1206C
Acousto-Optic Modulator

APPLICATIONS
• Modulator
• Low Resolution Deflector
• Frequency Shifter

FEATURES
• Low Drive Power
• Small Size
• Good Temperature Stability

DRIVERS
523C-L or -2 (Digital Modulation)  620C-110 (Variable Frequency & Digital Modulation)
533C-L or -2 (Analog Modulation)  630C-110 (Variable Frequency & Analog Modulation)

OUTLINE DRAWING

Active aperture C/L
17,77
50,76
16,00
6,98
11,42
26,65
11,17

Dimm: mm
(1” = 25.4mm)

RF Input (SMA)

4-40 UNC x 4mm dp
(2 places)

Bragg pivot Hole
2.38mm x 4mm dp
Optical centre of AO cell
Coincides to C/L within 0.76mm

Input

Vel

Input

Vel
1206C
Acousto-Optic Modulator

SPECIFICATIONS

Spectral Range: .442->1.5µm*
Standard Operating Wavelengths: 442nm, 488-633nm
Interaction Medium: Lead Molybdate (PbMo04)
Acoustic Velocity: 3.63mm/µs
Active Aperture: 1mm
Centre Frequency (CF): 110MHz
RF Bandwidth: 50MHz
Input Impedance: 50Ω
VSWR: <1.5:1 @ 110MHz
DC Contrast Ratio: >1000:1 min (2000:1 typical)

PERFORMANCE vs. WAVELENGTH

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>442</th>
<th>488</th>
<th>515</th>
<th>633</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF Drive Power</td>
<td>&lt;0.4</td>
<td>&lt;0.5</td>
<td>&lt;0.5</td>
<td>&lt;1.0</td>
</tr>
<tr>
<td>Bragg angle (mr)</td>
<td>6.7</td>
<td>7.4</td>
<td>7.8</td>
<td>9.6</td>
</tr>
<tr>
<td>Beam Separation (mr)</td>
<td>13.4</td>
<td>14.8</td>
<td>15.6</td>
<td>19.2</td>
</tr>
<tr>
<td>Static Insertion Loss</td>
<td>&lt;10</td>
<td>&lt;5</td>
<td>&lt;3</td>
<td>&lt;3</td>
</tr>
</tbody>
</table>

PERFORMANCE vs. BEAM DIAMETER

<table>
<thead>
<tr>
<th>Beam Diameter (mm)</th>
<th>1.0</th>
<th>0.34</th>
<th>0.2</th>
<th>0.084</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rise Time (ns)</td>
<td>180</td>
<td>60</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Video Bandwidth (MHz)</td>
<td>2</td>
<td>6</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Deflection Efficiency (%)</td>
<td>&gt;85</td>
<td>&gt;85</td>
<td>&gt;80</td>
<td>&gt;60</td>
</tr>
<tr>
<td>T.Δf Product</td>
<td>16</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Operation at near IR wavelengths with reduced efficiency and modulation bandwidth. Special A/R coatings to 1.5µm available.

The typical MTF (depth of modulation) curve for the 1206C modulator assuming a 84µm beam diameter is shown at the left. For larger beam diameters the abscissa scales linearly. The curve is closely approximated by the function:

\[ M \approx \exp \left( -\left( \frac{f}{f_o} \right)^2 \right) \]

where:  
\[ f = \text{modulating frequency in MHz} \]
\[ f_o = \text{parameter of modulator related to beam waist diameter = 30MHz (from experimental data)} \]

The value of M from the curve may be used to the sine wave contrast ratio at a particular modulating according to the relation:

\[ \text{CR} = 1+M/1-M \]

For digital on-off modulation, the contrast ratio will be greater than the value calculated from the above equation.