AT73C239-EK1 Evaluation Board

User Guide

Table of Contents

Section 1

Overview 1-1

1.1 Scope 1-1
1.2 Deliverables 1-1
1.3 AT73C239-EK1 Evaluation Board 1-1

Section 2

Setting Up the AT73C239-EK1 Board 2-1

2.1 Electrostatic Warning 2-1
2.2 System Requirements 2-1
2.3 Hardware Settings 2-1
2.4 Layout 2-2

Section 3

AT73C239-EK1 Board Description 3-1

3.1 AT73C239 Device 3-1
3.2 Power Supply Circuitry 3-4
3.3 Two-wire Interface 3-5

Section 4

Using the AT73C239-EK1 4-1

4.1 Getting Started 4-1
4.2 Electrical Parameter Measurement 4-2
4.3 AT73C239 Test Interface 4-4
4.4 Quick Start 4-5

Section 5

Technical Specifications 5-1

5.1 Specifications 5-1

Section 6

PCB Schematics 6-1

Section 7

Revision History 7-1

7.1 Revision History 7-1

Section 1
Overview

1.1 Scope

This document describes the AT73C239-EK1 dedicated to the AT73C239 product. This board is designed to allow an easy evaluation of the product using demonstration software.

To increase its capabilities for demonstration, this standalone board has several serial interfaces (Parallel Port and Two-wire Interface).

This user guide acts as a general getting started guide as well as a complete technical reference manual for advanced users.

This document refers the AT73C239 datasheet, literature number 6201, available at www.atmel.com.

1.2 Deliverables

The AT73C239-EK1 package contains the following items:

- An AT73C239-EK1 board
- One software CD

1.3 AT73C239-EK1 Evaluation Board

The AT73C239-EK1 provides the following features:

- Power supply
  - External power supplies (VIN and VBAT)
  - Transformer (5.5V up to 9V with 100mA minimum)
- Serial interfaces
  - One Parallel Port
  - One Two-wire Interface
- On-board resources
  - 1 LDO - 2.75V/1.8V - 25mA
  - 1 LDO - 1.8V/1.5V - 30mA
  - 1 LDO - 1.8V/1.5V/1.23V - 60mA
  - 1 LDO - 1.8V/1.5V/1.2V - 2mA
  - 1 Reset Generator

- Power supply select I2 button
  - Input power supply selection for LDO4

Section 2

Setting Up the AT73C239-EK1 Board

2.1 Electrostatic Warning

The AT73C239-EK1 evaluation board is shipped in protective anti-static packaging. The board must not be subjected to high electrostatic potentials. A grounding strap or similar protective device should be worn when handling the board. Avoid touching the component pins or any other metallic element.

2.2 System Requirements

For AT73C239-EK1 tools, the minimum hardware and software PC requirements are:

- Intel Pentium II processor
- 64 MB RAM
- 70 MB free hard disk space (for AT73C239 Demokit installation)
- Windows® 95/98/2000/ME/XP and Windows NT® 4.0 or higher (for Windows 2000/XP/NT 4.0 the software DLPORTIO.exe must be installed)
- Parallel port (COM port)

2.3 Hardware Settings

External DC power supplies are required:

- Transformer 5.5V up to 9V DC (100mA minimum)
- Power supply for VIN input 3V up to 3.6V DC
- Power supply for VBAT input: 2.5V up to 3.6V DC

2.4 Layout

Figure 2-1. AT73C239-EK1 Top View

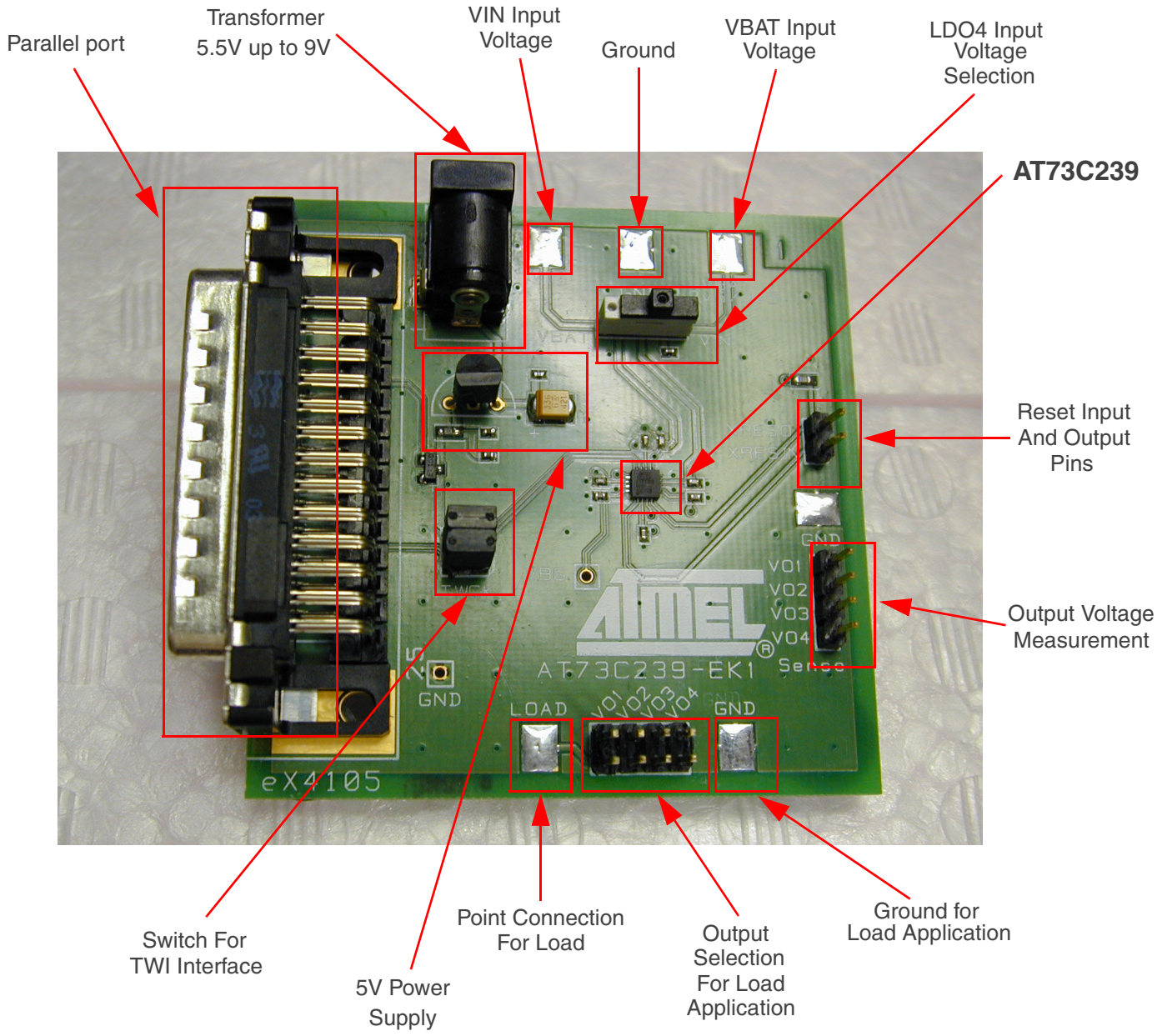


Figure 2-2. AT73C239-EK1 Serigraphy - Top View

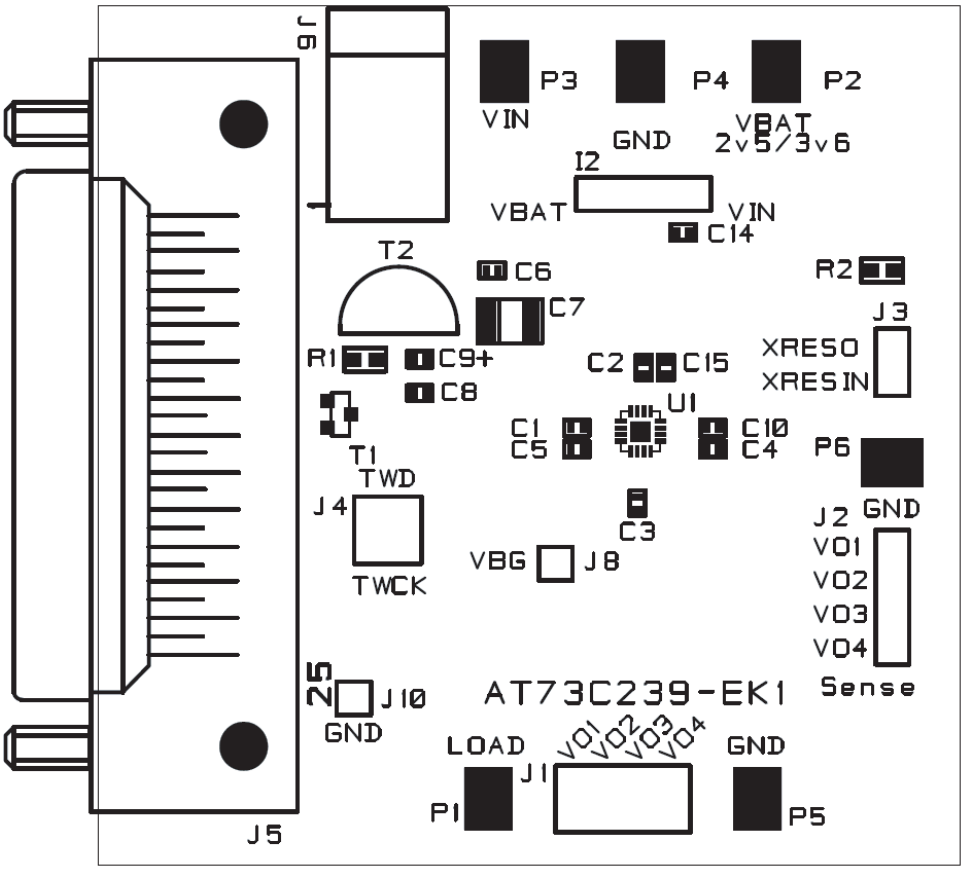


Figure 2-3. PCB Layout - Top Layer

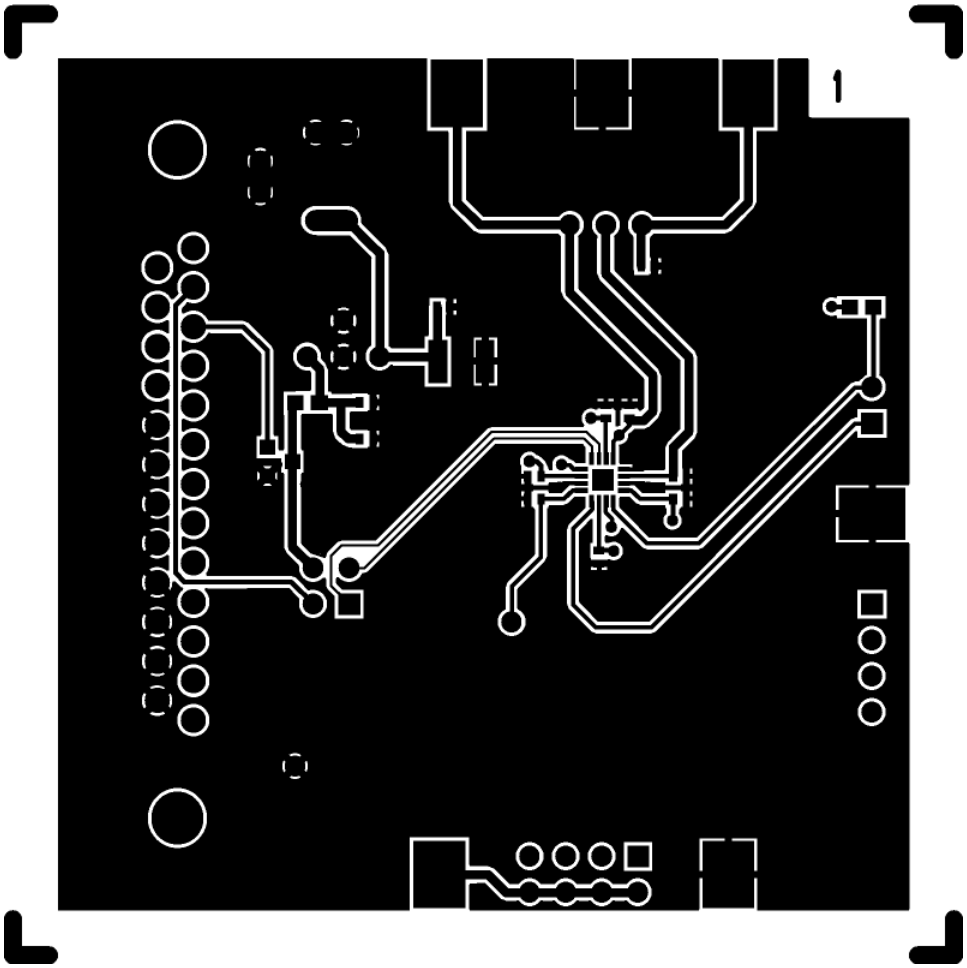
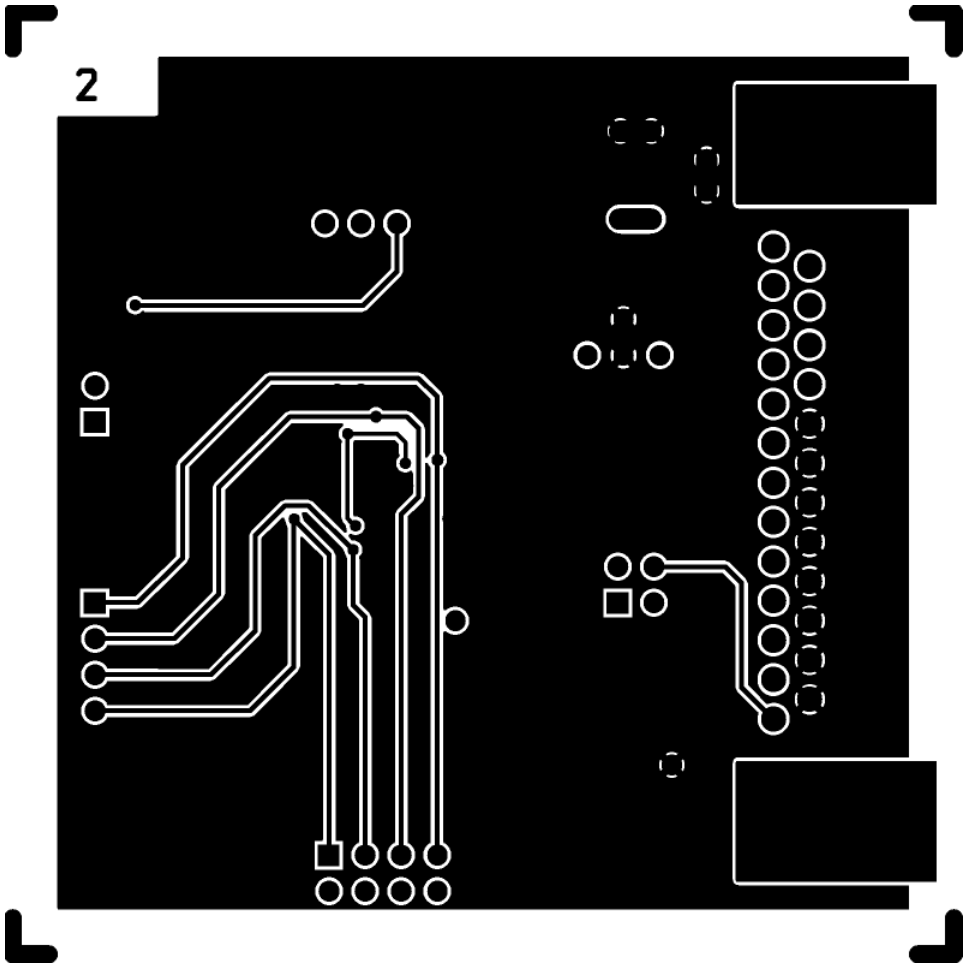


Figure 2-4. PCB Layout - Bottom Layer



Section 3

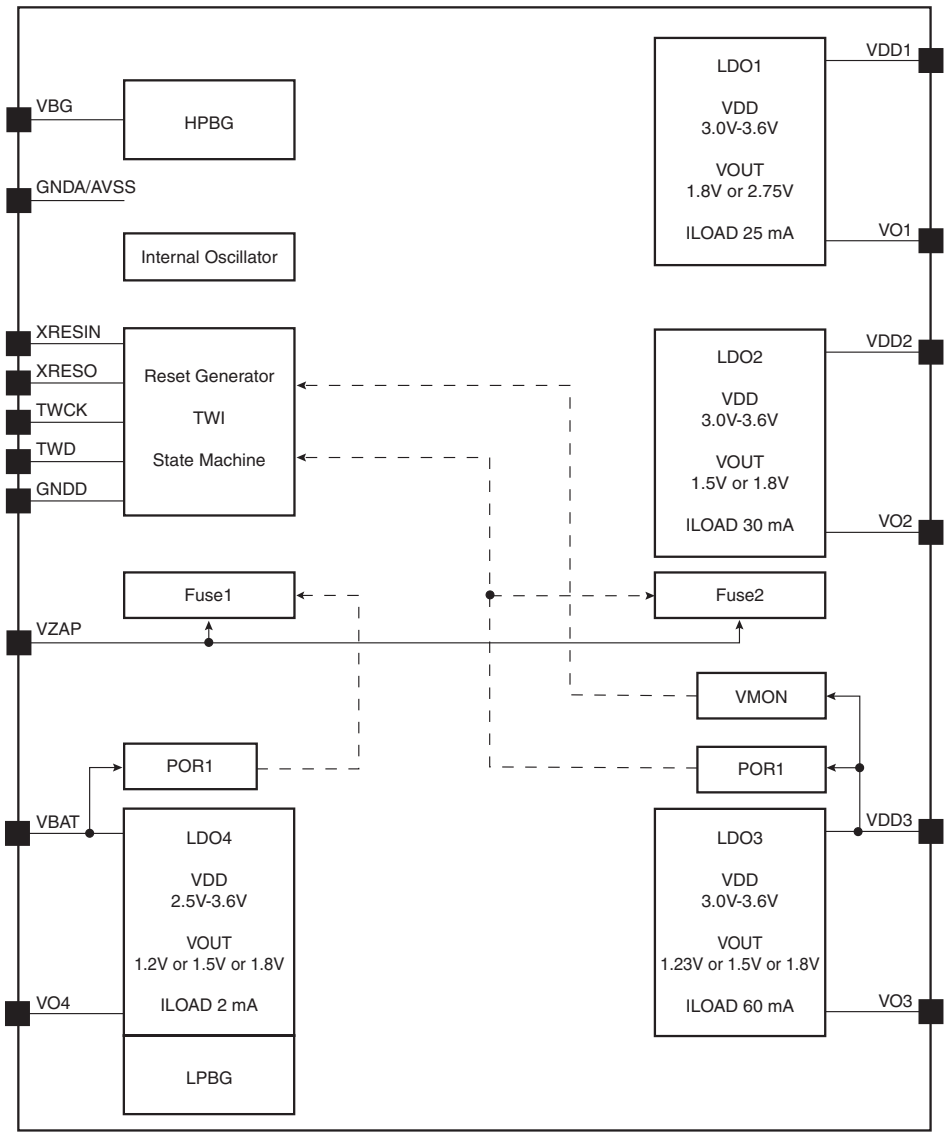
AT73C239-EK1 Board Description

3.1 AT73C239 Device

- Main supply 3.0V to 3.6V
- Independent 2.5V to 3.6V auxiliary supply for backup section
- Internal state machine for startup
- 25 mA/1.8V - 2.75V linear low drop out regulator with high PSRR and low noise (LDO1)
- 30 mA/1.5V - 1.8V linear low drop out regulator with high PSRR and low noise (LDO2)
- 60 mA/1.23V - 1.5V - 1.8V linear low drop out regulator with high PSRR (LDO3)
- 2 mA/1.2V - 1.5V - 1.8V linear low drop out regulator with very low quiescent current (LDO4)
- HPBG economic high performance voltage reference for LDO supply to RF sections
- LPBG low power voltage reference to LDO4 during backup battery operation
- Internal reset generator for main supply
- Additional external reset input
- Two-wire Interface (TWI) for independent activation and output voltage programming for each LDO
- Available in 3 x 3 x 0.9 mm 16-pin QFN package
- Applications: GPS Modules, WLAN Devices, Wireless Modules

3.1.1 Block Diagram

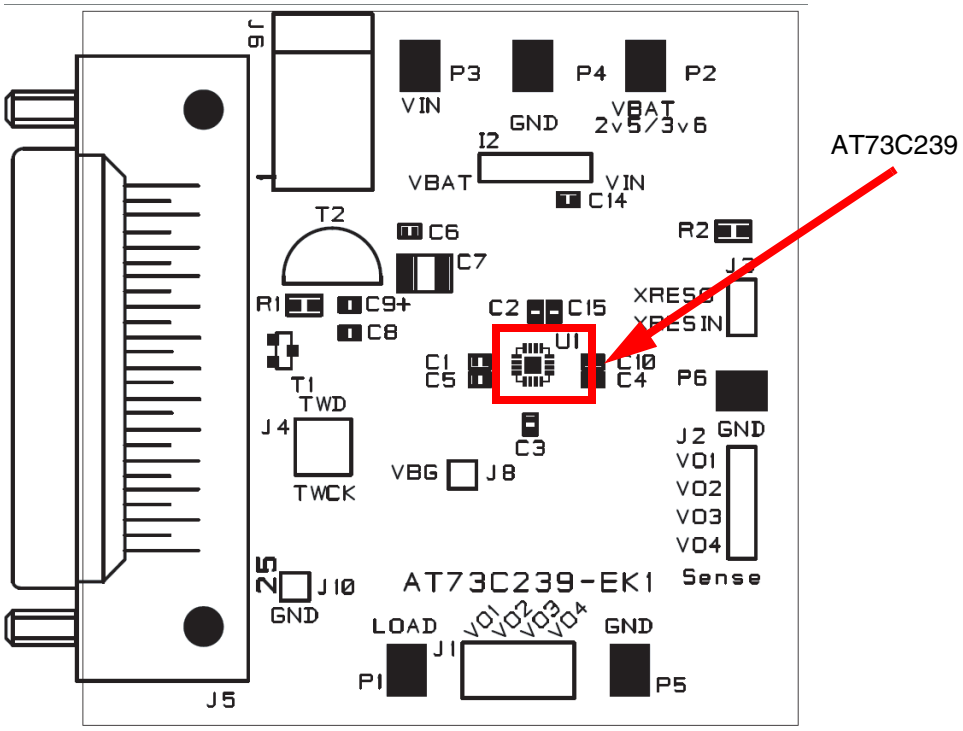
Figure 3-1. AT73C239 Functional Block Diagram



3.1.2 Board Position

The AT73C239 is located in the center of the AT73C239-EK1.

Figure 3-2 . AT73C239 Placement



3.2 Power Supply Circuitry

Three power supplies are required:

- Transformer with 5.5V min to 9V max
- External VIN with 3V min to 3.6 max
- External VBAT with 2.5V min to 3.6V max

The power supply voltage is regulated with on-board circuitry. Input voltage on this connector should be included between 5.5V and 9V.

This power supply input is ***NOT protected*** against polarization inversion.

Figure 3-3. AT73C239 Power Supply

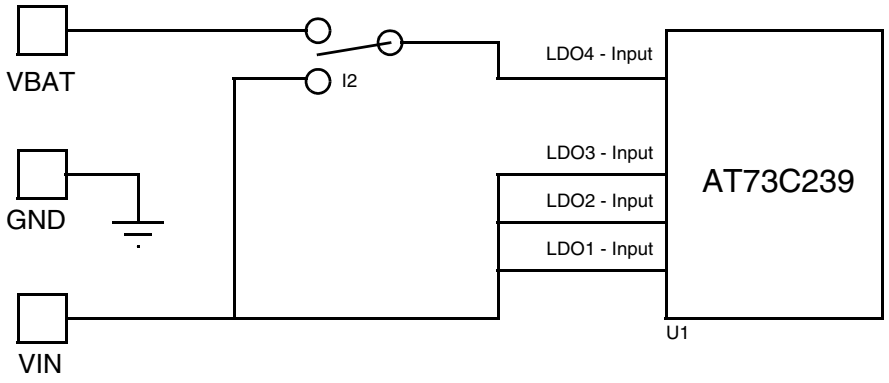
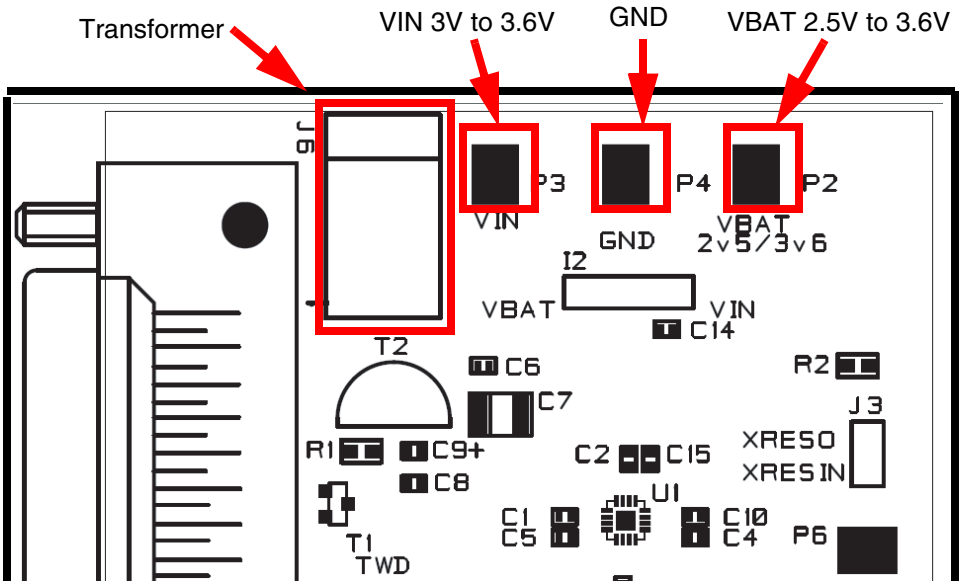
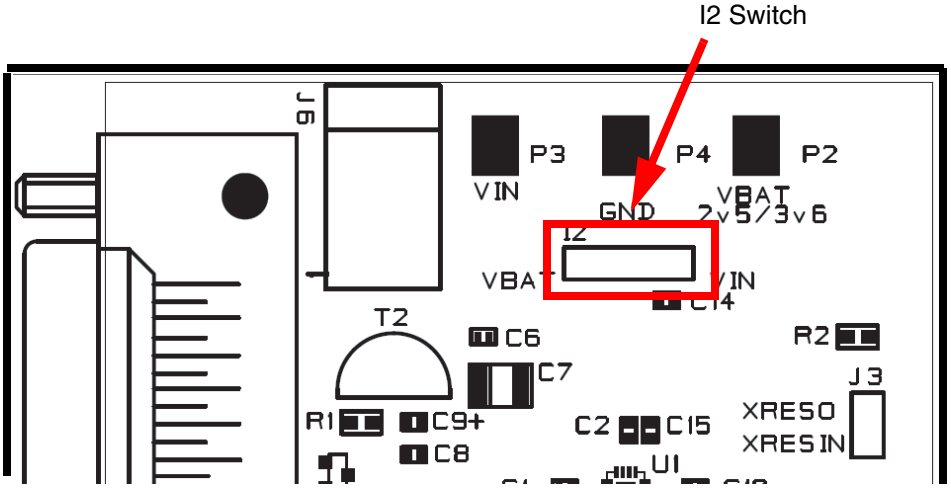


Figure 3-4 . Power Supply Connector



The on-board power supply circuitry allows various power supply configurations. The power supply selection for LDO4 Input Voltage is performed using the I2 switch.

Figure 3-5 . LDO4 Power Supply Input Configuration

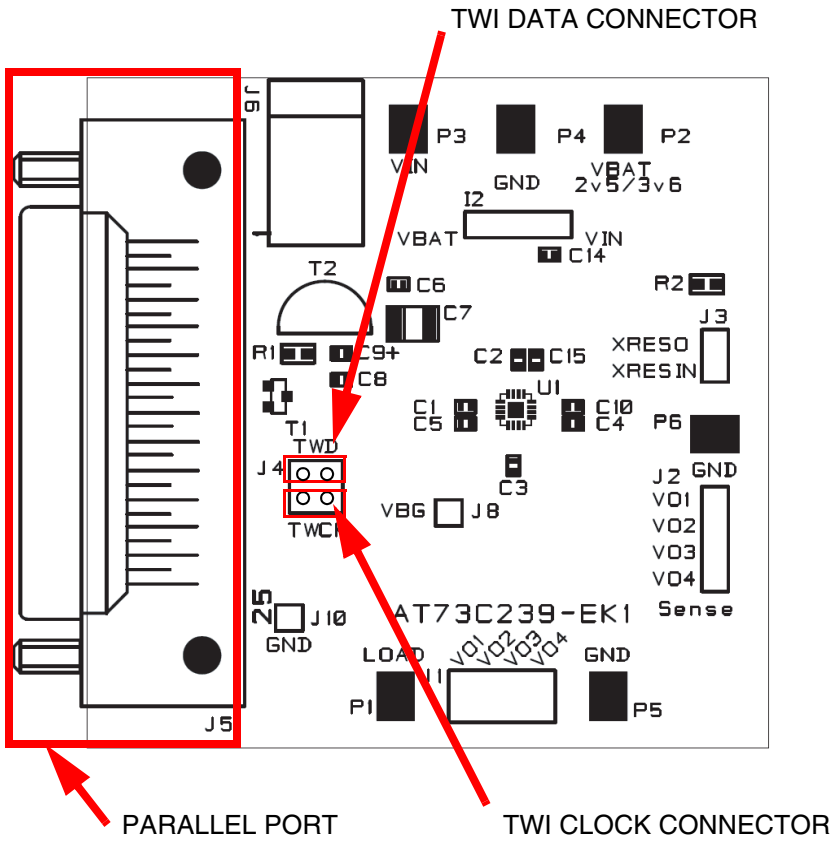


3.3 Two-wire Interface

The board controls the AT73C239 via the Two-wire Interface through the parallel port.

If the user wants to program the AT73C239 directly with an extend host, J4 can be removed and the AT73C239 can be driven directly.

Figure 3-6 . AT73C239 TWI Configuration



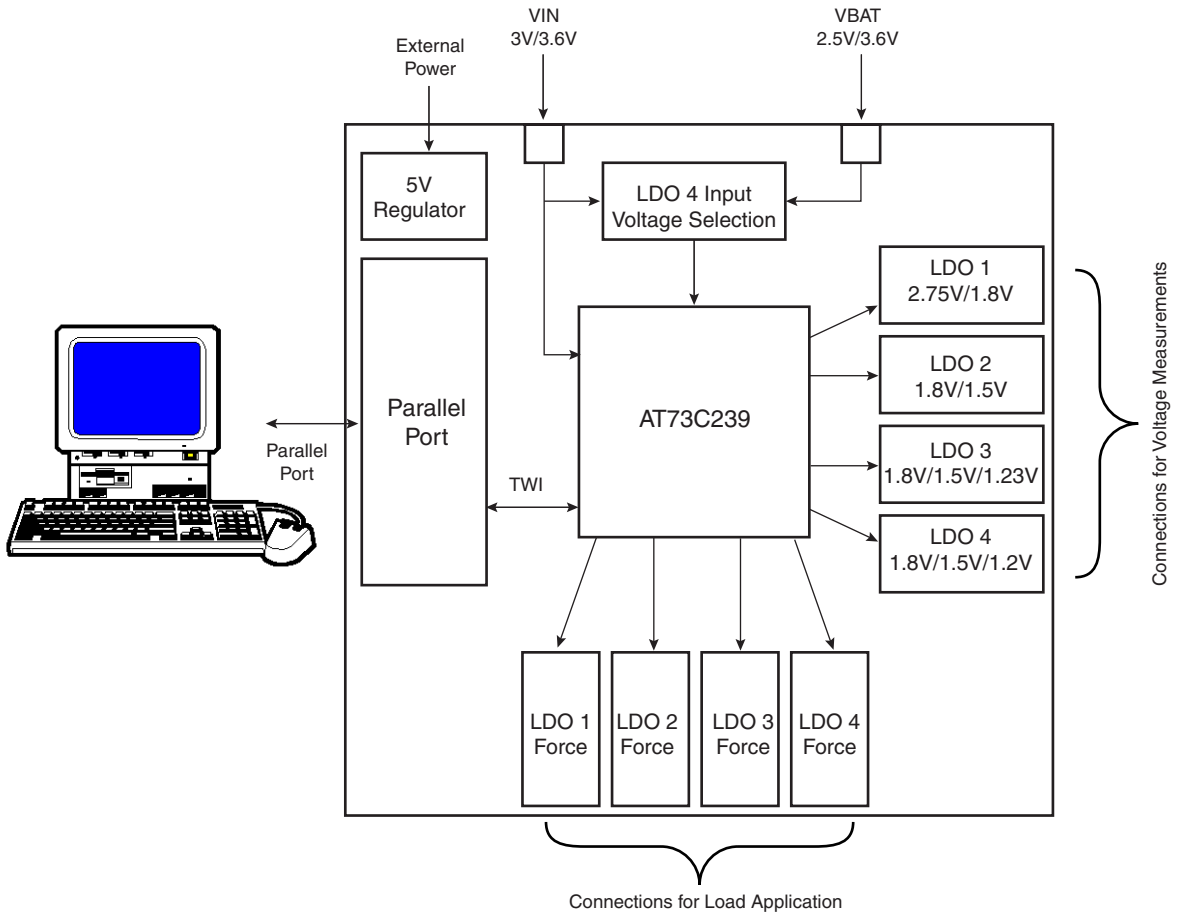
Section 4

Using the AT73C239-EK1

4.1 Getting Started

The AT73C239-EK1 can be used as a standalone board. For optimal use, the connection between the demo board and the PC should be removed.

Figure 4-1. AT73C239-EK1 Block Diagram



4.2 Electrical Parameter Measurement

The AT73C239-EK1 is designed to allow easy measurement of electrical parameters on the board. Connectors are provided to perform voltage and current measurements.

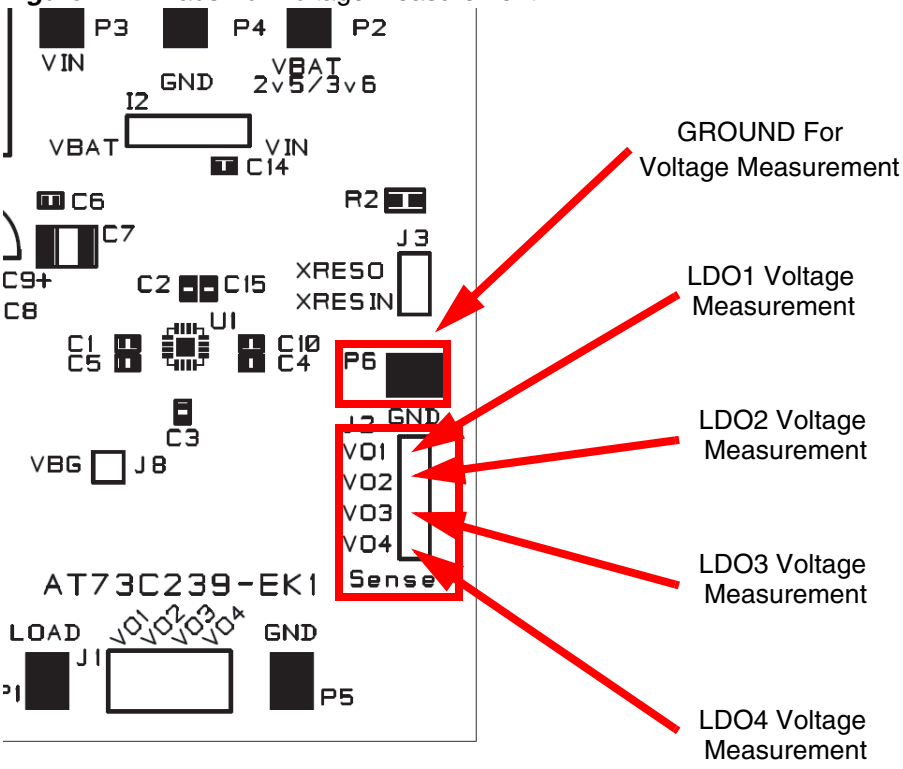
Measurements such as load regulation, line regulation, noise and PSRR can be performed on these pads.

4.2.1 AT73C239 Voltage Measurements Pads

There are four “sense” pads that perfom voltage measurements on each LDO output delivered by the AT73C239. These four pads are described as follows:

- VO1 - Output Voltage of LDO1 (2.75V / 1.8V)
- VO2 - Output Voltage of LDO2 (1.8V / 1.5V)
- VO3 - Output Voltage of LDO3 (1.8V / 1.5V / 1.23V)
- VO4 - Output Voltage of LDO4 (1.8V / 1.5V / 1.2V)

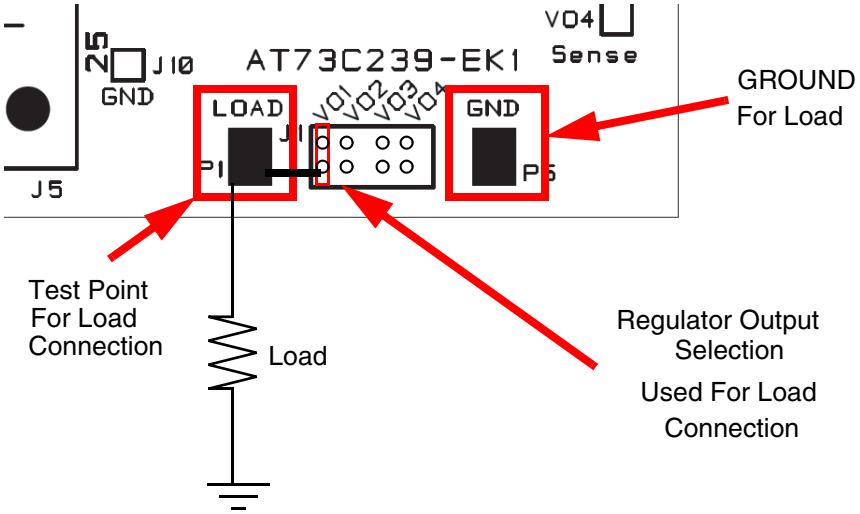
Figure 4-2 . Pads For Voltage Measurement



4.2.2 AT73C239 Pads for Load Application

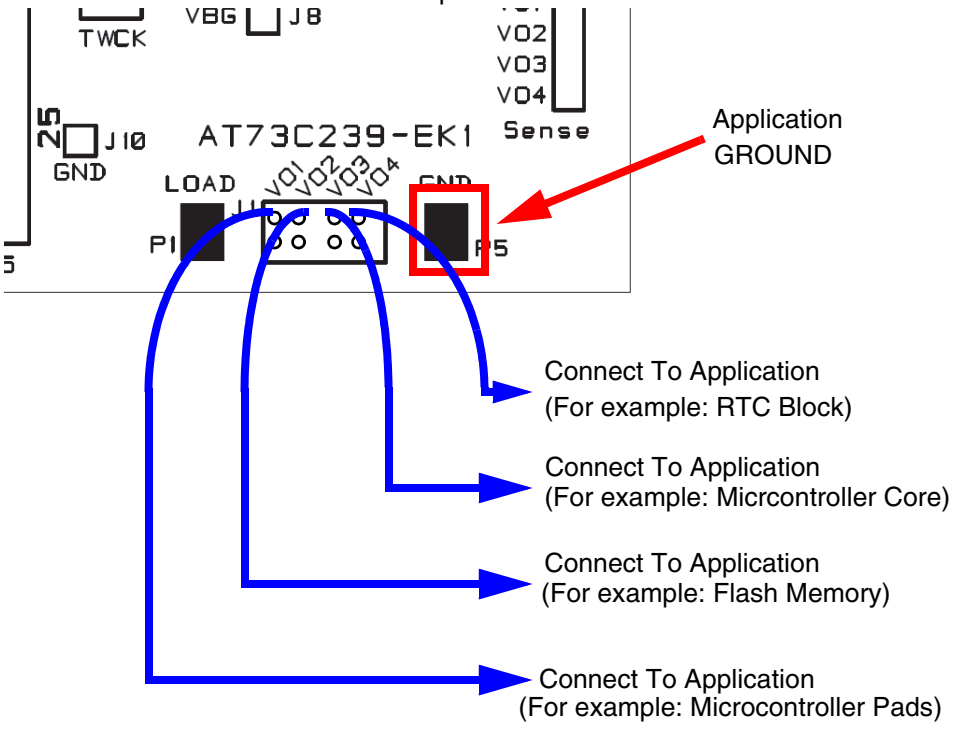
To perform measurements with load, or to connect external applications (microcontroller, communication module, etc.), “force” pads are available.

Figure 4-3 . Current Measurement on One LDO



Current measurement can be done by connecting an ampere-meter between the test point and the load. It is possible to connect via the test point only one output regulator at the same time. To connect several loads, refer to Figure 4-4.

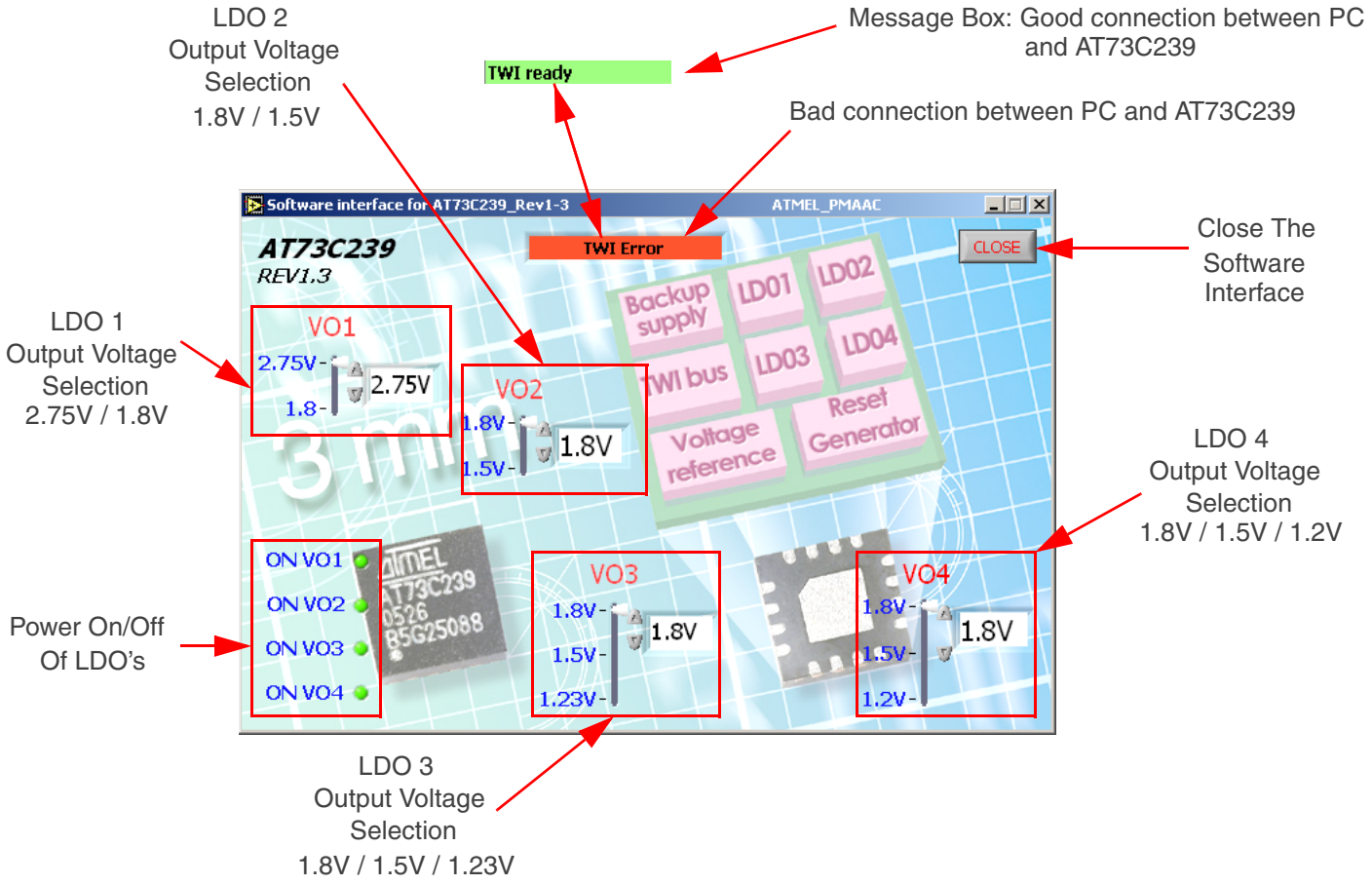
Figure 4-4 . Load Connection on Each Output LDO



4.3 AT73C239 Test Interface

Figure 4-5 shows the test interface.

Figure 4-5. Software Panel



4.4 Quick Start

To get started quickly with the AT73C239-EK1 board,

- If your PC runs with Windows® NT, 2000, or XP, install DLPORTIO.exe. It is available in CD-ROM:\CONFIGURATION\ folder of the CD.
- To install the AT73C239 Test Interface, go to the folder CD-ROM:\SOFTWARE\Installer on the CD provided with the evaluation kit, and click on setup.exe.
- Connect the transformer on J6.
- Select the power configuration I2 switch (for LDO4 supply).
- Connect the parallel port.
- To launch the AT73C239 software test interface, click on AT73C239_Rev1-3.exe in the folder CD-ROM:\SOFTWARE\ CD.
- If the PC has a good connection with the AT73C239-EK1, the message board indicates “TWI ready”. If the message box indicates “TWI error”, check that the setup has been done correctly.

Section 5

Technical Specifications

5.1 Specifications

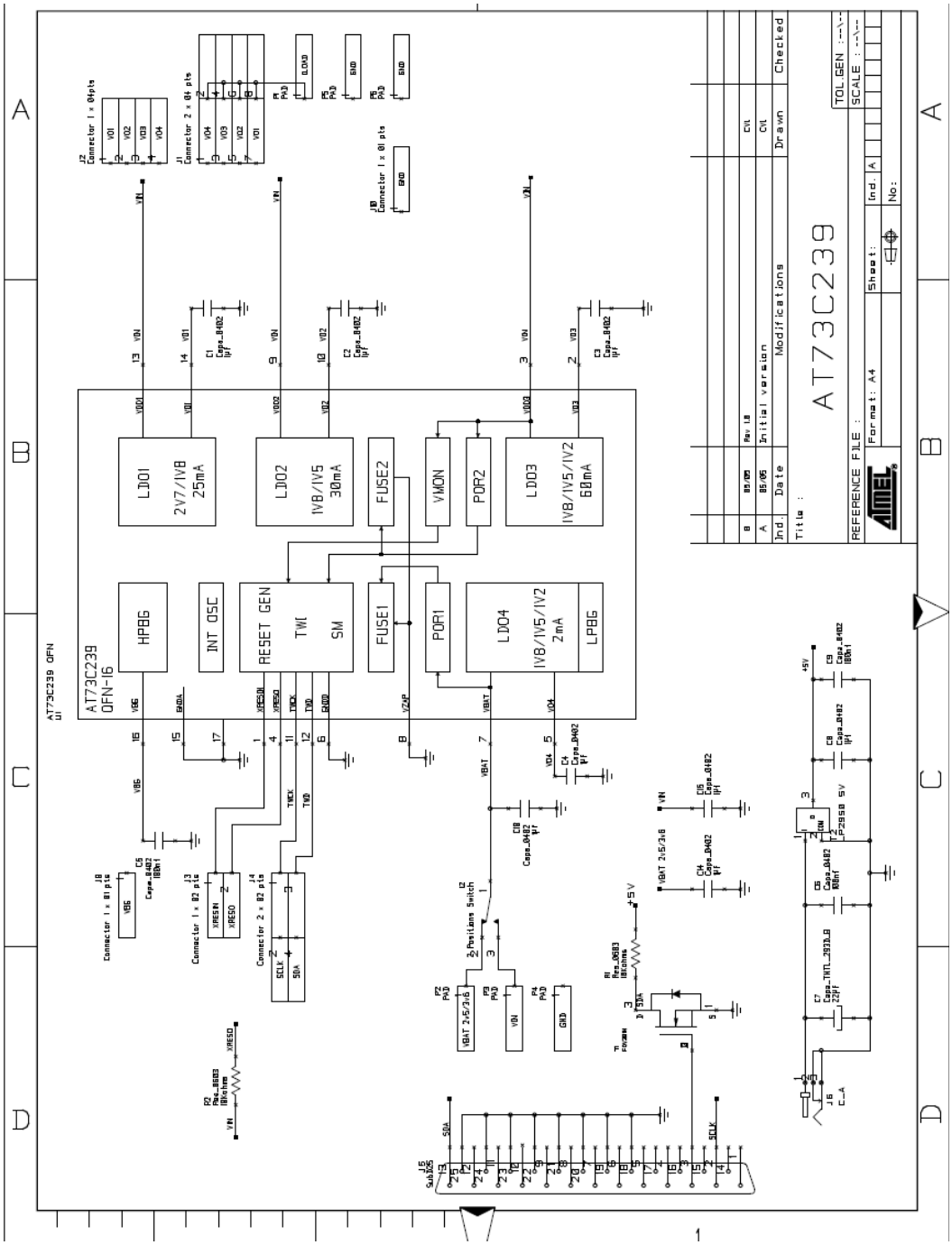
- **System Unit**
  - Physical Dimensions ..... L= 65 x W = 65 x H = 27 mm
  - Weight ..... 50 g

- **Operating Conditions**
  - Voltage Supply ..... 5.5V - 9V

- **Connections**
  - Parallel port Connector ..... SubD25 male

Section 6

PCB Schematics



Section 7

Revision History

7.1 Revision History

Table 7-1.

Document	Comments	Change Request Ref.
6235A	First issue.	

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