

# 29 mm (1.13") photomultiplier 9888B series data sheet

## 6 characteristics

### 1 description

The 9888B is a 29 mm (1.13") diameter, end window photomultiplier with high temperature bialkali photocathode and 11 BeCu dynodes of box grid design. It is suitable for use with temperatures up to 150 °C.

### 2 applications

- oil well logging

### 3 features

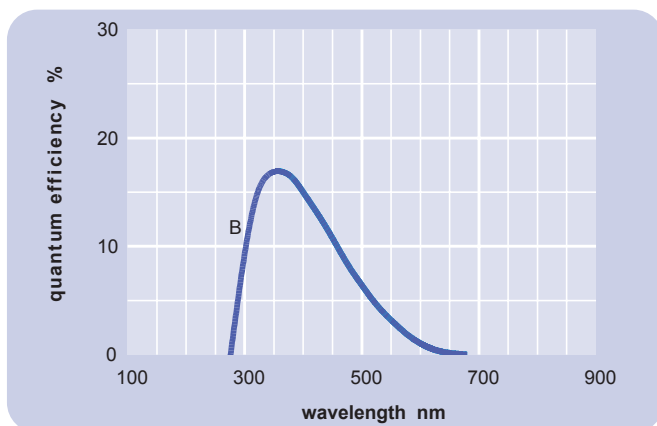
- will operate up to 150 °C
- short version of 9878B
- tarnish-free gold plated base pins

### 4 window characteristics

9888B borosilicate	
spectral range *(nm)	280 - 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



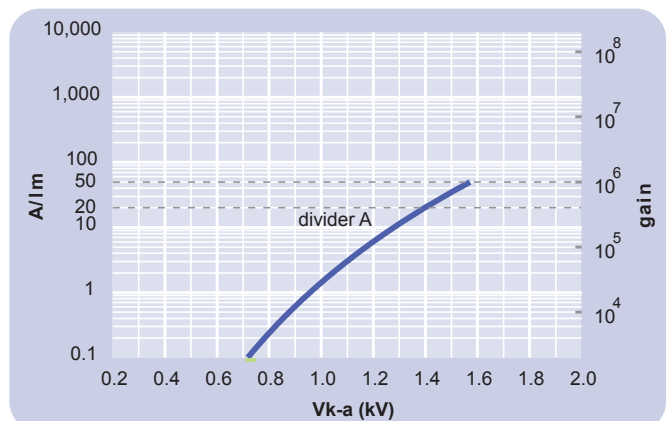
	unit	min	typ	max
<b>photocathode:</b>				
<b>high temperature bialkali</b>				
active diameter	mm		25	
quantum efficiency at peak	%		17	
luminous sensitivity	$\mu\text{A/lm}$		50	
with CB filter		4	6	
with CR filter			5	
<b>dynodes: 11BGBeCu</b>				
<b>anode sensitivity in divider A:</b>				
nominal anode sensitivity	A/lm		20	
max. rated anode sensitivity	A/lm		50	
overall V for nominal A/lm	V		1400	1600
overall V for max. rated A/lm	V		1550	
gain at nominal A/lm	$\times 10^6$		0.4	
<b>dark current at 20 °C:</b>				
dc at nominal A/lm	nA		0.03	1
dc at max. rated A/lm	nA		0.08	
<b>pulsed linearity (-5% deviation):</b>				
divider A	mA		0.5	
<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>				
timing:	$\% \text{ } ^\circ\text{C}^{-1}$		$\pm 0.5$	
single electron rise time	ns		15	
single electron (fwhm)	ns		30	
transit time	ns		80	
weight:	g		55	
<b>maximum ratings:</b>				
anode current	$\mu\text{A}$			100
cathode current	nA			50
gain	$\times 10^6$			1
sensitivity	A/lm			50
temperature	$^\circ\text{C}$	-55		150
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)

spectral data	unit	20 °C typ	150 °C typ	max
operating voltage for 50 pC/MeV	V	1200	1300	-
pulse height resolution <sup>(3)</sup>	%	9	12	-
noise edge	keV	1	15	100

<sup>(3)</sup> measured with <sup>137</sup>Cs/NaI(Tl) crystal

### 7 typical voltage gain characteristics

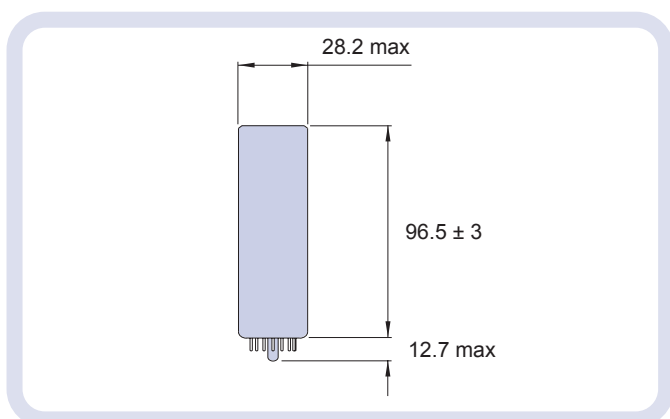


## 8 voltage divider distribution

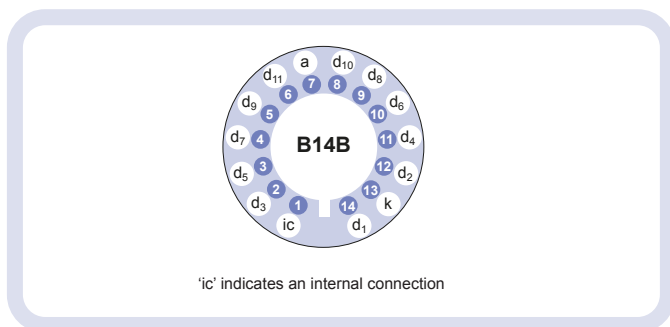
	k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>8</sub>	d <sub>9</sub>	d <sub>10</sub>	d <sub>11</sub>	a	
A	150V	R	.....		R	R	R	2R	R	Standard

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

## 9 external dimensions mm



## 10 base configuration (viewed from below)



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 9888B 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 9888A. 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.

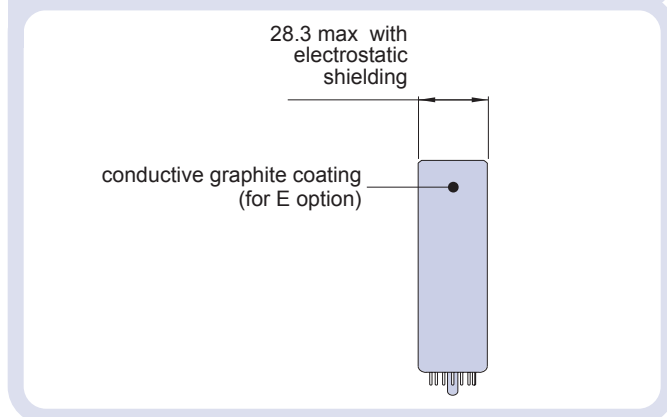
**9888**

**options**

- E** electrostatic 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



### Safety note

Photomultipliers supplied with the optional graphite coating are for use with positive HV only.

## 12 voltage dividers

The standard voltage dividers available for these pmts are tabulated below; they are rated to 70 °C:

	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
C635A	2R	R	.....		R	R	R	2R	R	
C635C	150 V	R	.....		R	R	R	2R	R	

R = 330 kΩ

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The company reserves the right to modify these designs and specifications without notice. Developmental devices are intended for evaluation and no obligation is assumed for future manufacture. While every effort is made to ensure accuracy of published information the company cannot be held responsible for errors or consequences arising therefrom.



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