PAS 5500/850C

DUV Step-and-Scan

Description

The PAS 5500/850C 248-nm Step-and-Scan system enables 110-nm mass production. Since the initial introduction of the PAS 5500/850, the PAS 5500/850 series have become the worldwide standard for both 110-nm logic and 110-nm memory applications. The PAS 5500/850C can be configured with a number of options that enable ultra low-k in manufacturing, extending application of the PAS 5500/850C well below 110 nm.
### Technical Specifications

#### Lens

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength</td>
<td>248 nm</td>
</tr>
<tr>
<td>NA</td>
<td>0.55–0.80</td>
</tr>
<tr>
<td>Resolution</td>
<td>≤ 110 nm</td>
</tr>
</tbody>
</table>

Field size, for reticle with pellicle

- Max X: 26.0 mm
- Max Y: 33.0 mm

CD Uniformity @ 0.11-µm L/SCD Uniformity @ 0.11-µm isolated lines

- BF: ≤ 8 nm
- Over 0.4-µm defocus: ≤ 10 nm

CD Uniformity @ 0.11-µm isolated lines

- BF: ≤ 8 nm
- Over 0.3-µm defocus: ≤ 14 nm

Distortion (Dynamic): ≤ 13 nm

#### Overlay

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-machine</td>
<td>≤ 15 nm</td>
</tr>
<tr>
<td>Matched-machine</td>
<td>≤ 25 nm</td>
</tr>
</tbody>
</table>

#### Production Throughput

50-mJ/cm² exposure dose

- 200-mm wafers, 46 shots: ≥ 135 wph

#### AERIAL Illumination

**Conventional**

- Intensity: ≥ 3300 mW/cm² (@ NA Max)
- σ max: 0.88
- σ min: 0.31

**Annular**

- Intensity: ≥ 3300 mW/cm² (@ NA Max)
- σ out: 0.40–0.88
- σ in: 0.16–0.64
- Integrated slit uniformity: ≤ 0.7%

#### Lasers

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Cymer ELS6610</td>
</tr>
<tr>
<td>Power</td>
<td>20 W</td>
</tr>
<tr>
<td>Beam Delivery</td>
<td>≤ 20-m remote capability</td>
</tr>
</tbody>
</table>
Key Features and Benefits

Variable 0.8-NA Deep UV Projection Lens
Production resolution down to 110 nm.

AERIAL II Illuminator
Provides the ultimate flexibility in illumination modes at maximum throughput.

PAS 5500 Step-and-Scan Body
Commonality with i-line and 193-nm Step-and-Scan tools for economic mix-and-match.

ATHENA Advanced Alignment Combined With Reticle Blue Align
Increased alignment accuracy for a wide variety of processes. Ultra stable over time.

Includes 20-W KrF Laser Technology with Variable Laser Frequency Control
Combines high laser power for high throughput with efficient use of laser pulses for the lowest possible laser cost of operation.

Batch Streaming with ARMS
Provides continuous-flow manufacturing.