POCKELS CELLS

BBO POCKELS CELLS

BBO based Pockels cells can be useful at wavelengths from the UV to more than 2 μm. Low piezoelectric ringing makes these Pockels cells attractive for the control of high-power and high pulse repetition rate lasers. Fast switching electronic drivers properly matched to the cell are available for Q-switching, cavity dumping and other applications.

Pockels cells of PCB series are transverse field devices. Low electro-optical coefficient of BBO results in high operating voltages. The quarter-wave voltage is proportional to the ratio of electrode spacing and crystal length. As a result, smaller aperture devices have lower quarter-wave, however even for 2.5 mm aperture devices the quarter-wave voltage is as high as 4 kV @ 1064 nm.

Double crystal design is employed to reduce required voltages and to allow operation in half-wave mode with fast switching times.

FEATURES
❯ Minimal piezoelectric ringing
❯ Very low absorption and suitability for high power laser applications
❯ Reliable design for operation up to 2 MHz HV pulse repetition rate
❯ Broad transmission rate from 200 to 2000 nm

APPLICATIONS
❯ High repetition rate Q-switching
❯ Pulse picking at up to 2 MHz rate
❯ Laser cavity dumping
❯ Pulses coupling into and from regenerative amplifier

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PCB3S</th>
<th>PCB3D</th>
<th>PCB4S</th>
<th>PCB4D</th>
<th>PCB6.3S</th>
<th>PCB6.3D</th>
<th>PCB8D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear aperture diameter, mm</td>
<td>2.5</td>
<td>3.5</td>
<td>5.8</td>
<td>7</td>
<td>5.8</td>
<td>3.8</td>
<td>4.6</td>
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<tr>
<td>Quantity of crystals</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>λ/4 voltage (@ 1064 nm), kV DC</td>
<td>&lt;3.5</td>
<td>&lt;1.8</td>
<td>&lt;4.6</td>
<td>&lt;2.3</td>
<td>&lt;7.5</td>
<td>&lt;3.8</td>
<td>&lt;4.6</td>
</tr>
<tr>
<td>Capacitance, pF</td>
<td>4</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>&lt;8</td>
<td>&lt;8</td>
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<tr>
<td>Optical transmission, %</td>
<td>&gt;98</td>
<td>&gt;97</td>
<td>&gt;97</td>
<td>&gt;98</td>
<td>&gt;98</td>
<td>&gt;98</td>
<td>&gt;98</td>
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<tr>
<td>Contrast ratio 1)</td>
<td>&gt;1:1000</td>
<td>&gt;1:500</td>
<td>&gt;1:1000</td>
<td>&gt;1:500</td>
<td>&gt;1:1000</td>
<td>&gt;1:500</td>
<td>&gt;1:500</td>
</tr>
<tr>
<td>Dimensions, mm</td>
<td>Ø25.4×37.2</td>
<td>Ø25.4×37.2</td>
<td>Ø25.4×37.2</td>
<td>Ø25.4×37.2</td>
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<td>Ø25.4×37.2</td>
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</tbody>
</table>

1) Measured by crossed polarizers method. All crystals are coated AR/AR @1064 nm. Other antireflection coatings are available on request. Damage threshold >5 J/cm² for 10 ns pulses at 1064 nm. Specifications are subject to changes without advance notice.

RELATED PRODUCTS

PM1 mounting stage for Pockels cells of Ø25.4 mm
See page 8

DQ high repetition rate Pockels cell driver for Q-switching
See page 17

DPD cavity dumping & pulse picking Pockels cell drivers
See page 9

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