IT8718F

Environment Control – Low Pin Count Input / Output
(EC - LPC I/O)

Preliminary Specification V0.8.2
(For K Version)

ITE TECH. INC.
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1. Features

■ Low Pin Count Interface
  - Complies with Intel Low Pin Count Interface Specification Rev. 1.1
  - Supports LDRQ#, SERIRQ protocols
  - Supports PCI PME# Interfaces

■ ACPI & LANDesk Compliant
  - ACPI V.2.0 compliant
  - Register sets compatible with “Plug and Play ISA Specification V. 1.0a”
  - LANDesk 3.X compliant
  - Supports 12 logical devices

■ Enhanced Hardware Monitor
  - Built-in 8-bit Analog to Digital Converter
  - 3 thermal inputs from either remote thermal resistor or thermal diode or diode-connected transistor
  - 8 voltage monitor inputs (VBAT is measured internally.)
  - 1 chassis open detection input with low power Flip-Flop dual-powered by battery or VCCH
  - Watch Dog comparison of all monitored values
  - Provides VID0 – VID7 support for the CPU
  - SST/PECI/AMDSI I/F support.

■ Fan Speed Controller
  - Provides fan on-off and PWM control
  - Supports 3 programmable Pulse Width Modulation (PWM) outputs
  - 128 steps of PWM modes
  - Monitors 5 fan tachometer inputs

■ SmartGuardian Controller
  - Provides programmably automatic fan speed control
  - Supports mix-and-match for temperature inputs and fan speed control outputs
  - Overrides fan speed controller during catastrophic situations
  - Provides audible over temperature warning

■ Two 16C550 UARTs
  - Supports two standard Serial Ports
  - Supports IrDA 1.0/ASKIR protocols

■ Consumer Remote Control (TV remote) IR with Power-up Feature

■ IEEE 1284 Parallel Port
  - Standard mode -- Bi-directional SPP compliant
  - Enhanced mode -- EPP V. 1.7 and V. 1.9 compliant
  - High speed mode -- ECP, IEEE 1284 compliant
  - Back-drive current reduction
  - Printer power-on damage reduction
  - Supports POST (Power-On Self Test) Data Port

■ Floppy Disk Controller
  - Supports two 360K/720K/1.2M/1.44M/2.88M floppy disk drives
  - Enhanced digital data separator
  - 3-Mode drives supported
  - Supports automatic write protection via software

■ Keyboard Controller
  - 8042 compatible with PS/2 keyboard and mouse
  - Hardware KBC
  - GateA20 and Keyboard reset output
  - Supports multiple keyboard power-on events (Any Key, 2-5 sequential keys, 1-3 simultaneous keys)
  - Supports mouse double-click and/or mouse move power on events
  - Supports Keyboard and Mouse I/F hardware auto-swap

■ 48 General Purpose I/O Pins
  - Input mode supports either switch de-bounce or programmable external IRQ input routing
  - Output mode supports 2 sets of programmable LED blinking periods

■ Serial Flash I/F for BIOS
  - Supports 8 M-bit SPI I/F

■ Watch Dog Timer
  - Time resolution 1 minute or 1 second, maximum 65535 minutes or 65535 seconds
  - Output to KRST# and PWROK when expired

■ ITE’s Innovative Automatic Power-failure Resume and Power Button De-bounce

■ Dedicated Infrared Pins

■ VCCH and Vbat Supported

■ Built-in 32.768 KHz Oscillator

■ Single 24/48 MHz Clock Input
IT8718F (For K Version)

- +5V Power Supply
- 128-pin QFP
2. General Description

The IT8718F is a highly integrated Super I/O using the Low Pin Count Interface. The IT8718F provides the most commonly used legacy Super I/O functionality plus the latest Environment Control initiatives, including H/W Monitor, Fan Speed Controller. The device’s LPC interface complies with Intel “LPC Interface Specification Rev. 1.0”. The IT8718F is ACPI & LANDesk compliant.

The IT8718F features an enhanced hardware monitor providing 3 thermal inputs from remote thermal resistors, or thermal diode or diode-connected transistor (2N3904). The device employs ITE’s innovative intelligent automatic Fan ON/OFF & speed control functions (SmartGuardian) to protect the system while reducing the system noise and power consumption.

The IT8718F contains one Fan Speed Controller. The fan speed controller can control up to 3 fan speeds through three separate 128 step Pulse Width Modulation (PWM) output pins and monitor up to five FANs’ Tachometer inputs. It also features two 16C550 UARTs, one IEEE 1284 Parallel Port, one Floppy Disk Controller and one Keyboard Controller.

Integrated in the IT8718F are 7 logical devices. One high-performance 2.88MB floppy disk controller, with digital data separator, supporting two drives in 360K/ 720K/ 1.2M/ 1.44M/ 2.88M format. One multi-mode high-performance parallel port supporting the bi-directional Standard Parallel Port (SPP), the Enhanced Parallel Port (EPP V. 1.7 and EPP V. 1.9), and the IEEE 1284 compliant Extended Capabilities Port (ECP). Two 16C550 standard compatible enhanced UARTs perform asynchronous communication, and also support an IR interface. The device also features one fan speed controller which controls 3 and monitors 5 fans, and 6 GPIO ports controlling up to 48 GPIO pins. The IT8718F also has an integrated Keyboard Controller.

These 7 logical devices can be individually enabled or disabled via software configuration registers. The IT8718F utilizes power-saving circuitry to reduce power consumption, and once a logical device is disabled the inputs are inhibited with the clock disabled and the outputs are tri-stated. The device requires a single 24/48 MHz clock input and operates with +5V power supply. The IT8718F is available in 128-pin QFP (Quad Flat Package).
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3. Block Diagram

![Block Diagram]

- **LPC Interface & Plug-and-Play Registers**
- **Central Interface Bus**
- **LPC I/F**
- **SERIRQ**
- **PME#**
- **LDRQ#**
- **Central Interface Bus**

- **24 / 48 MHz OSC.**
- **Serial Port I/F**
- **IR I/F**
- **Serial Port I/F**
- **Parallel Port I/F**
- **Floppy Drive I/F**
- **16C550 UART 1**
- **IrDA 1.0 /ASKIR**
- **16C550 UART 2**
- **IEEE1284 Parallel Port**
- **Floppy Disk Controller**
- **8-bit ADC**

- **Environment Controller**
  - Monitored Voltages
  - Fan Tachometers
  - Thermal Resistor
  - Thermal Diode

- **Keyboard Controller**
- **Mouse I/F**
- **Keyboard I/F**
- **CIR I/F**
- **I/O Ports**
- **Serial Flash I/F**
- **Fan I/F**
- **Thermal Sensor**
- **General Purpose I/O**
- **Serial Flash I/F**
- **Fan Speed Controller**

- **Consumer I/R**
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# Package Information

## 4. Package Information

**QFP 128L Outline Dimensions**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Dimension in inches</th>
<th>Dimension in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A₁</td>
<td>0.010</td>
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<tr>
<td>A₂</td>
<td>0.107</td>
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<tr>
<td>b</td>
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<td>D</td>
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<tr>
<td>D₁</td>
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<td>0.063 BSC</td>
<td>-</td>
</tr>
<tr>
<td>y</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>θ</td>
<td>0°</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notes:**

1. Dimensions D₁ and E₁ do not include mold protrusion. But mold mismatch is included.
2. Dimensions b does not include dambar protrusion.
3. Controlling dimension: millimeter

DI-QFP128(14*20)v2

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5. Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Package</th>
</tr>
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<tbody>
<tr>
<td>IT8718F</td>
<td>128 QFP</td>
</tr>
</tbody>
</table>

ITE also provides RoHS compliant component. Please mark "-L" at the end of the Part No. when the parts ordered are RoHS compliant.
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6. Top Marking Information

![Top Marking Information Diagram]

- PART NO.: IT8718F-S
- DATE CODE: 0607-XXX (The seventh week of the year 2006)
- LOTID: XXXXX L
- TRACKING CODE
- FOR LEAD FREE PACKAGE (OPTIONAL)
0. PARTIES
ITE Tech. Inc. ("Seller") is a company headquartered in Taiwan, Republic of China, and incorporated under laws of Republic of China. Buyer is a company or an entity, purchasing product from ITE Tech. Inc.

1. ACCEPTANCE OF TERMS
BUYER ACCEPTS THESE TERMS (i) BY WRITTEN ACCEPTANCE (BY PURCHASE ORDER OR OTHERWISE), (ii) BY FAILURE TO RETURN GOODS DESCRIBED ON THE FACE OF THE PACKING LIST WITHIN FIVE DAYS OF THEIR DELIVERY.

2. DELIVERY
(a) Delivery will be by Common Carrier (Incoterms), Seller's warehouses, Science-Based Industrial Park, Hsinchu, Taiwan.
(b) Title to the goods and the entire risk will pass to Buyer upon delivery to carrier.
(c) Shipment are subject to availability. Seller shall make every reasonable effort to meet the date(s) quoted or acknowledged, and if Seller makes such effort, Seller will not be liable for delays.

3. TERMS OF PAYMENT
(a) Terms are as stated on Seller's quotation, or if none are stated, net thirty (30) days. All accounts past due will incur a monthly charge at the rate of one percent (1%) per month.
(b) Seller reserves the right to charge credit terms at any time in its discretion.

4. LIMITED WARRANTY
Seller warrants that the goods sold will be free from defects in material and workmanship and comply with Seller's applicable published specifications for a period of ninety (90) days from the date of Seller's delivery. Within the warranty period and by obtaining a return number from Seller, Buyer may request repair or replacement for defective goods.

5. LIMITATION OF LIABILITY
Seller shall have no obligation to hold any information in confidence except as provided in a separate nondisclosure agreement signed by both parties.

6. ATTORNEYS' FEES
In the event of litigation involving and/or relating to the enforcement or interpretation of the contract and/or any goods sold under it, Seller may at any time make substitutions for product ordered which do not materially and adversely affect overall performance with the then current specifications in the typical and intended use. Seller reserves the right to return deliveries and shipments and alter specifications and prices without notice. Buyer shall verify that the literature and information is current before purchasing.

7. CANCELLATION
The purchase contract may not be canceled by Buyer except with written consent by Seller and Buyer's payment of reasonable cancellation charges (including but not limited to expenses already incurred for labor and material, overhead, commitments made by Seller, and a reasonable profit).

8. INDEMNIFICATION
Seller will at its own expense, assist Buyer with technical support and information in connection with any claim that any parts as shipped by Seller under the purchase order infringe any valid and enforceable copyright, or trademark, provided however, that Buyer (i) gives Seller immediate written notice to Seller; (ii) permits Seller to participate in and to defend if Seller requests to do so; and (iii) gives Seller all needed information, assistance and authority. However, Seller will not be responsible for infringements resulting from anything not entirely manufactured by Seller, or from any combination with products, equipment, or materials not furnished by Seller. Seller will have no liability with respect to intellectual property matters arising out of products made by Buyer's specifications, code, or designs.

9. NO CONFIDENTIAL INFORMATION
There shall be no obligation to hold any information in confidence except as provided in a separate nondisclosure agreement signed by both parties.

10. ENTIRE AGREEMENT
These terms and conditions are the entire agreement and the only representations and understandings between Seller and Buyer, and no addition, deletion or modification shall be binding on Seller unless expressly agreed to in writing and signed by an officer of Seller.

11. APPLICABLE LAW
The contract, performance and dispute arising out of or relating to goods involved will be governed by the laws of R.O.C. (Taiwan, Republic of China), without reference to the U.N. Convention on Contracts for the International Sale of Goods or conflict of laws principles. Buyer agrees to litigate its disputes to comply with applicable laws in connection with the purchase, use, sale of the goods, provided hereunder and to indemnify Seller for any failure by Buyer to so comply. Without limiting the foregoing, Buyer certifies that no technical data or direct products thereof will be made available or re-exported, directly or indirectly, to any country to which such export or access is prohibited or restricted under R.O.C. laws or U.S. laws or regulations, unless prior authorization is obtained from the appropriate official or agency of the government as required under R.O.C. or U.S. laws or regulations.

12. JURISDICTION AND VENUE
The parties hereto agree that the Republic of China, Republic of China, will have the sole and exclusive jurisdiction and venue over any dispute arising out of or relating to the contract or any sale of goods hereunder. Buyer hereby consents to the jurisdiction of such courts.

13. ATTORNEYS' FEES
Reasonable attorneys' fees and costs will be awarded to the prevailing party in the event of litigation involving and/or relating to the enforcement or interpretation of the contract and/or any goods sold under it.

ITE TECH. INC. TERMS AND CONDITIONS OF SALE (Rev: 2005)