

Integrated Capacitive Fingerprint Module SM-66H2

Product Specification

Version 3.0



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1. Product Overview

1.1 Brief Introduction

MIAxis® model SM-66H2 is an Integrated Capacitive Fingerprint Module, which developed by MIAxis Biometrics consists of semi-conductor fingerprint sensor, low power consumption & high-performance ARM core processor and FLASH etc chips. The module supports fingerprint image processing, template extraction, fingerprint matching (including 1: 1 and 1: N), template storage and other functions.

1.2 Highlight Features

➤ **MIAxis own IP technology**

Module hardware and fingerprint algorithm technologies developed by MIAxis.

➤ **Strong Adaptation for wet/dry Fingers**

In the process of fingerprint enrollment, it has self-adaptive parameter adjustment mechanism, which improves imaging quality for both dry and wet fingers. It can be applied to wider public.

➤ **MIAxis Fingerprint Application Algorithm with Excellent Performance**

It adapts high-performance SM6 series algorithm with excellent correction & tolerance to deformed and poor-quality fingerprint.

➤ **Easy to Use and Expand**

User doesn't need to have professional know-how in fingerprint verification. User can easily develop powerful fingerprint verification application systems based on the rich collection of controlling command provided by SM-66H1 module. All the commands are simple, practical and easy for development.

➤ **Extreme Low Power Consumption**

It supports Standby mode with Wake-up control interface. Widely applied in ultra-low power consumption applications.

➤ **Flexible settings of security grades**

Users can set by themselves for various working environment.

2. Product Specification

2.1 Technical Parameters

Parameter	Detail
Module size	Diameter 18.3mm Thickness 7.8mm
Sensor type	Capacitive Sensor
Active platen area	9.6 x 9.6mm
Image Size	192 x 192 pixel
Image resolution	508dpi
Grey scale	8 bit
Power-on time	≤0.2s, 0.22s is suggested.
Enrollment time	≤0.3s
1:1 Verification time	≤0.6s, template extraction+ 1 vs 1 matching
1:N Matching time	≤1s, N=100
FAR	≤0.001%, security level=3
FRR	≤1.0%, security level=3
Template size	512 bytes
Fingerprint capacity	100 templates
ESD immunity	±8kV contact discharge, ±15kV air discharge
Supply voltage	VDD_CTRL:DC 3.3±0.3V, device power supply Vtouch:DC 3.3 ± 0.3V, touch for wakeup power
Supply current at work mode	≤30mA
Supply current at Sleep mode	≤10uA, typical value is 5uA
Communication interface	UART
Baud rate	115200(default), 5 options=9600、 19200、38400、57600、115200
Operating Temperature	-20°C to +60°C
Storage Temperature	-40°C to +85°C
Operating humidity	20%RH~90%RH

2.2 Functional Circuit

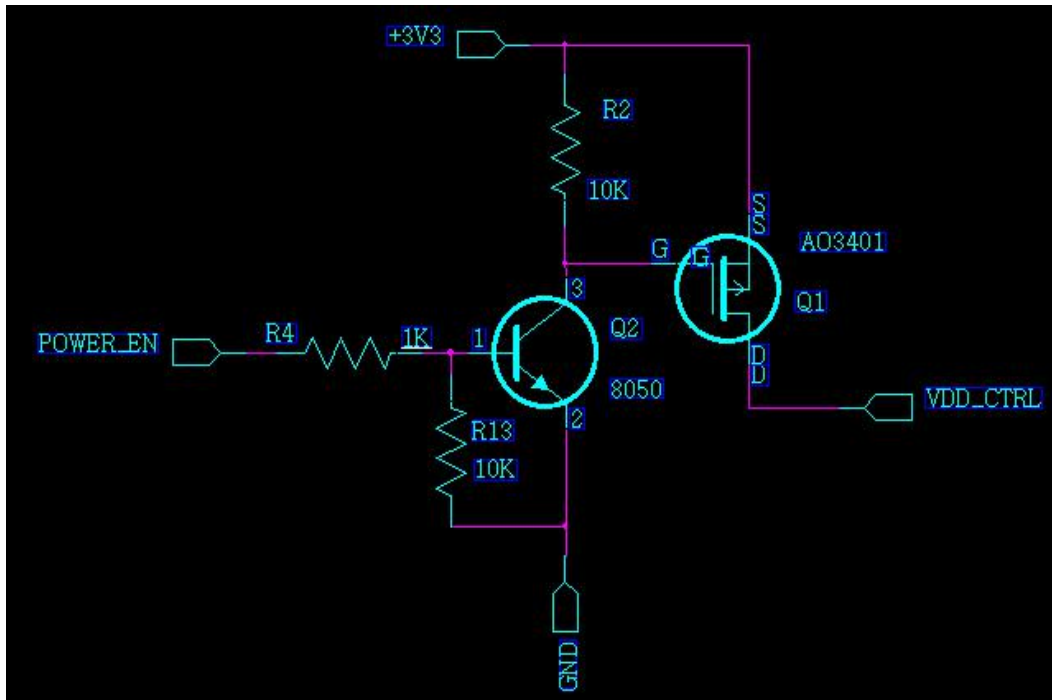
2.2.1 Power-on timing

Under UART communication mode, module device power on or enter work mode from a low power mode, it roughly takes 200ms to get initialized. During this period, module device would not respond to commands from host device.

2.2.2 VDD_CTRL、VTOUCH control circuit

Fp module is controlled by VDD_CTRL、VTOUCH power supply, designed circuit like

below,

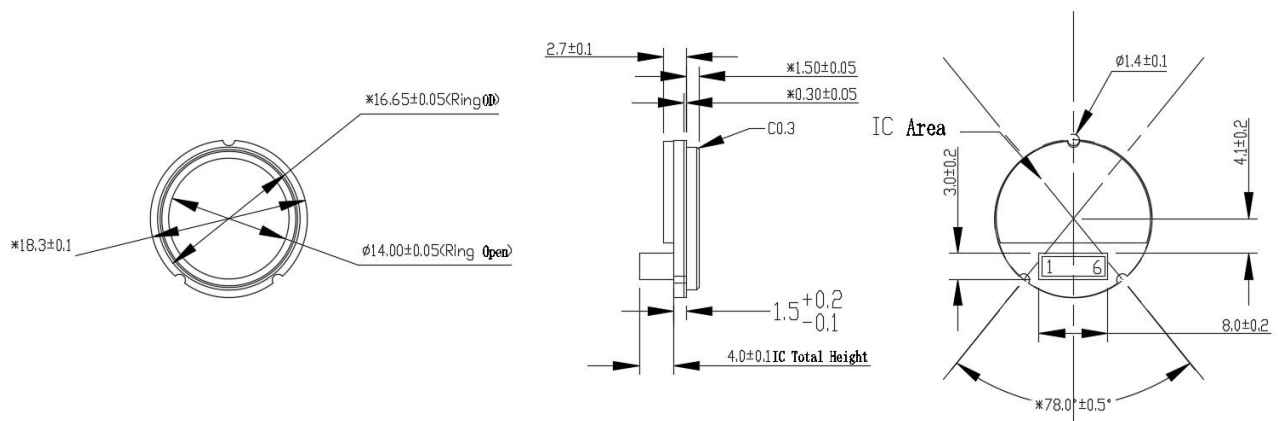


The time of power on/off controlled by VDD_CTRL to achieve low power mode, when the VDD_CTRL Power is off, only touch for wakeup circuit works, power consumption is less than 10uA; To make sure touch for wakeup function works, need to power off VDD_CTRL then to reset touch for wakeup.

2.2.3 Bezel Design

Module device is designed with metal bezel connected to the sensor. When sensor outputs RING signal to collect fingerprint image, it requires user's finger press on sensor and the bezel simultaneously, otherwise the collection will fail.

2.3 Mechanical Dimension



Unit: mm

2.4 Electrical interface

PIN assignment in detail for external interface: 1mm* 6Pins

Pin	Pin Name	Pin Type	Function
1	VDD_CTRL	P	Power supply input,+3.3V. Need to cutoff the power supply at low power mode, get power on at work mode.
2	UART_TXD	O	Serial data output, 3.3V TTL(default)
3	UART_RXD	I	Serial data input, 3.3V TTL(default)
4	GND	G	Module ground pin
5	V _{touch}	P	Power supply for touch-sensitive, DC 3.3±0.3V
6	TOUCH_OUT	O	Sensor touch sensor signal output, active high

Note:

- 1- G=Ground, I=Digital input, O=Digital output, P=Power.
- 2- VDD_CTRL , V_{touch} must separate LDO power supply, and can be cutoff separately, because the voltage instability will cause the abnormal operation of the fingerprint module.
- 3- When finger touch bezel, Touch_OUT pin output high level signal.

3. Notices

- ◆ Don't let the metal edge of sensor get connected to other metal materials or devices for secondary development.
- ◆ Ready for communication after 220ms power-on time.
- ◆ Don't use sharp objects to avoid damage to the sensor surface.
- ◆ For the device that forgot serial baud rate, could test all five baud rates, which returns with OK result is the right baud rate.