

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 bialkali 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

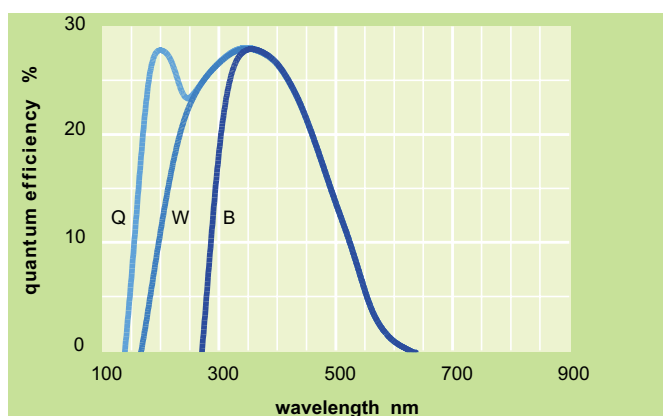
4 window characteristics

	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

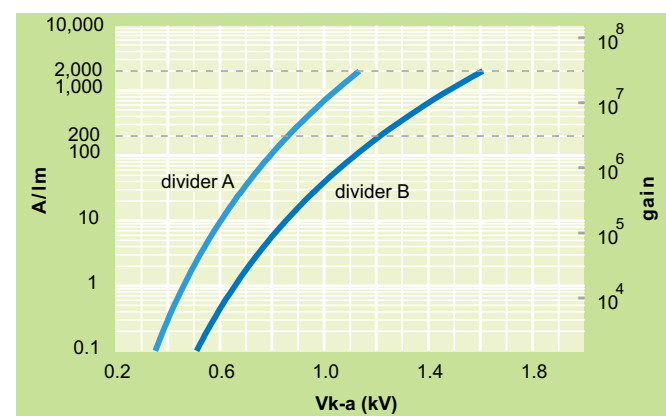


6 characteristics

	unit	min	typ	max
photocathode: bialkali				
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	1150
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:	$\% \text{ } ^\circ\text{C}^{-1}$		± 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

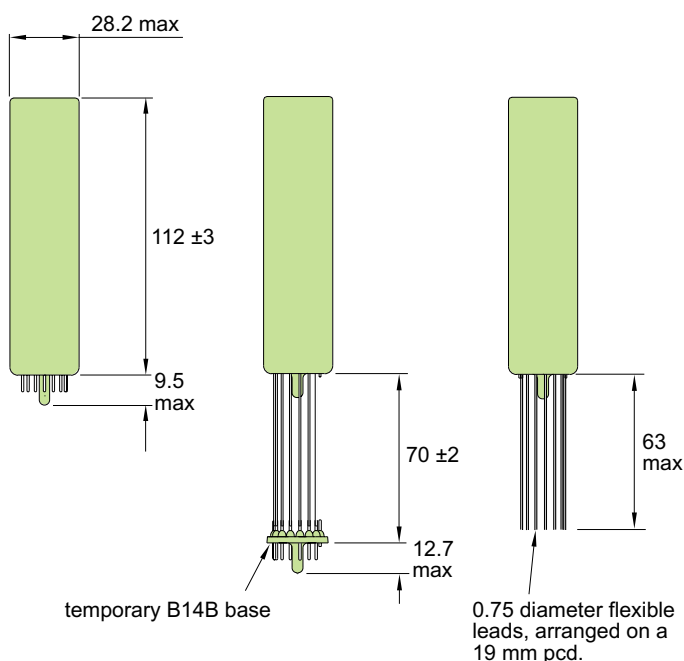


8 voltage divider distribution

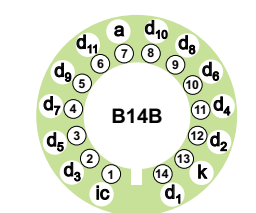
k	d ₁	d ₂	.....	d ₈	d ₉	d ₁₀	d ₁₁	a
A	2R	R	.....	R	R	R	R	Standard
B	2R	R	.....	R	2R	3R	4R	High Pulsed Linearity

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

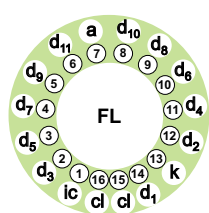
9 external dimensions mm



10 base configuration (viewed from below)



B14B hardpin base
(For 9125B)
'ic' indicates an internal connection



flying lead base
(For 9125FLB)
after removal of temporary base.
'cl' indicates cut lead

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

base variant

FL flying lead base with temporary B14B hardpin base

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

29 max with electrostatic shielding
29.3 max with electromagnetic shielding

conductive coating
(for E option)

mumetal* shield
(for S option)

insulating sleeve
(for E & S options)

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	R	
C637C	2R	R	.....	R	2R	3R	4R	3R		
C686	2 V	V	.....	V	V	V	V	V		

R = 300 kΩ

*mumetal is a registered trademark of Magnetic Shield Corporation

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DS_9125B Issue 5 (05/04/07)