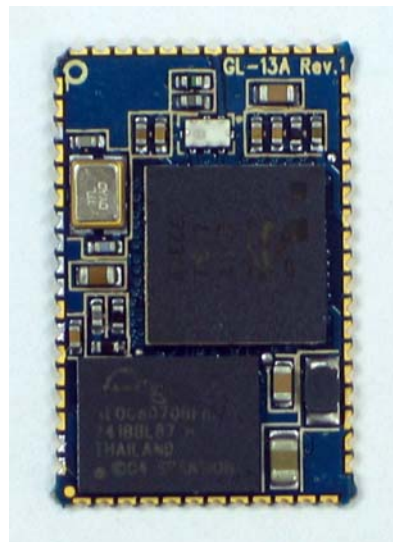


GL-13A MODULE

Device Feature

- Fully Qualified Bluetooth V2.0+EDR System
- Enhanced Data Rate(EDR) Compliant with v2.0 of specification for both 2Mbps and 3Mbps modulation modes
- 16-bit Internal Stereo CODEC -95dB SNR for DAC
- Low-Power 1.5V Operation,1.8V to 3.6V I/O
- Integrated Switched-Mode Regulator
- Integrated Battery Charger
- USB and UART with Dual Port Bypass Mode to 4Mbit/s
- Supports up to 32Mbits of External Flash
- Multi-configurable I2S,PCM,or SPDIF Interface
- Enhanced Audibility and Noise Cancellation
- Support for 802.11 Co-existence
- Rohs compliant



BC57E687BU

REV 1.1

November 2007

General Description

GL-13A is a module for Bluetooth 2.4GHz systems. It interfaces up to 32Mbit of external Flash memory. When used with CSR Bluetooth stack, it provides a fully compliant Bluetooth system to V2.0+EDR of the specification for data and voice.

Applications

- High-End Stereo Wireless Headsets
- High-END Mono Headsets
- Hands-Free Car Kits
- Bluetooth-Enabled Automotive Dashboards
- Wireless Speakers
- VOIP handsets
- Analogue and USB Multimedia Dongles

Contents

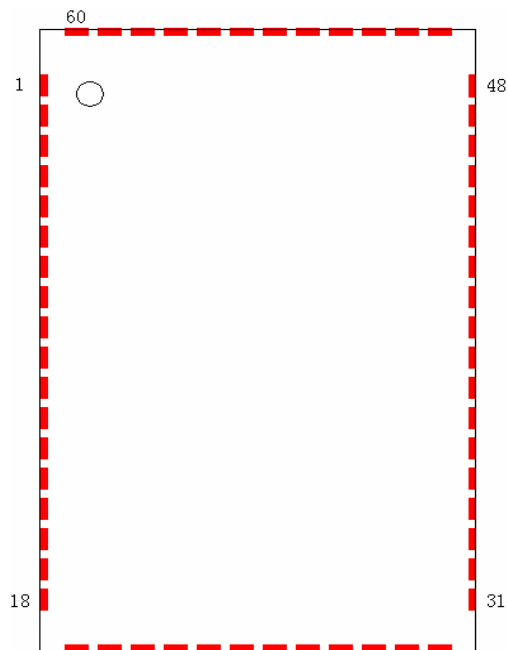
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1. Key Features

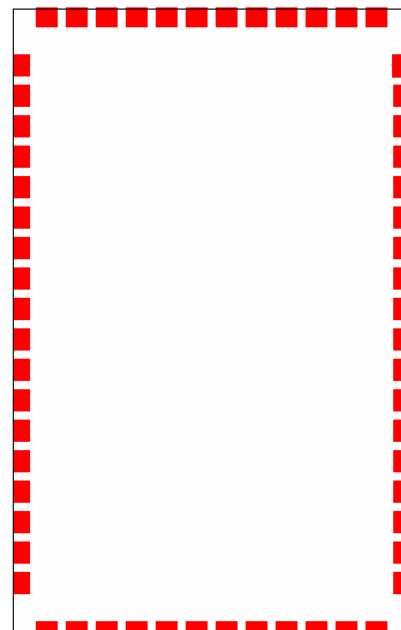
Operating Frequency Band	2.402GHz -2.480GHz ISM band
Bluetooth Specification	V2.0 or V2.0+EDR
Bluetooth Stack	* Standard HCI(UART or USB) * Audio CODEC echo-noise cancellation algorithms running on the DSP
Theoretical range in open field	Bluetooth Class II
Antenna	External
Power Supply	* 3.3V * Internal 1.5V and 1.8V regulator
Dimension	21mm(L) X 13.5mm(W) X 2mm(H)

2. Package Information

2.1 Pinout Diagram



Top View



Bottom View

2.2 Device Terminal Functions

Pin NO	Pin Name	Type	Description
1	AIO[1]	Bi-directional	Analogue Programmable input/output line
2	AIO[0]	Bi-directional	Analogue Programmable input/output line
3	RESET	CMOS input	Reset if low. Input debounced so must be low for >5ms to cause a reset. with weak internal pull-up
4	GND	GND	Digital ground
5	PIO9	Bi-directional	Programmable input/output line
6	PIO10	Bi-directional	Programmable input/output line
7	PIO11	Bi-directional	Programmable input/output line
8	PIO12	Bi-directional	Programmable input/output line
9	PIO13	Bi-directional	Programmable input/output line
10	PIO14	Bi-directional	Programmable input/output line
11	PIO15	Bi-directional	Programmable input/output line
12	GND	GND	Digital ground
13	VDD	POWER	Positive supply for MEMORY
14	VDD_USB	POWER	Positive supply for VDD_USB
15	+1V8	POWER, output	Positive supply for PIO
16	GND	GND	Digital ground
17	USB_DP	Bi-directional	USB data plus with selectable internal 1.5Ω pull-up resistor
18	USB_DN	Bi-directional	USB data minus
19	UART_RTS	CMOS input	UART request to send active low
20	UART_CTS	CMOS output	UART clear to send active low
21	UART_RX	CMOS input	UART data input
22	UART_TX	CMOS output	UART data output
23	PCM_IN	CMOS input	Synchronous data input, with weak internal pull-down
24	PCM_SYNC	Bi-directional	Synchronous data sync, with weak internal pull-down
25	PCM_CLK	Bi-directional	Synchronous data clock, with weak internal pull-down
26	PCM_OUT	CMOS output, tri-state	Synchronous data output, with weak internal pull-down
27	SPI_CSB	CMOS input	Chip select for Synchronous Serial Interface, active low
28	SPI_MISO	CMOS output	Serial Peripheral Interface data output
29	SPI_CLK	CMOS input	Serial Peripheral Interface clock
30	SPI_MOSI	CMOS input	Serial Peripheral Interface data input
31	VRE_IN	Analogue	Take high to enable high-voltage linear regulator core circuitry
32	VDD_BAT	Battery terminal +V	Lithium ion/polymer battery positive terminal .Battery charger output and input to switch-mode regulator
33	GND	GND	Digital ground

34	VDD_CHG	Charger input	Lithium ion/polymer battery charger input
35	LED1	Open drain output	Led driver
36	LED0	Open drain output	Led driver
37	GND	GND	Digital ground
38	SPK_L_N	Analogue	Speaker output negative, left
39	SPK_L_P	Analogue	Speaker output positive, left
40	SPK_R_N	Analogue	Speaker output negative, right
41	SPK_R_P	Analogue	Speaker output positive, right
42	GND_S	VSS	Analogue GND
43	MIC_BIAS	Analogue	Microphone bias
44	MIC_B_P	Analogue	Microphone input positive, right
45	MIC_B_N	Analogue	Microphone input negative, right
46	MIC_A_P	Analogue	Microphone input positive, left
47	MIC_A_N	Analogue	Microphone input negative, left
48	GND	GND	Digital ground
49	PIO0	Bi-directional	Programmable input/output line
50	PIO1	Bi-directional	Programmable input/output line
51	PIO2	Bi-directional	Programmable input/output line
52	PIO3	Bi-directional	Programmable input/output line
53	GND	GND	Digital ground
54	RF	Analogue	Transmitter output/switched receiver input
55	GND	GND	Digital ground
56	PIO4	Bi-directional	Programmable input/output line
57	PIO5	Bi-directional	Programmable input/output line
58	PIO6	Bi-directional	Programmable input/output line
59	PIO7	Bi-directional	Programmable input/output line
60	PIO8	Bi-directional	Programmable input/output line

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33	GND	GND	Digital ground

3.3 Microphone input

Microphone Input	Min	Type	Max	Unit
Input full scale at maximum	-	4	-	mV rms
Input full scale at minimum gain(differential)	-	560	-	mV rms
Gain resolution	-	3	-	dB
Distortion at 1kHz	-	-	-74	dB
Input referenced rms noise in 15kHz bandwidth	-	8	-	uV rms
3dB Bandwidth	-	17	-	kHz
Input impedance	-	5.6	-	K ohm
THD+N(microphone input)@30mV rms input	-	-66	-	dB

3.4 Speaker output

Loudspeaker Driver	Min	Type	Max	Unit
Output voltage full scale swing(differential)	-	2.0	-	V Pk-Pk
Output current drive at full scale swing	-	62	-	mA
Allow Load	Resistive	16(8)	-	ohm
	Capacitive	-	500	pF
THD 100Kohm load	-	-	0.01	%
THD 16ohm load	-	-	0.1	%
SNR (-1dB FS relative to digital silence)	-	92	-	dB

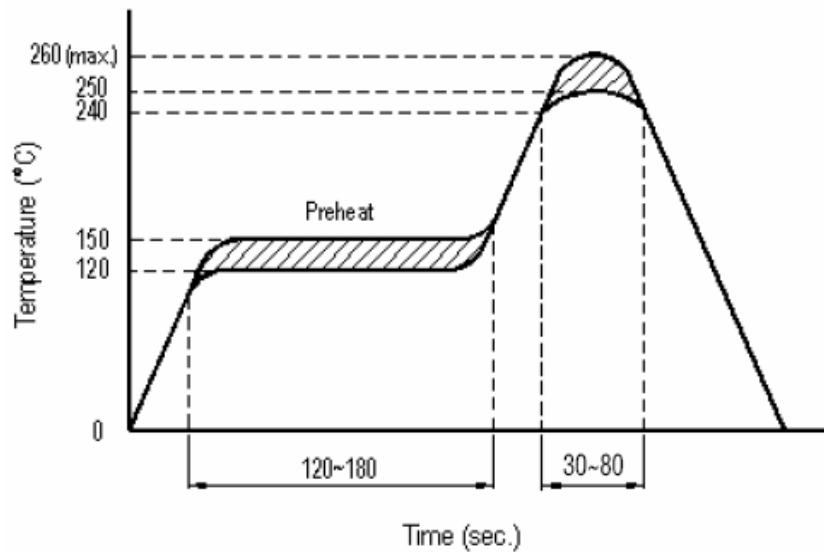
5. PCB Layout

5.1 PCB Details

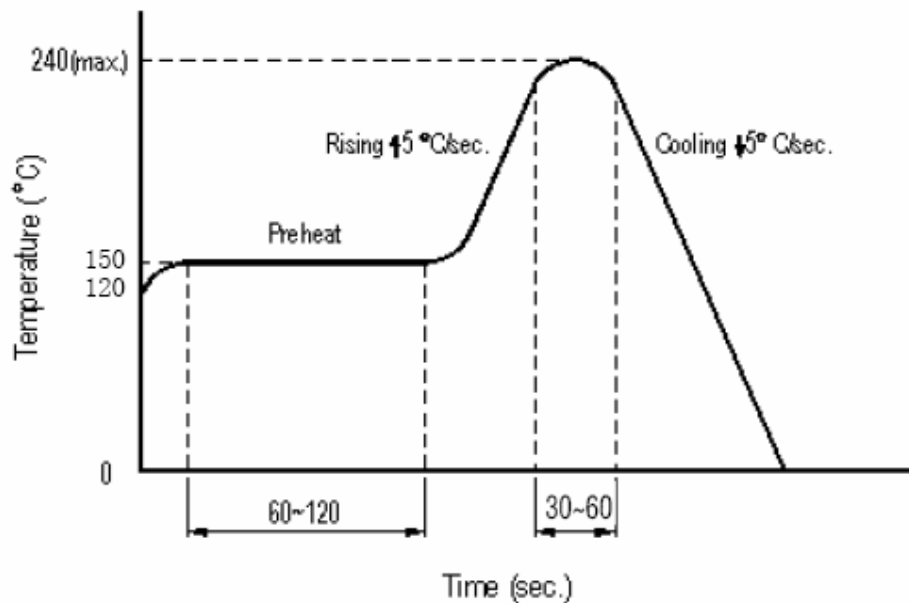
PCB NO	Revision	Board Thickness	Board Material	Date
GL-13A	V1.0	0.8mm	FR4	October 2007

6.SMT Reflow Profile

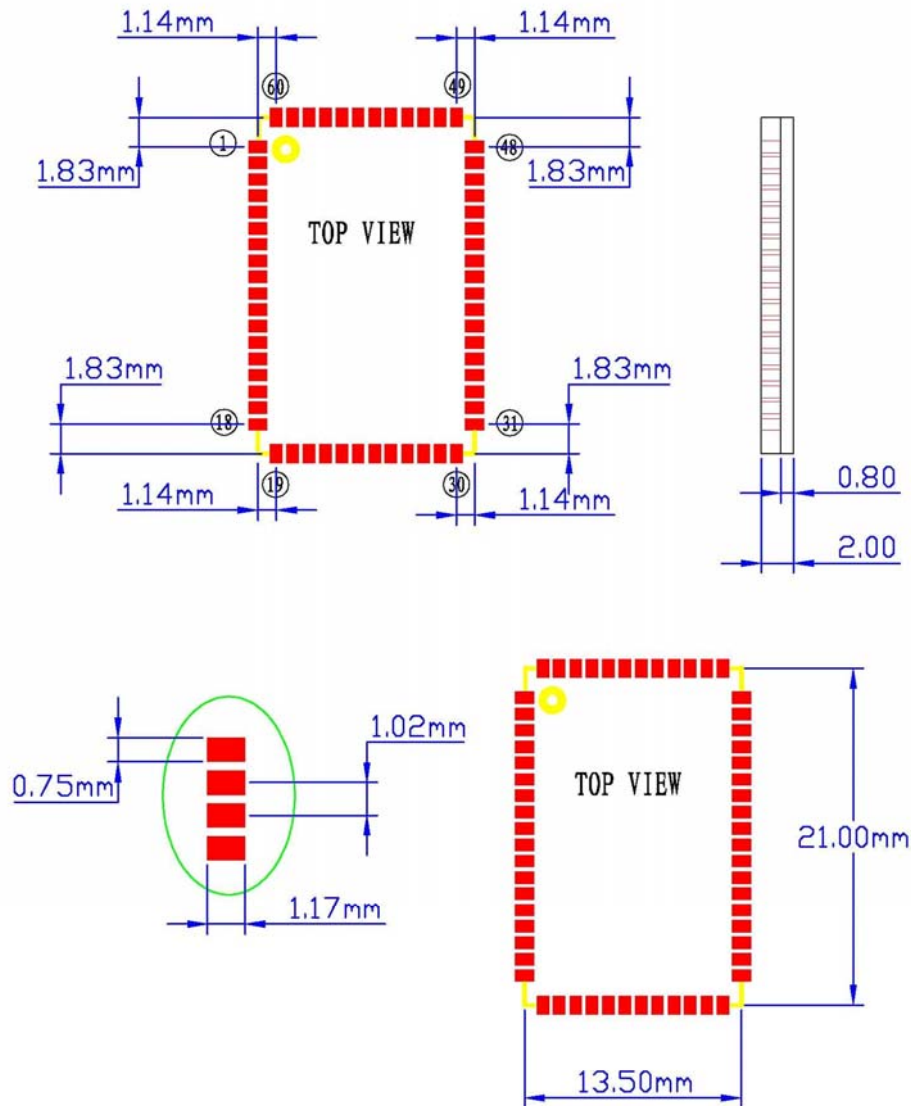
6.1 Reliability solder temperature chart:



6.2 Reflow temperature chart:



7.PCB Board Land Dimensions



8.Document History

Revision	Datey	History
V1.0	Oct 07 2007	Original publication of this document
V1.1	Nov 2 2007	ADD Item 2.3 Block diagram on page 6