

29 mm (1.13") photomultiplier 9878B series data sheet

1 description

The 9878B 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

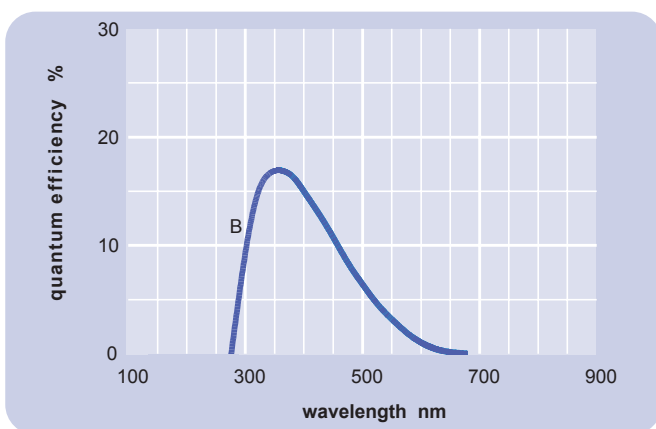
- will operate up to 150 °C
- tarnish-free gold plated base pins

4 window characteristics

9878B 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



6 characteristics

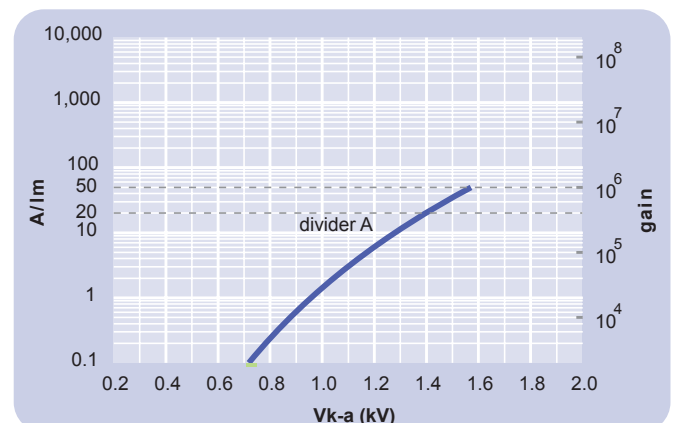
	unit	min	typ	max
photocathode:				
high temperature bialkali				
active diameter	mm		25	
quantum efficiency at peak	%		17	
luminous sensitivity	$\mu\text{A/lm}$		50	
with CB filter		4	6	
with CR filter			5	
dynodes: 11BGBeCu				
anode sensitivity in divider A:				
nominal anode sensitivity	A/lm		20	
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	
dark current at 20 °C:				
dc at nominal A/lm	nA		0.03	1
dc at max. rated A/lm	nA		0.08	
pulsed linearity (-5% deviation):				
divider A	mA		0.5	
rate effect (I_a for $\Delta g/g=1\%$):	μA		1	
magnetic field sensitivity:				
the field for which the output decreases by 50 %				
most sensitive direction	$T \times 10^{-4}$		2	
temperature coefficient:	$\% \text{ } ^\circ\text{C}^{-1}$		± 0.5	
timing:				
single electron rise time	ns		15	
single electron (fwhm)	ns		30	
transit time	ns		80	
weight:	g		55	
maximum ratings:				
anode current	μA			100
cathode current	nA			50
gain	$\times 10^6$			1
sensitivity	A/lm			50
temperature	$^\circ\text{C}$	-55		150
V (k-a) ⁽¹⁾	V			2000
V (k-d1)	V			300
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)

spectral data	unit	20 °C typ	150 °C typ	max
operating voltage for 50 pC/MeV	V	1200	1300	-

(3) measured with ¹³⁷Cs/NaI(Tl) crystal

7 typical voltage gain characteristics

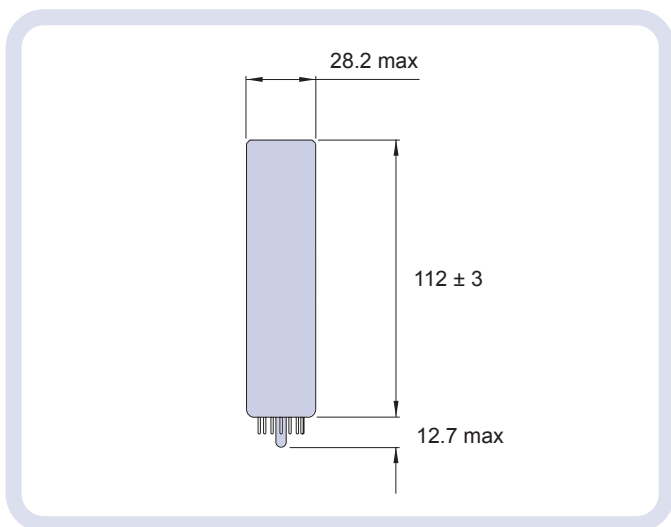


8 voltage divider distribution

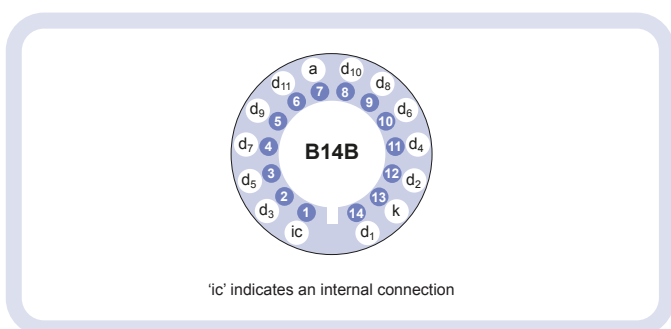
k	d ₁	d ₂	d ₈	d ₉	d ₁₀	d ₁₁	a	
A	150V	R	R	R	R	2R	R	Standard

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 9878B 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 9878A. 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.

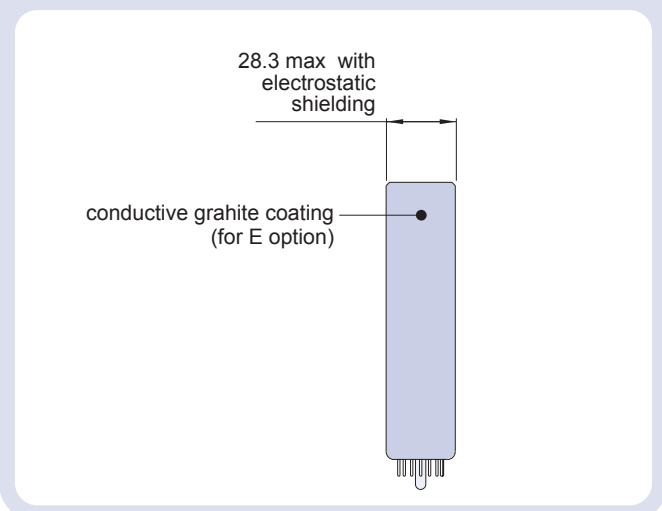
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options

- 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



Safety note

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

12 voltage dividers

	k	d ₁	d ₂	d ₇	d ₈	d ₉	d ₁₀	d ₁₁	a
C635A	2R	R	R	R	R	R	R	R	
C635C	150 V	R	R	R	R	R	R	R	

R = 330 kΩ

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