The 9924B is a 29 mm (1.13") diameter, end window photomultiplier with enhanced green sensitive bialkali photocathode and 11 high gain, high stability, SbCs dynodes of box and grid design. The 9924QB is a variant for applications requiring uv sensitivity.

- wide range of applications
- x-ray & gamma-ray spectroscopy
- photon counting of bio- and chemi-luminescent samples

- high gain
- low operating voltage
- good SER

**Notes:**
- *note that the sidewall of the envelope contains graded seals of high K content
- **wavelength range over which quantum efficiency exceeds 1% of peak

### window characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>9924B borosilicate</th>
<th>9924QB* fused silica</th>
</tr>
</thead>
<tbody>
<tr>
<td>spectral range***(nm)</td>
<td>280 - 680</td>
<td>160 - 680</td>
</tr>
<tr>
<td>refractive index (n)</td>
<td>1.49</td>
<td>1.46</td>
</tr>
<tr>
<td>radiopurity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K (ppm)</td>
<td>300</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Th (ppb)</td>
<td>250</td>
<td>&lt;10</td>
</tr>
<tr>
<td>U (ppb)</td>
<td>100</td>
<td>&lt;10</td>
</tr>
</tbody>
</table>

### features

- wide range of applications
- x-ray & gamma-ray spectroscopy
- photon counting of bio- and chemi-luminescent samples

### applications

- x-ray & gamma-ray spectroscopy
- photon counting of bio- and chemi-luminescent samples

### photomultiplier: bialkali

<table>
<thead>
<tr>
<th>Parameter</th>
<th>unit</th>
<th>min</th>
<th>typ</th>
<th>max</th>
</tr>
</thead>
<tbody>
<tr>
<td>active diameter</td>
<td>mm</td>
<td>25</td>
<td>26</td>
<td>95</td>
</tr>
<tr>
<td>quantum efficiency at peak</td>
<td>µA/lm</td>
<td>8</td>
<td>12</td>
<td>7.5</td>
</tr>
<tr>
<td>luminous sensitivity with CB filter</td>
<td>µA/lm</td>
<td>95</td>
<td>12</td>
<td>7.5</td>
</tr>
<tr>
<td>luminous sensitivity with CR filter</td>
<td>µA/lm</td>
<td>95</td>
<td>12</td>
<td>7.5</td>
</tr>
</tbody>
</table>

### gain at nominal A/lm x 10

- 2

### dark current at 20 °C:

- dc at nominal A/lm nA: 0.2
- dc at max. rated A/lm nA: 2

### pulsed linearity (-5% deviation):

- divider A: mA: 0.1
- rate effect (I/I for Δg/g=1%): 20

### magnetic field sensitivity:

- the field for which the output decreases by 50 %
  - most sensitive direction T x 10^-4: 2
  - temperature coefficient: % °C^-1: ± 0.5

### maximum ratings:

- anode current µA: 100
- cathode current nA: 25
- gain x 10^3: 21
- sensitivity A/lm: 2000
- temperature °C: -30
- V (k-a)(1) V: 60
- V (k-d1) V: 2000
- V (d-d)(2) V: 300
- ambient pressure (absolute) kPa: 202

### timing:

- single electron rise time ns: 15
- single electron (fwhm) ns: 30
- transit time ns: 85
- weight g: 55

### typical spectral response curves

- quantum efficiency %
- wavelength nm

### typical voltage gain characteristics

- A/lm
- Vk-a (kV)

---

**Notes:**

- (1) subject to not exceeding max. rated sensitivity
- (2) subject to not exceeding max rated Vk-a
8 voltage divider distribution

<table>
<thead>
<tr>
<th>k</th>
<th>d_1</th>
<th>d_2</th>
<th>d_3</th>
<th>d_4</th>
<th>d_5</th>
<th>d_6</th>
<th>d_7</th>
<th>d_8</th>
<th>d_9</th>
<th>d_10</th>
<th>d_11</th>
<th>a</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>150V</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Standard

Characteristics contained in this data sheet refer to divider A unless stated otherwise.

9 external dimensions mm

![Diagram](image)

10 base configuration (viewed from below)

Our range of B14B sockets, available for this series, includes versions with or without a mounting flange, and versions with contacts for mounting directly onto printed circuit boards.

12 voltage dividers

The standard voltage dividers available for these pmts are tabulated below:

<table>
<thead>
<tr>
<th>k</th>
<th>d_1</th>
<th>d_2</th>
<th>d_3</th>
<th>d_4</th>
<th>d_5</th>
<th>d_6</th>
<th>d_7</th>
<th>d_8</th>
<th>d_9</th>
<th>d_10</th>
<th>d_11</th>
<th>a</th>
</tr>
</thead>
<tbody>
<tr>
<td>C637E</td>
<td>2R</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C737G</td>
<td>150V</td>
<td>R</td>
<td></td>
<td></td>
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</tbody>
</table>

R = 330 kΩ

The 9924B meets the specification given in this data sheet. You may order variants by adding a suffix to the type number. You may also order options by adding a suffix to the type number. You may order product with specification options by discussing your requirements with us. If your selection option is for one-off order, then the product will be referred to as 9924A. For a repeat order, ET Enterprises will give the product a two digit suffix after the letter B, for example B21. This identifies your specific requirement.