Reliability · Bondability · Ultra Fine Pitch
State-of-the-Art 2N Gold Wire with Ultimate Reliability and Bondability

Features

- Ultimate high reliability of 1st bond
- Hassle-free bondability in both 1st and 2nd bond, suitable for both laminate and leadframe devices
- Significantly improved 2nd bond stitch pull value
- Robust 2nd bond at lower parameters
- Improved concentricity of FAB for ultrafine wire bonding
- Soft free air ball, applicable for low-k and sensitive die
- Higher MTBA as compared to other 2N gold wires

Ultimate High Reliability Performance

Isothermal Aging @ 200°C in Air [hrs]

Ball Strength [gm]

- RelMax of 15 µm diameter passed HTS. 5000 hours at 200°C – significantly surpass the most stringent criteria in the market, including automotive industry.

Stable intermetallic growth at elevated storage temperature

Soft Free Air Ball

FAB Hardness [HV0.005/5]

Improved Bonded Ball Concentricity

Ultra-fine pitch ball bond concentricity

Reference Wire


Recommended Technical Data of RelMax

<table>
<thead>
<tr>
<th>Diameter (µm)</th>
<th>Microns</th>
<th>Mils</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>15</td>
<td>0.6</td>
</tr>
<tr>
<td>18</td>
<td>18</td>
<td>0.7</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td>0.8</td>
</tr>
<tr>
<td>23</td>
<td>23</td>
<td>0.9</td>
</tr>
<tr>
<td>25</td>
<td>25</td>
<td>1.0</td>
</tr>
<tr>
<td>28</td>
<td>28</td>
<td>1.1</td>
</tr>
<tr>
<td>30</td>
<td>30</td>
<td>1.2</td>
</tr>
<tr>
<td>33</td>
<td>33</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Elongation (%)  2 – 6  2 – 7  3 – 7  3 – 7  3 – 7  3 – 8  3 – 8  3 – 8

Breaking Load (g)  3 – 7  4 – 9  5 – 11  8 – 14  10 – 16  13 – 19  15 – 20  18 – 25

For other diameters, please contact Heraeus Bonding Wires sales representative.
### Characteristics

<table>
<thead>
<tr>
<th>Property</th>
<th>Diameter at 25 µm</th>
<th>Diameter at 15 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elastic Modulus</td>
<td>~90 GPa</td>
<td>~90 GPa</td>
</tr>
<tr>
<td>Heat Affected Zone (HAZ) at BSR 1.8</td>
<td>35 – 110 µm</td>
<td>35 – 110 µm</td>
</tr>
<tr>
<td>FAB Hardness at BSR 1.8</td>
<td>57 – 67 HV (0.01 N/s)</td>
<td>57 – 67 HV (0.01 N/s)</td>
</tr>
<tr>
<td>Fusing Current, dia 10 mm length (in air)</td>
<td>0.37 A</td>
<td>0.23 A</td>
</tr>
<tr>
<td>Non-Gold Elements</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Density</td>
<td>19.3 g/cm³</td>
<td>19.3 g/cm³</td>
</tr>
<tr>
<td>Heat Conductivity</td>
<td>2.3 W/cm.K</td>
<td>2.3 W/cm.K</td>
</tr>
<tr>
<td>Electrical Resistivity</td>
<td>3.3 µΩ-cm</td>
<td>3.3 µΩ-cm</td>
</tr>
<tr>
<td>Coeff. of Linear Expansion (20 – 100 °C)</td>
<td>14.2 ppm/K</td>
<td>14.2 ppm/K</td>
</tr>
</tbody>
</table>

### Larger 2nd Bond Window

**with Improved Stitch Pull Value**

**Stitch pull reference 2N wire**

**Stitch pull reference RelMax**

**MTBA Improvement over Ref. 2N Wire**

**Maintaining Stitch Pull at Lower Bonding Parameter Setting**

Parameter reduction (USG, Force)

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**Device Type A**

- Device: BGA
- Wire bonder: ASM Eagle 60 AP
- Capillary: K&S 2CA5768L
- Gold wire: 20 µm

**Device Type B**

- Device: BGA
- Wire bonder: K&S Maxum Plus
- Capillary: K&S 488CF-3454-R33
- Gold wire: 23 µm
Gold Wire Segmentation by Properties

- Superior Reliability
- Widest Bonding
- Highest Looping Performance

- Electrical Performance

Widest Bonding Window

High Loop / Low Loop

Sensitve Pad Structure

The data given here is valid. We reserve the right to make technical alterations.

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