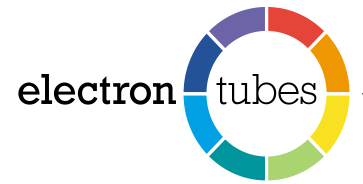


# 52 mm (2") photomultiplier 9869B series data sheet



## 1 description

The 9869B is a 52 mm (2") diameter, end window photomultiplier with a thin domed window, sandblasted for enhanced cathode sensitivity, blue-green sensitive bialkali photocathode and 8 high gain, high stability, SbCs dynodes of linear focused design for good linearity and timing. The 9869WB and 9869QB are variants for applications requiring uv sensitivity.

## 2 applications

- liquid scintillation counting

## 3 features

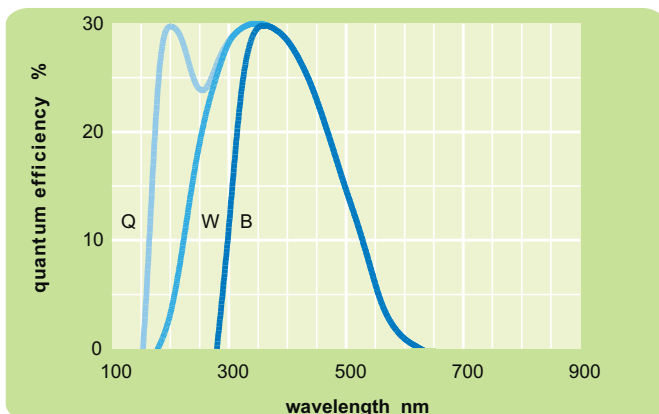
- compact

## 4 window characteristics

	9869B borosilicate	9869WB uv glass	9869QB* fused silica
spectral range** (nm)	290 - 630	185 - 630	160 - 630
refractive index ( $n_d$ )	1.49	1.48	1.46
K (ppm)	300	8500	<10
Th (ppb)	250	30	<10
U (ppb)	100	30	<10

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

## 5 typical spectral response curves

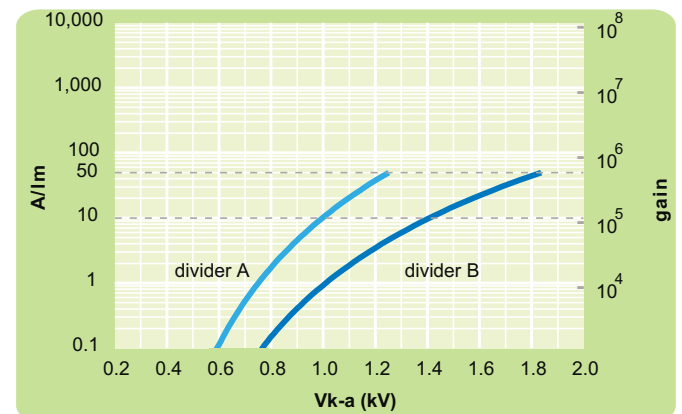


## 6 characteristics

	unit	min	typ	max
<b>photocathode: bialkali</b>				
active diameter	mm		46	
quantum efficiency at peak	%		30	
luminous sensitivity	$\mu\text{A}/\text{lm}$		85	
with CB filter		9.5	12.5	
with CR filter			2	
<b>dynodes: 8LFSbCs</b>				
<b>anode sensitivity in divider A:</b>				
nominal anode sensitivity	$\text{A}/\text{lm}$		10	
max. rated anode sensitivity	$\text{A}/\text{lm}$		50	
overall V for nominal $\text{A}/\text{lm}$	V		1000	1300
overall V for max. rated $\text{A}/\text{lm}$	V		1250	
gain at nominal $\text{A}/\text{lm}$	$\times 10^6$		0.1	
<b>dark current at 20 °C:</b>				
dc at nominal $\text{A}/\text{lm}$	nA		0.05	1
dc at max. rated $\text{A}/\text{lm}$	nA		0.2	
<b>pulsed linearity (-5% deviation):</b>				
divider A	mA		30	
divider B	mA		100	
<b>rate effect (<math>I_a</math> for <math>\Delta g/g=1\%</math>):</b>				
	$\mu\text{A}$		20	
<b>magnetic field sensitivity:</b>				
the field for which the output decreases by 50 %				
most sensitive direction	$\text{T} \times 10^{-4}$		1	
<b>temperature coefficient:</b>				
	$\% \text{ } ^\circ\text{C}^{-1}$		$\pm 0.5$	
<b>timing:</b>				
multi electron rise time	ns		3.3	
multi electron fwhm	ns		5	
transit time	ns		30	
<b>weight:</b>				
	g		70	
<b>maximum ratings:</b>				
anode current	$\mu\text{A}$			100
cathode current	nA			100
gain	$\times 10^6$			0.6
sensitivity	$\text{A}/\text{lm}$			50
temperature	$^\circ\text{C}$	-30		60
V (k-a) <sup>(1)</sup>	V			1800
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

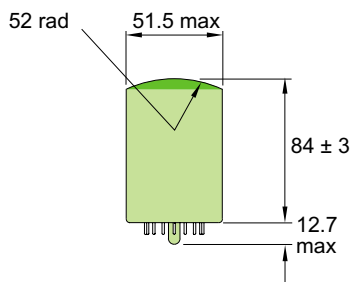


## 8 voltage divider distribution

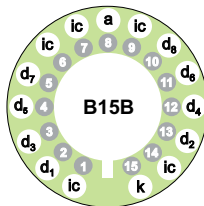
	k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	a	
A	300V	R	.....	R	R	R	R	R	R	Standard
B	300V	R	.....	R	2R	3R	4R	3R	R	High Pulsed Linearity

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

## 9 external dimensions mm



## 10 base configuration (viewed from below)



'ic' indicates an internal connection

Our range of B15B sockets, available for this series, includes versions with or without a mounting flange, and versions with contacts for mounting directly onto printed circuit boards.

## 11 handling instructions

The window of this pmt has been specially cleaned to give maximum efficiency. It should not be touched with fingers or allowed to come into contact with oil or grease. The window can be cleaned with isopropyl alcohol to remove oil deposits.

## 12 ordering information

The 9869B meets the specification given in this data sheet. You may 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 9869A. For a repeat order, Electron Tubes will give the product a two digit suffix after the letter B, for example B21. This identifies your specific requirement.

