

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

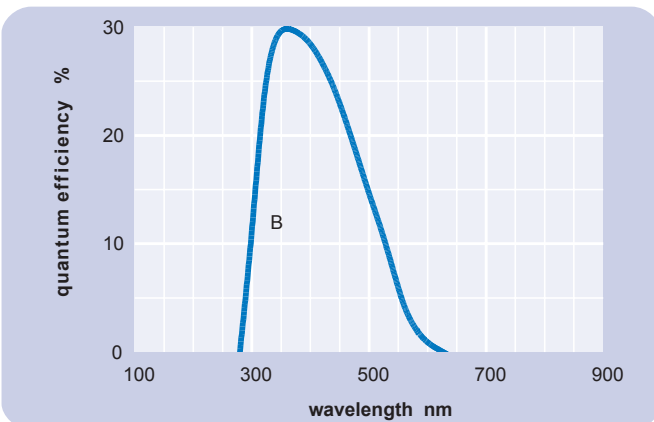
- good SER
- high pulsed linearity

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

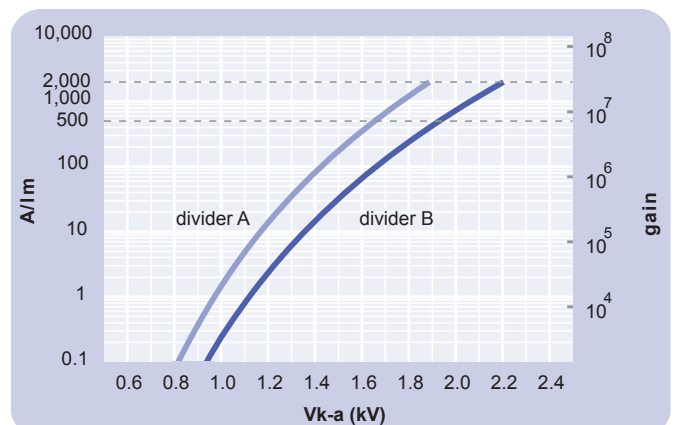


6 characteristics

	unit	min	typ	max
photocathode: bialkali				
active diameter	mm		46	
quantum efficiency at peak	%		30	
luminous sensitivity	$\mu\text{A}/\text{lm}$		70	
with CB filter		8	11.5	
with CR filter			2	
dynodes: 12LFBBeCu				
anode sensitivity in divider A:				
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	
dark current at 20 °C:				
dc at nominal A/lm	nA		3	20
dc at max. rated A/lm	nA		20	
dark count rate	s^{-1}		300	
pulsed linearity (-5% deviation):				
divider A	mA		50	
divider B	mA		150	
pulse height resolution:				
single electron peak to valley	ratio		2	
rate effect (I_a for $\Delta g/g=1\%$):				
	μA		1	
magnetic field sensitivity:				
the field for which the output decreases by 50%				
most sensitive direction	$T \times 10^{-4}$		1	
temperature coefficient:	$\% \text{ } ^\circ\text{C}^{-1}$		± 0.5	
timing:				
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	
weight:				
	g		150	
maximum ratings:				
anode current	μA			100
cathode current	nA			100
gain	$\times 10^6$			30
sensitivity	A/lm			2000
temperature	$^\circ\text{C}$	-30		60
V (k-a) ⁽¹⁾	V			2800
V (k-d1)	V			500
V (d-d) ⁽²⁾	V			450
ambient pressure (absolute)	kPa			202

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

7 typical voltage gain characteristics



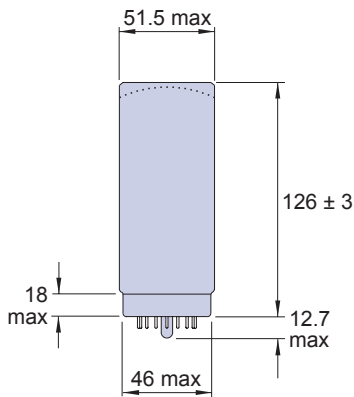
8 voltage divider distribution

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

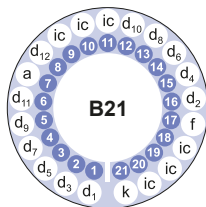
note: focus connected to d₁.

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 d₁

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.

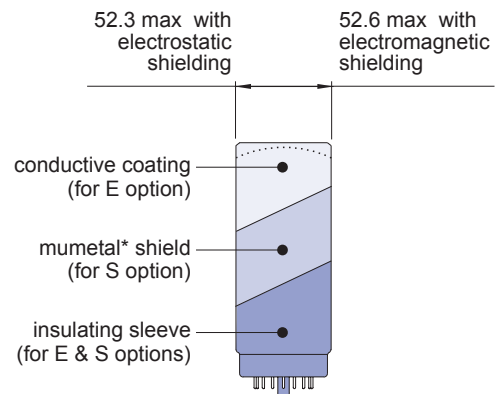
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options

- E** 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



12 voltage dividers

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

	k	d ₁	d ₂	d ₃	.....	d ₈	d ₉	d ₁₀	d ₁₁	d ₁₂	a
C628A	3R	R	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 d₁

R = 330 kΩ

*mumetal is a registered trademark of Magnetic Shield Corporation

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