



Data Book

AU6369

**USB 2.0 Single-Slot
Flash Memory Card Reader
Technical Reference Manual**

Product Specification

Official Release

Revision 3.02W

Public

Sep 2005



Data sheet status

| | |
|---------------------------|---|
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |

Revision History

| Date | Revision | Description |
|----------|----------|--|
| Dec 2004 | 2.00W | Official release |
| Apr 2004 | 2.01W | To modify the "4.2 sample schematics" |
| May 2005 | 2.02W | To modify "3.0 Power Switch Feature" |
| Sep 2005 | 3.02W | <ol style="list-style-type: none">1. Add 64 LQFP package information2. To modify "5.2 Recommended Operating Conditions"3. Moved "3.0 Power Switch Feature" to "5.6 Power Switch Feature"4. Removed the schematics. Please contact our sales if you need it. |



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1.0 Introduction

1.1 Description

The AU6369 is a highly integrated single chip memory card reader controller. It supports USB v2.0 high-speed transmission to the entire popular storage media interface on one chip, such as, Compact Flash (CF), Secure Digital (SD), Multi Media Card (MMC), Micro Drive (MD), Memory Stick (MS, MS Pro, MS Duo), Digital photo (xD) and Smart Media Card (SMC).

The AU6369 supports USB v2.0 and USB v1.0 Storage Class specification. It can read digital contents stored on memory card designed to cover a wide area of applications such as digital cameras, PDAs, MP3 players and smart phones...etc. With the AU6369, users can transfer digital data between flash memory card and PC or these electronic devices.

The integration of various mixed mode makes component AU6369 is the most powerful and most effective solution for single-slot flash memory reader.

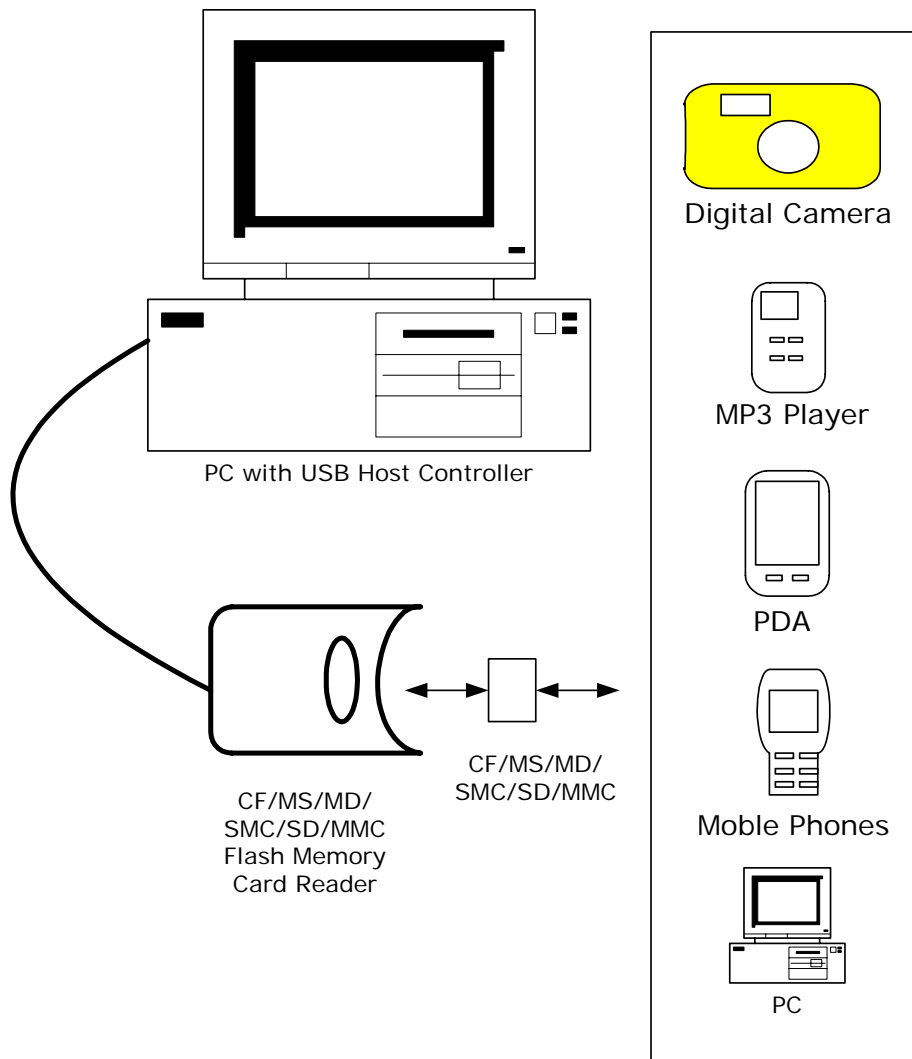
1.2 Features

- Support USB v2.0 specification and USB Device Class Definition for Mass Storage, Bulk-Transport v1.0
- Integrated USB 2.0 Transceiver Macrocell Interface (UTMI) transceiver and Serial interface Engine
- Support CF/MD, SD/MMC, MS/MS PRO/MS ROM/MS Duo and xD/SMC specification
- Work with default driver from Windows ME, Windows XP, and Mac OS X. Windows 98, Windows 2000 are supported by vendor AP from Alcor.
- Ping-pong FIFO implementation for concurrent bus operation
- Support multiple sectors transfer optimize performance
- Support auto-detecting slot with card inserted on Win 2000 without driver.
- Support LED for bus activity indication.
- CPU Runs at 30MHz, built-in 480MHz PLL

2.0 Application Block Diagram

Following is the application diagram of a typical card reader product with AU6369. By connecting the card reader to a desktop or notebook PC through USB bus, AU6369 is implemented as a bus-powered, full speed USB card reader, which can be used as a bridge for data transfer between Desktop PC and Notebook PC.

2.1 Block Diagram



3.0 Pin Assignment

The AU6369 is packed in 48pin/64pin-LQFP-form factor. The following figure shows signal name for each pin and the table in the following page describes each pin in detail.

Figure 3.1 48 Pin (SD/MS) Assignment Diagram

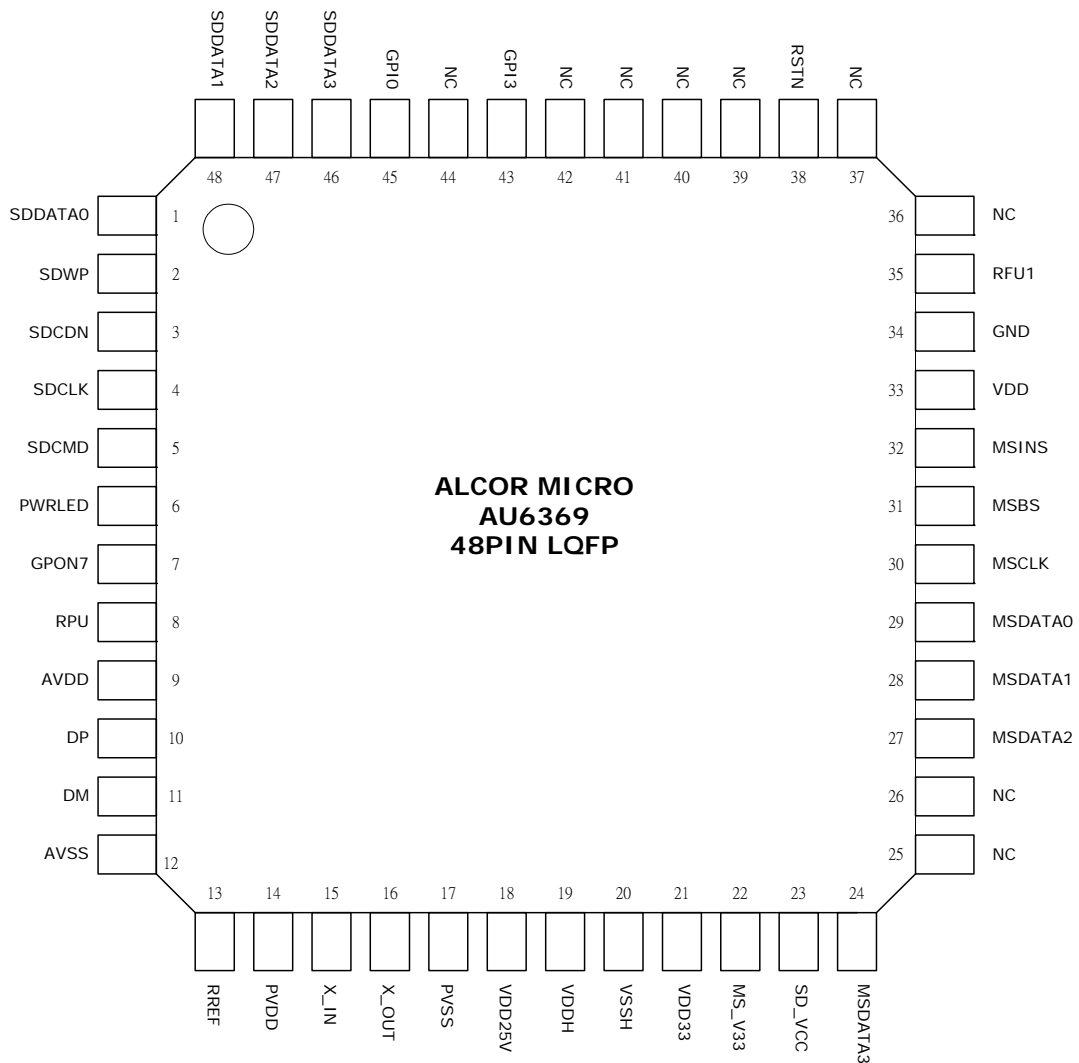




Table 3.1 48 Pin (SD/MS) Descriptions

| Pin # | Pin Name | I/O | Description |
|-------|----------|-----|---|
| 1 | SDDATA0 | I/O | SD Data0 |
| 2 | SDWP | I | SD Write Protect |
| 3 | SDCDN | I | SD Card Detect |
| 4 | SDCLK | O | SD CLK |
| 5 | SDCMD | I/O | SD CMD |
| 6 | PWRLED | O | Power LED; (Normal:"0"; Suspend"1") |
| 7 | GPON7 | O | Data transferring LED; (Data transferring:"0"; Standby:"1") |
| 8 | RPU | I | Connected with an 1.5k pull up resistor to 3.3 VDD |
| 9 | AVDD | I | Analog Power 3.3V |
| 10 | DP | I/O | USB DP |
| 11 | DM | I/O | USB DM |
| 12 | AVSS | PWR | Analog Ground |
| 13 | RREF | I | Connected an 1k resistor to GND for impedance match |
| 14 | PVDD | I | OSC Power 3.3V |
| 15 | X_IN | I | 12 MHz crystal input. |
| 16 | X_OUT | O | 12 MHz crystal output. |
| 17 | PVSS | PWR | OSC Ground |
| 18 | VDD25V | O | Core Power 2.5V |
| 19 | VDDH | I | IO Power 3.3V |
| 20 | VSSH | PWR | IO Ground |
| 21 | VDD33 | I | Switch Power 3.3V |
| 22 | MS_V33 | O | MS Card Power |
| 23 | SD_VCC | O | SD Card Power |
| 24 | MSDATA3 | I/O | MS Data3 |
| 25 | NC | | |
| 26 | NC | | |
| 27 | MSDATA2 | I/O | MS Data2 |
| 28 | MSDATA1 | I/O | MS Data1 |
| 29 | MSDATA0 | I/O | MS Data0 |
| 30 | MSCLK | O | MS CLK |
| 31 | MSBS | O | MS BS |
| 32 | MSINS | I | MS Card Detect (Insert:"0"; Extraction:"1"; Default:"1") |
| 33 | VDD | I | Core power 2.5V |
| 34 | GND | PWR | Core Ground |
| 35 | RFU1 | I | External pull up with 470K to 3.3V. |
| 36 | NC | | |
| 37 | NC | | |
| 38 | RSTN | I | Chip Reset (Reset:"0"; Normal:"1"), pull up with RC |
| 39 | NC | | |
| 40 | NC | | |
| 41 | NC | | |



| | | | |
|----|---------|-----|------------------|
| 42 | NC | | |
| 43 | GPI3 | I | Reserved |
| 44 | NC | | |
| 45 | GPI0 | I | Always pull high |
| 46 | SDDATA3 | I/O | SD Data3 |
| 47 | SDDATA2 | I/O | SD Data2 |
| 48 | SDDATA1 | I/O | SD Data1 |



Figure 3.2 64 Pin (SD/MS/xD) Assignment Diagram

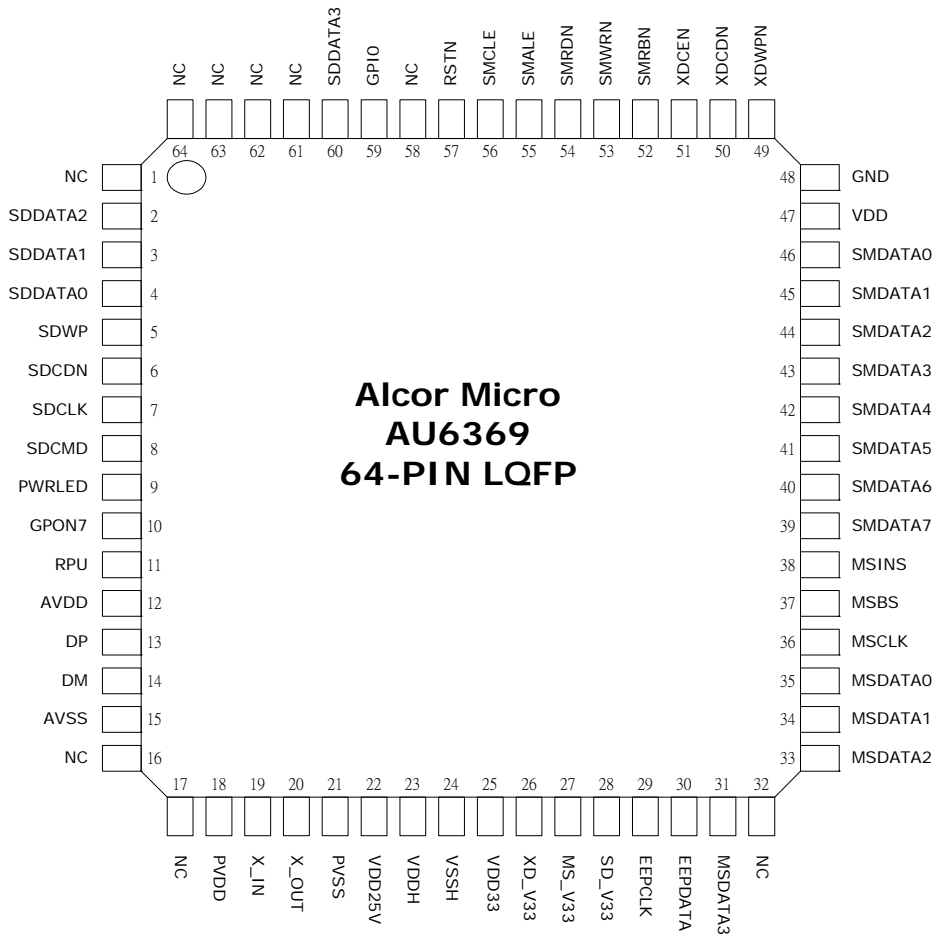




Table 3.2 64 Pin (SD/MS/xD) Descriptions

| Pin # | Pin Name | I/O | Description |
|-------|----------|-----|--|
| 1 | NC | | |
| 2 | SDDATA2 | I/O | SD Data2 |
| 3 | SDDATA1 | I/O | SD Data1 |
| 4 | SDDATA0 | I/O | SD Data0 |
| 5 | SDWP | I | SD Write Protect |
| 6 | SDCDN | I | SD Card Detect |
| 7 | SDCLK | O | SD CLK |
| 8 | SDCMD | I/O | SD CMD |
| 9 | PWRLED | O | Power LED; (Normal:"0"; Suspend"1") |
| 10 | GPON7 | O | Card insert LED; (Card inserted:"0"; |
| 11 | RPU | I | Connected with an 3.9k pull up resistor to 3.3 VDD |
| 12 | AVDD | I | Analog Power 3.3V |
| 13 | DP | I/O | USB DP |
| 14 | DM | I/O | USB DM |
| 15 | AVSS | PWR | Analog Ground |
| 16 | NC | | |
| 17 | NC | | |
| 18 | PVDD | I | OSC Power 3.3V |
| 19 | X_IN | I | 12 MHz crystal input. |
| 20 | X_OUT | O | 12 MHz crystal output. |
| 21 | PVSS | PWR | OSC Ground |
| 22 | VDD25V | O | Core Power 2.5V |
| 23 | VDDH | I | IO Power 3.3V |
| 24 | VSSH | PWR | IO Ground |
| 25 | VDD33 | I | Switch Power 3.3V |
| 26 | XD_V33 | O | XD Card Power |
| 27 | MS_V33 | O | MS Card Power |
| 28 | SD_V33 | O | SD Card Power |
| 29 | EEPCLK | O | EEPROM Clock |
| 30 | EEPDATA | I/O | EEPROM Data |
| 31 | MSDATA3 | I/O | MS Data3 |
| 32 | NC | | |
| 33 | MSDATA2 | I/O | MS Data2 |
| 34 | MSDATA1 | I/O | MS Data1 |
| 35 | MSDATA0 | I/O | MS Data0 |
| 36 | MSCLK | O | MS CLK |
| 37 | MSBS | O | MS BS |
| 38 | MSINS | I | MS Card Detect (Insert:"0"; Extraction:"1"; Default:"1") |
| 39 | SMDATA7 | I/O | SM Data7 |
| 40 | SMDATA6 | I/O | SM Data6 |
| 41 | SMDATA5 | I/O | SM Data5 |
| 42 | SMDATA4 | I/O | SM Data4 |
| 43 | SMDATA3 | I/O | SM Data3 |



| | | | |
|----|---------|-----|---|
| 44 | SMDATA2 | I/O | SM Data2 |
| 45 | SMDATA1 | I/O | SM Data1 |
| 46 | SMDATA0 | I/O | SM Data0 |
| 47 | VDD | I | Core power 2.5V |
| 48 | GND | PWR | Core Ground |
| 49 | XDWPN | O | XD WP |
| 50 | XDCDN | I | XD CD |
| 51 | XDCEN | O | XD CE |
| 52 | SMRBN | I | External pull up with 470K to 3.3V. |
| 53 | SMWRN | O | SM WR |
| 54 | SMRDN | O | SM RD |
| 55 | SMALE | O | SM ALE |
| 56 | SMCLE | O | SM CLE |
| 57 | RSTN | I | Chip Reset (Reset: "0"; Normal: "1"), pull up with RC |
| 58 | NC | | |
| 59 | GPIO | I | Always pull high |
| 60 | SDDATA3 | I/O | SD Data3 |
| 61 | NC | | |
| 62 | NC | | |
| 63 | NC | | |
| 64 | NC | | |



Figure 3.3 64 Pin (CF) Assignment Diagram

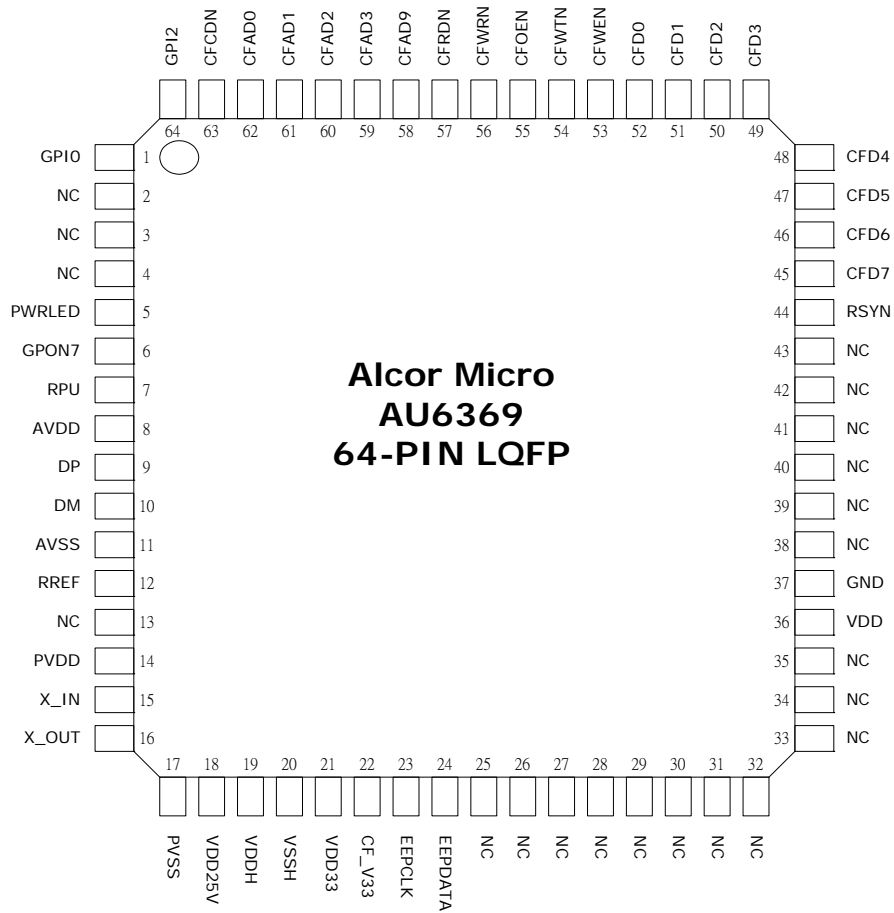




Table 3.3 64 Pin (CF) Descriptions

| Pin # | Pin Name | I/O | Description |
|-------|----------|-----|---|
| 1 | GPI0 | I | Always pull high |
| 2 | NC | | |
| 3 | NC | | |
| 4 | NC | | |
| 5 | PWRLED | O | Device LED |
| 6 | GPON7 | O | Card operating LED |
| 7 | RPU | I | Connected with an 1.5k pull up resistor to 3.3 VDD |
| 8 | AVDD | I | Analog Power 3.3V |
| 9 | DP | I/O | USB DP |
| 10 | DM | I/O | USB DM |
| 11 | AVSS | PWR | Analog Ground |
| 12 | RREF | I | Connected an 1k resistor to GND for impedance match |
| 13 | NC | | |
| 14 | PVDD | I | OSC Power 3.3V |
| 15 | X_IN | I | 12 MHz crystal input. |
| 16 | X_OUT | O | 12 MHz crystal output. |
| 17 | PVSS | PWR | OSC Ground |
| 18 | VDD25V | O | Core Power 2.5V |
| 19 | VDDH | I | IO Power 3.3V |
| 20 | VSSH | PWR | IO Ground |
| 21 | VDD33 | I | Switch Power 3.3V |
| 22 | CF_V33 | O | CF card power |
| 23 | EEPCLK | O | EEPROM serial clock. |
| 24 | EEPDATA | I/O | EEPROM for PID,VID customization. |
| 25 | NC | | |
| 26 | NC | | |
| 27 | NC | | |
| 28 | NC | | |
| 29 | NC | | |
| 30 | NC | | |
| 31 | NC | | |
| 32 | NC | | |
| 33 | NC | | |
| 34 | NC | | |
| 35 | NC | | |
| 36 | VDD | I | Core power 2.5V |
| 37 | GND | PWR | Core Ground |
| 38 | NC | | |
| 39 | NC | | |
| 40 | NC | | |
| 41 | NC | | |
| 42 | NC | | |
| 43 | NC | | |
| 44 | RSTN | I | Chip Reset ("0":Reset; "1":Normal), pull up |



| | | | |
|----|-------|-----|--|
| | | | with RC |
| 45 | CFD7 | I/O | CF Data7 |
| 46 | CFD6 | I/O | CF Data6 |
| 47 | CFD5 | I/O | CF Data5 |
| 48 | CFD4 | I/O | CF Data4 |
| 49 | CFD3 | I/O | CF Data3 |
| 50 | CFD2 | I/O | CF Data2 |
| 51 | CFD1 | I/O | CF Data1 |
| 52 | CFD0 | I/O | CF Data0 |
| 53 | CFWEN | O | CF WEN |
| 54 | CFWTN | I | CF WTN |
| 55 | CFOEN | O | CF OEN |
| 56 | CFWRN | O | CF WRN |
| 57 | CFRDN | O | CF RDN |
| 58 | CFAD9 | O | CF Address9 |
| 59 | CFAD3 | O | CF Address3 |
| 60 | CFAD2 | O | CF Address2 |
| 61 | CFAD1 | O | CF Address1 |
| 62 | CFAD0 | O | CF Address0 |
| 63 | CFCDN | I | CF CDN |
| 64 | GPI2 | I | USB current value description ("1": 100mA[Default]; "0": 250mA) |



Figure 3.4 64 Pin (xD/SMC) Assignment Diagram

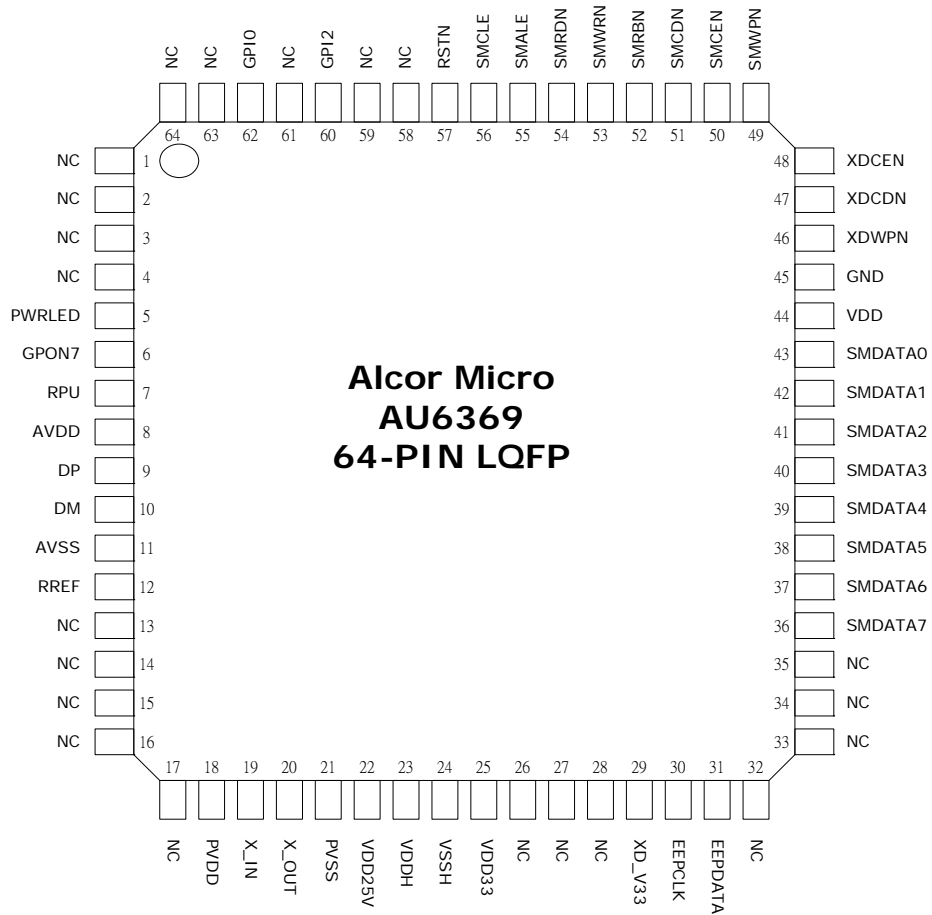




Table 3.4 64 Pin (xD/SMC) Descriptions

| Pin # | Pin Name | I/O | Description |
|-------|----------|-----|---|
| 1 | NC | | |
| 2 | NC | | |
| 3 | NC | | |
| 4 | NC | | |
| 5 | PWRLED | O | Power LED; (Normal:"0"; Suspend"1") |
| 6 | GPON7 | O | Card insert LED; (Card inserted:"0"; |
| 7 | RPU | I | Connected with an 1.5k pull up resistor to 3.3 VDD |
| 8 | AVDD | I | Analog Power 3.3V |
| 9 | DP | I/O | USB DP |
| 10 | DM | I/O | USB DM |
| 11 | AVSS | PWR | Analog Ground |
| 12 | RREF | I | Connected an 1k resistor to GND for impedance match |
| 13 | NC | | |
| 14 | NC | | |
| 15 | NC | | |
| 16 | NC | | |
| 17 | NC | | |
| 18 | PVDD | I | OSC Power 3.3V |
| 19 | X_IN | I | 12 MHz crystal input. |
| 20 | X_OUT | O | 12 MHz crystal output. |
| 21 | PVSS | PWR | OSC Ground |
| 22 | VDD25V | O | Core Power 2.5V |
| 23 | VDDH | I | IO Power 3.3V |
| 24 | VSSH | PWR | IO Ground |
| 25 | VDD33 | I | Switch Power 3.3V |
| 26 | NC | | |
| 27 | NC | | |
| 28 | NC | | |
| 29 | XD_V33 | O | XD Card Power |
| 30 | EEPCLK | O | |
| 31 | EEPDATA | I/O | |
| 32 | NC | | |
| 33 | NC | | |
| 34 | NC | | |
| 35 | NC | | |
| 36 | SMDATA7 | I/O | |
| 37 | SMDATA6 | I/O | |
| 38 | SMDATA5 | I/O | |
| 39 | SMDATA4 | I/O | |
| 40 | SMDATA3 | I/O | |
| 41 | SMDATA2 | I/O | |
| 42 | SMDATA1 | I/O | |
| 43 | SMDATA0 | I/O | |
| 44 | VDD | I | Core power 2.5V |

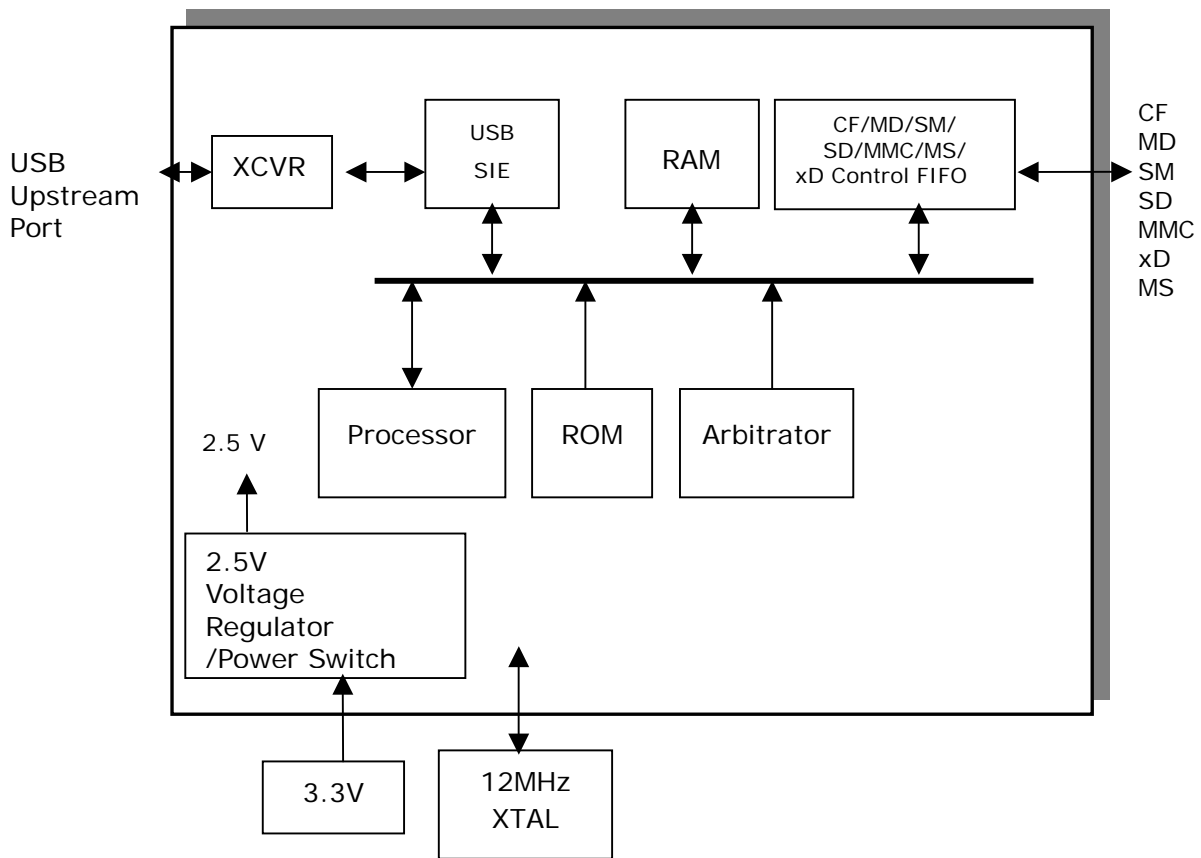


| | | | |
|----|-------|-----|---|
| 45 | GND | PWR | Core Ground |
| 46 | XDWPN | O | |
| 47 | XDCDN | I | |
| 48 | XDCEN | O | |
| 49 | SMWPN | I | |
| 50 | SMCEN | O | |
| 51 | SMCDN | I | |
| 52 | SMRBN | I | External pull up with 470K to 3.3V. |
| 53 | SMWRN | O | |
| 54 | SMRDN | O | |
| 55 | SMALE | O | |
| 56 | SMCLE | O | |
| 57 | RSTN | I | Chip Reset (Reset:"0"; Normal:"1"), pull up with RC |
| 58 | NC | | |
| 59 | NC | | |
| 60 | GPI2 | I | USB current value : 100mA(1)/250mA(0) for USBIF qualification (Pull-High) |
| 61 | NC | | |
| 62 | GPI0 | I | Always pull high |
| 63 | NC | | |
| 64 | NC | | |

4.0 System Architecture and Reference Design

4.1 AU6369 Block Diagram

Figure 4.1 AU6369 Block Diagram





5.0 Electrical Characteristics

5.1 Absolute Maximum Ratings

Table 5.1 Absolute Maximum Ratings

| SYMBOL | PARAMETER | RATING | UNITS |
|------------------|---------------------|------------------------------|-------|
| V _{CC} | Power Supply | -0.3 to V _{CC} +0.3 | V |
| V _{IN} | Input Voltage | -0.3 to 3.6 | V |
| V _{OUT} | Output Voltage | -0.3 to V _{CC} +0.3 | V |
| T _{STG} | Storage Temperature | -40 to 150 | °C |

5.2 Recommended Operating Conditions

Table 5.2 Recommended Operating Conditions

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS |
|------------------|-----------------------|------|-----|------|-------|
| V _{CC} | Power Supply | 3.0 | 3.3 | 3.6 | V |
| V _{DD} | Digital Supply | 2.25 | 2.5 | 2.75 | V |
| V _{IN} | Input Voltage | 0 | 3.3 | 5.2 | V |
| T _{OPR} | Operating Temperature | 0 | 25 | 125 | °C |

5.3 Leakage Current and Capacitance

Table 5.3 General DC Characteristics

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|------------------|-----------------------------------|-------------------------|-----|-----|-----|-------|
| I _{IN} | Input current | no pull-up or pull-down | -10 | ±1 | 10 | μA |
| I _{OZ} | Tri-state leakage current | | -10 | ±1 | 10 | μA |
| C _{IN} | Input capacitance | Pad Limit | | 2.8 | | ρF |
| C _{OUT} | Output capacitance | Pad Limit | | 2.8 | | ρF |
| C _{BID} | Bi-directional buffer capacitance | Pad Limit | | 2.8 | | ρF |



5.4 DC Electrical Characteristics of 3.3V I/O Cells

Table 5.4 DC Electrical Characteristics of 3.3V I/O Cells

| SYMBOL | PARAMETER | CONDITIONS | Limits | | | UNIT |
|-----------------|----------------------------------|--|--------|-----|-----|------|
| | | | MIN | TYP | MAX | |
| V _{CC} | Power supply | 3.3V I/O | 3.0 | 3.3 | 3.6 | V |
| V _{il} | Input low voltage | LVTTTL | | | 0.8 | V |
| V _{ih} | Input high voltage | | 2.0 | | | V |
| V _{ol} | Output low voltage | I _{ol} = 2~16mA | | | 0.4 | V |
| V _{oh} | Output high voltage | I _{oh} = 2~16mA | 2.4 | | | V |
| R _{pu} | Input pull-up resistance | PU=high, PD=low | 40 | 75 | 190 | KΩ |
| R _{pd} | Input pull-down resistance | PU=low, PD=high | 40 | 75 | 190 | KΩ |
| I _{in} | Input leakage current | V _{in} = V _{CC} or 0 | -10 | ±1 | 10 | μA |
| I _{oz} | Tri-state output leakage current | | -10 | ±1 | 10 | μA |



5.5 USB Transceiver Characteristics

Table 5.5 Electrical characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-----------------------|--------------------------|--|------|------|------|---------|
| AVCC | Analog supply voltage | | 3.0 | 3.3 | 3.6 | V |
| VCC | Digital supply voltage | | 2.25 | 2.5 | 2.75 | V |
| I _{CC} | Operating supply current | High speed operating at 480 MHz | | | 73 | mA |
| I _{CC(susp)} | Suspend supply current | In suspend mode, current with 1.5k Ω pull-up resistor on pin RPU disconnected | | | 120 | μ A |

Table 5.6 Static characteristic : Digital pin

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-----------------|---------------------------|------------|---------|------|------|------|
| Input levels | | | | | | |
| V _{IL} | Low-level input voltage | | | | 0.8 | V |
| V _{IH} | High-level input voltage | | 2.0 | | | V |
| Output levels | | | | | | |
| V _{OL} | Low-level output voltage | | | | 0.2 | V |
| V _{OH} | High-level output voltage | | VCC-0.2 | | | V |



AVCC=3.0V~3.6V ; VCC=2.25V~2.75V ; Temp=0°C~115°C

Table 5.7 Static characteristic : Analog I/O pins (DP/DM)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------------|---|--|------|------|------|----------|
| USB2.0 Transceiver (HS) | | | | | | |
| Input Levels (differential receiver) | | | | | | |
| V_{HSDIFF} | High speed differential input sensitivity | $ V_{I(DP)} - V_{I(DM)} $ measured at the connection as application circuit | 300 | | | mV |
| V_{HSCM} | High speed data signaling common mode voltage range | | -50 | | 500 | mV |
| V_{HSSQ} | High speed squelch detection threshold | Squelch detected | | | 100 | mV |
| | | No squelch detected | 150 | | | mV |
| V_{HSDSC} | High speed disconnection detection threshold | Disconnection detected | 625 | | | mV |
| | | Disconnection not detected | | | 525 | mV |
| Output Levels | | | | | | |
| V_{HSOI} | High speed idle level output voltage(differential) | | -10 | | 10 | mV |
| V_{HSOL} | High speed low level output voltage(differential) | | -10 | | 10 | mV |
| V_{HSOH} | High speed high level output voltage(differential) | | -360 | | 400 | mV |
| V_{CHIRPJ} | Chirp-J output voltage (differential) | | 700 | | 1100 | mV |
| V_{CHIRPK} | Chirp-K output voltage (differential) | | -900 | | -500 | mV |
| Resistance | | | | | | |
| R_{DRV} | Driver output impedance | Equivalent resistance used as internal chip only | 3 | 6 | 9 | Ω |
| | | Overall resistance including external resistor | 40.5 | 45 | 49.5 | |
| Termination | | | | | | |
| V_{TERM} | Termination voltage for pull-up resistor on pin RPU | | 3.0 | | 3.6 | V |
| USB1.1 Transceiver (FS/LS) | | | | | | |
| Input Levels (differential receiver) | | | | | | |
| V_{DI} | Differential input sensitivity | $ V_{I(DP)} - V_{I(DM)} $ | 0.2 | | | V |
| V_{CM} | Differential common mode voltage | | 0.8 | | 2.5 | V |



| Input Levels (single-ended receivers) | | | | | | |
|---------------------------------------|---------------------------------|--|-----|--|-----|---|
| V_{SE} | Single ended receiver threshold | | 0.8 | | 2.0 | V |
| Output levels | | | | | | |
| V_{OL} | Low-level output voltage | | 0 | | 0.3 | V |
| V_{OH} | High-level output voltage | | 2.8 | | 3.6 | V |

AVCC=3.0V~3.6V ; VCC=2.25V~2.75V ; Temp=0°C~115°C

Table 5.8 Dynamic characteristic : Analog I/O pins (DP/DM)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|------------------------|--|---|------|------|------|------|
| Driver Characteristics | | | | | | |
| High-Speed Mode | | | | | | |
| t_{HSR} | High-speed differential rise time | | 500 | | | ps |
| t_{HSF} | High-speed differential fall time | | 500 | | | ps |
| Full-Speed Mode | | | | | | |
| t_{FR} | Rise time | CL=50pF ; 10 to 90% of $ V_{OH}-V_{OL} $; | 4 | | 20 | ns |
| t_{FF} | Fall time | CL=50pF ; 90 to 10% of $ V_{OH}-V_{OL} $; | 4 | | 20 | ns |
| t_{FRMA} | Differential rise/fall time matching (t_{FR} / t_{FF}) | Excluding the first transition from idle mode | 90 | | 110 | % |
| V_{CRS} | Output signal crossover voltage | Excluding the first transition from idle mode | 1.3 | | 2.0 | V |
| Low-Speed Mode | | | | | | |
| t_{LR} | Rise time | CL=200pF-600pF ; 10 to 90% of $ V_{OH}-V_{OL} $; | 75 | | 300 | ns |
| t_{LF} | Fall time | CL=200pF-600pF ; 90 to 10% of $ V_{OH}-V_{OL} $; | 75 | | 300 | ns |
| t_{LRMA} | Differential rise/fall time matching (t_{LR} / t_{LF}) | Excluding the first transition from idle mode | 80 | | 125 | % |
| V_{CRS} | Output signal crossover voltage | Excluding the first transition from idle mode | 1.3 | | 2.0 | V |
| V_{OH} | High-level output voltage | | 2.8 | | 3.6 | V |



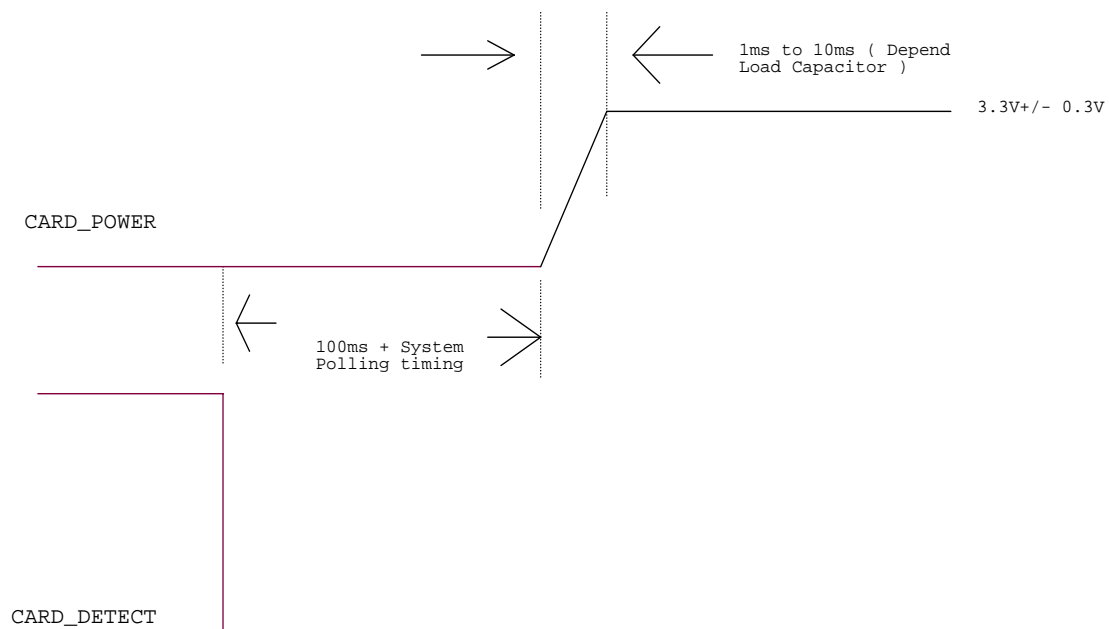
5.6 Power Switch Feature

AU6369 integrates a 3.3V to 2.5V voltage regulator and power switch to replace all MOS chips for flash card power supply.

Card Power Output Current Range

- For MS/SD
 - ◆ MAX: 100mA
- For XD/SMC
 - ◆ MAX: 70mA
- For CF
 - ◆ MAX: 250mA
- Card power output voltage range
 - ◆ MS/XD/SD/SMC/CF: $3.3V \pm 0.3V$
- AU6369 will turn off all of Card Power in suspend mode

Figure 5.1 Card Detect Power-on Timing



6.0 Mechanical Information

Figure 6.1 48 LQFP Mechanical Information Diagram

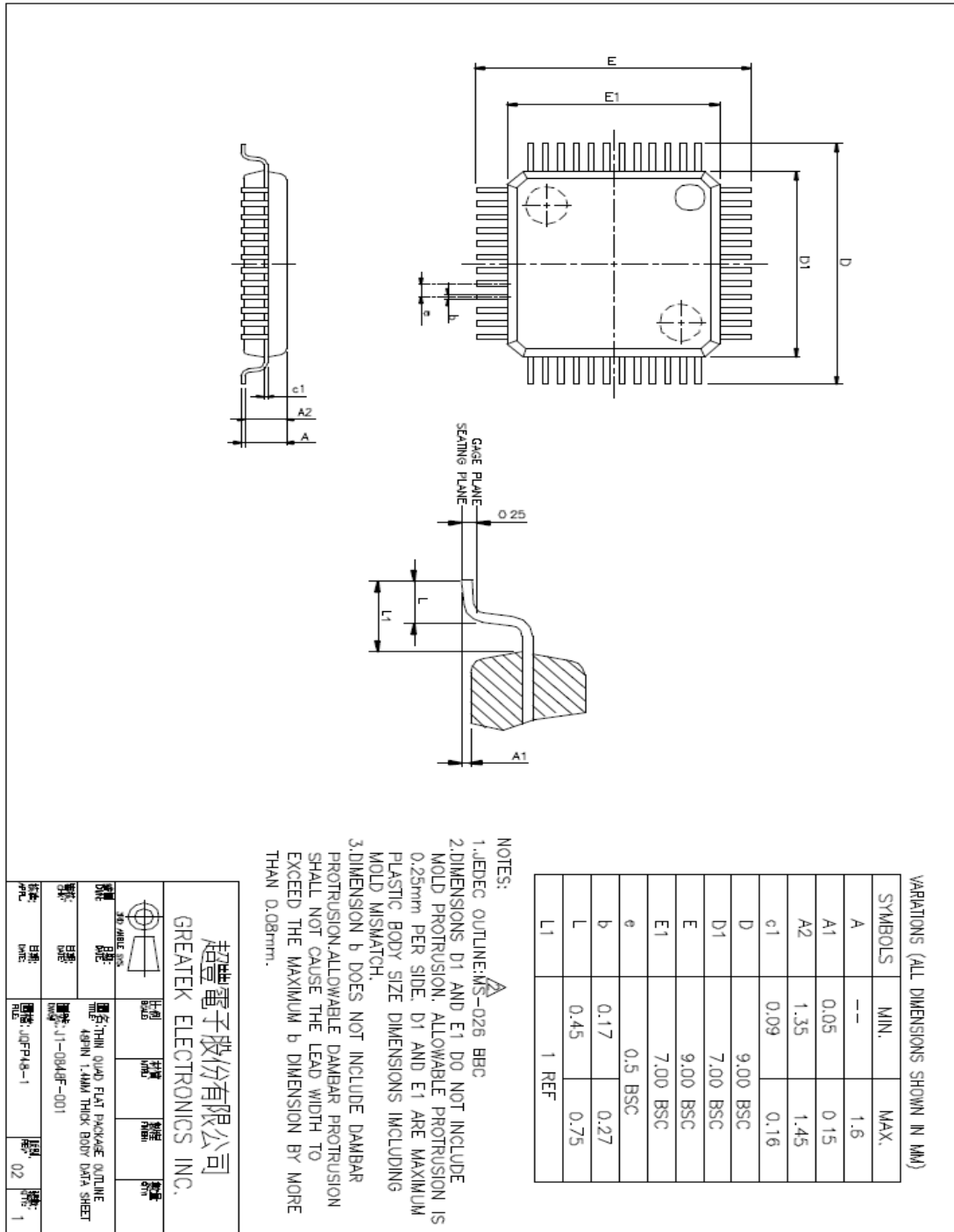
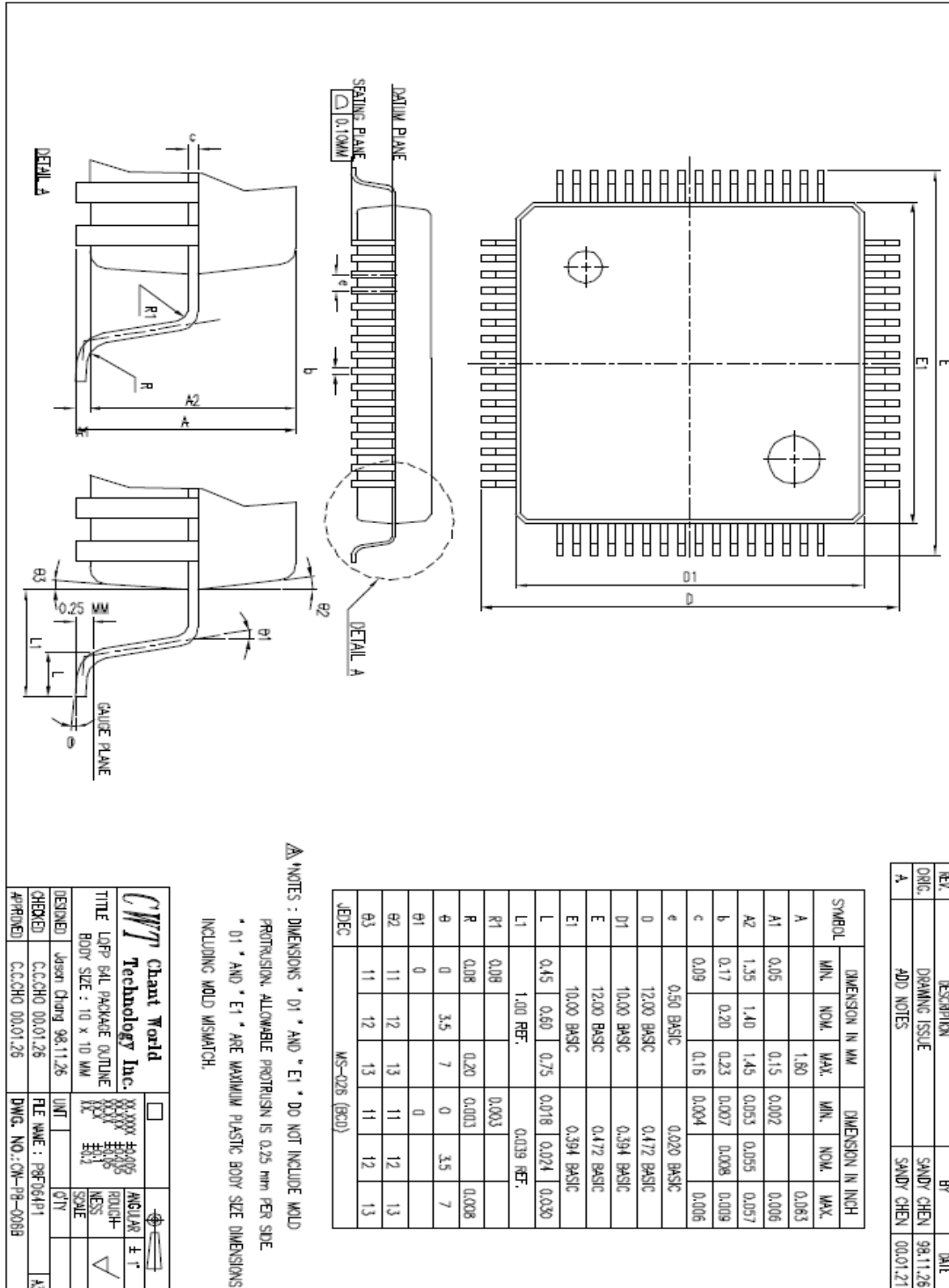


Figure 6.2 64 LQFP Mechanical Information Diagram





7.0 Abbreviations

This chapter lists and defines terms and abbreviations used throughout this specification.

| | |
|-------------|-------------------------------------|
| SIE | Serial Interface Engine |
| CF | Compact Flash |
| MD | Micro Drive |
| SMC | SmartMedia Card |
| MS | Memory Stick |
| SD | Secure Digital |
| MMC | Multimedia Card |
| UTMI | USB Transceiver Macrocell Interface |



【MEMO】

About Alcor Micro, Corp

Alcor Micro, Corp. designs, develops and markets highly integrated and advanced peripheral semiconductor, and software driver solutions for the personal computer and consumer electronics markets worldwide. We specialize in USB solutions and focus on emerging technology such as USB and IEEE 1394. The company offers a range of semiconductors including controllers for USB hub, integrated keyboard/USB hub and USB Flash memory card reader...etc. Alcor Micro, Corp. is based in Taipei, Taiwan, with sales offices in Taipei, Japan, Korea and California.

Alcor Micro is distinguished by its ability to provide innovative solutions for spec-driven products. Innovations like single chip solutions for traditional multiple chip products and on-board voltage regulators enable the company to provide cost-efficiency solutions for the computer peripheral device OEM customers worldwide.