29 mm (1.13") photomultiplier
9107B series data sheet

ET Enterprises electron tubes

1 description

The 9107B is a 29 mm (1.13″) diameter end window photomultiplier with blue-green sensitive bialkali photocathode and 11 high gain, high stability, SbCs dynodes of linear focused design. The 9107QB is a variant for applicationsrequiring uv sensitivity.

2 applications

- wide range of applications
- spectroscopy
- x-ray & gamma-ray spectroscopy
- photon counting of bio- and chemi-luminescent samples

3 features

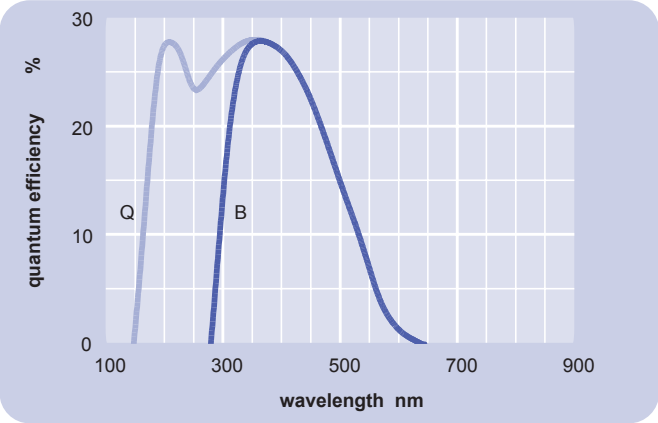
- compact (a short version of the 9125B)
- high gain
- low operating voltage
- good SER
- good pulse height resolution

4 window characteristics

	9107B borosilicate	9107QB* 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

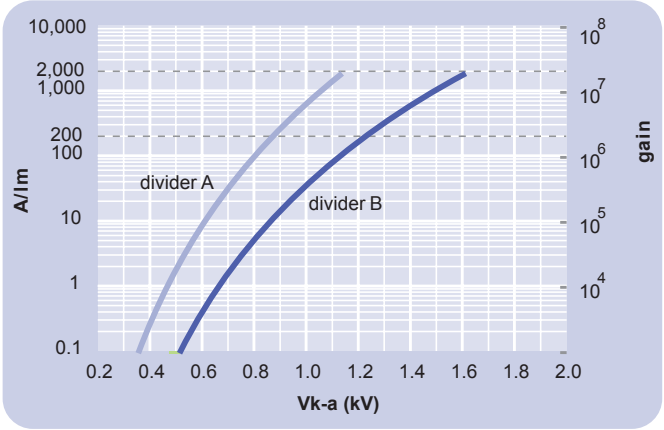


6 characteristics

	unit	min	typ	max
photocathode: bialkali				
active diameter	mm		25	
quantum efficiency at peak	%		28	
luminous sensitivity	µA/lm		65	
with CB filter		7	11	
with CR filter			1	
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	V		850	1150
overall V for max. rated A/lm	V		1100	
gain at nominal A/lm	x 10^6		3	
dark current at 20 °C:				
dc at nominal A/lm	nA		0.2	5
dc at max. rated A/lm	nA		2	
dark count rate	s^{-1}		100	
afterpulse rate:	%		1	
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		2	
^{137}Cs with 1″ x 1″ NaI (T1)			7.5	
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	T x 10^{-4}		2	
temperature coefficient:	% $°C^{-1}$		± 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	x 10^6			30
sensitivity	A/lm			2000
temperature	°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



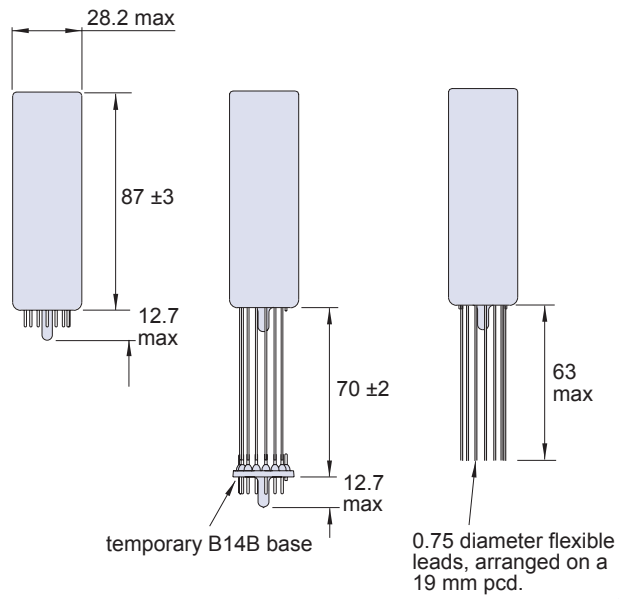
8 voltage divider distribution

	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

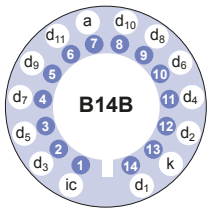
Characteristics contained in this data sheet refer to divider A unless stated otherwise.

9 external dimensions mm

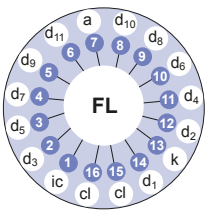
The drawings below show the 9107B in hardpin format, the 9107FLB in flying lead format with temporary B14B base fitted and the 9107FLB in flying lead format.



10 base configuration (viewed from below)



B14B hardpin base
(For 9107B)
'ic' indicates an internal connection



flying lead base
(For 9107FLB)
after removal of
temporary base.
'cl' indicates cut lead

Our range of B14B sockets, available for the B14B hardpin base, includes versions with or without a mounting flange, and versions with contacts for mounting directly onto printed circuit boards.

11 ordering information

The 9107B 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 9107A. 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.

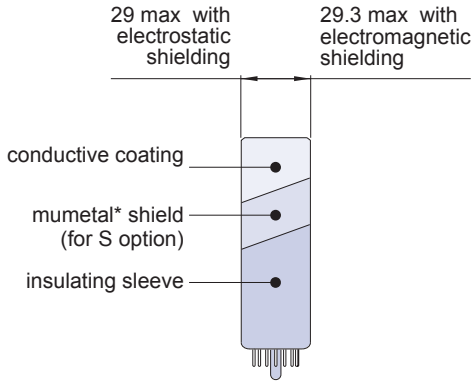
9107 □ □ □ □

window variants
Q fused silica

base variant
FL flying lead base with temporary B14B hardpin base

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	

R = 330 kΩ

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choose accessories for this pmt on our website

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