IT8783F

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

Preliminary Specification V0.2
(For A Version)

ITE TECH. INC.
## CONTENTS

1. Features ...................................................................................................................... 1
2. General Description .................................................................................................... 3
3. Block Diagram ........................................................................................................... 5
4. Package Information .................................................................................................. 7
5. Ordering Information .................................................................................................. 9
6. Top Marking Information .......................................................................................... 11
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, the temperature sensor of the current mode
  - 8 voltage monitor inputs (VBAT 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
  - SST/PECI I/F support
  - H/W Smart fan control

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

- **Six 16C550 UARTs**
  - Supports six standard Serial Ports
  - Supports IrDA 1.0/ASKIR protocols
  - Supports CIR

- **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 for PS/2 keyboard and mouse
  - Hardware KBC
  - GateA20 and Keyboard reset output
  - Supports multiple keyboard power-on events (Any keys, 2-5 sequential keys, 1-3 simultaneous keys)
  - Supports mouse double-click and/or mouse move power on events

- **40 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
  - 8 GPIO Pins in the same group

- **Serial Flash I/F for BIOS**
  - Supports 8 M-bit of SPI I/F
  - Supports H/W lock

- **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**

- **VCCH and Vbat Supported**

- **Single 24/48 MHz Clock Input**

- **Built-in 32.768 kHz Oscillator**

- **+5V/3.3V Power Supply**

- **128-pin QFP**
This page is intentionally left blank.
2. General Description

The IT8783F is a highly integrated Super I/O using the Low Pin Count Interface. It provides the most commonly used legacy Super I/O functionality plus the latest Environment Control initiatives, including H/W Monitor and Fan Speed Controller. The device’s LPC interface complies with Intel “LPC Interface Specification Rev. 1.1”. The IT8783F is ACPI & LANDesk compliant.

The IT8783F features an enhanced hardware monitor providing three thermal inputs from remote thermal resistors, or thermal diode or diode-connected transistor (2N3904).

The IT8783F contains one Fan Speed Controller, which can control up to three fan speeds through three separate 128 steps of Pulse Width Modulation (PWM) output pins and monitor up to three FANs' Tachometer inputs. It also features six 16C550 UARTs, one IEEE 1284 Parallel Port, one Floppy Disk Controller and one Keyboard Controller.

Integrated in the IT8783F are 12 logical devices, which can be individually enabled or disabled via software configuration registers, 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), Enhanced Parallel Port (EPP V. 1.7 and EPP V. 1.9), and IEEE 1284 compliant Extended Capabilities Port (ECP), six 16C550 standard compatible enhanced UARTs performing asynchronous communication, and supporting an IR interface. The device also features one fan speed controller controlling and monitoring three fans, six GPIO ports controlling up to 40 GPIO pins, and one integrated Keyboard Controller.

The IT8783F 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/3.3V power supply. The IT8783F is available in 128-pin QFP (Quad Flat Package).
This page is intentionally left blank.
3. Block Diagram

[Block Diagram Image]

- 24/48 MHz OSC.
- Serial Port I/F
- IR I/F
- CIR I/F
- Serial Port I/F
- Parallel Port SMBG I/F
- Floppy Drive I/F
- Monitored Voltages
- Fan Tachometers
- Thermal Resistor
- Thermal Diode
- Mouse I/F
- Keyboard I/F
- Serial Port I/F
- General Purpose I/O
- Serial Flash I/F
- Fan Speed Controller
- I/O Ports
- Serial Flash I/F
- Fan I/F
- Thermal Sensor

LPC Interface & Plug-and-Play Registers

16C550 UART 3/5
IrDA 1.0/ASKIR
CIR
16C550 UART 4/6
IEEE 1284 Parallel Port
Floppy Disk Controller

8-bit ADC

Environment Controller
This page is intentionally left blank.
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>
<td>-</td>
</tr>
<tr>
<td>A₂</td>
<td>0.107</td>
<td>0.112</td>
</tr>
<tr>
<td>b</td>
<td>0.007</td>
<td>0.009</td>
</tr>
<tr>
<td>c</td>
<td>0.004</td>
<td>-</td>
</tr>
<tr>
<td>D</td>
<td>0.906</td>
<td>0.913</td>
</tr>
<tr>
<td>D₁</td>
<td>0.783</td>
<td>0.787</td>
</tr>
<tr>
<td>E</td>
<td>0.669</td>
<td>0.677</td>
</tr>
<tr>
<td>E₁</td>
<td>0.547</td>
<td>0.551</td>
</tr>
<tr>
<td>e</td>
<td>0.020 BSC</td>
<td>-</td>
</tr>
<tr>
<td>L</td>
<td>0.029</td>
<td>0.035</td>
</tr>
<tr>
<td>L₁</td>
<td>0.063 BSC</td>
<td>-</td>
</tr>
<tr>
<td>y</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>θ</td>
<td>0 0</td>
<td>7 0</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
This page is intentionally left blank.
5. Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT8783F</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."
This page is intentionally left blank.
6. Top Marking Information

PART NO. IT8783F
DATE CODE 0607-XXX
LOTID XXXXX L

TRACKING CODE
FOR LEAD-FREE PACKAGE (OPTIONAL)

(The seventh week of the year 2006)
ITE TECH. INC. TERMS AND CONDITIONS OF SALE

1. ACCEPTANCE OF TERMS
   Buyer accepts these terms by written acceptance by purchase order or otherwise, or by failure to return Good(s) described in the Facing Page(s) within 30 days of delivery.

2. DELIVERY
   Delivery is F.O.B. the factory (looming), unless otherwise stipulated in a purchase order. Buyer to sign delivery docket and acknowledge receipt. If delivery is not acceptable due to damage or defect, Buyer shall immediately notify Seller and return the Good(s) at Buyer's expense.

3. TERMS OF PAYMENT
   Terms are Net 30 unless otherwise specified. Seller reserves the right to charge interest on overdue balances at the rate of 1.5% per month. If Buyer defaults in any payment, Seller may require cash with order for any further shipments.

4. LIMITED WARRANTY
   Seller warrants to Buyer that the Good(s) will be free from defects in material and workmanship for a period of one year from the date of shipment. Buyer shall inspect the Good(s) immediately upon delivery and notify Seller of any defects within 10 days of delivery. Seller shall at its option repair, replace, or refund the price of any Good(s) that is found to be defective.

5. LIMITATION OF LIABILITY
   Seller will not be responsible for any damage or loss caused by the failure of the Good(s) or any portion thereof, even if Seller has been advised of the possibility of such damage or loss.

6. INDEMNIFICATION
   Buyer agrees to indemnify and hold Seller harmless from any claims, losses, damages, costs, or expenses incurred by Buyer as a result of any claim, suit, or action brought against Buyer arising out of the use or handling of the Good(s) or any portion thereof.

7. TERMINATION
   Seller may, at its option, terminate this agreement in whole or in part if Buyer shall fail to comply with any provisions of this agreement.

8. TERMINATION
   Seller reserves the right to terminate this agreement immediately if Buyer shall fail to pay any invoice within 30 days of the due date.

9. CONFIDENTIAL INFORMATION
   Seller will keep all information received from Buyer confidential and will not disclose any such information to any third party without Buyer's prior written consent.

10. APPLICABLE LAW
    This agreement is governed by the laws of the State of California, and the parties agree to submit to the jurisdiction of the federal and state courts located in San Francisco, California.

11. JURISDICTION AND VENUE
    Any action or proceeding arising out of or relating to this agreement shall be brought in the federal or state courts located in San Francisco, California.

12. ATTORNEYS' FEES
    In the event that any legal action or proceeding is brought by or on behalf of Buyer or Seller to enforce any provision of this agreement, the prevailing party shall be entitled to recover its costs, including reasonable attorneys' fees.

13. INTERPRETATION
    The parties agree to the interpretation that these terms and conditions are intended to reflect the parties' agreement as of the date of this agreement.

Buyer: [Signature]

ITE TECH. INC. [Signature]