

78 mm (3") photomultiplier 9321B series data sheet

6 characteristics

1 description

The 9321B is a 78mm (3") diameter, compact, end window photomultiplier with blue-green sensitive bialkali photocathode and 10 high gain, high stability, SbCs dynodes of linear focused design for good linearity and timing.

2 applications

- scintillation spectroscopy

3 features

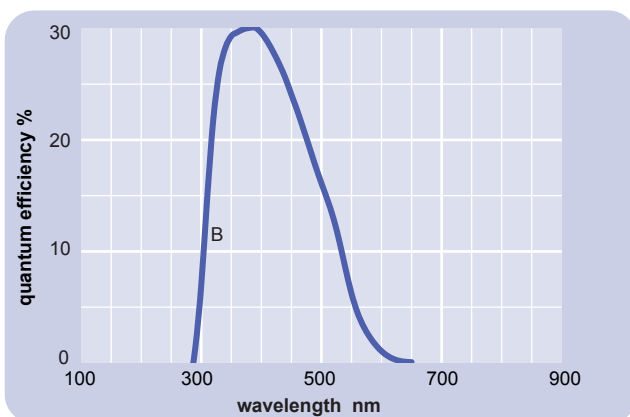
- good pulse height resolution

4 window characteristics

9321B borosilicate	
spectral range *(nm)	295 - 630
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

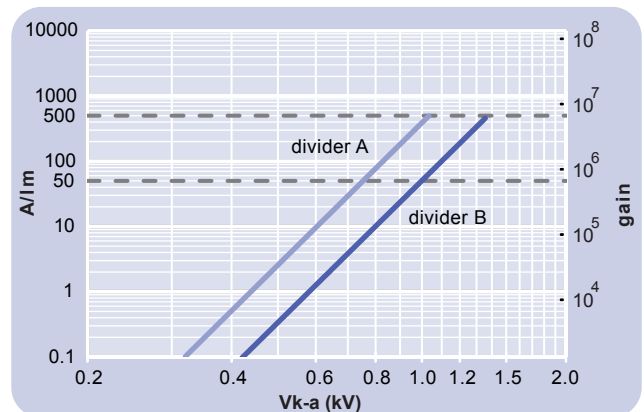
5 typical spectral response curves



	unit	min	typ	max
photocathode: bialkali				
active diameter	mm		72	
quantum efficiency at peak	%		30	
luminous sensitivity	$\mu\text{A/lm}$		75	
with CB filter		8	11.5	
with CR filter			1	
dynodes: 10LFSbCs				
anode sensitivity in divider A:				
nominal anode sensitivity	A/lm		50	
max. rated anode sensitivity	A/lm		500	
overall V for nominal A/lm	V		750	1200
overall V for max. rated A/lm	V		1000	
gain at nominal A/lm	$\times 10^6$		0.7	
dark current at 20 °C:				
dc at nominal A/lm	nA		1	10
dc at max. rated A/lm	nA		4	
dark count rate	s^{-1}		500	
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 3" x 3" NaI(Tl)	%		7	
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	$\text{T} \times 10^{-4}$		1.4	
temperature coefficient	$\% \text{ } ^\circ\text{C}^{-1}$		± 0.5	
timing:				
single electron rise time	ns		3	
single electron fwhm	ns		5	
multi electron rise time	ns		6	
multi electron fwhm	ns		12	
transit time	ns		42	
weight:				
hard pin	g		125	
capped	g		155	
maximum ratings:				
anode current	μA			100
cathode current	nA			100
gain	$\times 10^6$			7
sensitivity	A/lm			500
temperature	$^\circ\text{C}$	-30		60
V (k-a) ⁽¹⁾	V			2000
V (k-d1)	V			450
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



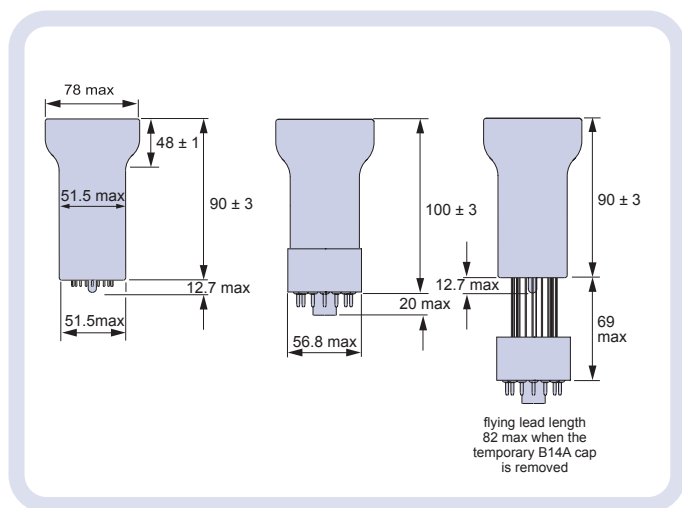
8 voltage divider distribution

	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	1.25R	1.5R	2R	3R		High Pulsed linearity

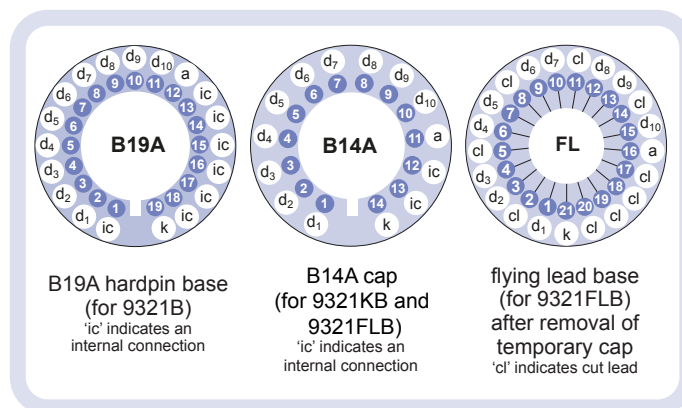
Characteristics contained in this data sheet refer to divider A unless stated otherwise.

9 external dimensions mm

The drawings below show the 9321B in hardpin format, the 9321KB with the B14A cap fitted and the 9321FLB in flying lead format with the temporary B14A cap fitted. The cap is attached as agreed.



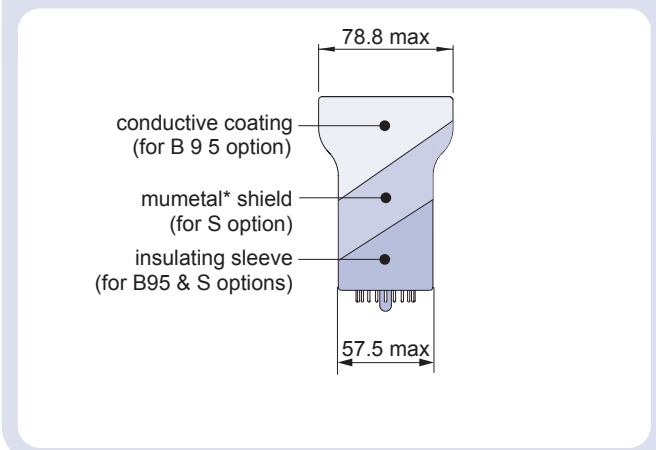
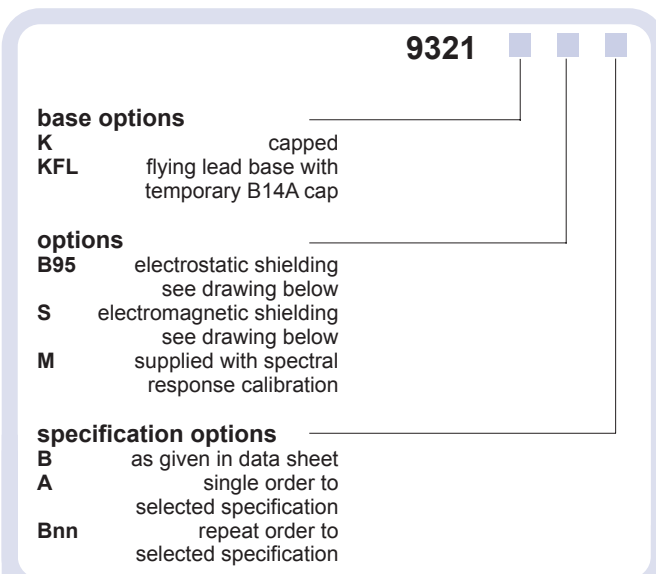
10 base configuration (viewed from below)



Our range of B14A sockets is available for this series and to suit the B14A cap. This includes versions with or without a mounting flange and with contacts for mounting directly onto printed circuit boards.

11 ordering information

The 9321B 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 9321A. 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 these pmts are tabulated below:

B	KB	FLB	k	d ₁	d ₂	.....	d ₆	d ₇	d ₈	d ₉	d ₁₀	a
C648P	C636P	C655P	3R	R	.....		R	R	R	R	R	
C648U	C636U	C655U	3R	R	.....		R	1.25R	1.5R	2R	3R	
C648S	C636S	C655S	150 V	R		R	R	R	R	R	
C648V	C636V	C655V	150 V	R		R	1.25R	1.5R	2R	3R	

R = 330kΩ

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