29 mm (1.13") photomultiplier
9900B series data sheet

ET Enterprises electron tubes

1 description

The 9900B is a 29 mm (1.13") diameter, end window photomultiplier with sidewall sensitivity for wide angle light detection. It has an enhanced-green sensitive bialkali photocathode and 11 high gain, high stability, SbCs dynodes of box and grid design.

2 applications

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

3 features

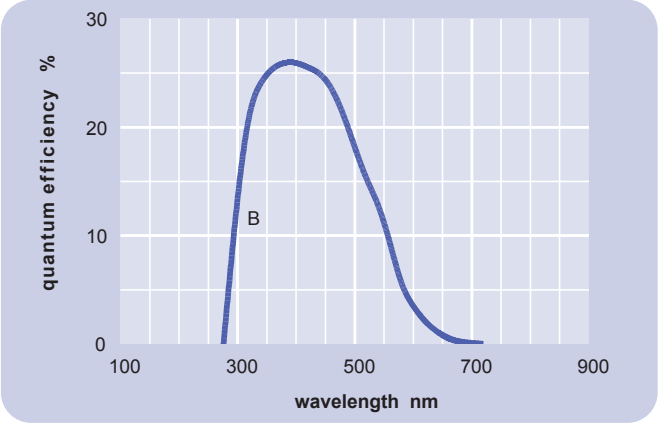
- high gain
- low operating voltage
- good SER
- good pulse height resolution
- 2π active area

4 window characteristics

	9900B borosilicate
spectral range *(nm)	280 - 680
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

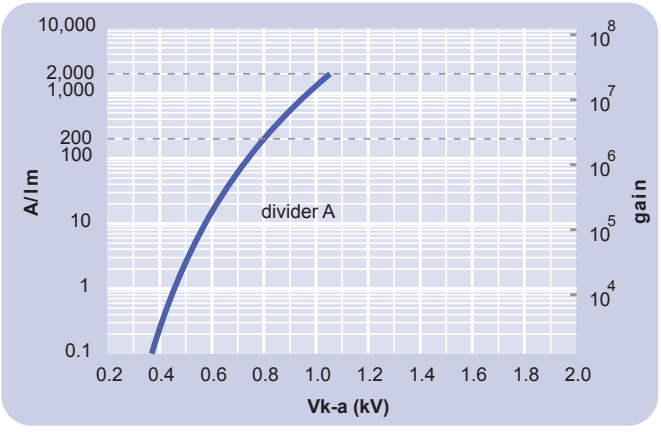


6 characteristics

	unit	min	typ	max
photocathode: bialkali				
active diameter	mm		25	
quantum efficiency at peak	%		26	
luminous sensitivity	µA/lm		80	
with CB filter		7	11	
with CR filter			7.5	
dynodes: 11BGSbCs				
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		800	1100
overall V for max. rated A/lm	V		1050	
gain at nominal A/lm	x 10^6		2.5	
dark current at 20 °C:				
dc at nominal A/lm	nA		0.3	5
dc at max. rated A/lm	nA		3	
dark count rate	s^{-1}		300	
pulsed linearity (-5% deviation):				
divider A	mA		0.1	
pulse height resolution:				
single electron peak to valley	ratio		2	
rate effect (I_a for Δg/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		15	
single electron (fwhm)	ns		30	
transit time	ns		85	
weight:	g		55	
maximum ratings:				
anode current	µA			100
cathode current	nA			25
gain	x 10^6			25
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

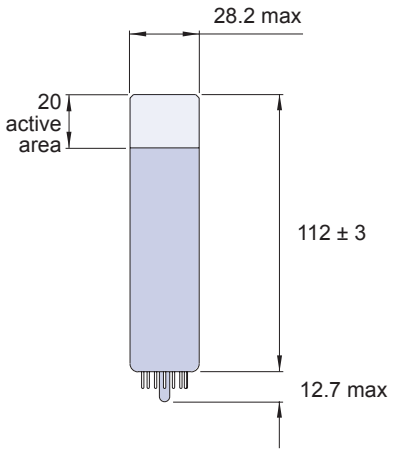


8 voltage divider distribution

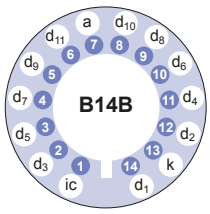
	k	d_1	d_2	.....	d_8	d_9	d_{10}	d_{11}	a	
A	150V	R	.....		R	R	R	2R	R	Standard

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 9900B 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 9900A. 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.

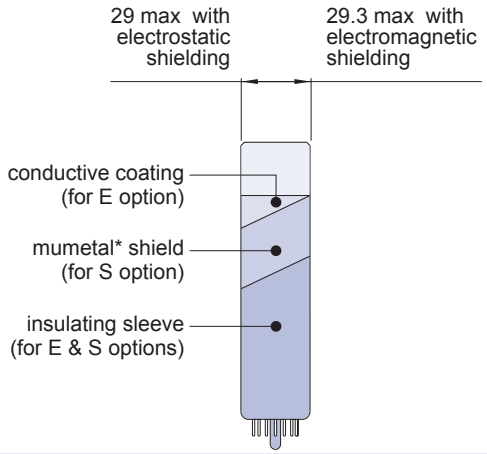
9900 ☐ ☐

options

E	electrostatic shielding see drawing below
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 divider available for these pmts is tabulated below:

	k	d_1	d_2	.....	d_7	d_8	d_9	d_{10}	d_{11}	a
C637E	2R	R	.....		R	R	R	2R	R	
C637G	150V	R	.....		R	R	R	2R	R	

R = 330 kΩ

ET Enterprises Limited
45 Riverside Way
Uxbridge UB8 2YF
United Kingdom
tel: +44 (0) 1895 200880
fax: +44 (0) 1895 270873
e-mail: sales@et-enterprises.com
web site: www.et-enterprises.com

ADIT Electron Tubes
300 Crane Street
Sweetwater TX 79556 USA
tel: (325) 235 1418
toll free: (800) 399 4557
fax: (325) 235 2872
e-mail: sales@electrontubes.com
web site: www.electrontubes.com

choose accessories for this pmt on our website

an ISO 9001 and ISO 14001 registered company