

25 mm (1") photomultiplier 9113B series data sheet

1 description

The 9113B is a compact 25 mm (1") diameter, end window photomultiplier with plano-concave window, S20 infra-red sensitive photocathode and 10 high gain, high stability, SbCs dynodes of circular focused design for fast timing. The 9113WB is a variant for applications requiring UV sensitivity.

2 applications

- wide range of applications
- photon counting of bio- and chemi- luminescent samples
- SOx NOx pollution monitoring

3 features

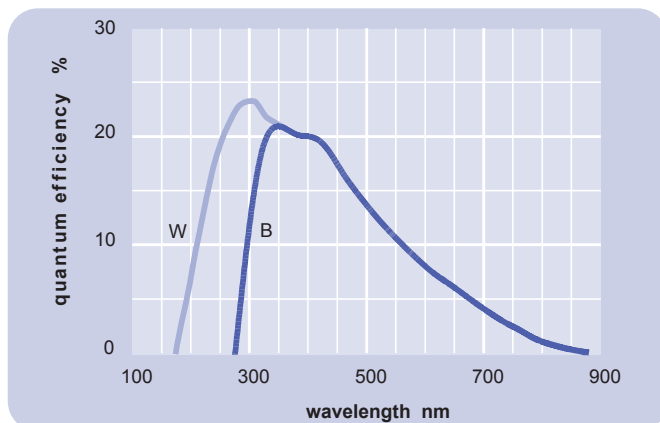
- compact
- fast time response
- low operating voltage

4 window characteristics

	9113B borosilicate	9113WB UV glass
spectral range* (nm)	280 - 850	170 - 850
refractive index (n_d)	1.49	1.48
K (ppm)	300	8500
Th (ppb)	250	30
U (ppb)	100	30

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

5 typical spectral response curves

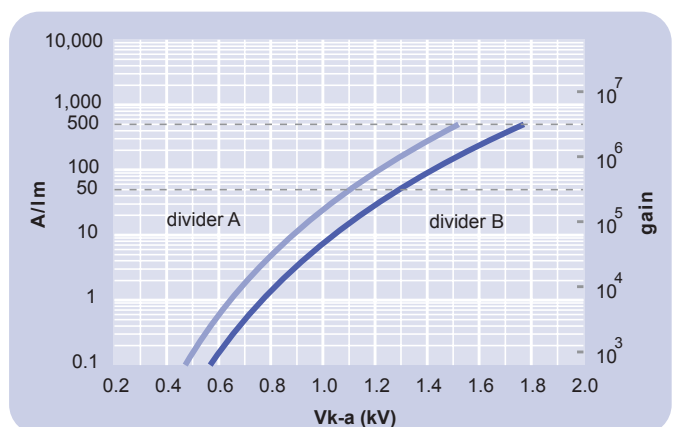


6 characteristics

	unit	min	typ	max
photocathode: S20				
active diameter	mm		22	
quantum efficiency at peak	%		21	
luminous sensitivity	$\mu\text{A/lm}$	80	160	
with CB filter			9	
with CR filter			60	
with IR filter			5	
dynodes: 10CFsBcS				
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		1100	1300
overall V for max. rated A/lm	V		1550	
gain at nominal A/lm	$\times 10^6$		0.3	
dark current at 20 °C:				
dc at nominal A/lm	nA		0.5	5
dc at max. rated A/lm	nA		5	
dark count rate	s^{-1}		3000	
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			300
gain	$\times 10^6$			3.1
sensitivity	A/lm			500
temperature	$^\circ\text{C}$	-80		60
V (k-a) ⁽¹⁾				2000
V (k-d1)	V			300
V (d-d) ⁽²⁾	V			200
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



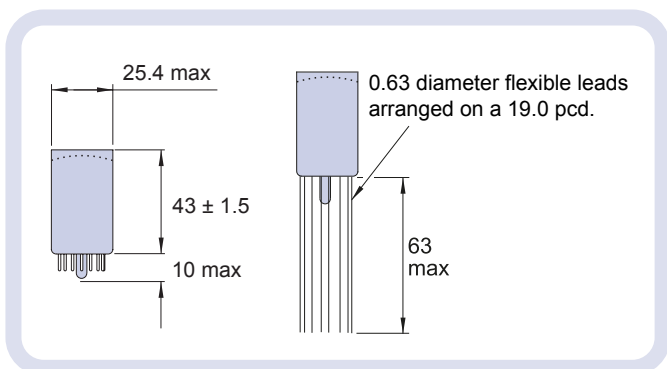
8 voltage divider distribution

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

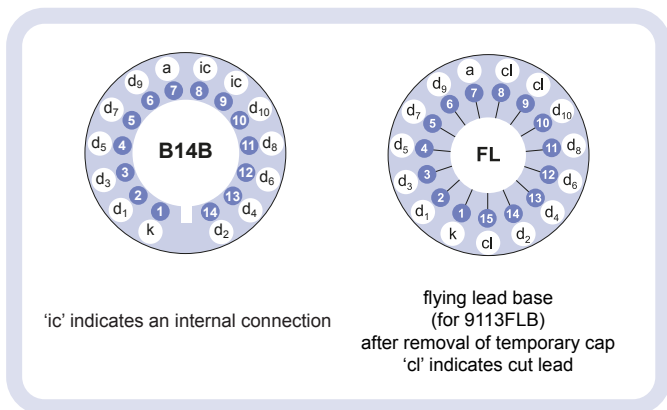
Characteristics contained in this data sheet refer to divider A unless stated otherwise

9 external dimensions mm

The drawings below show the 9113B in hardpin format and the 9113FLB in flying lead format.



10 base configuration (viewed from below)



Our range of B14B sockets is available to suit the B14B hardpin base. The range includes versions with or without a mounting flange, and versions with contacts for mounting directly onto printed circuit boards.

11 ordering information

The 9113B 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 9113A. 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.

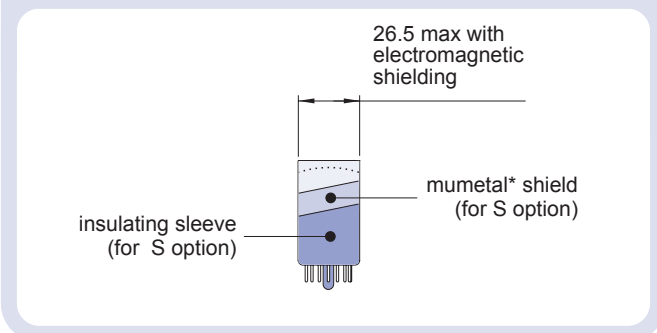
9113 ■ ■ ■ ■

window options
W UV glass

shielding options
S electromagnetic shielding see drawing below

selection options
M supplied with spectral response calibration

specification
B as data sheet
A customer specific selection(s) single order
Bnm customer specific selection(s) repeat order



12 voltage dividers

The standard voltage dividers available for all variants of these pmts are tabulated below:

9113B	9113FLB	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	R	2R	4R	
	C651C	150 V	R	.....	R	R	R	R	R	R	
	C651D	150 V	R	.....	R	R	R	R	2R	4R	

R = 330 kΩ

*mumetal is a registered trademark of Magnetic Shield Corporation

ET Enterprises Limited
45 Riverside Way
Uxbridge UB8 2YF
United Kingdom
tel: +44 (0) 1895 200880
fax: +44 (0) 1895 270873
e-mail: sales@et-enterprises.com
web site: www.et-enterprises.com

ADIT Electron Tubes
300 Crane Street
Sweetwater TX 79556 USA
tel: (325) 235 1418
toll free: (800) 399 4557
fax: (325) 235 2872
e-mail: sales@electron tubes.com
web site: www.electrontubes.com

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