SHARP®

Integrated Circuits Group

APPLICATIONS:
- Cellular Phone
- Pager

LH28F160BG
16M (1,024K × 16) Flash Memory

FEATURES

- 2.4 V-only single voltage technology
  - 2.4 V – 2.6 V V_{CC} and V_{PP} read/write/erase
    - Operation: high speed products
  - 2.4 V – 3.0 V V_{CC} and V_{PP} read/write/erase
    - Operation: standard products
  - Smart 3 V_{CC} (2.7 V – 3.6 V V_{CC} and V_{PP} read/write/erase operation): Smart 3 products
- High-block erase and word write performance
  - Useable 12 V ±0.6 V V_{PP}
- Optimized array blocking architecture
  - Thirty-one 32K-word main blocks
  - Two 4K-word boot blocks
  - Six 4K-word parameter blocks
  - Top or bottom boot locations
- High-Performance
  - Maximum access time
    - 110 ns (V_{CC} = 2.4 V – 2.6 V): high speed products
    - 120 ns (V_{CC} = 2.4 V – 3.0 V): standard products
    - 100 ns (V_{CC} = 2.7 V – 3.6 V): Smart 3 products
- Automated suspend options
  - Block erase suspend to read
  - Block erase suspend to word write
  - Word write suspend to read
- 16-bit I/O interface
- Low power management
  - Deep power-down mode
  - Automatic power saving mode decrease I_{CC} in static mode
- Industry standard packaging
  - 48-pin TSOP
- Chip size packaging
  - 48-ball CSP
- Operating Temperature
  - Extended Temperature (-40°C to +85°C)
- Automated word write and block erase
  - Command user interface
  - Status register
- Absolute hardware-write/erase protection
- SRAM-compatible write interface
- Extended cycling capability
  - 100,000 block erase cycles
- EXTOX™ V nonvolatile flash technology
- Not designed or rated as radiation hardened

DESCRIPTION

SHARP's LH28F160BG Flash memory is a highly-density, low-cost, nonvolatile, read/write storage solution for a wide range of applications. LH28f160BG can operate at V_{CC} and V_{PP} = 2.4 V. Its low voltage operation capability realize longer battery life and suits for cellular phone application. Its boot, parameter and main-blocked architecture, flexible voltage and extended cycling provide for highly flexible component suitable for portable terminals and personal computers. Its enhanced suspend capabilities provide for an ideal solution for code and data storage applications. For secure code storage applications, such as networking, where code is either directly executed out of flash or downloaded to DRAM, the LH28F160BG offers two levels of protection: absolute protection with V_{PP} at GND, selective hardware boot block locking. These alternatives give designers ultimate control of their code security needs.

The LH28F160BG is manufactured on SHARP's 0.4 µm ETOX™ V process technology. It comes in industry-standard package: the 48-pin TSOP and chip size package: the 48-ball CSP, ideal for board constrained applications.

This Product Information is from LH28F160BG Preliminary Specification; Issue Date: October 8, 1997.

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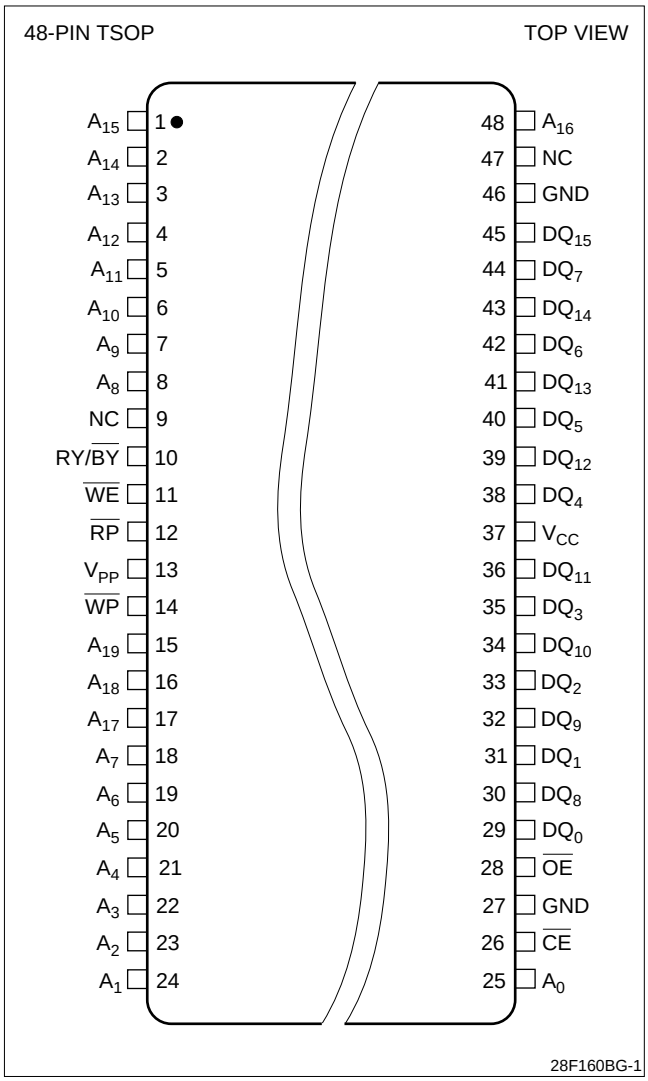
48-PIN TSOP PINOUT



48-BALL CSP PINOUT