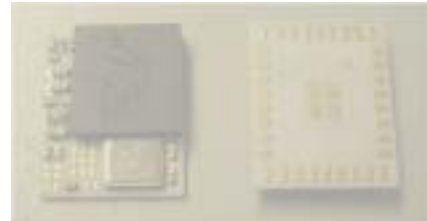


DLBM-CH122

Bluetooth™ Module Class 2

A Class 2 Bluetooth™ module suitable for cellular phone, smart phone applications.



1.FEATURES:

- *Support DUN, SPP, AG & FAX profiles.*
- *Minimal software effort to own Bluetooth functions.*
- *Almost no resource required from host CPU.*
- *Reducing the size and thickness greatly by using high-density packaging technology.*
- *Compliant to various interfaces: UART, USB, PIO*
- *Wide operating temperature range: -30~+80 .*

2.Device diagram

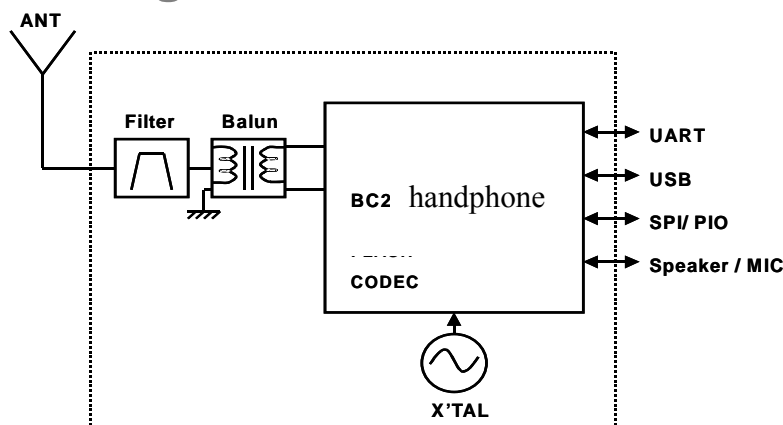


Figure 1. DLBM-CH122 Block Diagram



Preliminary

DLBM-CH122

3. General Specification

Bluetooth™ Specification	Version 1.1
Frequency	2402~2480MHz
Modulation	FHSS/GFSK
Transmission rate	721kbps
Receive sensitivity	-80 dBm
Maximum output power	+4dBm(Class 2)
Operating Voltage	2.7~3.6V
Operating temperature	-30~+80
Antenna Impedance	50 ohm
Package size	9.1*7.9*1.6mm
Operating range	< 10 meters
Current consumption (TX)	< 35mA
Current consumption (Standby)	< 2mA

4. Rating

	Min	Max	Unit
Storage Temperature	-40	+85	
VDD_1.8V	-0.4	+1.9	V
VDD_IO	-0.4	+3.6	V
VREG_IN	-0.4	+3.6	V

5.Interface

Interface	Description
Antenna	External Antenna 50 ohm
UART Interface	TX,RX,RTS,CTS(9600bps~1.5Mbps)
SPI Interface	Synchronous Serial Interface for firmware download
PIO Interface	9 terminals

6.Power Supply Diagram

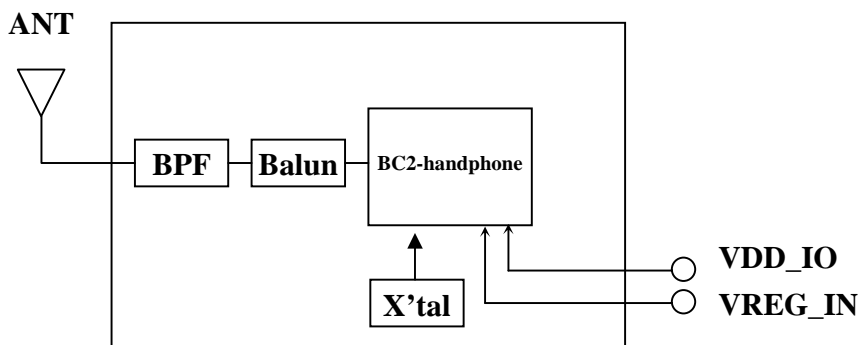


Figure 2. Power Supply Diagram

Terminal	VDD=3.0V	VDD=1.8V
VDD_1.8V	NC	1.7 to 1.9V
VDD_IO	2.7 to 3.6V	1.7 to 3.6V
VREG_IN	2.7 to 3.6V	NC



7.RF Characteristics

Operating Condition: +25 , VDD=2.7V

RF Characteristics	Min.	Typ.	Max.	Unit
1. Frequency Range	2400 ~ 2483.5			MHz
2. Output Power		0	4	dBm
3. Sensitivity at 0.1% BER				
1) 2402MHz		-82		dBm
2) 2441MHz		-82		dBm
3) 2480MHz		-82		dBm
4. Maximum Input Level (BER 0.1%)		3		dBm
5. Adjacent channel selectivity				
1) C/I F=F ₀ + 1MHz		-4	0	dB
2) C/I F=F ₀ - 1MHz		-4	0	dB
3) C/I F=F ₀ + 2MHz		-35	-30	dB
4) C/I F=F ₀ - 2MHz		-21	-20	dB
5) C/I F F ₀ + 3MHz		-45		dB
6) C/I F F ₀ - 5MHz		-45		dB
7) C/I F=F _{image}		-18	-9	dB
6. Adjacent channel transmit power				
1) F=F ₀ ± 2MHz		-35		dBc
2) F=F ₀ ± 3MHz		-55		dBc
7. Modulation Characteristics				
1) Modulation f _{1avg}		165		kHz
2) Modulation f _{2max}		155	-	kHz
8. Initial Carrier Frequency Tolerance				
1) 2402MHz	-75	-3	75	kHz
2) 2441MHz	-75	-7	75	kHz
3) 2480MHz	-75	-14	75	kHz



Preliminary

DLBM-CH122

9. Carrier Frequency Drift				
1) 1slot		9		kHz
2) 5slot		10		kHz
4) Drift rate		8		KHz/50us
10. 20dB Bandwidth for modulated carrier				
1) 2402MHz		879		KHz
2) 2441MHz		816		KHz
3) 2480MHz		819		KHz
11.C/I co - channel		9		dB

8.Application circuit

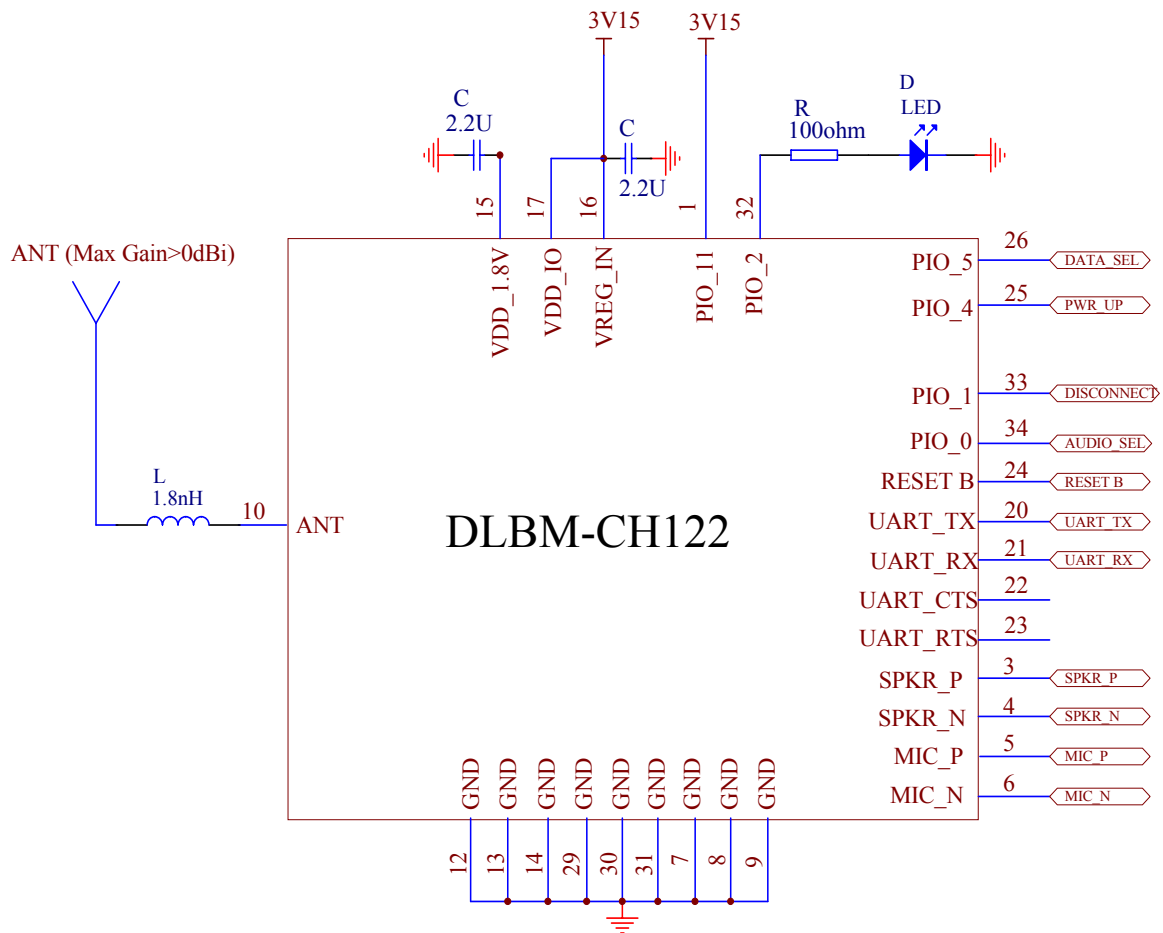
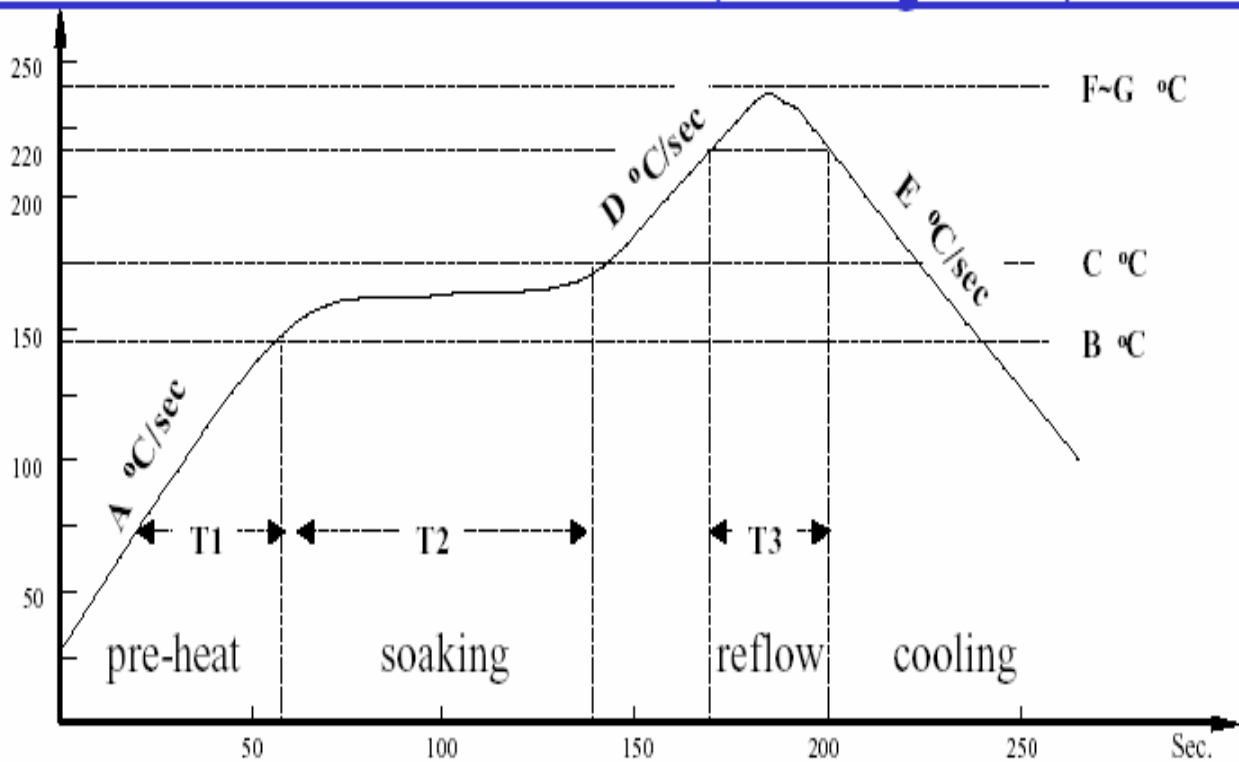


Figure 3. 2.7~3.6V Supply

Important: The circuit is offered without warranty and Delta is unable to accept any liability for direct or consequential loss associated with their use. It is therefore important for designers to ensure that their Bluetooth handphone design is properly evaluated in a Design Verification Test. The results of the Design Verification Test should be used to assess the suitability of the handphone for manufacture.

9. RECOMMENDED REFLOW PROFILE

Reflow Profile Used at The Evaluation (Sn-3.0Ag-0.5Cu) –PF606-P



A: ramp up rate during preheat:	1.5~3.0 °C/sec
B-C: soaking temperature:	170± 15 °C
D: ramp up rate during reflow:	1.2~2.3 °C/sec
E: ramp down rate during cooling:	1.7~2.2 °C/sec
F-G: peak temperature:	240± 10 °C
T1: preheat time:	65± 15 sec
T2: dwell time during soaking:	75± 15 sec
T3: time above 220 °C :	30± 10 sec

Figure 4. REFLOW PROFILE



Preliminary

DLBM-CH122

10.Pin description

Pin No.	Name	Description
1	PIO_11	Programmable I/O terminal
2	PIO_9	Programmable I/O terminal
3	SPKR_P	Speaker output positive
4	SPKR_N	Speaker output negative
5	MIC_P	Microphone input positive
6	MIC_N	Microphone input negative
7	Gnd	
8	Gnd	
9	Gnd	
10	ANT	RF input/output
11	AIO_0	Programmable input/output
12	Gnd	
13	Gnd	
14	Gnd	
15	Vdd_1.8V	Refer to Power supply diagram
16	VREG_IN	Refer to Power supply diagram



Preliminary

DLBM-CH122

17	VDD_IO	Refer to Power supply diagram
18	USB_DN	USB data minus
19	USB_DP	USB data plus with selectable internal 1.5kohm pull-up resistor
20	UART_TX	UART data output active high
21	UART_RX	UART data input active high
22	UART_CTS	UART clear to send active low
23	UART_RTS	UART request to send active low
24	Reset_B	Reset if low
25	PIO_4	Programmable input/output line
26	PIO_5	Programmable input/output line
27	PIO_10	Programmable input/output line
28	PIO_3	Programmable input/output line
29	Gnd	
30	Gnd	
31	Gnd	
32	PIO_2	Programmable input/output line
33	PIO_1	Programmable input/output line
34	PIO_0	Programmable input/output line
35	SPI_MOSI	Serial Peripheral Interface data input
36	SPI_MISO	Serial Peripheral Interface data output

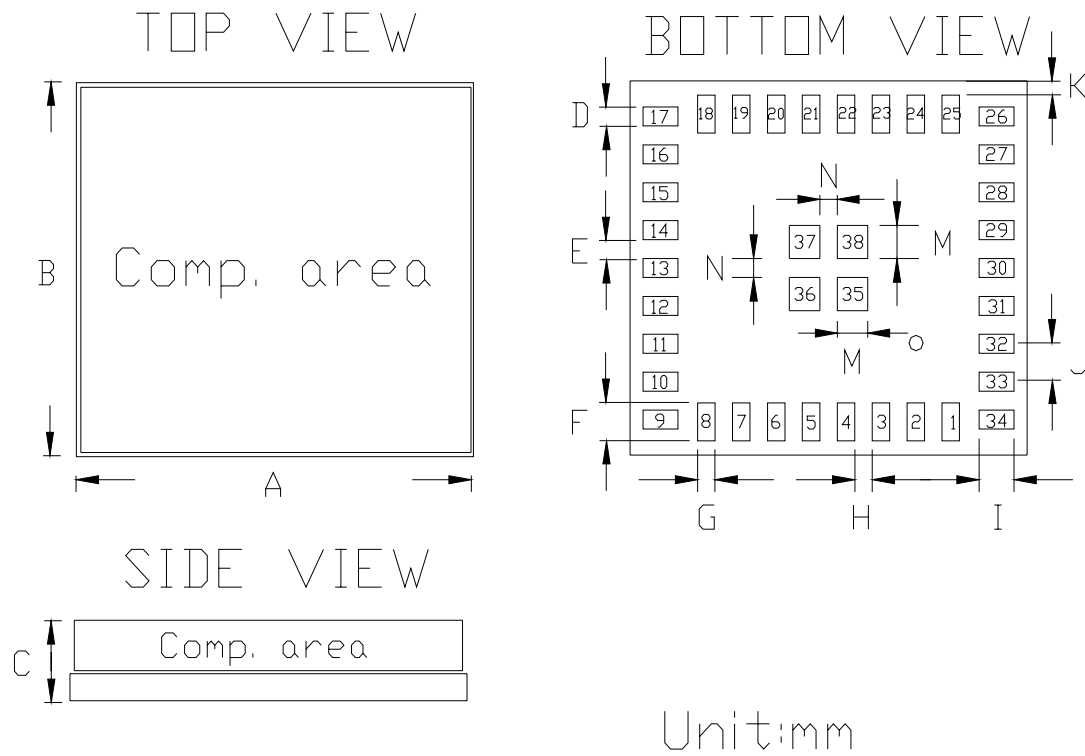


Preliminary

DLBM-CH122

37	SPI_CLK	Serial Peripheral Interface clock
38	SPI_CSB	Chip select for Serial Peripheral Interface, active low

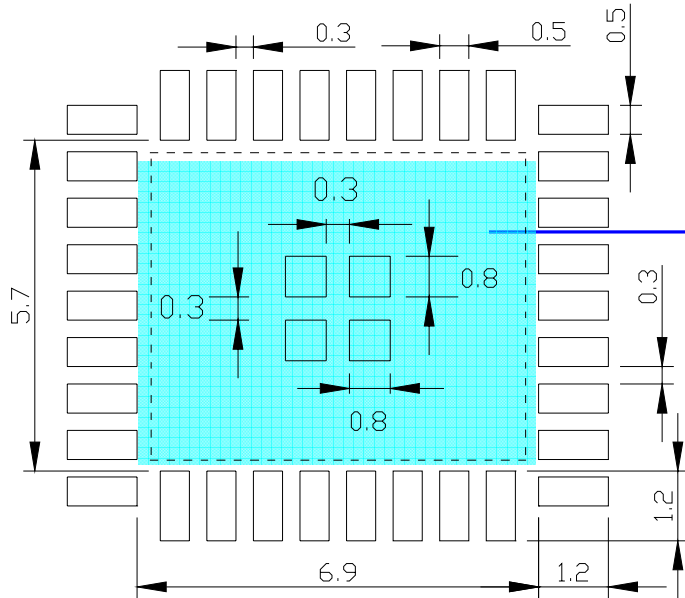
11. Dimensions (mm)



A	9.1 ± 0.2	E	0.4 ± 0.1	I	0.8 ± 0.1	N	0.4 ± 0.1
B	7.9 ± 0.2	F	0.8 ± 0.1	J	0.8 ± 0.1		
C	1.6 ± 0.2	G	0.4 ± 0.1	K	0.3 ± 0.1		
D	0.4 ± 0.1	H	0.4 ± 0.1	M	0.7 ± 0.1		

Figure 5. Output pin dimensions

12. Layout Guide



Don't place the ground on the top layer (Inside area)

Unit: mm

Figure 6. Land Pattern

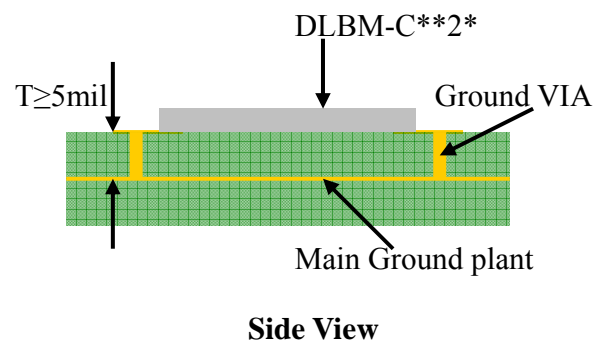
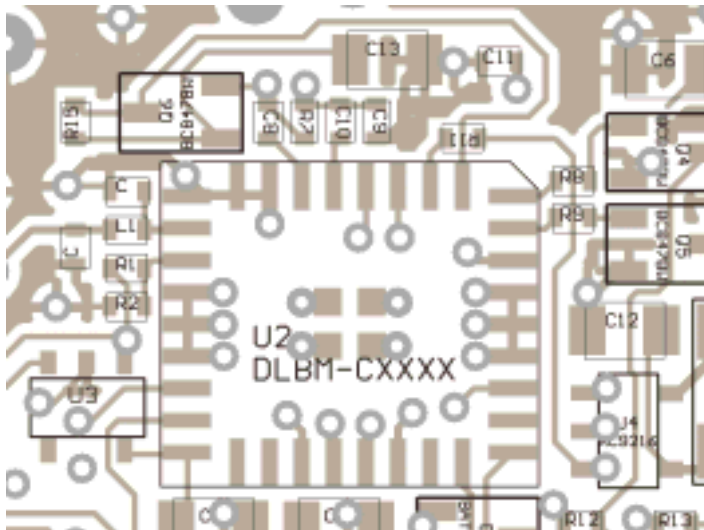


Figure 7. Layout Example



Preliminary

DLBM-CH122

13. Record of changes

Date	Content of change	Maker
May 19,2005	Initial release	JOHNNIE

Contact information:

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

Email: RICHARD.MENG@delta.com.tw

Tel No.: 886-3-3591968#2930