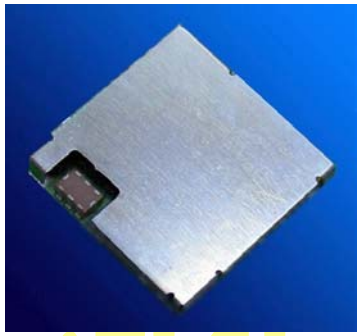
DFCM-MGC31
WLAN/ Bluetooth Combo Module



An IEEE 802.11g&b WLAN plus v2.0 + EDR Bluetooth Module for various applications.

1. Features:

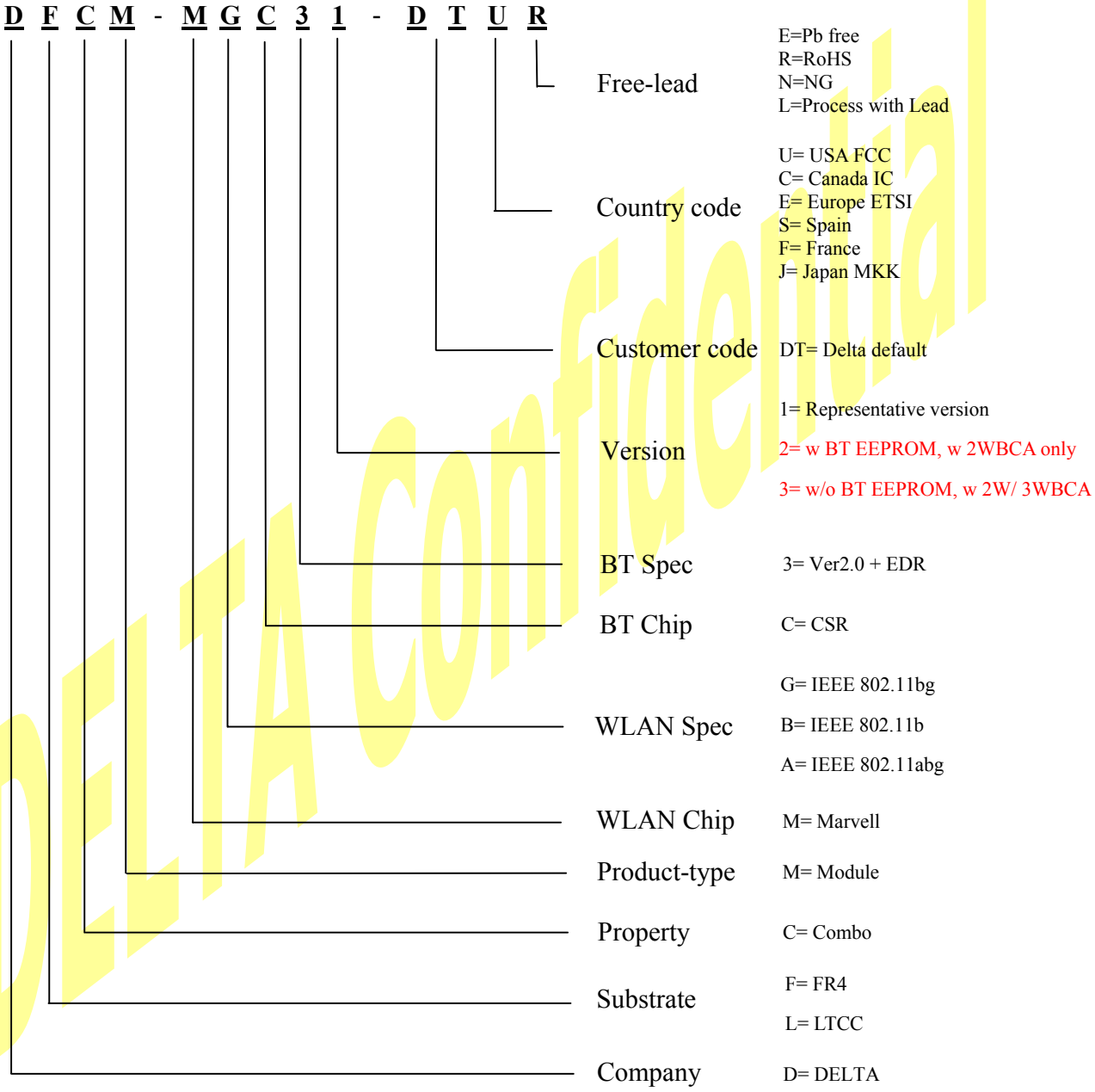
- **Applications for cellular handsets and consumer electronic devices that require low power consumption**

- **Compared with DFWM-MHG21**
  - **The same chip (MARVELL 8686), the reusable software**
  - **The same radio performance**
  - **Lower power dissipation (22% current saved when Tx)**
  - **A 1.8V DC supply and a ref-clock source required**

- **Compared with DFBM-CS32x series**
  - **The same chip (CSR BC4 ROM), the reusable software**
  - **Great radio performance**
  - **A ref-clock source required**

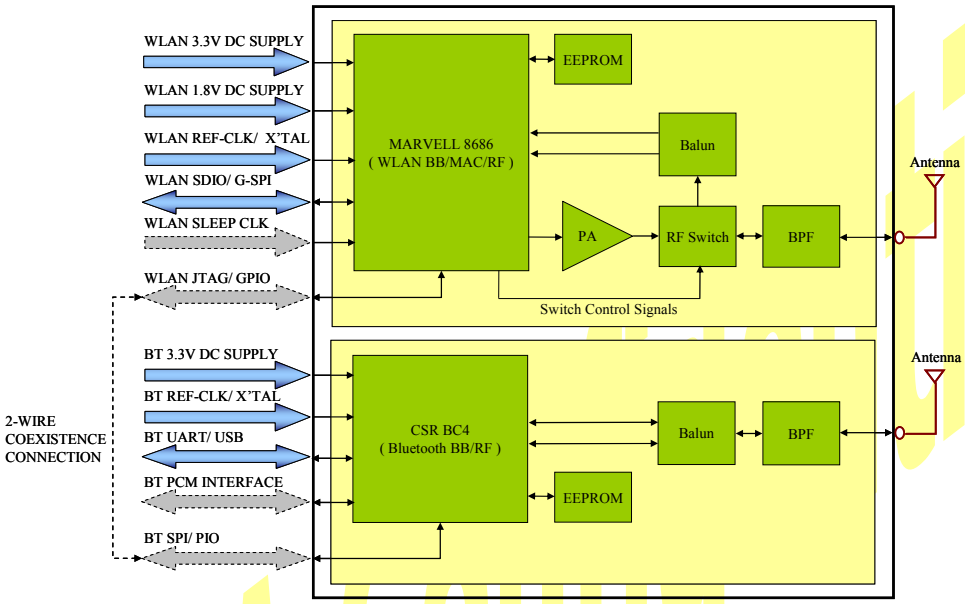
- **Compact module size the same as DFWM-MHG21**
- **High isolation between integrated WLAN and BT circuits**
- **Two Crystal Mode/ Single XOSC Mode verified**
- **Single Antenna Mode/ Dual Antenna Mode supported**
- **2WBCA (2-Wire Bluetooth Coexist Arbitration)/ 3WBCA supported (Please refer to the Section 2, Model No. Definition)**
- **Fine coexistence performance on embedded platforms**

2. Combo Module Model No. Definition

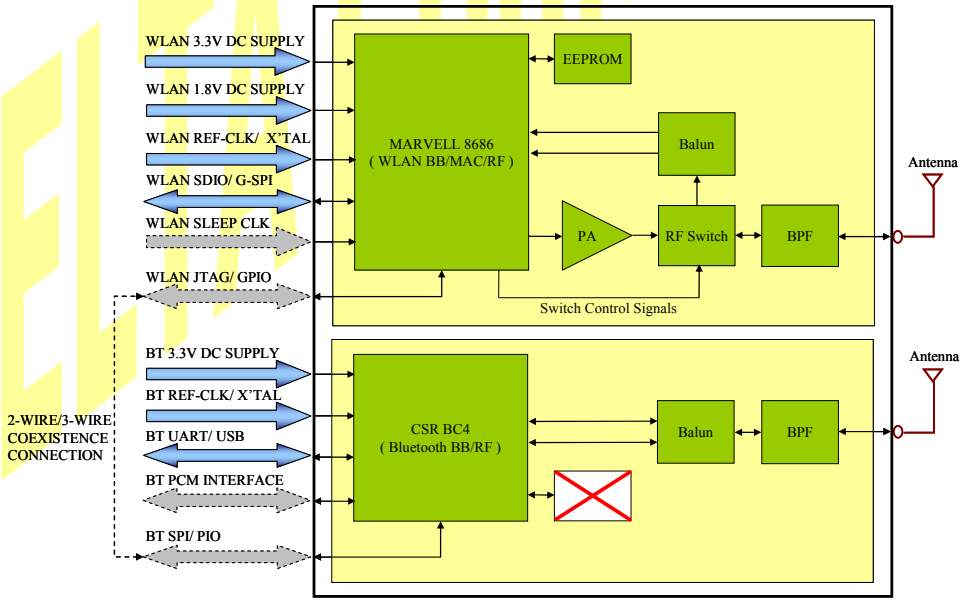


3. Block Diagram:

3.1 DFCM-MGC32

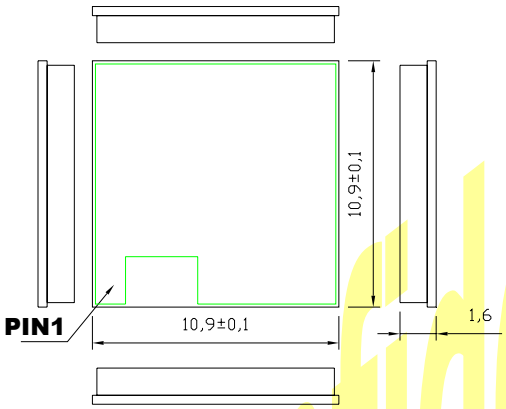


3.2 DFCM-MGC33



4. Dimensions (mm):

< TOP VIEW >



5. Module Standard Brief

5.1 Whole Module

Item	Specification
Package Type	101 pins LGA SMT Component
Dimension	10.9x10.9x1.6mm
Coexistence Type	2-Wire Mode/ 3-Wire Mode*
Storage Temperature	-40℃ ~ +110℃
Storage Humidity	5~95%
Ambient Operating Temperature	-25℃ ~ +80℃
Operating Humidity	10~90%
Baking Condition	125℃/24hrs or 45℃/192hrs

NOTE: * DFCM-MGC32: with a BT EEPROM inside, supports 2-Wire Mode only.
DFCM-MGC33: without a BT EEPROM inside, supports both of 2-Wire Mode and 3-Wire Mode, Needs Host porting to boot Bluetooth

(Please also refer to the Section 2. Model No. Definition on page 2)

5.2 WLAN Section

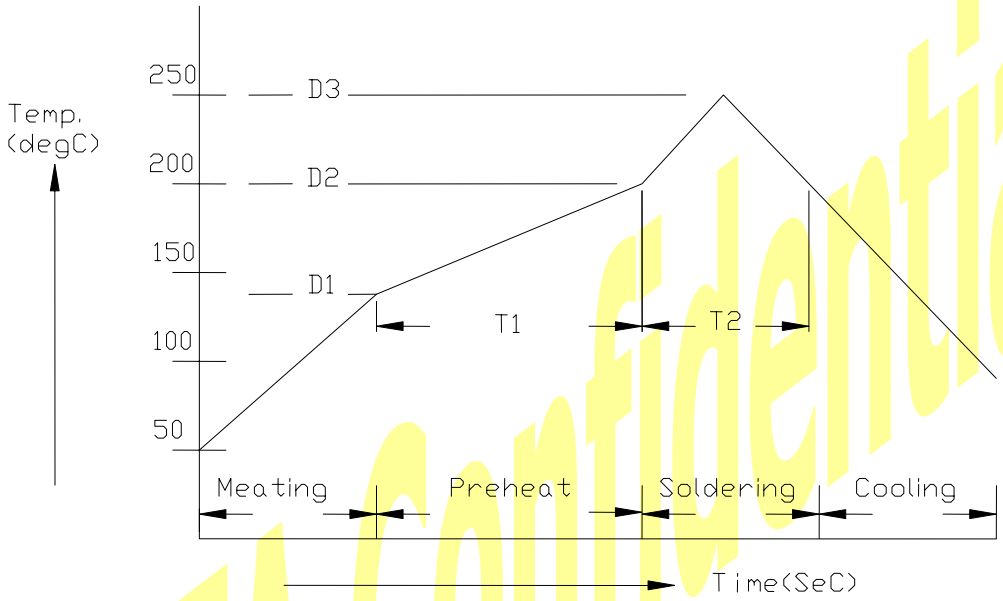
Item	Specification
Chip Solution	MARVELL 8686
Product Standard	Compliant with IEEE 802.11, 802.11b and 802.11g
Operation Voltage	3.0~3.3V and 1.7~1.9V
Host Interface	SDIO and G-SPI
Host Requirement	External 1.8V power supply and reference clock source
OS and Driver Support	WinCE/ WinMobile 5.0, Linux2.6, WinXP and WinVista
Security Support	64/128-bit WEP with hardware TKIP processing, WPA and WPA2 with AES-CCMP hardware implementation

5.3 Bluetooth Section

Item	Specification
Chip Solution	CSR BC4 ROM
Product Standard	Compliant with Bluetooth v2.0 + EDR
Operation Voltage	2.2~3.6V
Host Interface	UART and USB
Host Requirement	External reference clock source
OS and Driver Support	WinCE/ WinMobile 5.0, Linux2.6, WinXP and WinVista

6. Recommended Reflow Profile:

6.1 Reflow Soldering Profile



NOTE: 1. Reflow soldering is recommended two times maximum.
2. If your soldering conditions are different from our recommendation, please feel free to consult with us.

No.	Item	Temperature (°C)	Time (sec)
1	Pre-heat	D1: 140 ~ D2: 200	T1: 60 ~ 120
2	Soldering	D2: >= 200	T2: 80 max
3	Peak-Temp.	D3: 250 °C max	

6.2 Soldering Iron Condition

(1) Temperature: 350 ℃ max
(2) Duration: 4 sec max (1 part)
(3) Capacity: 30W max

7.WLAN Software Support:

7.1 Standard Software Platforms

Item.	Host Operating System	SDIO Interface	G-SPI Interface
1	WinCE/ WinMobile (v5.0)	Available	Available
2	Linux (Kernel v2.6)	Available	Available
3	WinXP	Available	Not yet
4	WinVista	Available	Not yet

7.2 G-SPI Software Features

Item.	Features	Item	Features (Continued)
1	802.11b/g Infrastructure scan, associate and ping	15	802.11d
2	802.11b/g Ad-Hoc mode scan, associate and ping	16	WMM (Linux only)
3	IEEE Power Save	17	Background Scan in Deep Sleep Mode
4	Ad-Hoc Security (WEP only)	18	Bluetooth Co-existence
5	Infra WEP	19	Host Sleep (Infrastructure Mode only)
6	Infra WPA/802.1x	20	Ad-Hoc Power Save
7	Infra WPA2	--	--
8	Reserved	--	--
9	TPC	--	--
10	Deep Sleep	--	--
11	CCX v1 (driver and firmware support only; no supplicant)	--	--
12	Subscribe Event API	--	--
13	Local Listen Interval Field Added to Power Save (Enter) Command	--	--
14	UAPSD	--	--

7.3 SDIO Software Features

Item.	Features	Item	Features (Continued)
1	802.11b/g Infrastructure scan, associate and ping	16	WMM (Linux only)
2	802.11b/g Ad-Hoc mode scan, associate and ping	17	Background Scan in Deep Sleep Mode
3	IEEE Power Save	18	Bluetooth Co-existence
4	Ad-Hoc Security (WEP only)	19	Host Sleep (Infrastructure Mode only)
5	Infra WEP	20	Ad-Hoc Power Save
6	Infra WPA/802.1x	21	Background Scan in Infra Mode
7	Infra WPA2	22	Background Scan wit Infra IEEE PS
8	SDIO interface support (SDIO only)	23	Inactivity Timeout
9	TPC	24	CCX v2 ASD (driver and firmware support only; no supplicant)
10	Deep Sleep	25	CCX v3 ASD (driver and firmware support only; no supplicant)
11	CCX v1 (driver and firmware support only; no supplicant)	26	Null packet screen before Host Wakeup
12	Subscribe Event API	27	Crypto API to host (AES, RC4)
13	Local Listen Interval Field Added to Power Save (Enter) Command	28	UAPSD for legacy APs
14	UAPSD	29	CCX v4 ASD (driver and firmware support only; no supplicant)
15	802.11d	--	--

NOTE: Please contact DELTA to get more information about the software support for different OS platforms.

10. Revision History:

Date	Description	Maker
2007/04/20	Initial release	Jim.Chen
2007/05/25	Update the module's photo, features, model number definition	Jim.Chen

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