38 mm (1.5") photomultiplier
9972B series data sheet

ET Enterprises electron tubes

1 description

The 9972B is a 38 mm (1.5″) diameter, end window photomultiplier with infra-red sensitive S20 photocathode and 10 high gain, high stability, SbCs dynodes of linear focused design for good linearity and timing.

2 applications

- particle counting
- SO_x NO_x pollution monitoring

3 features

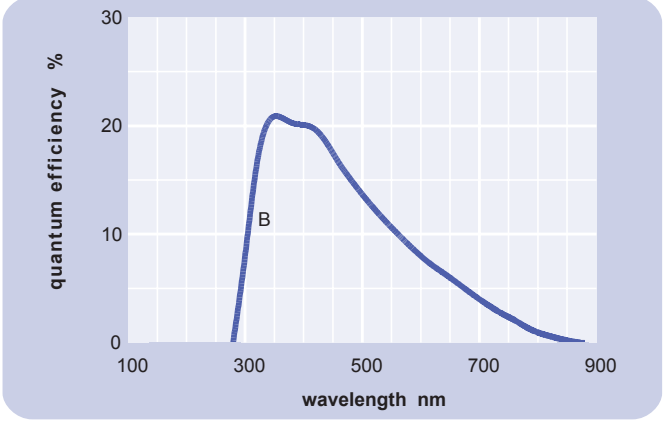
- compact
- fast time response

4 window characteristics

	9972B borosilicate
spectral range *(nm)	290 - 850
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

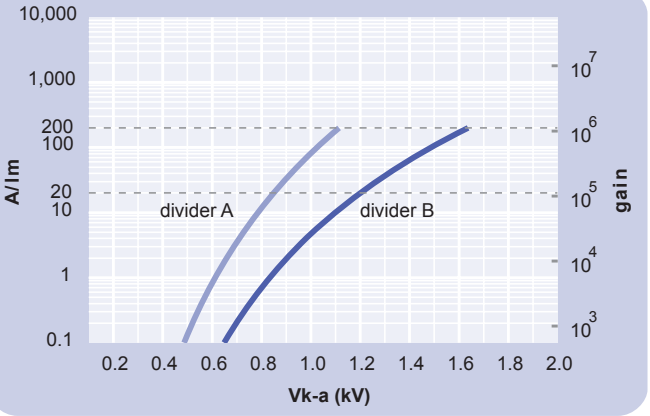


6 characteristics

	unit	min	typ	max
photocathode: S20				
active diameter	mm		32	
quantum efficiency at peak	%		21	
luminous sensitivity	µA/lm	130	180	
with CB filter			8	
with CR filter			8	
with IR filter			10	
dynodes: 10LFSbCs				
anode sensitivity in divider A:				
nominal anode sensitivity	A/lm		20	
max. rated anode sensitivity	A/lm		200	
overall V for nominal A/lm	V		850	1100
overall V for max. rated A/lm	V		1100	
gain at nominal A/lm	x 10^6		0.1	
dark current at 20 ºC:				
dc at nominal A/lm	nA		0.2	2
dc at max. rated A/lm	nA		2	
dark count rate	s^{-1}		7000	
pulsed linearity (-5% deviation):				
divider A	mA		25	
divider B	mA		100	
pulse height resolution:				
single electron peak to valley	ratio		1.8	
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}		1.3	
temperature coefficient:	% $ºC^{-1}$		± 0.5	
timing:				
multi electron rise time	ns		3.5	
multi electron fwhm	ns		6	
single electron rise time	ns		3	
single electron (fwhm)	ns		4	
single electron jitter (fwhm)	ns		4.5	
transit time	ns		35	
weight:	g		60	
maximum ratings:				
anode current	µA			100
cathode current	nA			750
gain	x 10^6			1.1
sensitivity	A/lm			200
temperature	°C	-80		60
V (k-a)[1]	V			1800
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



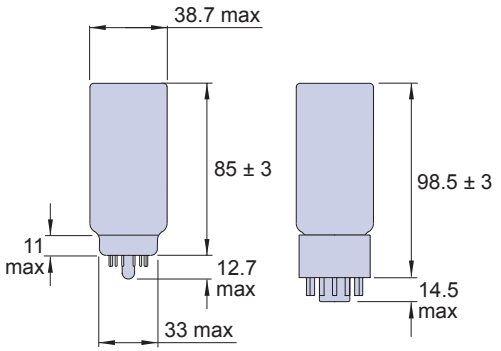
8 voltage divider distribution

	k	d_1	d_2	d_7	d_8	d_9	d_{10}	a	
A	150V	R	. . . . .	R	R	R	R	R	Standard
B	150V	R	. . . . .	R	2R	3R	4R	3R	High Pulsed Linearity

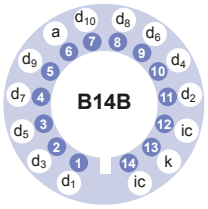
Characteristics contained in this data sheet refer to divider A unless stated otherwise.

9 external dimensions mm

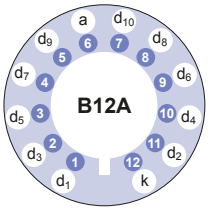
The drawings below show the 9972B in hardpin format and the 9972KB with the B12A cap fitted.



10 base configuration (viewed from below)



B14B hardpin base
(for 9972B)
'ic' indicates an internal connection



B12A cap
(for 9972KB)

Our range of B14B sockets is available to suit the hardpin base. Our range of B12A sockets is available to suit the B12A cap. Both socket ranges include versions with or without a mounting flange, and versions with contacts for mounting directly onto printed circuit boards.

11 ordering information

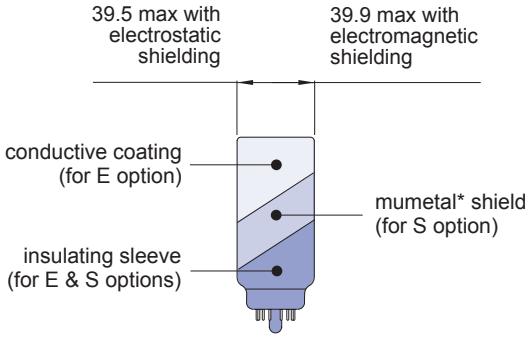
The 9972B meets the specification given in this data sheet. You may order **variants** by adding a suffix to the type number. You may also order **options** by adding a suffix to the type number. You may order product with **specification options** by discussing your requirements with us. If your selection option is for one-off order, then the product will be referred to as 9972A. 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.

9972 □ □ □

base options
K capped

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



12 voltage dividers

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

9972B	9972KB	k	d_1	d_2	d_6	d_7	d_8	d_9	d_{10}	a
C646A	C674A	2R	R	. . . . .	R	R	R	R	R	
C646B	C674B	2R	R	. . . . .	R	2R	3R	4R	3R	
C646C	C674C	150 V	R	. . . . .	R	R	R	R	R	
C646D	C674D	150 V	R	. . . . .	R	2R	3R	4R	3R	

R = 330 kΩ

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choose accessories for this pmt on our website

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