

# 29 mm (1.13") photomultiplier 9128B series data sheet

## 1 description

The 9128B is a 29 mm (1.13") diameter, end window photomultiplier with plano-concave window, blue-green sensitive bialkali photocathode and BeCu dynodes of linear focused design for high pulsed linearity. The 9128QB is a variant for applications requiring uv sensitivity.

## 2 applications

- x-ray & gamma-ray spectroscopy
- high energy physics studies

## 3 features

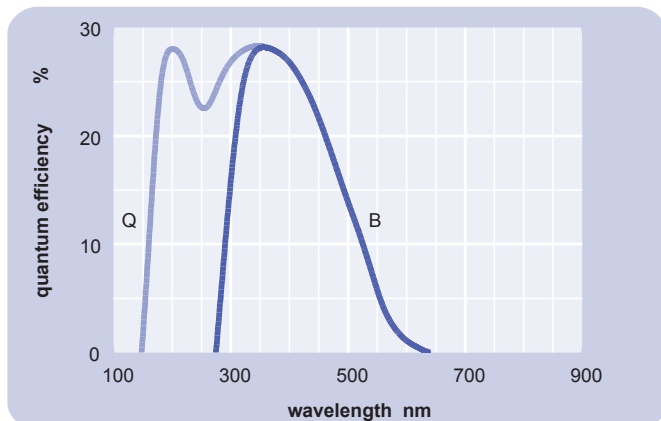
- high pulsed linearity
- fast timing

## 4 window characteristics

	9128B borosilicate	9128QB* fused silica
spectral range**(nm)	280 - 630	160 - 630
refractive index ( $n_d$ )	1.49	1.46
K (ppm)	300	<10
Th (ppb)	250	<10
U (ppb)	100	<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

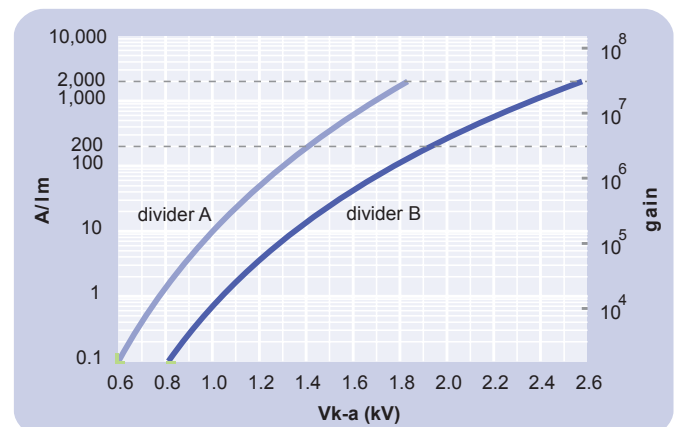


## 6 characteristics

	unit	min	typ	max
<b>photocathode: bialkali</b>				
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	
<b>dynodes: 11LFBcCu</b>				
<b>anode sensitivity in divider A:</b>				
nominal anode sensitivity	A/lm		200	
max. rated anode sensitivity	A/lm		2000	
overall V for nominal A/lm	V		1400	1600
overall V for max. rated A/lm	V		1800	
gain at nominal A/lm	$\times 10^6$		3	
<b>dark current at 20 °C:</b>				
dc at nominal A/lm	nA		0.2	5
dc at max. rated A/lm	nA		2	
dark count rate	$\text{s}^{-1}$		100	
<b>afterpulse rate:</b>	%		1	
afterpulse time window	$\mu\text{s}$	0.2		6.4
<b>pulsed linearity (-5% deviation):</b>				
divider A	mA		100	
divider B	mA		150	
<b>pulse height resolution:</b>				
single electron peak to valley	ratio		1.5	
<b>rate effect (<math>I_a</math> for <math>\Delta g/g=1\%</math>):</b>				
	$\mu\text{A}$		1	
<b>magnetic field sensitivity:</b>				
the field for which the output decreases by 50 %				
most sensitive direction	$\text{T} \times 10^{-4}$		2	
<b>temperature coefficient:</b>	$\% \text{ } ^\circ\text{C}^{-1}$		$\pm 0.5$	
<b>timing:</b>				
single electron rise time	ns		2.5	
single electron (fwhm)	ns		3.5	
single electron jitter (fwhm)	ns		2	
transit time	ns		30	
<b>weight:</b>	g		50	
<b>maximum ratings:</b>				
anode current	$\mu\text{A}$			200
cathode current	nA			50
gain	$\times 10^6$			30
sensitivity	A/lm			2000
temperature	$^\circ\text{C}$	-30		60
V (k-a) <sup>(1)</sup>	V			2800
V (k-d1)	V			450
V (d-d) <sup>(2)</sup>	V			300
ambient pressure (absolute)	kPa			202

<sup>(1)</sup> subject to not exceeding max. rated sensitivity <sup>(2)</sup> subject to not exceeding max rated V(k-a)

## 7 typical voltage gain characteristics

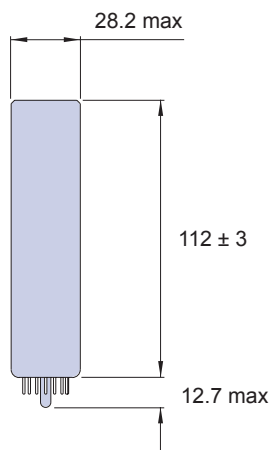


## 8 voltage divider distribution

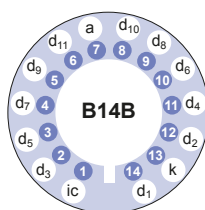
	k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>8</sub>	d <sub>9</sub>	d <sub>10</sub>	d <sub>11</sub>	a	
A	2R	R	.....	R	R	R	R	R	R	Standard
B	2R	R	.....	R	2R	3R	4R	3R		High Pulsed Linearity

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

## 9 external dimensions mm



## 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.

## 11 ordering information

The 9128B 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 9128A. 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.

9128

### window variants

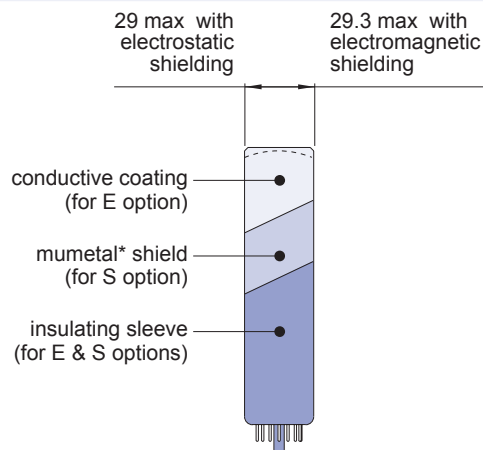
Q fused silica

### 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



## 12 voltage dividers

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

	k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>7</sub>	d <sub>8</sub>	d <sub>9</sub>	d <sub>10</sub>	d <sub>11</sub>	a
C637A	2R	R	.....	R	R	R	R	R	R	
C637B	2R	R	.....	R	2R	3R	4R	3R		
C637C	150 V	R	.....	R	R	R	R	R		

R = 300k Ω

\*mumetal is a registered trademark of Magnetic Shield Corporation

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choose accessories for this pmt on our website

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