CSR8635

From ElectroDragon

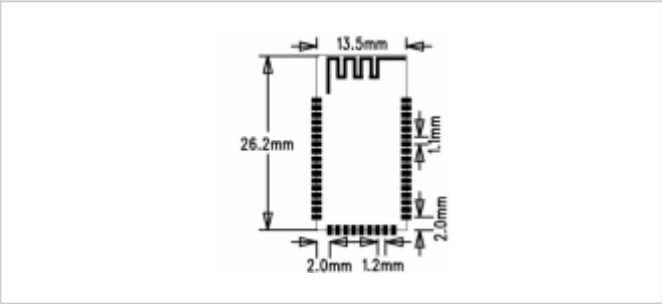
Contents

Features

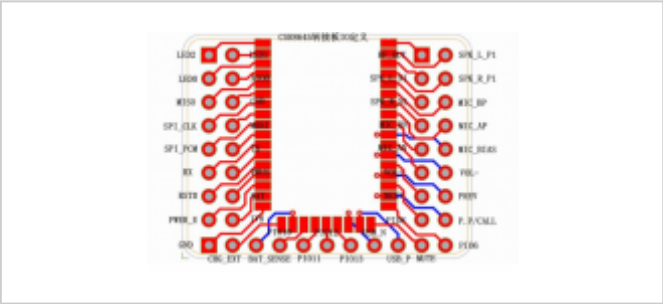
- Model CSR8645/8635
- Bluetooth specification Bluetooth V4.0
- Modulation GFSK, π / 4 DQPSK, 8DPSK
- Supply voltage DC3.3-4.2V, ≤3.0V automatic shutdown, ≤3.2V alarm
- Bluetooth protocol HFPV1.6, A2DPV1.2, AVRCPV1.4, HSPV1.2
- Working current ≤30mA for 8645, ≤13mA for 8635
- Standby current <50uA or 8645, <2mA for 8635
- Temperature range -40ºC ~ + 85ºC
- Wireless transmission range ≤10 meters
- Transmission power support Class1 / Class2 / Class3 maximum adjustable 9dbm for 8645, and 8dbm for 8635
- Sensitivity -80dBm <0.1% BER
- Frequency Range 2.4GHz ~ 2.480GHz
- External Interface USB (USB sound card)
- Audio performance supports ACC, MP3, SBC, APT-X decoder
- Audio SNR ≥75dB
- Distortion ≤0.1%
- Module size 26.2x13.5x0.8mm for 8645 and 24.5x14.1x2.0mm for 8635
- Adapter plate size 31x25mm for 8645 and 29x24mm for 8635

EX8635	EX8645
Bluetooth v4.0 A2DP v1.2； AVRCP v1.4； HFP v1.6； Single MIC input	GAVDP1.2 HSP1.2； Dual MIC input

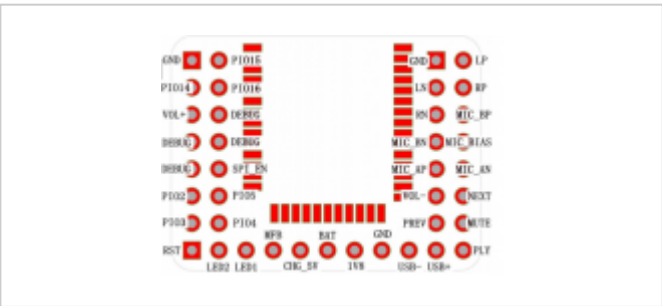
Dimension



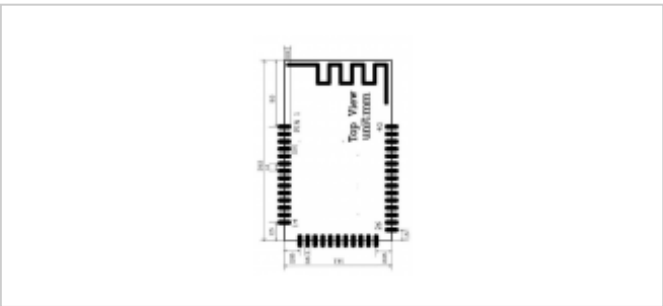
8645 board



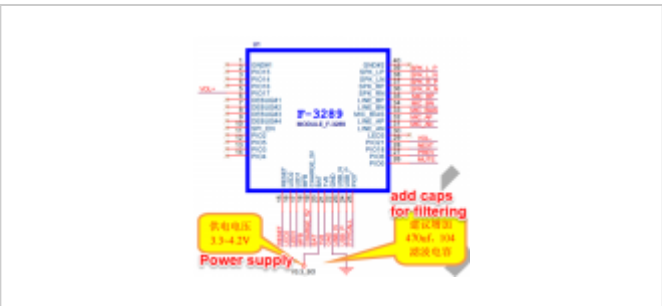
8645 Convert board



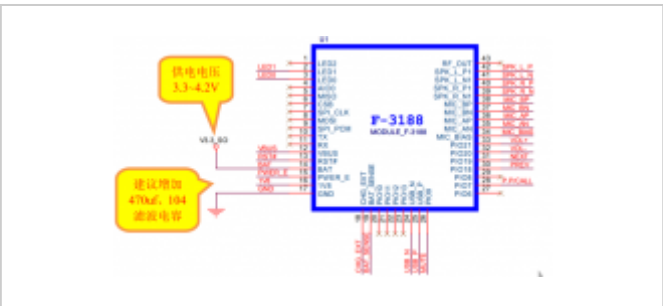
8635 convert board



8635



8635 pin definition



8645 pin definition

Pin Definition

- For 8645

Name Number IO IO IO Description

1. 1 LED2 status indicator (not enabled)
2. 2 LED1 status lights
3. 3 LED0 status indicator
4. 4 AIO0 not enabled
5. 5 MISO burned into the program interface
6. 6 CSB program burned into port
7. 7 CLK burned into the program interface
8. 8 MOSI burned into the program interface
9. 9 SPI_EN burned into the program interface enable pin (high enable)
10. 10 TX serial TX (not enabled)
11. 11 RX serial RX (not enabled)
12. 12 VBUS 5V input charging port
13. 13 RST # low reset
14. 14 BAT power input (3.3 ~ 4.2V)
15. 15 POWER_EN module enable control, active-high (delay of 30ms must power)

16. 16 1.8V 1.8V output
17. 17 GND Power ground
18. 18 CHG_EXT External Battery Charge Management
19. 19 BAT_SENSE External Battery Charge Management
20. 20 PIO10 not enabled
21. 21 PIO11 not enabled
22. 22 PIO12 not enabled
23. 23 PIO13 not enabled
24. 24 USB_N USB differential signal negative
25. 25 USB_P USB differential signal positive
26. 26 MUTE (PIO9) Mute control (mute, after a period of time is low)
27. 27 PIO6 not enabled
28. 28 PP / CALL (PIO7) Play / Pause / receive calls / back / re-pair
29. 29 PIO8 not enabled
30. 30 PREV (PIO18) on a
31. 31 NEXT (PIO19) under a
32. 32 VOL- (PIO20) Volume down
33. 33 VOL + (PIO21) Volume up
34. 34 MIC_BIAS Mike bias voltage
35. 35 MIC_AN Mike 1 negative end
36. 36 MIC_AP Mike 1 positive terminal
37. 37 MIC_BN Mike 2 negative terminal (not enabled)
38. 38 MIC_BP Mike 2 positive terminal (not enabled)
39. 39 SPK_R_N1 audio right channel negative differential output terminal
40. 40 SPK_R_P1 audio right channel positive differential output terminal
41. 41 SPK_L_N1 Audio left channel differential output negative end
42. 42 SPK_L_P1 audio left channel positive differential output terminal
43. 43 RFOUT antenna (default built-in antenna, external disconnect)

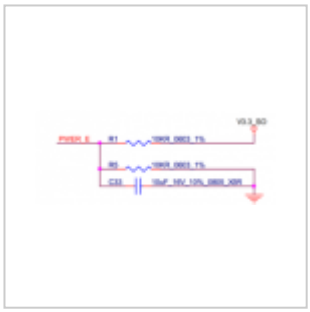
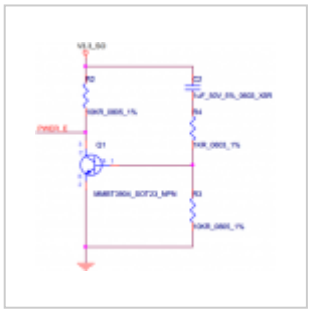
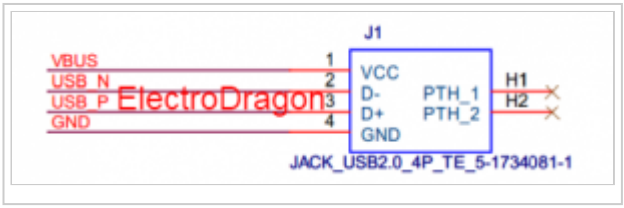
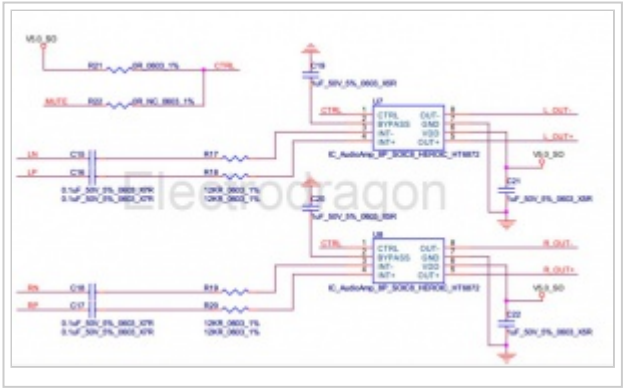
- For 8635

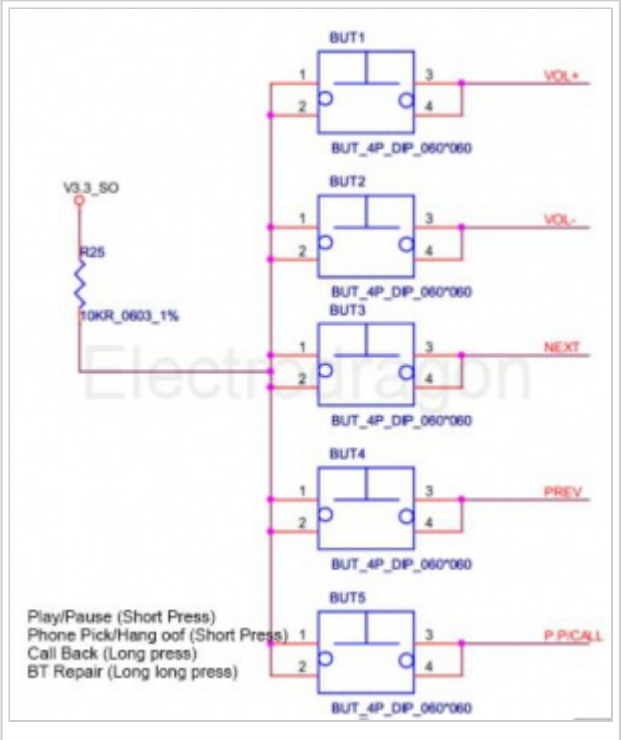
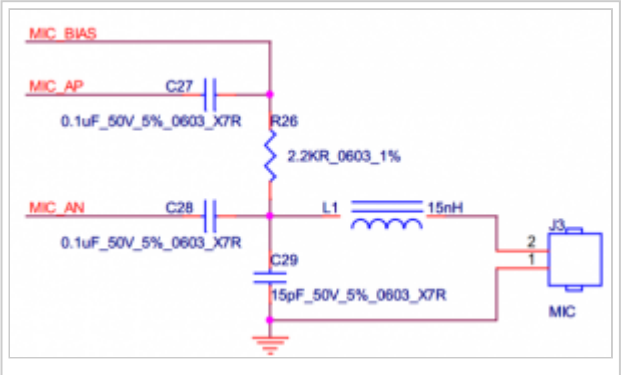
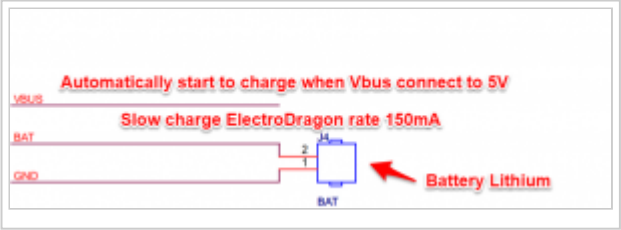
Name Number IO IO IO Description

1. 1 GND Power ground
2. 2 PIO15 Unused
3. 3 PIO14 Unused
4. 4 PIO16 Unused
5. 5 VOL + (PIO17) Volume up
6. 6 PIO Debug debug port
7. 7 PIO Debug debug port
8. 8 PIO Debug debug port
9. 9 PIO Debug debug port
10. 10 SPI_PCM_EN unused
11. 11 PCM1_IN / SPI_MOSI unused
12. 12 PCM1_CLK / SPI_CLK unused
13. 13 PCM1_OUT / SPI_MISO unused
14. 14 PCM1_SYNC / SPI_CS unused
15. 15 RESET low reset
16. 16 LED2 Status Indicator
17. 17 LED1 status lights
18. 18 MFB / POWER module enable control, active-high (delay of 30ms must power)
19. 19 CHARGE External Battery Charge Management (5V)
20. 20 VBAT power input (3.3 ~ 4.2V)
21. 21 1V8 1.8V output
22. 22 GND Power ground
23. 23 USB_N USB differential signal negative
24. 24 USB_P USB differential signal positive
25. 25 PP / CALL (PIO7) Play / Pause / receive calls / back / re-pair

26. 26 MUTE (PIO0) Mute control (mute, after a period of time is low)
27. 27 PREV (PIO6) on a
28. 28 NEXT (PIO18) under a
29. 29 VOL- (PIO21) volume reduction
30. 30 LED3 is not enabled
31. 31 LINE / MIC_AN Mike 1 negative end
32. 32 LINE / MIC_AP Mike 1 positive terminal
33. 33 MIC_BIAS Mike bias voltage
34. 34 LINE_BN Mike 2 negative terminal (not used)
35. 35 LINE_BP Mike 2 positive terminal (not used)
36. 36 SPK_RN audio right channel negative differential output terminal
37. 37 SPK_RP audio right channel positive differential output terminal
38. 38 SPK_LN Audio left channel differential output negative end
39. 39 SPK_LP audio left channel positive differential output terminal
40. 40 GND Power ground

Design Circuits

Type	schematic	note
Bluetooth power up on boot	 convert board simple power up  stable power up in application	* VCC (3.3 ~ 4.2V), when using an external power supply: 3.3V (ASM1117) power supply. When using lithium batteries: lithium guarantee voltage between 3.3V ~ 4.2V; ▪ Recommendations Bluetooth module supply terminal in parallel with the capacitor 104 470uf suppress interference; ▪ 1V8 output voltage. ▪ As shown above connection, this time it did not work after the power module, because the module "PWER_E" is not enabled, as shown below on the electric start mode.
Connect as USB card		* Simply access the module after Figure 4 and connected to the computer to be recognized as a USB sound card, driver-free; ▪ Recommendations USB cable not too long; ▪ The default version of the firmware with USB sound card function; ▪ USB sound card and Bluetooth functions can not work simultaneously.
Headset Connection	 	* Output to 3.5mm headphones or 3.5mm input soundbox ▪ Only tested for headset function, not LRG audio amplification ▪ SPK_LN and SPK_RN connect either one, not both
Differential four wires		* Auto enable on CTRL pin ▪ when 5V VCC, speaker can use 4ohm|3W ▪ C21, C22 keep close to HT6872; ▪ Module control chip mute welding R22, no welding R21. No control, welding R21, no welding R22. ▪ Recommendations for soldering of R21, no welding R22, reason is when play a song and in the silent phase, a module considered to be muted, it will shut off HT6872 and cause discontinuities stopped play.

Type	schematic	note
Button Function		Example
Status LED		* Before pairing, the two LEDs will blink in turns ▪ After pairing, LED1 off, LED2 blink
Mic Input		Note the MIC has polarity
Battery Charge		* Better to use a standalone charge module

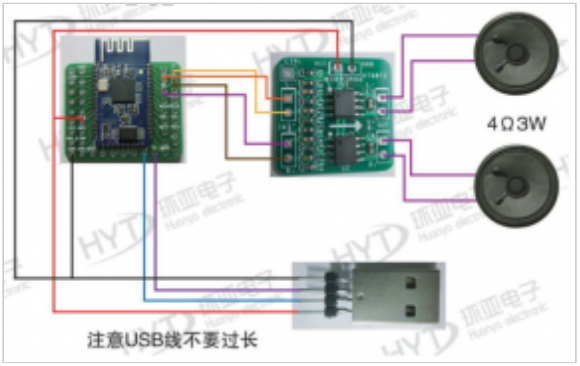
Design note

- If the next antenna modules have batteries, metal, LCD screen, speaker, and requires a minimum distance from the antenna 3cm, it is recommended to use an external antenna.
- Layout supply line is recommended when using the star alignment and ensure that the performance of the Bluetooth module power supply line is better. There BT, with op amp, amplifier, MCU, etc. separated,

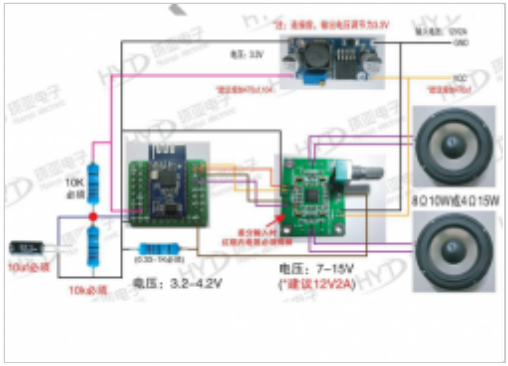
and the lower side of BT shall have no other interference, we recommend Bluetooth module on the bottom corner.

- It recommended that the module antenna portion of the float in the floor, but can not go around the antenna control cable, power cable, audio cable, MIC and other interference lines, if the module to be placed in the middle, to be slotted in around the antenna, it is recommended to use an external antenna .
- If there is row seat near the antenna module, housing a metal iron net impact on the signal, it is recommended to use an external antenna to solve the distance problem.
- When an external amplifier module to be connected to the differential input of the amplifier, if you do not take a differential input amplifier, you must be connected to a balance of the two differential amplifier level, otherwise there will be "pops" the impact of sound.

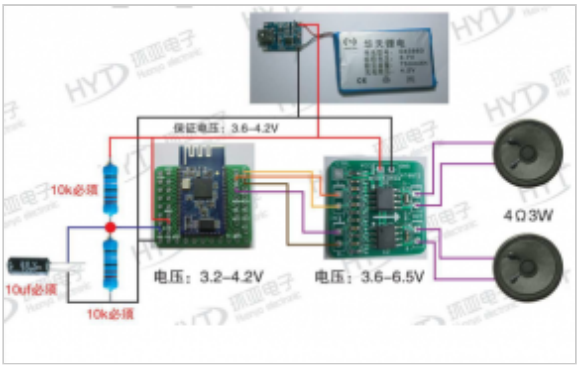
Reference Design Circuit



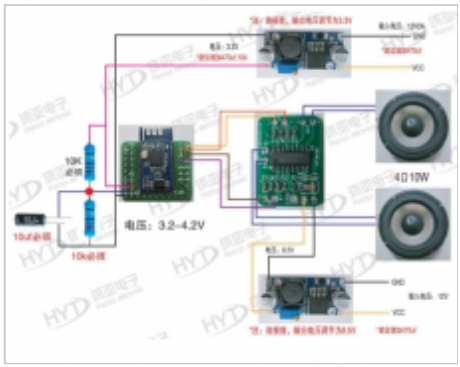
USB card



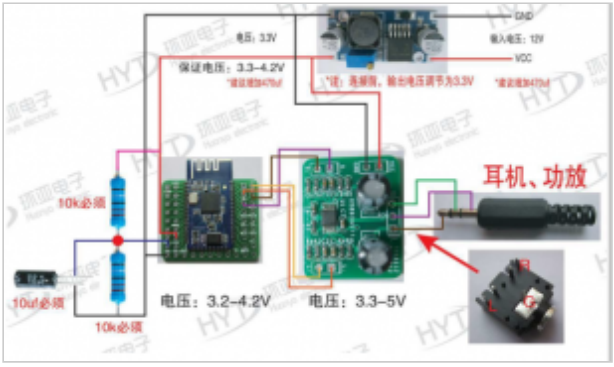
PAM8610 Amp Board



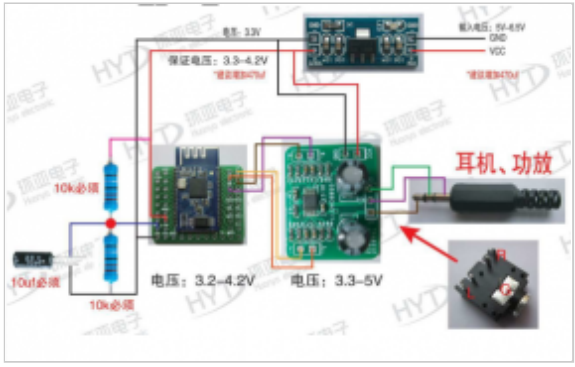
HT6872 Amp Board



HT8696 Amp Board



Differential and headset



Differential and headset

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