

30 mm (1 $\frac{1}{8}$ ") photomultiplier 9125B series data sheet



1 description

The 9125B is a 30 mm (1 $\frac{1}{8}$ ") diameter, end window photomultiplier with blue-green sensitive bi-alkali photocathode and 11 high gain, high stability, SbCs dynodes of linear focused design. The 9125WB and 9125QB are variants for applications requiring uv sensitivity.

2 applications

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

3 features

- high gain
- low operating voltage
- good SER
- good pulse height resolution

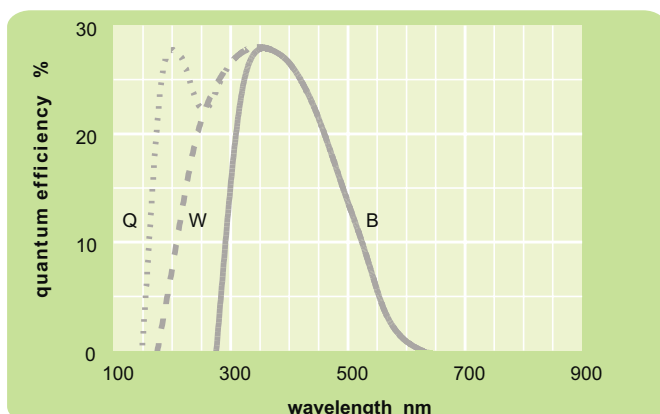
4 window characteristics

	9125B borosilicate	9125WB UV glass	9125QB* fused silica
spectral range**(nm)	280 - 630	170 - 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 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

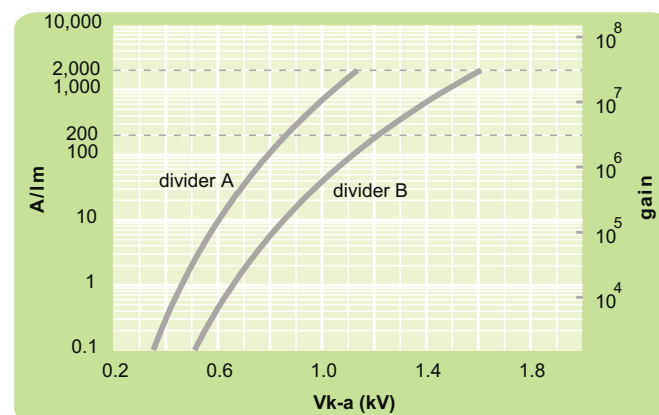


6 characteristics

	unit	min	typ	max
photocathode: bi-alkali				
active diameter	mm		25	
quantum efficiency at peak	%		28	
luminous sensitivity	$\mu\text{A/lm}$		65	
with CB filter		7	11	
with CR filter			1	
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		850	1100
overall V for max. rated A/lm	V		1100	
gain at nominal A/lm	$\times 10^6$		3	
dark current at 20 °C:				
dc at nominal A/lm	nA		0.2	5
dc at max. rated A/lm	nA		2	
dark count rate	s^{-1}		100	
afterpulse rate:	%		1	
afterpulse time window	μs	0.1		6.4
pulsed linearity (-5% deviation):				
divider A	mA		25	
divider B	mA		100	
pulse height resolution:				
single electron peak to valley	ratio		2	
¹³⁷ Cs with 1" x 1" NaI(Tl)			7.5	
rate effect (I_a for $\Delta g/g=1\%$):	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:	% $^{\circ}\text{C}^{-1}$		± 0.5	
timing:				
single electron rise time	ns		4.5	
single electron (fwhm)	ns		7.5	
single electron jitter (fwhm)	ns		4	
transit time	ns		33	
weight:	g		50	
maximum ratings:				
anode current	μA			100
cathode current	nA			50
gain	$\times 10^6$			30
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

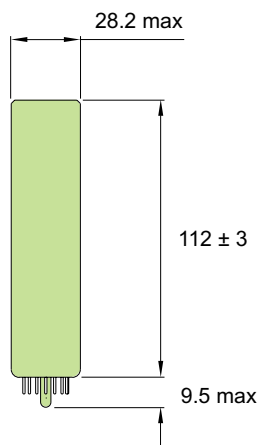


8 voltage divider distribution

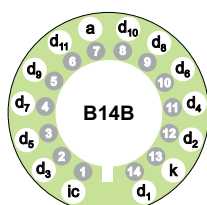
k	d ₁	d ₂	.....	d ₈	d ₉	d ₁₀	d ₁₁	a	
A	2R	R	.....	R	R	R	R	R	Standard
B	2R	R	.....	R	2R	3R	4R	3R	High Pulsed Linearity

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 9125B 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 9125A. 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.

9125

window variants

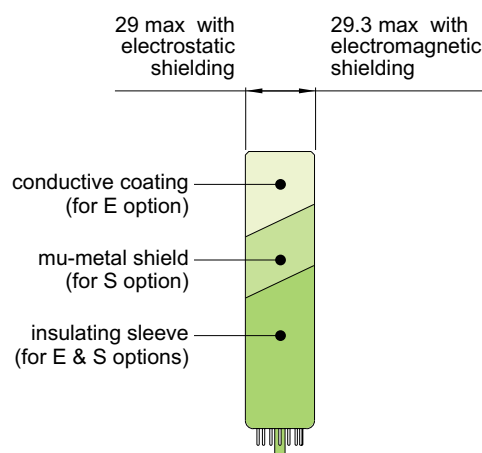
W UV glass
Q fused silica

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 ₇	d ₈	d ₉	d ₁₀	d ₁₁	a
C637A	2R	R		R	R	R	R	R	
C637C	2R	R		R	2R	3R	4R	3R	
C686	2 V	V		V	V	V	V	V	

R = 300 kΩ

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