お客様各位

資料中の「ラピスセミコンダクタ」等名称の
ラピステクノロジー株式会社への変更

2020年10月1日をもって、ラピスセミコンダクタ株式会社のLSI事業部門は、
ラピステクノロジー株式会社に分割承継されました。従いまして、本資料中には
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2020年10月1日
ラピステクノロジー株式会社
Dear customer

LAPIS Semiconductor Co., Ltd. ("LAPIS Semiconductor"), on the 1st day of October, 2020, implemented the incorporation-type company split (shinsetsu-bunkatsu) in which LAPIS established a new company, LAPIS Technology Co., Ltd. ("LAPIS Technology") and LAPIS Technology succeeded LAPIS Semiconductor’s LSI business.

Therefore, all references to "LAPIS Semiconductor Co., Ltd.", "LAPIS Semiconductor" and/or "LAPIS" in this document shall be replaced with "LAPIS Technology Co., Ltd."

Furthermore, there are no changes to the documents relating to our products other than the company name, the company trademark, logo, etc.

Thank you for your understanding.

LAPIS Technology Co., Ltd.
October 1, 2020
MR26V6455J

2M–Word x 32–Bit or 4M–Word x 16–Bit Page Mode P2ROM

FEATURES

- 2,097,152-word x 32-bit / 4,194,304-word x 16-bit electrically switchable configuration
- Page size of 8-word x 32-Bit or 16-word x 16-Bit
- 3.0 V to 3.6 V power supply
- Random Access time: 100 ns MAX
- Page Access time: 30ns MAX
- Operating current: 100 mA MAX
- Standby current: 20 µA MAX

- Input/Output TTL compatible
- Three-state output

PACKAGES

- MR26V6455J-xxxMB
  70-pin plastic SSOP (P-SSOP70-500-0.80-EK-MC)

P2ROM ADVANCED TECHNOLOGY

P2ROM stands for Production Programmed ROM. This exclusive LAPIS Semiconductor technology utilizes factory test equipment for programming the customers code into the P2ROM prior to final production testing. Advancements in this technology allows production costs to be equivalent to MASKROM and has many advantages and added benefits over the other non-volatile technologies, which include the following;

- **Short lead time**, since the P2ROM is programmed at the final stage of the production process, a large P2ROM inventory "bank system" of un-programmed packaged products are maintained to provide an aggressive lead-time and minimize liability as a custom product.
- **No mask charge**, since P2ROMs do not utilize a custom mask for storing customer code, no mask charges apply.
- **No additional programming charge**, unlike Flash and OTP that require additional programming and handling costs, the P2ROM already has the code loaded at the factory with minimal effect on the production throughput. The cost is included in the unit price.
- **Custom Marking** is available at no additional charge.
BLOCK DIAGRAM

A-1(D30/A-1[61] AND D31/A-1[63])

\[ \times 16/\times 32 \text{ Switch} \]

CE# OE# WORD#

CE OE

Memory Cell Matrix

2M \times 32\text{-Bit} \text{ or } 4M \times 16\text{-Bit}

Column Decoder

Address Buffer

Row Decoder

Output Buffer

In 16-bit output mode, these pins are placed in a high-Z state and pin D31,D30 functions as the A-1 address pin.

PIN DESCRIPTIONS

<table>
<thead>
<tr>
<th>Pin name</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>D31 / A-1, D30/A-1</td>
<td>Data output / Address input</td>
</tr>
<tr>
<td>A0 to A20</td>
<td>Address inputs</td>
</tr>
<tr>
<td>D0 to D29</td>
<td>Data outputs</td>
</tr>
<tr>
<td>CE#</td>
<td>Chip enable input</td>
</tr>
<tr>
<td>OE#</td>
<td>Output enable input</td>
</tr>
<tr>
<td>WORD#</td>
<td>Word -Byte select input</td>
</tr>
<tr>
<td>V_{CC}</td>
<td>Power supply voltage</td>
</tr>
<tr>
<td>V_{SS}</td>
<td>Ground</td>
</tr>
</tbody>
</table>
FUNCTION TABLE

<table>
<thead>
<tr>
<th>Mode</th>
<th>CE#</th>
<th>OE#</th>
<th>WORD#</th>
<th>VCC</th>
<th>D0 to D15</th>
<th>D16 to D29</th>
<th>D30/A–1,D31/A-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read (32-Bit)</td>
<td>L</td>
<td>L</td>
<td>H</td>
<td>3.3 V</td>
<td>D_OUT</td>
<td>Hi–Z</td>
<td>L/H</td>
</tr>
<tr>
<td>Read (16Bit)</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output disable</td>
<td>L</td>
<td>H</td>
<td>H</td>
<td></td>
<td></td>
<td>Hi–Z</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standby</td>
<td>H</td>
<td>*</td>
<td>H</td>
<td></td>
<td></td>
<td>Hi–Z</td>
<td>*</td>
</tr>
</tbody>
</table>

*: Don’t Care (H or L)

ABSOLUTE MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature under bias</td>
<td>Ta</td>
<td>—</td>
<td>0 to 70</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>Tstg</td>
<td>—</td>
<td>－55 to 125</td>
<td>°C</td>
</tr>
<tr>
<td>Input voltage</td>
<td>V_i</td>
<td>relative to V_SS</td>
<td>－0.5 to V_CC+0.5</td>
<td>V</td>
</tr>
<tr>
<td>Output voltage</td>
<td>V_o</td>
<td>relative to V_SS</td>
<td>－0.5 to V_CC+0.5</td>
<td>V</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>V_CC</td>
<td>—</td>
<td>－0.5 to 5</td>
<td>V</td>
</tr>
<tr>
<td>Power dissipation per package</td>
<td>P_D</td>
<td>Ta = 25°C</td>
<td>1.0</td>
<td>W</td>
</tr>
<tr>
<td>Output short circuit current</td>
<td>I_OSS</td>
<td>—</td>
<td>10</td>
<td>mA</td>
</tr>
</tbody>
</table>

RECOMMENDED OPERATING CONDITIONS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_CC power supply voltage</td>
<td>V_CC</td>
<td>V_CC = 3.0 to 3.6 V</td>
<td>3.0</td>
<td>—</td>
<td>3.6</td>
<td>V</td>
</tr>
<tr>
<td>Input “H” level</td>
<td>V_H</td>
<td>V_CC = 3.0 to 3.6 V</td>
<td>2.2</td>
<td>—</td>
<td>V_CC+0.5*</td>
<td>V</td>
</tr>
<tr>
<td>Input “L” level</td>
<td>V_L</td>
<td>V_CC = 3.0 to 3.6 V</td>
<td>－0.5**</td>
<td>—</td>
<td>0.6</td>
<td>V</td>
</tr>
</tbody>
</table>

Voltage is relative to V_SS.
*: Vcc+1.5V(Max.) when pulse width of overshoot is less than 10ns.
**: -1.5V(Min.) when pulse width of undershoot is less than 10ns.

PIN CAPACITANCE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>C_IN1</td>
<td>V_i = 0 V</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>pF</td>
</tr>
<tr>
<td>WORD#</td>
<td>C_IN2</td>
<td>V_i = 0 V</td>
<td>—</td>
<td>—</td>
<td>400</td>
<td>pF</td>
</tr>
<tr>
<td>Output</td>
<td>C_OUT</td>
<td>V_o = 0 V</td>
<td>—</td>
<td>—</td>
<td>20</td>
<td>pF</td>
</tr>
</tbody>
</table>
# ELECTRICAL CHARACTERISTICS

## DC Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input leakage current</td>
<td>I&lt;sub&gt;LI&lt;/sub&gt;</td>
<td>V&lt;sub&gt;i&lt;/sub&gt; = 0 to V&lt;sub&gt;CC&lt;/sub&gt;</td>
<td>—</td>
<td>—</td>
<td>10</td>
<td>μA</td>
</tr>
<tr>
<td>Output leakage current</td>
<td>I&lt;sub&gt;LO&lt;/sub&gt;</td>
<td>V&lt;sub&gt;O&lt;/sub&gt; = 0 to V&lt;sub&gt;CC&lt;/sub&gt;</td>
<td>—</td>
<td>—</td>
<td>10</td>
<td>μA</td>
</tr>
<tr>
<td>V&lt;sub&gt;CC&lt;/sub&gt; power supply current (Standby)</td>
<td>I&lt;sub&gt;ICCSC&lt;/sub&gt;</td>
<td>CE# = V&lt;sub&gt;CC&lt;/sub&gt;</td>
<td>—</td>
<td>—</td>
<td>20</td>
<td>μA</td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;CCST&lt;/sub&gt;</td>
<td>CE# = V&lt;sub&gt;IH&lt;/sub&gt;</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>mA</td>
</tr>
<tr>
<td>V&lt;sub&gt;CC&lt;/sub&gt; power supply current (Read)</td>
<td>I&lt;sub&gt;ICCA1&lt;/sub&gt;</td>
<td>CE# = V&lt;sub&gt;L&lt;/sub&gt;</td>
<td>tc = 5MHz</td>
<td>—</td>
<td>—</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OE# = V&lt;sub&gt;IL&lt;/sub&gt;</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Input “H” level: V<sub>IH</sub> (V<sub>CC</sub> + 0.5 V) | 2.2 | — | V<sub>CC</sub> + 0.5 V |

Input “L” level: V<sub>IL</sub> (–0.5 V) | — | — | — |

Output “H” level: V<sub>OH</sub> (–2 mA) | — | — | 2.4 |

Output “L” level: V<sub>OL</sub> (2 mA) | — | — | 0.4 |

Voltage is relative to V<sub>SS</sub>.

* : V<sub>CC</sub> + 1.5V(Max.) when pulse width of overshoot is less than 10ns.

** : -1.5V(Min.) when pulse width of undershoot is less than 10ns.

## AC Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Min.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address cycle time</td>
<td>t&lt;sub&gt;C&lt;/sub&gt;</td>
<td>—</td>
<td>100</td>
<td>—</td>
<td>ns</td>
</tr>
<tr>
<td>Address access time</td>
<td>t&lt;sub&gt;ACC&lt;/sub&gt;</td>
<td>CE# = OE# = V&lt;sub&gt;L&lt;/sub&gt;</td>
<td>—</td>
<td>100</td>
<td>ns</td>
</tr>
<tr>
<td>Page cycle time</td>
<td>t&lt;sub&gt;PC&lt;/sub&gt;</td>
<td>—</td>
<td>30</td>
<td>—</td>
<td>ns</td>
</tr>
<tr>
<td>Page access time</td>
<td>t&lt;sub&gt;PAC&lt;/sub&gt;</td>
<td>CE# = OE# = V&lt;sub&gt;L&lt;/sub&gt;</td>
<td>—</td>
<td>30</td>
<td>ns</td>
</tr>
<tr>
<td>CE# access time</td>
<td>t&lt;sub&gt;CE&lt;/sub&gt;</td>
<td>OE# = V&lt;sub&gt;L&lt;/sub&gt;</td>
<td>—</td>
<td>100</td>
<td>ns</td>
</tr>
<tr>
<td>OE# access time</td>
<td>t&lt;sub&gt;OE&lt;/sub&gt;</td>
<td>CE# = V&lt;sub&gt;L&lt;/sub&gt;</td>
<td>—</td>
<td>30</td>
<td>ns</td>
</tr>
<tr>
<td>Output disable time</td>
<td>t&lt;sub&gt;CZH&lt;/sub&gt;</td>
<td>OE# = V&lt;sub&gt;L&lt;/sub&gt;</td>
<td>0</td>
<td>20</td>
<td>ns</td>
</tr>
<tr>
<td>Output hold time</td>
<td>t&lt;sub&gt;OH&lt;/sub&gt;</td>
<td>CE# = OE# = V&lt;sub&gt;L&lt;/sub&gt;</td>
<td>0</td>
<td>—</td>
<td>ns</td>
</tr>
</tbody>
</table>

Measurement conditions

Input signal level: 0 V/3 V
Input timing reference level: 1/2Vcc
Output load: 50 pF
Output timing reference level: 1/2Vcc

Output load:

```
Output

50 pF
(Including scope and jig)
```
TIMING CHART (READ CYCLE)

Random Access Mode Read Cycle

Address

CE#

OE#

Dout

Hi-Z

Valid Data

Valid Data

Hi-Z

tC
tCE
tOE
tOH
tCHZ
tOHZ

Page Access Mode Read Cycle

A3 to A20

A-1 to A2 (x16 mode)

A0 to A2 (x32 mode)

CE#

OE#

Dout

Hi-Z

Hi-Z

tC
tPC
tPC
tOE
tOE
tACC
tACC
tACC
tPAC
tPAC
tPAC
tOH
tOH
tOH
tCHZ
tCHZ
tPAC
Notes for Mounting the Surface Mount Type Package

The surface mount type packages are very susceptible to heat in reflow mounting and humidity absorbed in storage. Therefore, before you perform reflow mounting, contact ROHM’s responsible sales person for the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).
## REVISION HISTORY

<table>
<thead>
<tr>
<th>Document No.</th>
<th>Date</th>
<th>Page</th>
<th>Description</th>
<th>Previous Edition</th>
<th>Current Edition</th>
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</thead>
<tbody>
<tr>
<td>FEDR26V6455J-002-02</td>
<td>Oct. 1, 2008</td>
<td>1</td>
<td>Deleted “Pin Compatible with Mask ROM”.</td>
<td>1</td>
<td>1</td>
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<td>–</td>
<td>Changed company logo and name to OKI SEMICONDUCTOR</td>
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