

29 mm (1.13") photomultiplier 9108B series data sheet

1 description

The 9108B is a 29 mm (1.13") diameter end window photomultiplier with enhanced green sensitive bialkali photocathode and 11 high gain, high stability, SbCs dynodes of linear focused design.

2 applications

- wide range of applications
- x-ray & gamma-ray spectroscopy
- photon counting of bio- and chemi-luminescent samples

3 features

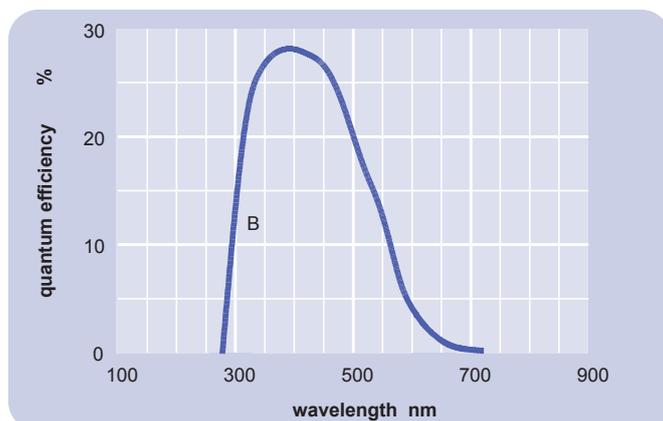
- compact (a short version of the 9124B)
- high gain
- high pulsed linearity
- good SER
- good pulse height resolution

4 window characteristics

9108B borosilicate	
spectral range**(nm)	280 - 680
refractive index (n_d)	1.49
K (ppm)	300
Th (ppb)	250
U (ppb)	100

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

5 typical spectral response curves

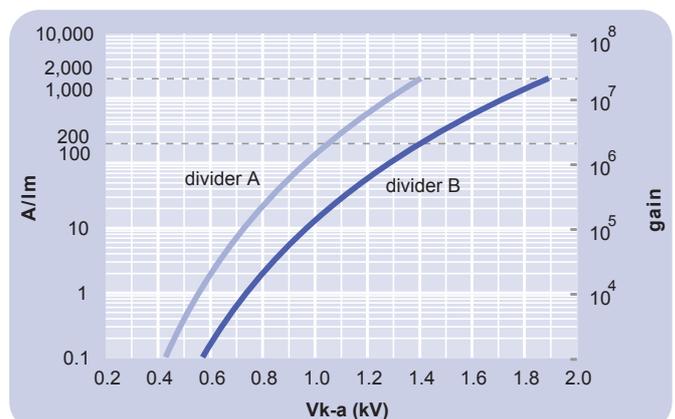


6 characteristics

	unit	min	typ	max
photocathode: bialkali				
active diameter	mm		25	
quantum efficiency at peak	%		28	
luminous sensitivity	$\mu\text{A/lm}$		90	
with CB filter		7	11	
with CR filter			5	
dynodes: 11LFSbCs				
anode sensitivity in divider A:				
nominal anode sensitivity	A/lm		200	
max. rated anode sensitivity	A/lm		2000	
overall V for nominal A/lm	V		1050	1250
overall V for max. rated A/lm	V		1400	
gain at nominal A/lm	$\times 10^6$		2	
dark current at 20 °C:				
dc at nominal A/lm	nA		0.3	5
dc at max. rated A/lm	nA		3	
dark count rate	s^{-1}		200	
afterpulse rate:				
afterpulse time window	μs	0.1	1	6.4
pulsed linearity (-5% deviation):				
divider A	mA		25	
divider B	mA		100	
pulse height resolution:				
single electron peak to valley	ratio		1.7	
¹³⁷ Cs with 1" x 1" NaI (T1)			7.5	
rate effect (I_a for Dg/g=1%):				
	μA		20	
magnetic field sensitivity:				
the field for which the output decreases by 50 %				
most sensitive direction	$\text{T} \times 10^{-4}$		2	
temperature coefficient:				
timing:	$\% \text{ } ^\circ\text{C}^{-1}$		± 0.5	
single electron rise time	ns		3	
single electron (fwhm)	ns		5	
single electron jitter (fwhm)	ns		4	
transit time	ns		33	
weight:	g		45	
maximum ratings:				
anode current	μA			100
cathode current	nA			100
gain	$\times 10^6$		22	
sensitivity	A/lm		2000	
temperature	$^\circ\text{C}$	-30		60
V (k-a) ⁽¹⁾	V			2000
V (k-d1)	V			300
V (d-d) ⁽²⁾	V			300
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

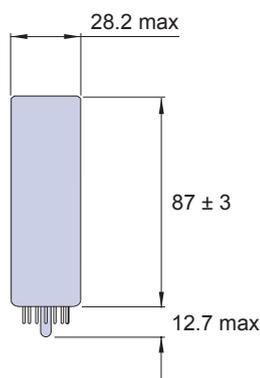


8 voltage divider distribution

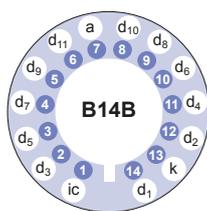
	k	d ₁	d ₂	.....	d ₈	d ₉	d ₁₀	d ₁₁	a	
A	2R	R	.....	R	R	R	R	R	R	Standard
B	2R	R	.....	R	2R	3R	4R	3R		High Pulsed Linearity

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

9 external dimensions mm



10 base configuration (viewed from below)

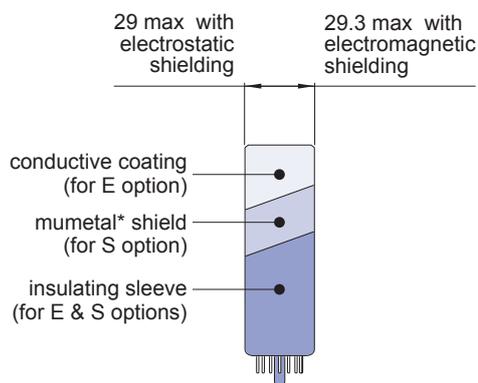
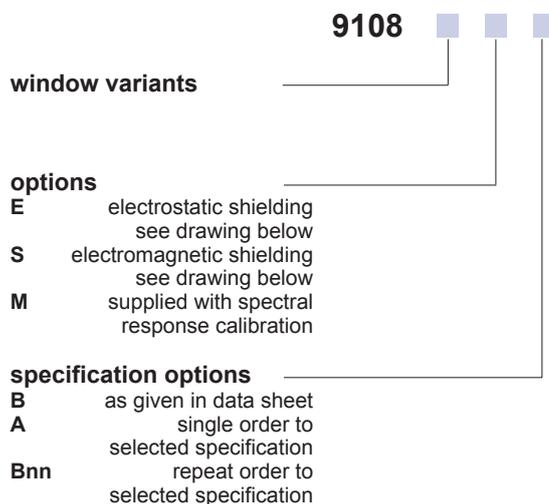


'ic' indicates an internal connection

Our range of B14B 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 9108B 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 9108A. 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.



12 voltage dividers

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

	k	d ₁	d ₂	d ₇	d ₈	d ₉	d ₁₀	d ₁₁	a
C637A	2R	R	R	R	R	R	R	R	
C637B	2R	R	R	2R	3R	4R	3R		
C637C	150 V	R	R	R	R	R	R		

R = 330 kΩ

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