Spansion Flash Memory
MirrorBit NOR GL Family (GL-P)

This 3V NOR Flash memory delivers optimal price-performance for a wide range of consumer applications and industrial equipments.

Introduction

Both demand and production have been expanding from advanced nations to worldwide not only for digital consumer electronics such as digital TVs, DVD players/recorders, digital cameras, and game machines but also for automotive applications and industrial equipments. As a consequence, the number of these devices and NOR Flash memory products shipped for program/code storage in these devices has been increasing.

Furthermore, the increase in program size in concurrence with the improved functions to realize localization and satisfy environmental standards for global distribution has led to greater demands for the growth of high-density NOR Flash memories.

Fig.1 illustrates the trend in global demands for NOR-type Flash memories for embedded applications.

Spansion, which offers a wide range of NOR Flash memories in multiple voltages, densities, and packages, is now the 3V MirrorBit NOR GL-P Family based on Spansion’s proprietary MirrorBit technology. Compared to conventional products, this product offers excellent balance between price and density. To facilitate migration from conventional products, it gives very serious consideration to the compatibility with the specifications of conventional products. As a result, customers can develop excellent applications with higher densities, higher performances, and lower power consumptions with minimum changes.

Fig.2 presents examples of applications using the MirrorBit NOR GL product family.

Advantage of High-density NOR Flash Memories

High-density NOR Flash memory is the best choice for applications such as digital TVs, digital cameras, digital video and portable music players, which all required compact, slim, power-saving and low-cost design. NOR flash provides the simplest solution for code execution, plus data storage and reliability. It also reduces power consumption compared to other non-volatile memories and simplifies the system design. Ultimately, the end result is lower system cost, both from a design perspective and BOM cost.
Technical Analysis

MirrorBit NOR GL Family (GL-P)

Figure 2 Application Examples Using the GL Product Family

Table 1 Product Portfolio and Access Speed

<table>
<thead>
<tr>
<th>Voltage setting</th>
<th>1G-bit</th>
<th>512M-bit</th>
<th>256M-bit</th>
<th>128M-bit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulated Vcc (3.0 to 3.6V)</td>
<td>110ns</td>
<td>100ns</td>
<td>90ns</td>
<td>90ns</td>
</tr>
<tr>
<td>Full Vcc (2.7 to 3.6V)</td>
<td>120ns</td>
<td>100ns/110ns</td>
<td>100ns/110ns</td>
<td>100ns/110ns</td>
</tr>
<tr>
<td>Versatile Vio (Vcc 3V, 1.8V only for input/output signal)</td>
<td>130ns</td>
<td>110ns/120ns</td>
<td>110ns</td>
<td>110ns</td>
</tr>
</tbody>
</table>

*Please contact our sales personnel for release plans.

Advantages of Spansion GL-P Products

- **Common platforms and time to the market** become important issues as our customers demand more advanced, more multi-functional and more differentiated products.
- **The Spansion MirrorBit NOR GL-P Family** provides a wide range of densities selection while maintaining compatibility with conventional products to the furthest extent possible. This enables our customers to add new values to their products while protecting the assets they have developed thus far.
- **The Universal Footprint** that is commonly adopted for Spansion products allows easy migration to higher densities.
- **MirrorBit** allows Spansion to stretch the boundaries of NOR technology both in performance and densities.
- **We plan to continue development** in the GL Family even after 65nm technology and to reinforce the product lineup. Our customers can continue to utilize their development assets over a long period by adopting the GL-P Family now.

Table 2 presents the advantages of Spansion products and a comparison with conventional products.

**Product Portfolio and Features**

- **Density**: 4 types (128M-bit/256M-bit/512M-bit/1G-bit)
  The 1G-bit product is the industry’s first and only monolithic product with single 3V power supply.
- **Package**: 2 types (56-pin TSOP/64-ball fortified BGA (fortified ball grid array))
- **The Universal Footprint** with consistent packaging and pinouts across product families, process technologies, and densities
- **25ns high-speed page access time**
- **90ns random access time** (128M-bit/256M-bit product)
- **Read/program/erase operation with 3V single power supply**
- **Uniform 64K-word/128K-byte sector architecture**
- **32-word/64-byte write buffer** reduces the programming time when updating several words
- **Secured silicon sector** can be programmed or locked at factory or by the user
- **Advanced sector protection** protects the sector with a password as necessary

**Supply system**
In addition to our own plants, production of the GL-P Family is also outsourced to TSMC for wafer processing. The quality is equivalent for products manufactured in our own Fabs or in TSMC, and the supply system is thus enhanced in terms of flexibility and stability.

**Guaranteed quality**
Spansion has received ISO/TS16949 certification and maintains high reliability and quality.
Support for designing

We offer simulation models, Flash file systems, drivers, hardware development tools, and support services to assist our customer development.

For more information about Spansion Flash memories, please visit the Spansion website. http://www.spansion.com/jp

Table 2  Comparison with Conventional Products

<table>
<thead>
<tr>
<th>Density</th>
<th>Before migration</th>
<th>After migration</th>
<th>Common points and differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>128M-bit</td>
<td>S29GL128N</td>
<td>S29GL128P</td>
<td>Common points</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Device ID</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• TSOP/FBGA package dimensions, pin assignments</td>
</tr>
<tr>
<td>256M-bit</td>
<td>S29GL256N</td>
<td>S29GL256P</td>
<td>Access speed, Erase time, Sector size, Security function</td>
</tr>
<tr>
<td>512M-bit</td>
<td>S29GL512N</td>
<td>S29GL512P</td>
<td>Reduced programming time for overhead with 32-word write buffer, Different Power-on-Reset timing</td>
</tr>
</tbody>
</table>

Seamless migration to MirrorBit NOR GL-P products.