

51 mm (2") photomultiplier

9272B series data sheet

1 description

The 9272B is a 51 mm (2") diameter, ruggedised, end window photomultiplier with blue-green sensitive bialkali photocathode and ten high gain, high stability SbCs dynodes of linear focused design for good linearity and timing. Intended for scintillation spectroscopy, this is a rugged version of the industry standard, 9266B, constructed to withstand shock and vibration levels above those normally experienced in industrial applications.

2 applications

- scintillation spectroscopy
- flow and level measurements

3 features

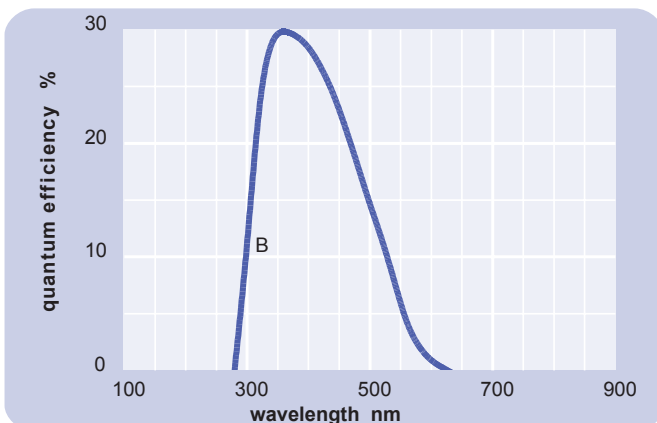
- rugged
- high quantum efficiency (QE)
- good single electron response (SER)
- good linearity
- low rate effect
- good stability

4 window characteristics

	9272B borosilicate
spectral range *(nm)	290 - 630
refractive index (n _s)	1.49
K (ppm)	300
Th (ppb)	250

* nm (1% of peak)

5 typical spectral response curves

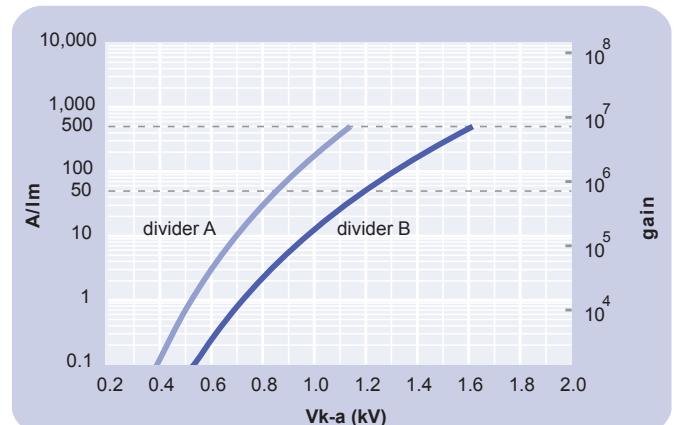


6 characteristics

	unit	min	typ	max
photocathode: bialkali				
active diameter	mm		48	
quantum efficiency at peak	%		30	
luminous sensitivity	μA/lm		70	
with CB filter		8	11.5	
dynodes: 10LFSbCs				
anode sensitivity in divider A:				
overall voltage for 50 A/lm	V		850	1100
gain at 50 A/lm	x 10 ⁶		0.6	
overall voltage for 500 A/lm	V		1200	
dark current at 20 °C:				
dc at 50 A/lm	nA		0.3	1.5
dark rate	cps		300	
pulsed linearity (-5 % deviation):				
divider A	mA		30	
divider B	mA		100	
rate effect:				
<1 % change in gain for Ia (μA):				10
resolution:				
single electron peak to valley			2	
¹³⁷ Cs with 2" x 2" NaI(Tl)	%		7.5	
⁵⁷ Co with 2" x 2" NaI(Tl)	%		10.5	
temperature coefficient:	% °C ⁻¹		± 0.5	
timing: multi-electron				
rise time	ns		4	
pulse width (fwhm)	ns		6.5	
transit time delay	ns		40	
weight :				
	g		100	
maximum ratings:				
anode current	μA			100
cathode current	nA			100
gain	x 10 ⁶			7
sensitivity	A/lm			500
V (k-a) ⁽¹⁾				2000
V (k-d1)	V			300
V (d-d) ⁽²⁾	V			300

⁽¹⁾ subject to not exceeding max. rated sensitivity ⁽²⁾ subject to not exceeding max rated V(k-a)

7 typical voltage gain characteristics



8 environmental specifications

shock & vibration profile	qualification levels		acceptance levels	
(all 3 axis tested)				
sine vibration:				
frequency (Hz)	20 - 2000			
amplitude (\hat{g})	20			
sweep rate (octave/min.)	2			
single sweep				
random vibration:				
freq. band (Hz)	PSD	overall	PSD	overall
	(g^2/Hz)	g rms.	(g^2/Hz)	g rms.
20	0.045		0.0187	
20 - 60 roll on	+6 db/oct		+6 db/oct	
60 - 400	0.4024	20	0.1686	13
400 - 2000 roll off	-3 db/oct		-3 db/oct	
2000	0.0805		0.0337	
1 min. duration				
in each axis				
impact shock ($\frac{1}{2}$ sine):				
peak acceleration (\hat{g})	250			
duration (ms)	1			
3 shocks per axis				
(18 shocks total)				

thermal range: operating - -30 °C to +60 °C
non-operating - -30 °C to +90 °C

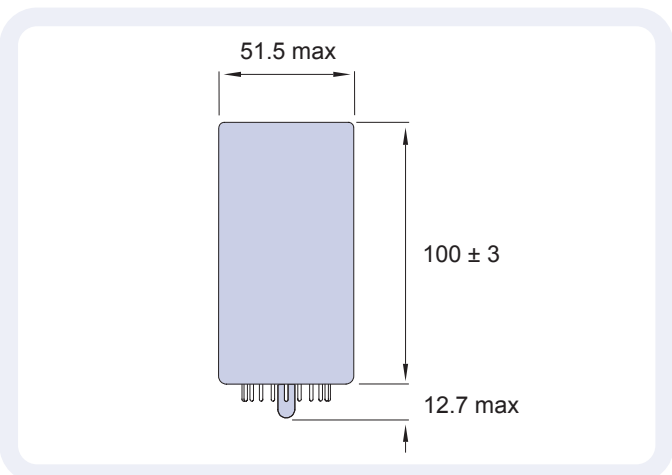
pressure: 0 - 1.3 atmospheres absolute

9 voltage divider distribution

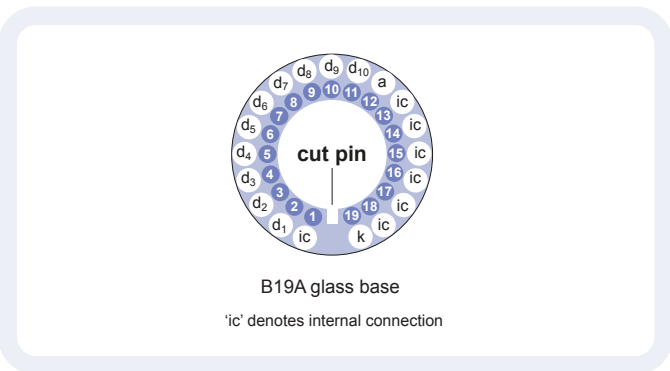
	k	d ₁	d ₂	.....	d ₆	d ₇	d ₈	d ₉	d ₁₀	a	
A	2R	R	.....		R	R	R	R	R		Standard
B	2R	R	.....		R	2R	3R	4R	3R		High Pulsed Linearity

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

10 external dimensions mm



11 pin connections (viewed from below)

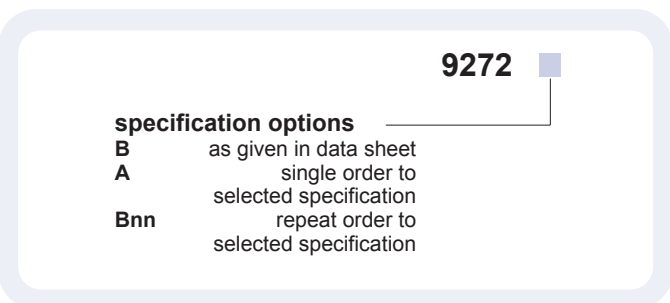


12 sockets

Our range of B19A sockets is available to suit the B19A glass base. The range includes versions with contacts for mounting directly onto printed circuit boards.

13 ordering information

The 9272B 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 9272A. 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.



14 voltage dividers

	k	d ₁	d ₂	.....	d ₆	d ₇	d ₈	d ₉	d ₁₀	a
C647A	2R	R		R	R	R	R	R	
C647B	2R	R		R	2R	3R	4R	3R	
C647C	150V	R		R	R	R	R	R	
C647D	150V	R		R	2R	3R	4R	3R	

R = 300 kΩ

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