

25 mm (1") photomultiplier

9114B series data sheet

1 description

The 9114B is a compact 25 mm (1") diameter, end window photomultiplier with hemispherical window for 2π detection, blue-green sensitive bialkali photocathode and 10 high gain, high stability, SbCs dynodes of circular focused design for fast timing.

2 applications

- x-ray & gamma-ray spectroscopy
- photon counting of bio- and chemi-luminescent samples
- astrophysics

3 features

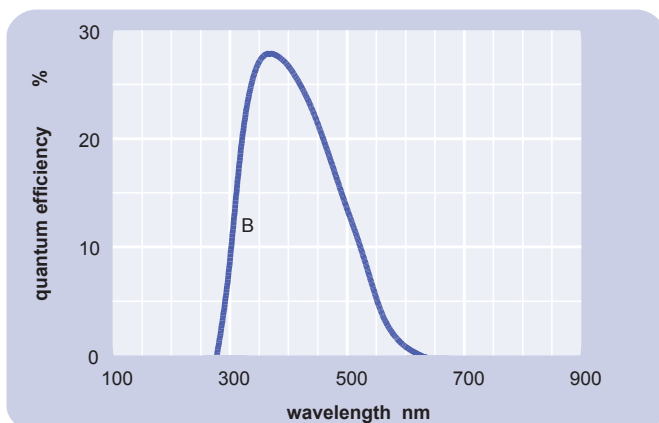
- compact
- 2π detection
- fast time response
- low operating voltage

4 window characteristics

9114B borosilicate	
spectral range (nm)*	295 - 630
refractive index (n_d)	1.49
K (ppm)	1400
Th (ppb)	900
U (ppb)	1100

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

5 typical spectral response curves

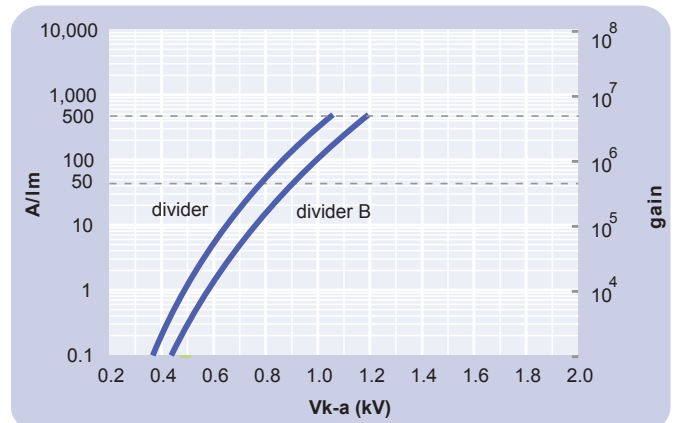


6 characteristics

	unit	min	typ	max
photocathode: bialkali				
active diameter	mm		22 (2π)	
quantum efficiency at peak	%		28	
luminous sensitivity	$\mu\text{A/lm}$		70	
with CB filter		7	11	
with CR filter			2	
dynodes: 10CFsBcs				
anode sensitivity in divider A:				
nom. anode sensitivity	A/lm		50	
max. rated anode sensitivity	A/lm		500	
overall V for nom. A/lm	V		800	1300
overall V for max. rated A/lm	V		1050	
gain at nom. A/lm	$\times 10^6$		0.7	
dark current at 20 °C:				
dc at nom. A/lm	nA		0.3	1
dc at max. rated A/lm	nA		3	
dark count rate	s^{-1}		100	
afterpulse rate:	%		5	
afterpulse time window	μs	0.1		6.4
pulsed linearity (-5% deviation):				
divider A	mA		2	
divider B	mA		20	
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	$\text{T} \times 10^{-4}$		2.5	
temperature coefficient:	$\% \text{ } ^\circ\text{C}^{-1}$		± 0.5	
timing:				
single electron rise time	ns		1.8	
single electron fwhm	ns		3.1	
single electron jitter fwhm	ns		1.2	
transit time delay	ns		15	
weight:	g		20	
maximum ratings:				
anode current	μA			100
cathode current	nA			20
gain	$\times 10^6$			7.1
sensitivity	A/lm			500
temperature	$^\circ\text{C}$	-30		60
V (k-a) ⁽¹⁾	V			1500
V (k-d1)	V			200
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



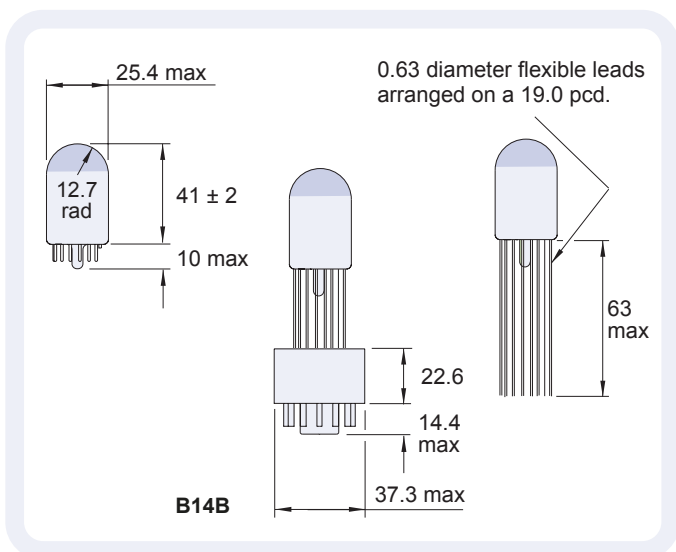
8 voltage divider distribution

	k	d ₁	d ₂	.....	d ₇	d ₈	d ₉	d ₁₀	a	
A	3R	R	.....	R	R	R	R	R	R	Standard
B	3R	R	.....	R	R	R	2R	4R		High Pulsed Linearity

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

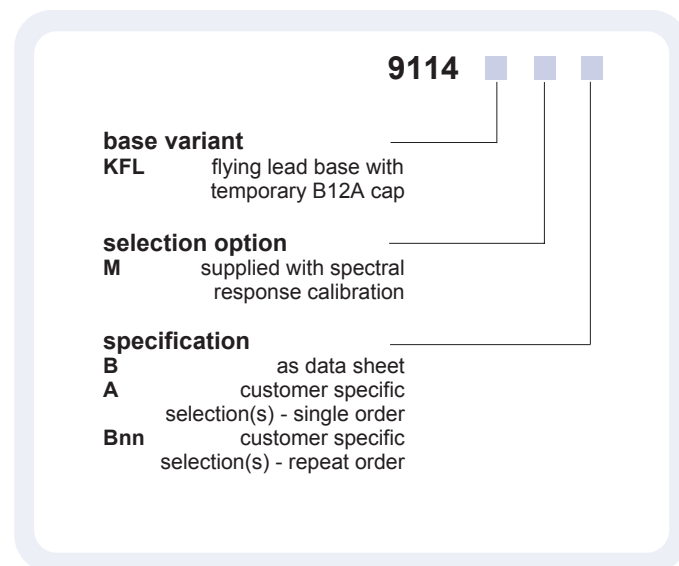
9 external dimensions mm

The drawings below show the 9114B in hardpin format, and the 9114KFLB variant in flying lead format, with and without the temporary B12A cap fitted. The cap is attached as agreed with the customer.

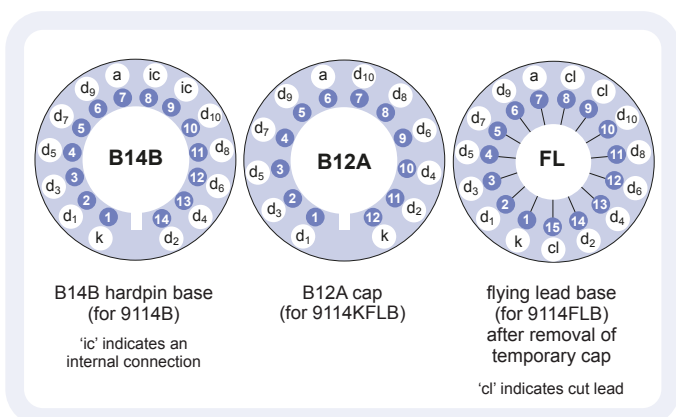


11 ordering information

The 9114B 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 9114A. 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.



10 base configuration (viewed from below)



Our range of B14B sockets is available to suit the B14B hardpin base. Our range of B12A sockets is available to suit the temporary B12A cap when the flying lead base variant is selected. Both socket ranges include versions with or without a mounting flange, and with contacts for mounting directly onto printed circuit boards.

12 voltage dividers

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

9114B	9114FLB	k	d ₁	d ₂	.....	d ₆	d ₇	d ₈	d ₉	d ₁₀	a
C673A	C651A	3R	R	.....	R	R	R	R	R	R	
C673B	C651B	3R	R	R	R	R	2R	4R		
	C651C	150 V	R	R	R	R	R	R		
	C651D	150 V	R	R	2R	3R	4R	3R		

R = 330 kΩ

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