1205C-x
Acousto-Optic Modulator

APPLICATIONS
- Modulator
- Low Resolution Deflector
- Frequency Shifter

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

DRIVERS
522C-L or -2 (Digital Modulation) 620C-80 (Variable Frequency & Digital Modulation)
532C-L or -2 (Analog Modulation) 630C-80 (Variable Frequency & Analog Modulation)

MODELS
1205C-1  1mm Active Aperture
1205C-2  2mm Active Aperture
1205C-3  3mm Active Aperture (488-532nm only)

OUTLINE DRAWING

Active aperture C/L
6,98
17,77
50,76
11,77
22,34

Aperture

4-40 UNC x 4mm dp (2 places)
RF Input (SMA)

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

Dimm: mm
(1" = 25.4mm)
1205C-x
Acousto-Optic Modulator

SPECIFICATIONS

Spectral Range: .442-> 1.5µm*
Standard Operating Wavelengths: 442nm, 488-633nm . (Special A/R coatings to 1.5µm).
Interaction Medium: Lead Molybdate (PbMo04)
Acoustic Velocity: 3.63mm/µs
Active Aperture: 1mm, 2mm and 3mm
Centre Frequency (CF): 80MHz
RF Bandwidth: 30MHz
Input Impedance: 50Ω Nominal
VSWR: <1.5:1 @ 80MHz
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>532</th>
<th>633</th>
<th>830*</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF Drive Power, 1205C-1 (W):</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
<td>&lt;0.4</td>
<td>&lt;0.5</td>
<td>&lt;0.9</td>
</tr>
<tr>
<td>RF Drive Power, 1205C-2 (W):</td>
<td>&lt;0.5</td>
<td>&lt;0.6</td>
<td>&lt;0.7</td>
<td>&lt;1.0</td>
<td>&lt;1.6</td>
</tr>
<tr>
<td>RF Drive Power, 1205C-3 (W):</td>
<td>&lt;0.7</td>
<td>&lt;0.9</td>
<td>&lt;1.1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bragg angle (mrad):</td>
<td>4.9</td>
<td>5.4</td>
<td>5.9</td>
<td>7.0</td>
<td>9.1</td>
</tr>
<tr>
<td>Beam Separation (mrad):</td>
<td>9.7</td>
<td>10.7</td>
<td>11.7</td>
<td>13.9</td>
<td>18.3</td>
</tr>
<tr>
<td>Static Insertion Loss (%):</td>
<td>&lt;10</td>
<td>&lt;5</td>
<td>&lt;3</td>
<td>&lt;3</td>
<td></td>
</tr>
</tbody>
</table>

PERFORMANCE vs. BEAM DIAMETER

<table>
<thead>
<tr>
<th>Beam Diameter (mm):</th>
<th>2.0</th>
<th>1.0</th>
<th>0.34</th>
<th>0.2</th>
<th>0.14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rise Time (ns):</td>
<td>360</td>
<td>180</td>
<td>60</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>Modulation Bandwidth (MHz) @ MTF = 0.5:</td>
<td>1.0</td>
<td>1.9</td>
<td>5.8</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Deflection Efficiency (% @ CF):</td>
<td>90</td>
<td>85</td>
<td>85</td>
<td>80</td>
<td>75</td>
</tr>
</tbody>
</table>

*Operation at near IR wavelengths with reduced efficiency and modulation bandwidth.

The typical MTF (depth of modulation) curve for the 1205C modulator assuming a 0.14mm beam diameter is shown at the left. For larger beam diameters the abscissa scales linearly. The curve is closely approximated by the function:

\[ M = \exp \left(-\frac{f}{f_0}\right)^2 \]

where: \( f \) = modulating frequency in MHz
\( f_0 \) = parameter of modulator related to beam waist
diameter = 18MHz (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:

\[ CR = 1 + M/1 - M \]

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

ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE
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Optical Polishing,
A/R coating, Vacuum Bonding