Spansion Overview

Spansion, the Flash memory subsidiary of AMD and Fujitsu, is the world’s leading manufacturer of NOR Flash Memory. Spansion is committed to delivering outstanding customer service and expert technical support, as well as providing the highest level of quality and reliability in its products. All Spansion production fabs are certified to the demanding ISO/TS16949:2002 global technical specification, ISO9001:2000 quality standards, and the ISO14001 environmental standard.

General Description

Spansion S29GL128N devices, manufactured using 110-nanometer second-generation MirrorBit™ (two-bit-per-cell) technology, uniquely combine expanded storage capacity with high performance and unparalleled security features to enable the next generation of embedded wireless applications.

Target Applications

• Consumer Electronics
• Networking
• Telecom
• Gaming
• Solid-State Disk
• Automotive
• Mobile Devices

PERFORMANCE CHARACTERISTICS

ACCESS TIMES

<table>
<thead>
<tr>
<th>Access Time</th>
<th>90°C</th>
<th>100°C</th>
<th>110°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Access Time (ns)</td>
<td>90°C</td>
<td>100°C</td>
<td>110°C</td>
</tr>
<tr>
<td>Max. CE# Access Time (ns)</td>
<td>90°C</td>
<td>100°C</td>
<td>110°C</td>
</tr>
<tr>
<td>Max. OE# Access Time (ns)</td>
<td>25°C</td>
<td>25°C</td>
<td>25°C</td>
</tr>
</tbody>
</table>

*° Contact local sales representative for availability

POWER DISSIPATION

<table>
<thead>
<tr>
<th>Power Consumption</th>
<th>Active Read (@ 10 MHz) (mA)</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intra-Page Read (@ 33MHz) (mA)</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Program (mA)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Erase (mA)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Standby Mode (µA)</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: Values based on typical.

PROGRAM & ERASE TIMES

<table>
<thead>
<tr>
<th>Erase Times</th>
<th>Effective Word Program (16-word buffer) (µs)</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Write Buffer Program (16-word buffer) (µs)</td>
<td>240</td>
</tr>
<tr>
<td></td>
<td>Typical Sector Erase (sec)</td>
<td>0.5</td>
</tr>
</tbody>
</table>

FEATURES AND BENEFITS

• Award-Winning 110nm MirrorBit™ Technology
• High Performance Read
  - Up to 90ns Random Access,
  25ns Page Access
• Highest Quality and Reliability in the Industry

DISTINCTIVE CHARACTERISTICS

ARCHITECTURAL

• Second generation 110nm MirrorBit technology
• Single 3.3V power supply with Versatile I/O™ (V_{cc} or 1.8V)
• Flexible uniform sector architecture
  - 128 sectors (sector size 64-Kword/128-Kbyte)
• 16-word/32-byte write buffer
• 8-word/16-byte page read buffer
• Industrial temperature
  - (-40 to 85°C)
• JEDEC standard compliant

SOFTWARE AND HARDWARE

• Program and Erase Suspend and Resume
• CFI (Common Flash Interface) compliant
• ACC pin accelerates factory programming

SECURITY

• Advanced Sector Protect
• WP# protects top and bottom sectors
• 128-word/256-byte SecSi™ (Secured Silicon) Sector

QUALITY AND RELIABILITY

• 100,000 erase cycles per sector typical
• 20 years data retention typical

PACKAGING

• 56-pin TSOP Package
• 64-ball Fortified BGA Package
• Standard or Pb-Free options available
## Ordering Information

### PACKING TYPE
- **0** = Tray
- **2** = 7” Tape and Reel
- **3** = 13” Tape and Reel

### MODEL NUMBER
- **01** = Highest address sector protect
  - \( V_{IO} = V_{CC} = 2.7 \text{ – } 3.6 \text{ V} \)
- **02** = Lowest address sector protect
  - \( V_{IO} = V_{CC} = 2.7 \text{ – } 3.6 \text{ V} \)
- **V1** = Highest address sector protect
  - \( V_{IO} = 1.65 \text{ – } 1.95 \text{ V} \)
- **V2** = Lowest address sector protect
  - \( V_{IO} = 1.65 \text{ – } 1.95 \text{ V} \)
- **R1** = Highest address sector protect
  - \( V_{IO} = V_{CC} = 3.0 \text{ – } 3.6 \text{ V} \)
- **R2** = Lowest address sector protect
  - \( V_{IO} = V_{CC} = 3.0 \text{ – } 3.6 \text{ V} \)

### TEMPERATURE RANGE
- **I** = Industrial (-40 °C to +85 °C)

### PACKAGING MATERIAL SET
- **A** = Standard
- **F** = Pb-Free

### PACKAGE TYPE
- **T** = TSOP Package
- **F** = Fortified BGA Package

### SPEED OPTIONS
- **90** = 90 ns
- **10** = 100 ns
- **11** = 110 ns

### DEVICE NUMBER/DESCRIPTION
- 128 Mb (8 M x 16-Bit/16 M x 8-Bit)
- 3.0 Volt-only, Page-Mode Flash Memory
- Manufactured on 110 nm MirrorBit™ process technology

### VALID COMBINATION FOR S29GL128N FLASH MEMORY

<table>
<thead>
<tr>
<th>Device Number</th>
<th>Speed Option</th>
<th>Package &amp; Material Temperature</th>
<th>Model Number</th>
<th>Packing Type</th>
<th>Package Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S29GL128N</td>
<td>90¹</td>
<td>TAI, TFI</td>
<td>R1, R2</td>
<td>0, 2, 3¹</td>
<td>TS056 (TSOP³)</td>
</tr>
<tr>
<td></td>
<td>10, 11</td>
<td>FAI, FFI</td>
<td>01, 02</td>
<td>V1, V2</td>
<td>LAA064 (Fortified BGA³)</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MIGRATION CONSIDERATIONS

<table>
<thead>
<tr>
<th>Part Number for New Designs</th>
<th>Legacy Part Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>S29GL128N</td>
<td>Am29LV128M</td>
</tr>
<tr>
<td></td>
<td>MBM29PL12LM</td>
</tr>
<tr>
<td></td>
<td>S29GL128M</td>
</tr>
</tbody>
</table>

Notes:
1. Type 0 is standard. Specify others as required. TSOPs can be packed in Types 0 and 3; BGAs can be packed in Type 0, 2, or 3.
2. TSOP package marking omits packing type designator from ordering part numbers.
3. BGA package marking omits leading “S29” and packing type designator from ordering number. For example, the package marking for Part Number S29GL128N/01A1010 is GL128N01A1010.
4. Contact local sales representative for availability.
5. Refer to related Spansion OPN map for feature mapping.

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