

29 mm (1.13") photomultiplier 7107B series data sheet

1 description

The 7107B is a 29 mm (1.13") diameter end window photomultiplier with a blue-green sensitive high QE bialkali photocathode and 11 high gain, high stability, SbCs dynodes of linear focused design. It is a high QE version of the 9107B.

2 applications

- any application requiring high QE
- x-ray & gamma-ray spectroscopy
- cosmic shower telescopes

3 features

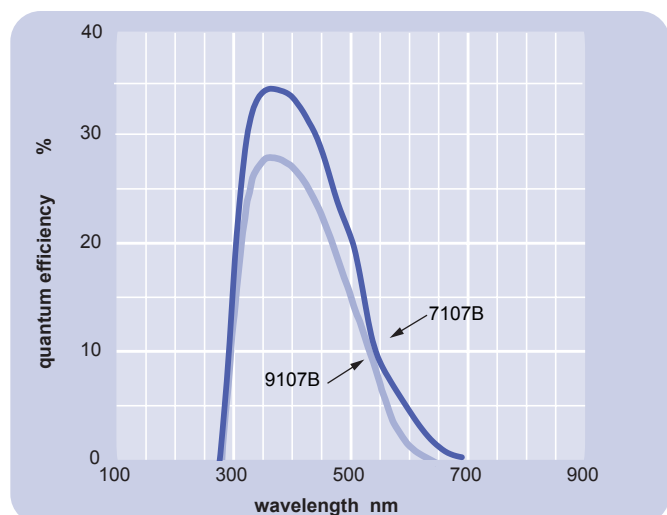
- high QE photocathode
- short length
- good SER

4 window characteristics

7107B borosilicate	
spectral range*(nm)	280 - 690
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

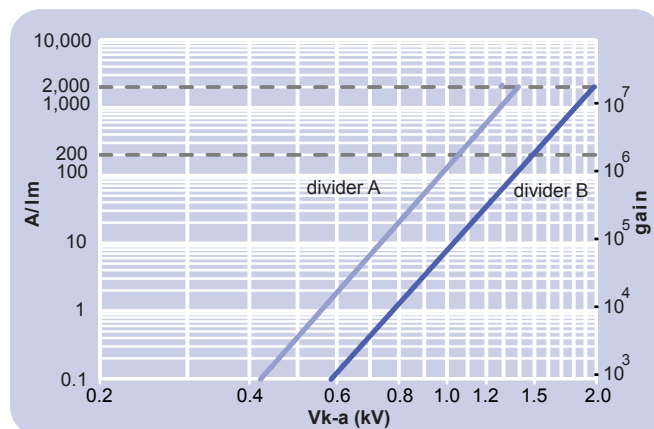


6 characteristics

	unit	min	typ	max
photocathode: bialkali				
active diameter	mm		25	
quantum efficiency at peak	%		35	
luminous sensitivity	$\mu\text{A/lm}$		115	
with CB filter		12	14	
with CR filter			10	
dynodes: 11LFSbCs				
anode sensitivity in divider A:				
nominal anode sensitivity	A/lm		200	
max. rated anode sensitivity	A/lm		2000	
overall V for nominal A/lm			1050	1300
overall V for max. rated A/lm	V		1450	
gain at nominal A/lm	$\times 10^6$		1.7	
dark current at 20 °C:				
dc at nominal A/lm	nA		1.5	20
dc at max. rated A/lm	nA		15	
dark count rate	s^{-1}		1000	
afterpulse rate:				
afterpulse time window	μs	0.1		6.4
pulsed linearity (-5% deviation):				
divider A	mA		25	
divider B	mA		100	
pulse height resolution:				
single electron peak to valley	ratio		1.5	
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	
temperature coefficient:				
	$\% \text{ } ^\circ\text{C}^{-1}$		± 0.5	
timing:				
single electron rise time	ns		4.5	
single electron (fwhm)	ns		7.5	
single electron jitter (fwhm)	ns		4	
transit time	ns		33	
weight:				
	g		45	
maximum ratings:				
anode current	μA			100
cathode current	nA			50
gain	$\times 10^6$			17
sensitivity	A/lm			2000
temperature	$^\circ\text{C}$	-30		60
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)

7 typical voltage gain characteristics

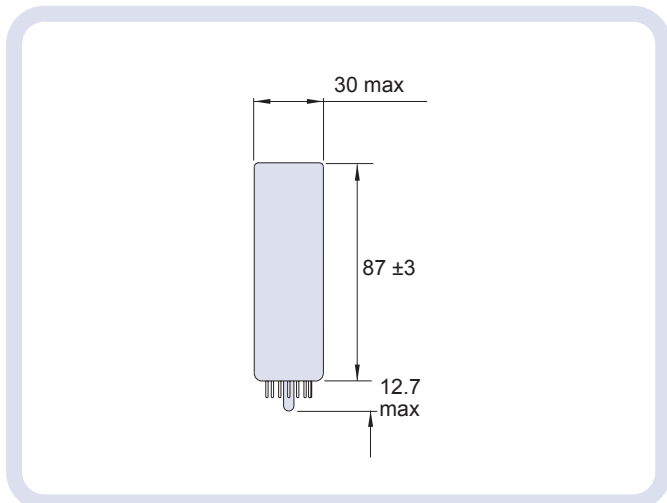


8 voltage divider distribution

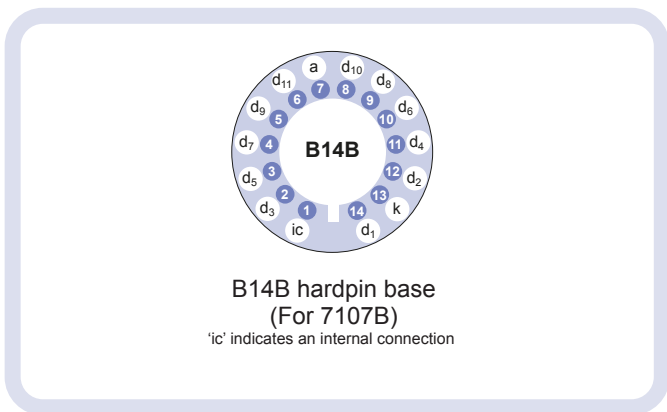
	k	d ₁	d ₂	.....	d ₈	d ₉	d ₁₀	d ₁₁	a	
A	2R	R	.....	R	R	R	R	R		Standard
B	2R	R	.....	R	2R	3R	4R	3R		High Pulsed Linearity

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

9 external dimensions mm



10 base configuration (viewed from below)



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 7107B 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 a one-off order, then the product will be referred to as 7107A. For a repeat order, ET Enterprises Limited will give the product a two digit suffix after the letter B, for example B21. This identifies your specific requirement.

7107

options

- 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

*mumetal is a registered trademark of Magnetic Shield Corporation

12 voltage dividers

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

	k	d ₁	d ₂	.....	d ₇	d ₈	d ₉	d ₁₀	d ₁₁	a
C637A	2R	R	.....	R	R	R	R	R		
C637B	2R	R	.....	R	2R	3R	4R	3R		
C637C	150 V	R	.....	R	R	R	R	R		
C637D	150 V	R	.....	R	2R	3R	4R	3R		

R = 330 kΩ