

# 51 mm (2") photomultiplier

## 7266B series data sheet

### 1 description

The 7266B is a 51mm (2") diameter, end window photomultiplier with blue-green sensitive high QE bialkali photocathode and 10 high gain, high stability, SbCs dynodes of linear focused design for good linearity and timing. It is a high QE version of the 9266B.

### 2 applications

- any application requiring high QE
- x-ray and gamma-ray
- scintillation

### 3 features

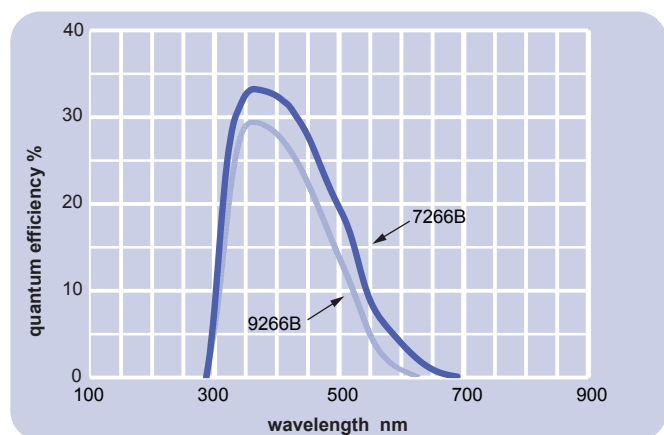
- high QE photocathode
- good SER
- high pulsed linearity
- low rate effect

### 4 window characteristics

| 7266B<br>borosilicate      |           |
|----------------------------|-----------|
| spectral range**(nm)       | 290 - 680 |
| refractive index ( $n_d$ ) |           |
| K (ppm)                    | 300       |
| Th (ppb)                   | 250       |
| U (ppb)                    | 100       |

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

### 5 typical spectral response curves

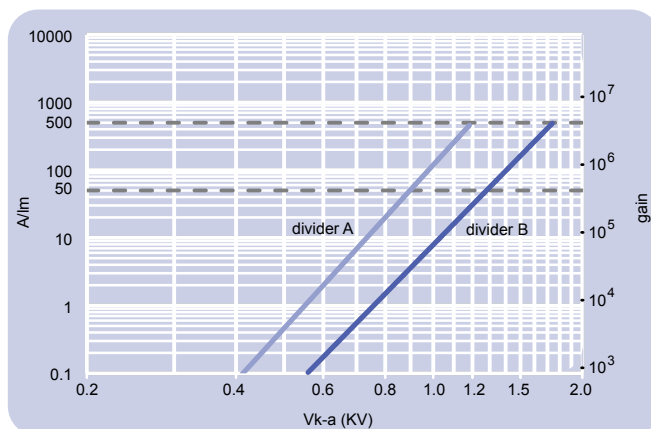


### 6 characteristics

|  | unit                              | min | typ       | max  |
|--|-----------------------------------|-----|-----------|------|
| <b>photocathode: bialkali</b>  |                                   |     |           |      |
| active diameter  | mm                                |     | 48        |      |
| quantum efficiency at peak   | %                                 |     | 33        |      |
| luminous sensitivity   | $\mu\text{A}/\text{lm}$           |     | 120       |      |
| with CB filter   |                                   | 12  | 14        |      |
| with CR filter   |                                   |     | 14        |      |
| <b>dynodes: 10LFSbCs</b>   |                                   |     |           |      |
| <b>anode sensitivity in divider A:</b>   |                                   |     |           |      |
| nominal anode sensitivity  | $\text{A}/\text{lm}$              |     | 50        |      |
| max. rated anode sensitivity   | $\text{A}/\text{lm}$              |     | 500       |      |
| overall V for nominal $\text{A}/\text{lm}$                                     | V                                 |     | 900       | 1300 |
| overall V for max. rated $\text{A}/\text{lm}$                                  | V                                 |     | 1150      |      |
| gain at nominal $\text{A}/\text{lm}$   | $\times 10^6$                     |     | 0.4       |      |
| <b>dark current at 20 °C:</b>  |                                   |     |           |      |
| dc at nominal $\text{A}/\text{lm}$   | nA                                |     | 1         | 5    |
| dc at max. rated $\text{A}/\text{lm}$  | nA                                |     | 10        |      |
| dark count rate  | $\text{s}^{-1}$                   |     | 2500      |      |
| <b>pulsed linearity (-5% deviation)</b>  |                                   |     |           |      |
| divider A  | mA                                |     | 40        |      |
| divider B  | mA                                |     | 120       |      |
| <b>rate effect (<math>I_a</math> for <math>\Delta g/g=1\%</math>):</b>         |                                   |     |           |      |
| magnetic field sensitivity:<br>the field for which the output decreases by 50% | $\mu\text{A}$                     |     | 20        |      |
| most sensitive direction   | $\text{T} \times 10^{-4}$         |     | 1.3       |      |
| temperature coefficient  | $\% \text{ } ^\circ\text{C}^{-1}$ |     | $\pm 0.5$ |      |
| <b>timing:</b>   |                                   |     |           |      |
| multi electron rise time   | ns                                |     | 7         |      |
| multi electron fwhm  | ns                                |     | 12        |      |
| single electron rise time  | ns                                |     | 3         |      |
| single electron fwhm   | ns                                |     | 10        |      |
| transit time   | ns                                |     | 40        |      |
| <b>weight:</b>   |                                   |     |           |      |
| hard pin   | g                                 |     | 100       |      |
| capped   | g                                 |     | 130       |      |
| <b>maximum ratings:</b>  |                                   |     |           |      |
| anode current  | $\mu\text{A}$                     |     |           | 100  |
| cathode current  | nA                                |     |           | 100  |
| gain   | $\times 10^6$                     |     |           | 4    |
| sensitivity  | $\text{A}/\text{lm}$              |     |           | 500  |
| temperature  | $^\circ\text{C}$                  | -30 |           | 60   |
| V (k-a) <sup>(1)</sup>   | V                                 |     |           | 2000 |
| V (k-d1)   | V                                 |     |           | 300  |
| V (d-d) <sup>(2)</sup>   | V                                 |     |           | 300  |
| ambient pressure (absolute)  | kPa                               |     |           | 202  |

<sup>(1)</sup> subject to not exceeding max. rated sensitivity <sup>(2)</sup> subject to not exceeding max rated V(k-a)

### 7 typical voltage gain characteristics



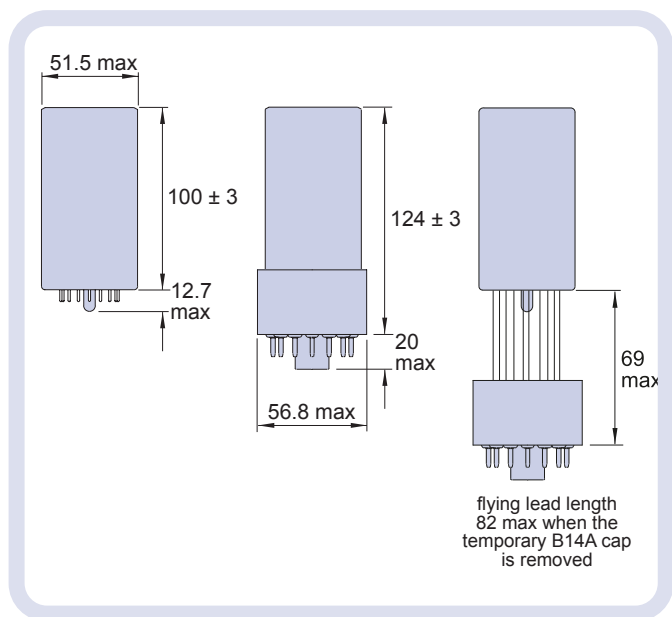
## 8 voltage divider distribution

|   |    |                |                |       |                |                |                |                 |   |                          |
|---|----|----------------|----------------|-------|----------------|----------------|----------------|-----------------|---|--------------------------|
|   | k  | d <sub>1</sub> | d <sub>2</sub> | ..... | d <sub>7</sub> | d <sub>8</sub> | d <sub>9</sub> | d <sub>10</sub> | a |                          |
| A | 2R | R              | .....          | R     | R              | R              | R              | R               | R | Standard                 |
| B | 2R | R              | .....          | R     | 2R             | 3R             | 4R             | 3R              |   | High Pulsed<br>linearity |

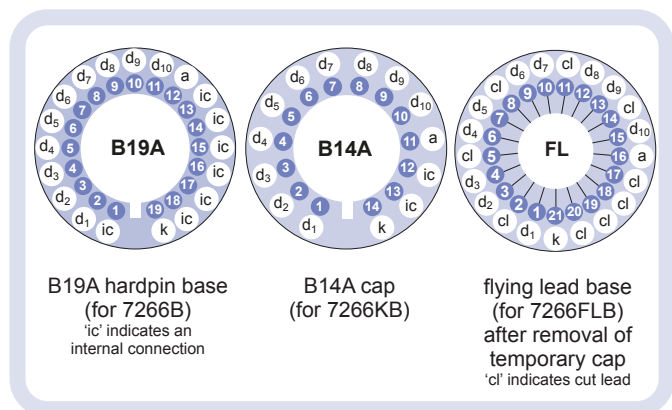
Characteristics contained in this data sheet refer to divider A unless stated otherwise.

## 9 external dimensions mm

The drawings below show the 7266B in hardpin format, the 7266KB with the B14A cap fitted and the 7266FLB in flying lead format with the temporary B14A cap fitted. The cap is attached as agreed with the customer.



## 10 base configuration (viewed from below)



Our range of B19A sockets is available to suit the B19A hardpin base. Our range of B14A sockets is available to suit the temporary B14A cap when the flying lead base variant is selected. Both socket ranges include versions with or without a mounting flange, and with contacts for mounting directly onto printed circuit boards.

## 11 ordering information

The 7266B 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 a one-off order, then the product will be referred to as 7266A. For a repeat order, ET Enterprises Limited will give the product a two digit suffix after the letter B, for example B21. This identifies your specific requirement.

7266

**base options**

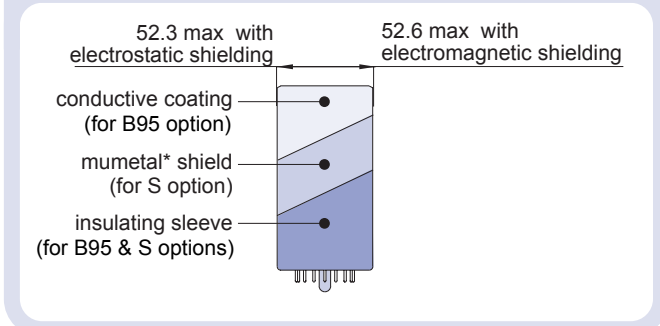
- K** capped
- KFL** flying lead base with temporary B14A cap

**options**

- B95** electrostatic shielding see drawing below
- S** electromagnetic shielding see drawing below
- M** supplied with spectral response calibration

**specification options**

- B** as given in data sheet
- A** single order to selected specification
- Bnn** repeat order to selected specification



\*mumetal is a registered trademark of Magnetic Shield Corporation

## 12 voltage dividers

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

| 7266  |       |       | k     | d <sub>1</sub> | d <sub>2</sub> | ... | d <sub>6</sub> | d <sub>7</sub> | d <sub>8</sub> | d <sub>9</sub> | d <sub>10</sub> | a |
|-------|-------|-------|-------|----------------|----------------|-----|----------------|----------------|----------------|----------------|-----------------|---|
| B     | KB    | FLB   |       |                |                |     |                |                |                |                |                 |   |
| C647A | C636A | C655A | 2R    | R              | ...            | R   | R              | R              | R              | R              | R               | R |
| C647B | C636B | C655B | 2R    | R              | ...            | R   | 2R             | 3R             | 4R             | 3R             |                 |   |
| C647C | C636C | C655C | 150 V | R              | ...            | R   | R              | R              | R              | R              | R               | R |
| C647D | C636D | C655D | 150 V | R              | ...            | R   | 2R             | 3R             | 4R             | 3R             |                 |   |

R = 330 kΩ

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