent channel selectivity				
1) C/I co – channel Ratio			11	dB
2) C/I @ 1MHz			0	dB

Preliminary



DLBM-CS222

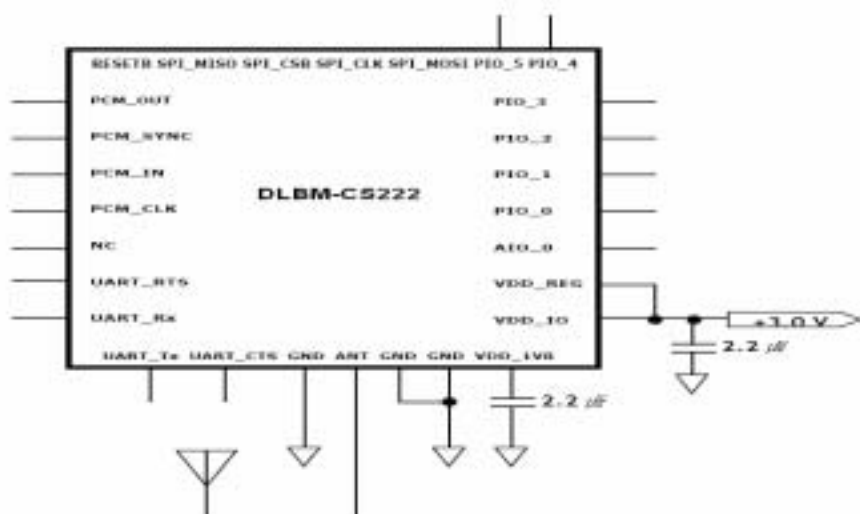
3) C/I @ 2MHz			-30	dB
4) C/I @ 3MHz			-40	dB
5) Image Ratio (-67 dBm input)			-9	dB
6. Adjacent channel transmit power				
1) $F=F_0 \pm 2\text{MHz}$		-35	-20	dBc
2) $F=F_0 \pm 3\text{MHz}$		-55	-40	dBc
7. Modulation Characteristics				
1) Modulation $\Delta f_{1\text{avg}}$	140	168	175	KHz
2) Modulation $\Delta f_{2\text{max}}$	115	157		KHz
8. Initial Carrier Frequency Tolerance				
1) 2402MHz	-75	+/-5	75	KHz
2) 2441MHz	-75	+/-5	75	KHz
3) 2480MHz	-75	+/-5	75	KHz
9. Carrier Frequency Drift				
1) 1slot	-20		20	KHz
2) 5slot	-25		25	KHz
4) Drift rate	-20		20	KHz/50us
10. 20dB Bandwidth for modulated carrier				
1) 2402MHz			1000	KHz
2) 2441MHz			1000	KHz
3) 2480MHz			1000	KHz

Preliminary

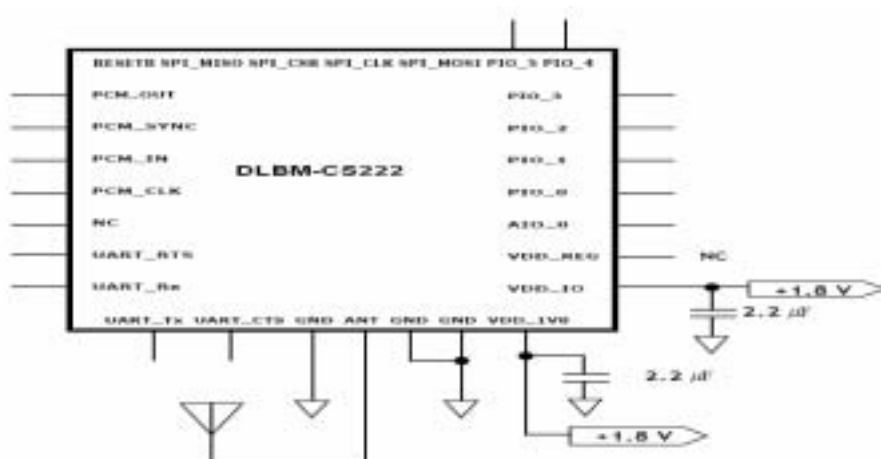


DLBM-CS222

Application Circuit



UART I/F 3.0V Power Supply



UART I/F 1.8V Power Supply



Pin description

Pin No.	Name	Description
1	PCM_OUT	Synchronous data out
2	PCM_SYNC	Synchronous data sync
3	PCM_IN	Synchronous data input
4	PCM_CLK	Synchronous data clock
5	NC	No Connection
6	UART_RTS	UART request to send active low
7	UART_Rx	UART data input active high
8	UART_Tx	UART data output active high
9	UART_CTS	UART clear to send active low
10	GND	Ground
11	ANT	Antenna port
12	GND	Ground
13	GND	Ground
14	VDD_1.8V	VDD 1.8V
15	VDD_IO	VDD Input / Output
16	VDD_REG	Regulator Input

Preliminary



DLBM-CS222

17	AIO_0	Programmable I/O Line
18	PIO_0	Programmable I/O Line
19	PIO_1	Programmable I/O Line
20	PIO_2	Programmable I/O Line
21	PIO_3	Programmable I/O Line
22	PIO_4	Programmable I/O Line
23	PIO_5	Programmable I/O Line
24	SPI_MOSI	Serial Peripheral Interface data input
25	SPI_CLK	Serial Peripheral Interface clock
26	SPI_CSB	Chip select for Synchronous Serial Interface active low
27	SPI_MISO	Serial Peripheral Interface data output
28	RESETB	Reset if low. Input debounced so must be low for >5ms to cause a reset

Preliminary



DLBM-CS222

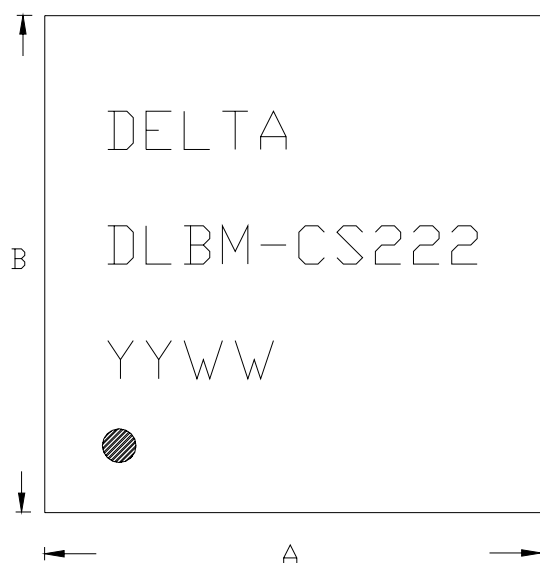
Dimensions (mm)

Note:

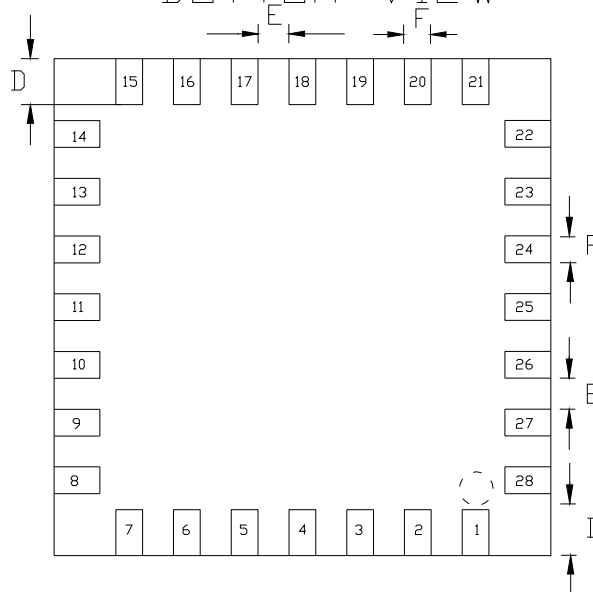
1. SHIELD MATERIAL IS COPPER NICKLE SHEETS AND PLATES AND IS SOLDERABLE.

2. YYWW IS THE DATE CODE. YY=YEAR, WW=WEEK

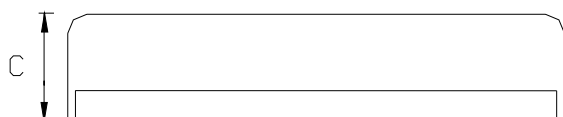
TOP VIEW



BOTTOM VIEW



SIDE VIEW



Unit : mm

A	6.35 ± 0.2	D	1.0 ± 0.05
B	6.35 ± 0.2	E	0.33 ± 0.05
C	1.6 max	F	0.33 ± 0.05

Preliminary



DLBM-CS222

Record of changes

Date	Content of change	Maker
May 11,2005	1)Spec setup	Ming.Wu

Contact information:

Website: <http://www.deltaww.com>

Email: Richard.Meng@delta.com.tw (Worldwide)

TEL: 886-3-359-1968 ext.2930