

# 25 mm (1") photomultiplier

## 9116B series data sheet

### 1 description

The 9116B is a compact 25mm (1") diameter, end window photomultiplier with a hemispherical window for  $2\pi$  detection, enhanced green sensitive bialkali photocathode and 6 high gain, high stability, SbCs dynodes of circular focused design for fast timing. The 9116WB is a variant for applications requiring UV sensitivity. The effective photocathode area is approximately twice that of a 25 mm plano-planar type.

### 2 applications

- high energy physics studies
- astrophysics

### 3 features

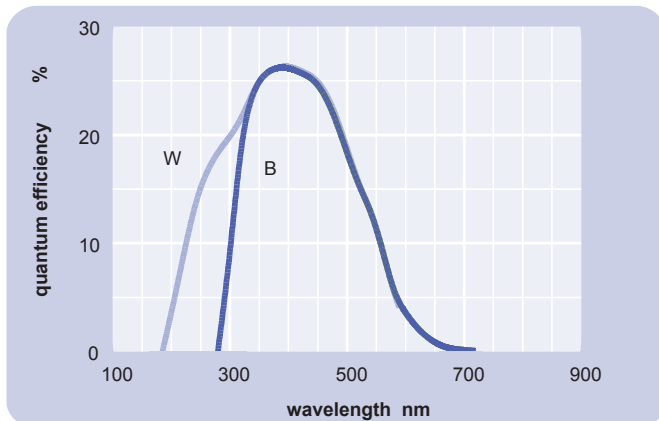
- compact
- $2\pi$  detection
- fast time response

### 4 window characteristics

	9116B borosilicate	9116WB UV glass
spectral range (nm)*	295 - 680	170 - 630
refractive index ( $n_s$ )	1.49	1.48
radio purity content:		
K (ppm)	1400	8500
Th (ppb)	900	30
U (ppb)	1100	30

\* wavelength range over which quantum efficiency exceeds 1 % of peak

### 5 typical spectral response curves

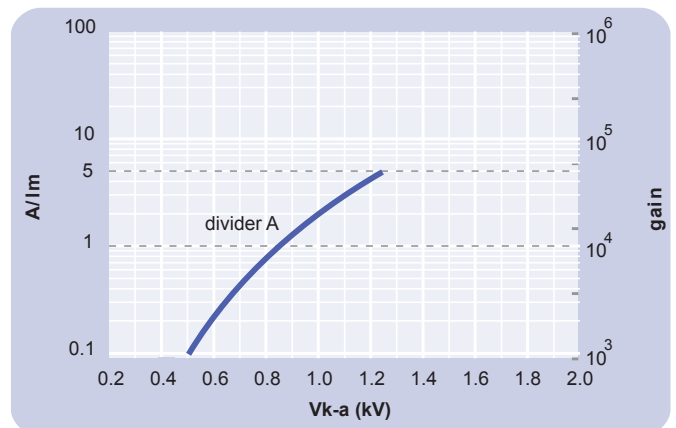


### 6 characteristics

	unit	min	typ	max
<b>photocathode: bialkali</b>				
active diameter	mm		22 ( $2\pi$ )	
quantum efficiency at peak	%		26	
luminous sensitivity	$\mu\text{A/lm}$		90	
with CB filter		7	11	
with CR filter			5	
<b>dynodes: 6CFsBcs</b>				
<b>anode sensitivity in divider A:</b>				
nom. anode sensitivity	A/lm		1	
max. rated anode sensitivity	A/lm		5	1200
overall V for nom. A/lm	V		850	
overall V for max. rated A/lm	V		1300	
gain at nom. A/lm	$\times 10^6$		0.01	
<b>dark current at 20 °C:</b>				
dc at nom. A/lm	nA		0.3	5
dc at max. rated A/lm	nA		1.5	
<b>pulsed linearity (-5% deviation):</b>				
divider A	mA		2	
rate effect ( $I_a$ for $\Delta g/g=1\%$ ):	$\mu\text{A}$		20	
<b>magnetic field sensitivity:</b>				
the field for which the output decreases by 50 %				
most sensitive direction	$\text{T} \times 10^{-4}$		2.5	
temperature coefficient:	$\% \text{ } ^\circ\text{C}^{-1}$		$\pm 0.5$	
<b>timing:</b>				
multi electron rise time	ns		1.8	
multi electron fwhm	ns		3.1	
transit time delay	ns		17	
weight:	g		15	
<b>maximum ratings:</b>				
anode current	$\mu\text{A}$			100
cathode current	nA			30
gain	$\times 10^6$			0.06
sensitivity	A/lm			5
temperature	$^\circ\text{C}$	-30		60
V (k-a) <sup>(1)</sup>	V			1800
V (k-d1)	V			400
V (d-d) <sup>(2)</sup>	V			200
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

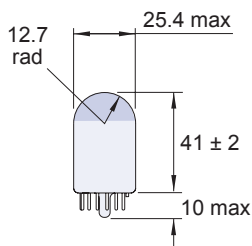


## 8 voltage divider distribution

k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>6</sub>	a
A	2R	R	.....	R	R Standard

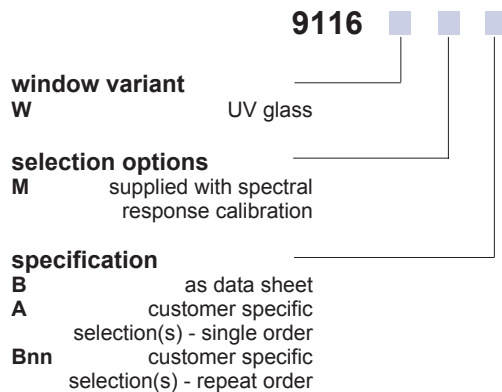
Characteristics contained in this data sheet refer to divider A unless stated otherwise.

## 9 external dimensions mm

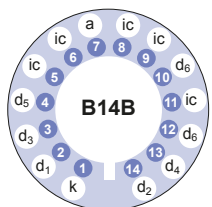


## 11 ordering information

The 9116B 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 9116A. 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.



## 10 base configuration (viewed from below)



'ic' indicates internal connection

## 12 voltage dividers

The standard voltage dividers available for all variants of this pmt are tabulated below:

	k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	a
C617A	2R	R	.....	R	R	R		
C617B	2R	R	.....	R	2R	4R		

R = 330 kΩ

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

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