

# 29 mm (1.13") photomultiplier

## 9828B series data sheet

### 1 description

The 9828B is a 29 mm (1.13") diameter, end window photomultiplier with prismatic window, S20 infra-red sensitive photocathode and 11 high gain, high stability SbCs dynodes of box and grid design. The 9828WB is a variant for applications requiring uv sensitivity.

### 2 applications

- photon counting of bio- and chemi-luminescent samples
- SO<sub>x</sub> NO<sub>x</sub> pollution monitoring
- spectroscopy

### 3 features

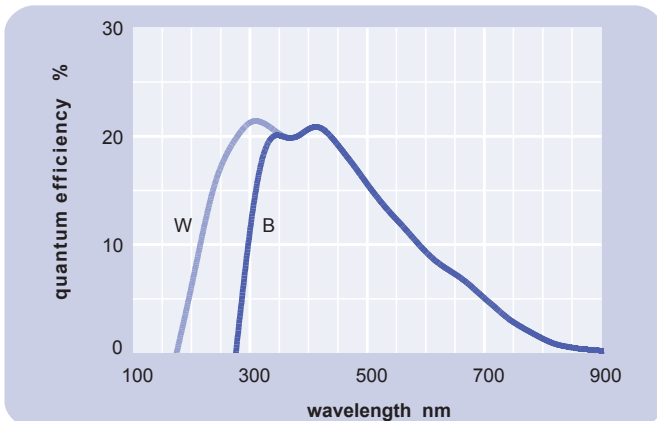
- high gain
- low operating voltage
- extended red sensitivity

### 4 window characteristics

	9828B borosilicate	9828WB uv glass
spectral range *(nm)	280 - 870	170 - 870
refractive index (n <sub>d</sub> )	1.49	1.48
radiopurity:		
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

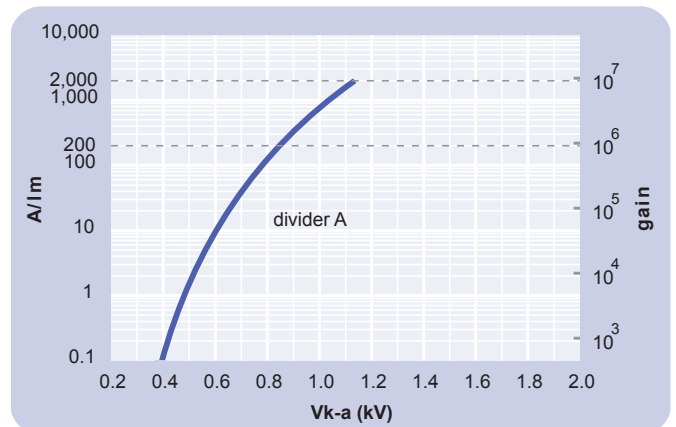


### 6 characteristics

	unit	min	typ	max
<b>photocathode: S20</b>				
active diameter	mm		25	
quantum efficiency at peak	%		21	
luminous sensitivity	μA/lm		220	
with CB filter			8	
with CR filter			100	
with IR filter		6	12	
<b>dynodes: 11BGSbCs</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		850	1100
overall V for max. rated A/lm	V		1100	
gain at nominal A/lm	x 10 <sup>6</sup>		0.9	
<b>dark current at 20 °C:</b>				
dc at nominal A/lm	nA		2	10
dc at max. rated A/lm	nA		20	
dark count rate	-1		10000	
<b>pulsed linearity (-5% deviation):</b>				
divider A	mA		0.1	
<b>magnetic field sensitivity:</b>				
the field for which the output decreases by 50 %				
most sensitive direction	T x 10 <sup>-4</sup>		2	
<b>temperature coefficient:</b>	% °C <sup>-1</sup>		± 0.5	
<b>timing:</b>				
single electron rise time	ns		15	
single electron (fwhm)	ns		30	
transit time	ns		80	
<b>weight:</b>	g		55	
<b>maximum ratings:</b>				
anode current	μA			100
cathode current	nA			500
gain	x 10 <sup>6</sup>			9
sensitivity	A/lm			2000
temperature	°C	-80		60
V (k-a) <sup>(1)</sup>	V			2000
V (k-d1)	V			300
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

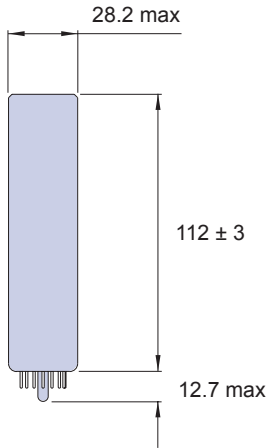


## 8 voltage divider distribution

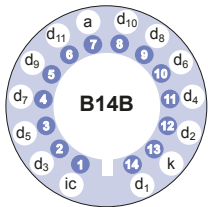
k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>8</sub>	d <sub>9</sub>	d <sub>10</sub>	d <sub>11</sub>	a	
A	150V	R	.....	R	R	R	2R	R	Standard

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

## 9 external dimensions mm



## 10 base configuration (viewed from below)



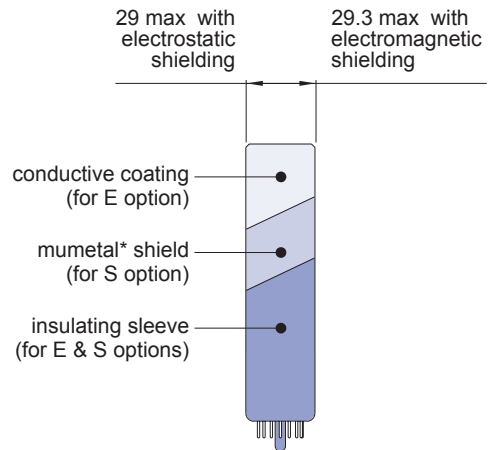
'ic' indicates an internal connection

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 9828B 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 9828A. 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.

	<b>9828</b>	■	■	■
<b>window variants</b>				
<b>W</b>	UV glass			
<b>options</b>				
<b>E</b>	electrostatic shielding			
	see drawing below			
<b>S</b>	electromagnetic shielding			
	see drawing below			
<b>M</b>	supplied with spectral response calibration			
<b>specification options</b>				
<b>B</b>	as given in data sheet			
<b>A</b>	single order to selected specification			
<b>Bnn</b>	repeat order to selected specification			



## 12 voltage dividers

The standard voltage dividers available for these pmts 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
C637E	2R	R	.....	R	R	R	R	R	R	
C637F	2R	R	.....	R	R	R	2R	R		

R = 330 kΩ

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