

# 51 mm (2") photomultiplier

## 9807B series data sheet

### 1 description

The 9807B is a 51 mm (2") diameter, end window photomultiplier with blue-green sensitive bialkali photocathode and 12 high gain, high stability, BeCu dynodes of linear focused design for good linearity and timing. It is a plug-in replacement for the RCA 8575 and has a 21 pin base.

### 2 applications

- high energy physics studies

### 3 features

- good SER
- high pulsed linearity

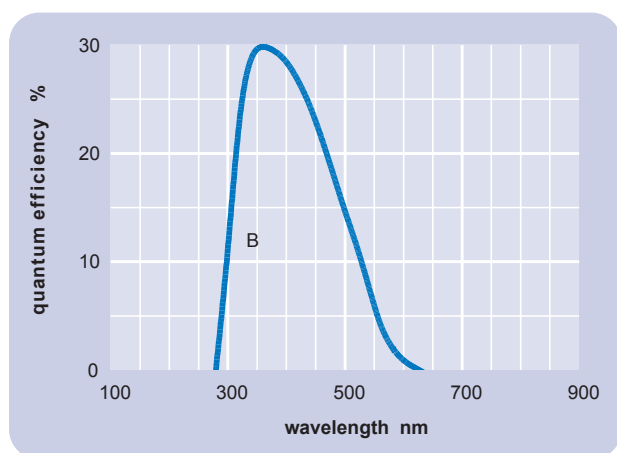
### 4 window characteristics

9807B borosilicate	
spectral range** (nm)	290 - 630
refractive index ( $n_d$ )	1.49
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

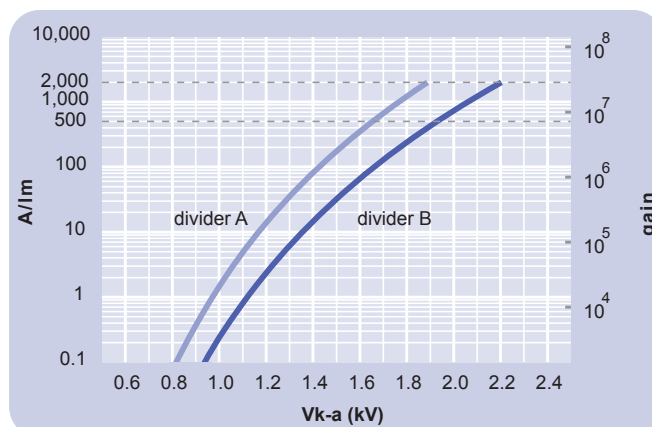


### 6 characteristics

	unit	min	typ	max
<b>photocathode: bialkali</b>				
active diameter	mm		46	
quantum efficiency at peak	%		30	
luminous sensitivity	$\mu\text{A/lm}$		70	
with CB filter		8	11.5	
with CR filter			2	
<b>dynodes: 12LFBcCu</b>				
<b>anode sensitivity in divider A:</b>				
nominal anode sensitivity	A/lm		500	
max. rated anode sensitivity	A/lm		2000	
overall V for nominal A/lm	V		1650	2300
overall V for max. rated A/lm	V		1900	
gain at nominal A/lm	$\times 10^6$		7	
<b>dark current at 20 °C:</b>				
dc at nominal A/lm	nA		3	20
dc at max. rated A/lm	nA		20	
dark count rate	$\text{s}^{-1}$		300	
<b>pulsed linearity (-5% deviation):</b>				
divider A	mA		50	
divider B	mA		150	
<b>pulse height resolution:</b>				
single electron peak to valley	ratio		2	
<b>rate effect (<math>I_a</math> for <math>\Delta g/g=1\%</math>):</b>				
	$\mu\text{A}$		1	
<b>magnetic field sensitivity:</b>				
the field for which the output decreases by 50 %				
most sensitive direction	$T \times 10^{-4}$		1	
<b>temperature coefficient:</b>				
	$\% \text{ } ^\circ\text{C}^{-1}$		$\pm 0.5$	
<b>timing:</b>				
single electron rise time	ns		2	
single electron fwhm	ns		3	
single electron jitter (fwhm)	ns		2.2	
multi electron rise time	ns		3.2	
multi electron fwhm	ns		4.5	
transit time	ns		41	
<b>weight:</b>				
	g		150	
<b>maximum ratings:</b>				
anode current	$\mu\text{A}$			100
cathode current	nA			100
gain	$\times 10^6$			30
sensitivity	A/lm			2000
temperature	$^\circ\text{C}$	-30		60
V (k-a) <sup>(1)</sup>	V			2800
V (k-d1)	V			500
V (d-d) <sup>(2)</sup>	V			450
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



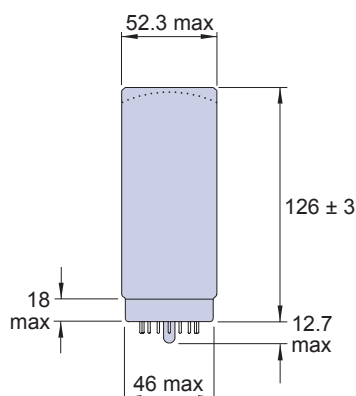
## 8 voltage divider distribution

	k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>9</sub>	d <sub>10</sub>	d <sub>11</sub>	d <sub>12</sub>	a	
A	300V	R	.....		R	R	R	R	R	Standard
B	300V	R	.....		R	1.25R	1.5R	2R	3R	High Pulsed Linearity

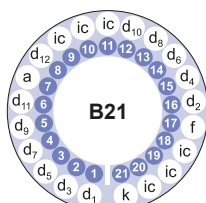
note: focus connected to d<sub>1</sub>.

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

note: connect f to d<sub>1</sub>

Our range of B21 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 ordering information

The 9807B 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 9807A. 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.

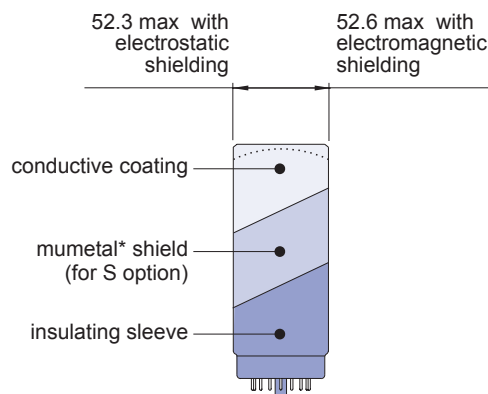
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### options

- 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



## 12 voltage dividers

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

	k	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	.....	d <sub>8</sub>	d <sub>9</sub>	d <sub>10</sub>	d <sub>11</sub>	d <sub>12</sub>	a
C628A	3R	R	R	.....		R	R	R	R	R	
C628B	3R	R	R	.....		R	1.25R	1.5R	2R	3R	
C628C	300 V	R	R	.....		R	R	R	R	R	
C628D	300 V	R	R	.....		R	1.25R	1.5R	2R	3R	

note: focus connected to d<sub>1</sub>

R = 330 kΩ

\*mumetal is a registered trademark of Magnetic Shield Corporation

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