

30 mm (1 1/8") photomultiplier 9124B series data sheet



1 description

The 9124B is a 30 mm (1 1/8") diameter, end window photomultiplier with enhanced green sensitive bialkali photocathode and 11 high gain, high stability, SbCs dynodes of linear focused design. The 9124WB and 9124QB are variants for applications requiring uv sensitivity.

2 applications

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

3 features

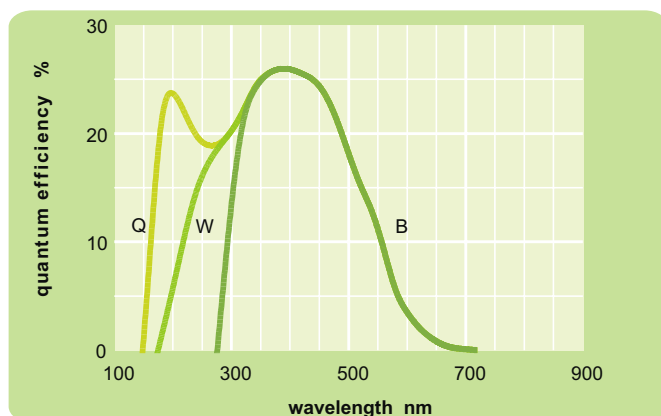
- high gain
- high pulsed linearity
- good SER
- good pulse height resolution

4 window characteristics

	9124B borosilicate	9124WB UV glass	9124QB* fused silica
spectral range**(nm)	280 - 680	170 - 680	160 - 680
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

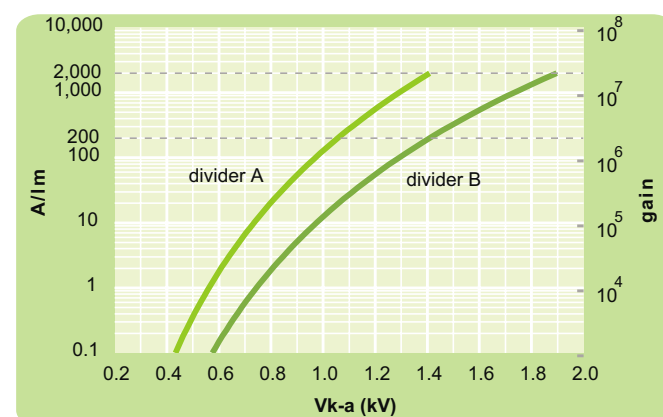


6 characteristics

	unit	min	typ	max
photocathode: bialkali				
active diameter	mm		25	
quantum efficiency at peak	%		26	
luminous sensitivity	μA/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	1300
overall V for max. rated A/lm	V		1400	
gain at nominal A/lm	x 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		6.4
pulsed linearity (-5% deviation):				
divider A	mA		25	
divider B	mA		50	
pulse height resolution:				
single electron peak to valley	ratio		1.7	
¹³⁷ Cs with 1" x 1" NaI(Tl)			7.5	
rate effect (I_a for Δg/g=1%):				
	μA		20	
magnetic field sensitivity:				
the field for which the output decreases by 50 %				
most sensitive direction	T x 10 ⁻⁴		2	
temperature coefficient:				
	% °C ⁻¹		± 0.5	
timing:				
single electron rise time	ns		3	
single electron (fwhm)	ns		5	
single electron jitter (fwhm)	ns		4	
transit time	ns		33	
weight:				
	g		50	
maximum ratings:				
anode current	μA			100
cathode current	nA			100
gain	x 10 ⁶		22	
sensitivity	A/lm		2000	
temperature	°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

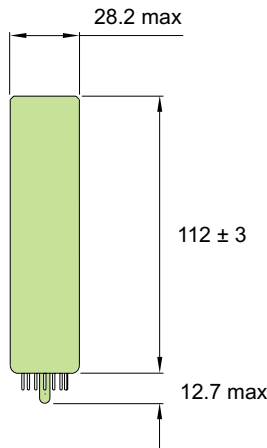


8 voltage divider distribution

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



11 ordering information

The 9124B 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 9124A. 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.

9124

window variants

W UV glass
Q fused silica

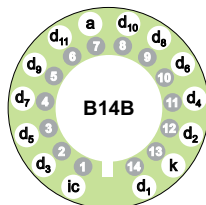
options

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

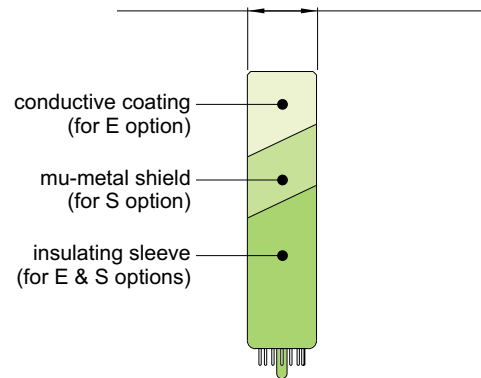
10 base configuration (viewed from below)



'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.

29 max with electrostatic shielding
29.3 max with electromagnetic shielding



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	2V	V	.....	V	V	V	V	V		

R = 300 kΩ

Electron Tubes Limited
Bury Street, Ruislip
Middx HA4 7TA, UK
tel: +44 (0) 1895 630771
fax: +44 (0) 1895 635953
e-mail:
info@electron-tubes.co.uk

Electron Tubes Inc.
100 Forge Way, Unit F
Rockaway, NJ 07866, USA
tel: (973) 586 9594
toll Free: (800) 521 8382
fax: (973) 586 9771
e-mail: sales@electrontubes.com

The company reserves the right to modify these designs and specifications without notice. Developmental devices are intended for evaluation and no obligation is assumed for future manufacture. While every effort is made to ensure accuracy of published information the company cannot be held responsible for errors or consequences arising therefrom.

an ISO 9001 registered company

www.electrontubes.com



© Electron Tubes Limited, 2001
DS_9124B Series Issue 1
04 September 2001