ADH8066 Quad band GSM/GPRS Module

Product Data Sheet

<V1.1>

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Revision History

Version	Effective Date	Description of Changes
1.0	2009/6/12	Formal release of V1.0
1.1	2009/9/25	Update power consumption and GPIO10 functionality

ADH8066 module is a quad band GSM/GPRS communication module. It supports standard AT commands and enhanced AT commands which provide rich voice and data communication functions. It's an ideal solution for various communication applications.

1. Product Introduction

1.1. Physical Dimensions

ADH8066 wireless module physical characteristics are described as table 1-1 and figure 1-1.

Figure 1-1 8066 physical appearance

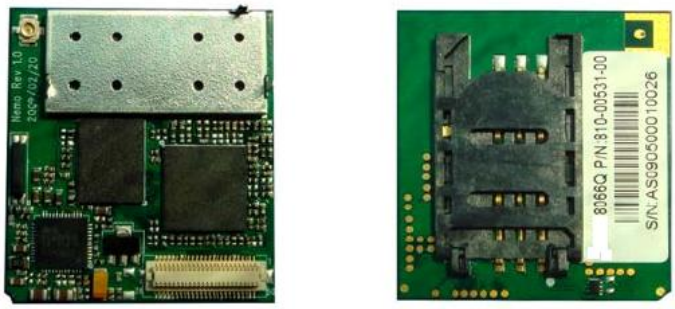


Table 1-1 Product physical characteristics

Physical Characteristics	
Weight	8g
Dimension (Length x Width x Height)	33mm×36mm×5.4mm (with SIM holder) 33mm×36mm×3.3mm (without SIM holder)

1.2. Product Functions

ADH8066 functions are listed as table 1-2

Table 1-2 ADH8066 function list

Product features	Descriptions
Frequency	GSM 850/900/1800/1900 Quad Band
Maximum RF Power	GSM850/EGSM900 Class 4 (2W)
	GSM1800/GSM1900 Class 1 (1W)
Receiving Sensitivity	<-106dBm
Working Temperature	-30°C～+70°C (-40°C～+80°C without SIM holder)
Power Voltage	3.4V～4.5V (4.0V is recommended)
Average STB current	<2.5 mA (Standby mode)
Current Leakage	<0.1mA
Protocol	Support GSM/GPRS Phase2/2+
AT COMMAND	GSM Standard AT commands

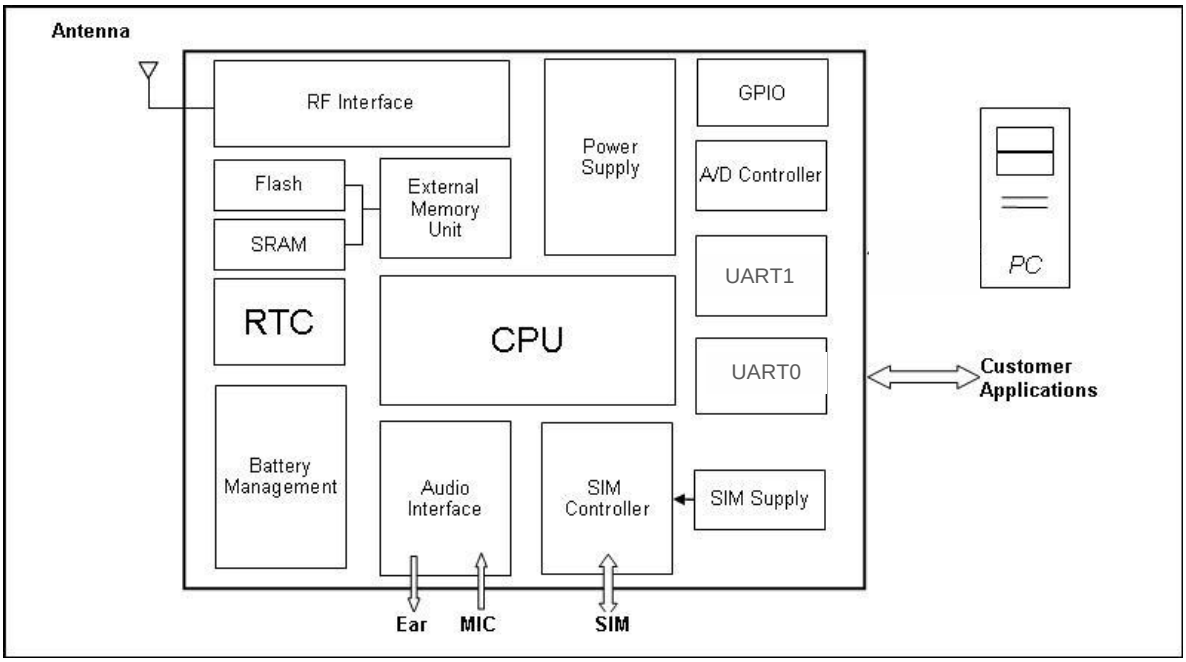
Product features	Descriptions
	V.25 AT commands
	defined AT commands
50PIN B2B Connector	UART interface (maximum I/O speed: 115,200bit/s)
SIM interface	Standard SIM interface (3V/1.8V)
Audio interface	2 Analogue audio Input/Output interfaces
Power interface	Power interface
GSC RF Connector	50Ω (MALE) RF antenna connector
Voice Communication	Support FR, EFR, HR and AMR voice codec
	Support hands free operation and echo cancellation.
SMS	Support MO and MT
	Support Point-to-Point short message cell broadcast
	Support TEXT and PDU mode
GPRS Data transmission	GPRS CLASS 10
	Coding scheme CS 1, CS 2, CS 3, CS 4
	Maximum transmission speed: 85.6Kbit/s [1]
	Support PBCCH
	Built-in TCP/IP/FTP protocol. Support multi-slot, ACK response, adjustable large memory buffer and domain name resolution.
CSD Service	Support CSD data transmission up to 9600bit/s
	Fax support: Group3, Class1.0
	Support USSD
Supplemental service	Caller ID, Call transfer.
Group Service	Support group call, broadcast, group call service & broadcast service
STK[2]	Support STK through enhanced AT commands

[1] Depend on network condition
[2] Upon customer request

1.3. System Architecture

Figure 1-2 describes ADH8066 function diagram and main interface.

Figure 1-2 ADH8066 block diagram



2. Application Environment and Interfaces

The application environment, connectors, and hardware interface design are described in this chapter.

2.1. Extreme conditions

ADH8066 extreme environment conditions are described as below:

Table 2-1 ADH8066 extreme condition specification

Parameters	Description	MIN	MAX	Unit
Ts	Storage Temperature	-40	+85	℃
Vi	In/Out voltage at any pin	-0.5	3.5	V
IIN	Input current	-	1000	mA
VESD	ESD voltage	-	±2000	V

2.2. Board to board connector interface and definitions

2.2.1. Interface pin definition

The board to board connector pin definitions are described as below table:

Table 2-2Board to board interface connector pin definitions

PIN.NO	PIN.NAME	Note
1	SIMCLK	SIM Card interface, supporting 1.8V/3V SIM card
2	SIMVDD	
3	SIMIO	
4	SIMRST	
5	GPIO10	Can be used as SIM card detector or ready for AT command indicator
6	GND	Ground
7	PCMDI	PCM data input
8	PCMFSO	PCM frame synchronization
9	PCMCLK	PCM clk
10	PCMDO	PCM data output
11	ADC1	Adc1
12	BATTEMP	Adc2 (bat temp)
13	GPIO3	GPIO, default as GSM network connection indicator
14	TXD1	UART1 Data Output
15	TXD0	UART0 Data Output
16	RXD1	UART1 Data Input
17	RXD0	UART0 Data Input
33	DTR0	UART0 Ready to receive, can be used as GPIO
34	CTS0	UART0 Permission to sent
19	VCHAGE	charging pin with current limit under 400mA.
35	DSR0	UART0 Ready to receive, can be used as GPIO or interrupt
20	CHV_DRV	
36	IICSCL	NC
21	GND	
37	RTS0	UART0 Request to send (Output)
22	GND	
38	IICSDA	NC
23	GND	Ground
39	DCD0	UART0
24	GND	
40	CHV_MAX	NC
25	GND	
41	ON_KEY	Power On/OFF signal. Effective low. Required 100ms above power level
26	VBAT	
42	GND	
27	VBAT	
43	MIC1_P	Mic 1 in positive
28	VBAT	3.5V~4.5V.
44	MIC1_N	Mic 1 in negative
29	VBAT	
45	MIC2_P	Mic 2 in positive
30	VBAT	
46	MIC2_N	Mic 2 in negative
31	V1.8	1.8V Power output with load of 50mA
47	AUXOUTP	AUX out positive
48	AUXOUTN	UART0 ring tone indicator output, can also be AUX out negative

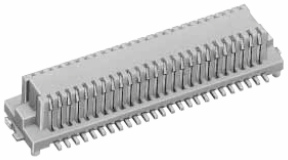
49	EARP	Audio out 1 positive
50	EARN	Audio out 1 negative

ADH8066 module is used as DCE (Data circuit-terminating equipment). However to let customer connect DCE-DTE, the signal naming is provided here as DTE (Data terminal equipment) signal definitions.

2.2.2. Type of Board to Board Connector

ADH8066 connector is a 50 Pin board to board connector with 0.5mm pitch as figure 2-1. The model number is Hirose's DF12C(3.0)-50DS-0.5V.

Figure 2-1 50 pin board to board connector



2.3. Antenna interface

Antenna interface of ADH8066 is GSC RF connector to be connected with an external antenna cable. The connector is an ultra-miniature SMT antenna connector (Hirose U.FL-R-SMT or compatible connector)

2.4. UART Interface

ADH8066 has two UART interfaces. UART0 is used for software download to the module flash system and AT COMMAND interface. The maximum baud rate is 115,200bps. UART1 is reserved.

2.5. Recommended application environment

2.5.1. Digital interface

Recommended digital interfaces of ADH8066 are described as below

Table 2-3 Recommended settings for digital interface

Parameter	Parameter descriptions	Min	Max	Unit
VIH	Voltage input high voltage	2	3.14	V
VIL	Input low voltage	-0.3	0.8	V
IIH	Leak current when high input level	-	2	µA
IIL	Leak current at low input level	-2		µA

Parameter	Parameter descriptions	Min	Max	Unit
VOH	Voltage output at high voltage level	2.39	3.00	V
VOL	Voltage output at low voltage level	0	0.40	V
CIN	Input capacitor		15	pF

2.5.2. Digital interface

Recommended digital interfaces of ADH8066 are described as below

Table 2-4 Recommended settings for digital interface

Parameter	Parameter descriptions	Min	Max	Unit
VIH	Voltage input high voltage	2	3.14	V
VIL	Input low voltage	-0.3	0.8	V
IIH	Leak current when high input	-	2	μA
IIL	Leak current at low input level	-2	-	μA
VOH	Voltage output at high voltage	2.39	3.00	V
VOL	Voltage output at low voltage	0	0.40	V
CIN	Input capacitor	-	15	pF

2.5.3. Audio Interface

ADH8066 audio interface reference testing value is as table 2-8, 2-9, 2-10 and 2-11.

Table 2-5 MIC 1 audio input

Parameter	Typical Value
Maximum input level (MIC+–MIC-)	32.5mVrms
Differential input resistance	220 KΩ
MIC Skew voltage	1.9~2.1V
	2.0~2.2V

Table 2-6 EAR 1 audio output

Parameter	Testing	MIN	TYP	MAX
EAR+ or EAR- maximum	Differentiate	-	-	1%
EAR+ or EAR- maximum output	16Ω 5%	3.1VPP	-	43.92VP
	4Ω 5%	1.2VPP	-	1.5VPP

2.6. Power characteristics

2.6.1. Input power

The input power of ADH8066 is described as below table:

Table 2-7 Input power requirement

Parameter	Min	Typ	Max	Unit
VBatt+	3.4	4.0	4.5	V

2.6.2. Operation Current

The operation current requirement is described as below:

Table 2-8 Operation current requirement

Operation mode	Min	TYP	Max	Unit
Standby mode	-	-	2.5	mA
Talking mode	-	250	-	mA
GPRS data transmission	-	350 (GPRS4+1)	-	mA
Power off mode	-		100	μA

The peak current of ADH8066 is 2A.

3. Power On/Off the module

3.1. General Description

The power on and off procedures are described in this chapter.

3.2. Power On

When the module is supplied with over 3.4V power and PWON signal is low (300ms), ADH8066 will be powered on.

3.3. Power Off

To power off ADH8066, the external CPU needs to pull low PWON for 2 to 3 seconds to power off the board.

4. Mechanical Dimension