

# 38 mm (1.5") photomultiplier

## 9845B series data sheet

### 1 description

The 9845B is a 38 mm (1.5") diameter, ruggedised, end window photomultiplier with blue-green sensitive bialkali photocathode and 10 high gain, high stability, SbCs dynodes of circular focused design for fast timing and compactness.

### 2 applications

- scintillation spectroscopy
- x-ray diffractometers

### 3 features

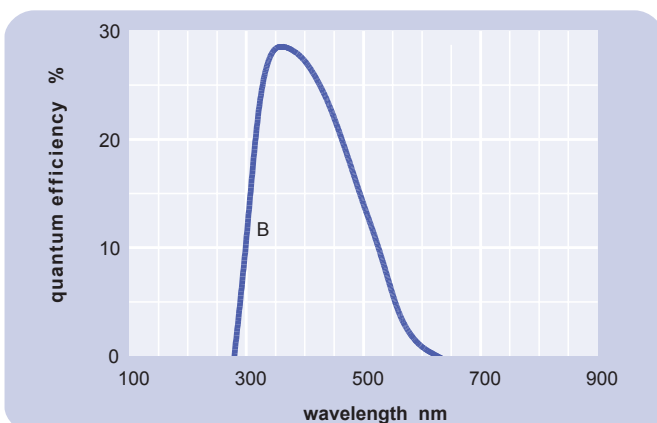
- ruggedised
- high gain
- fast time response
- good SER
- high pulsed linearity
- good pulse height resolution
- compact

### 4 window characteristics

	9845B borosilicate
spectral range *(nm)	290 - 630
refractive index (n <sub>e</sub> )	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

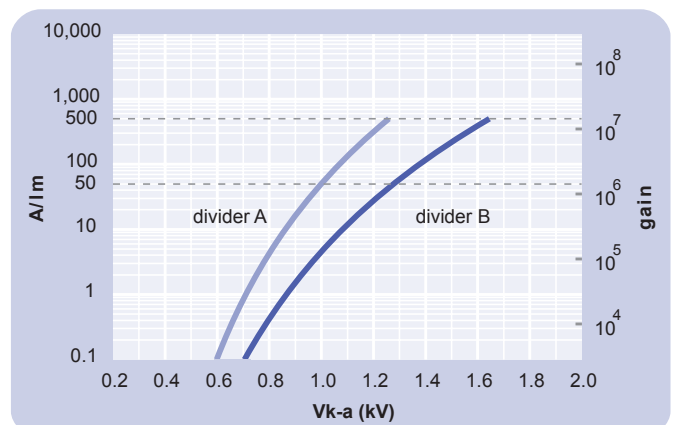


### 6 characteristics

	unit	min	typ	max
<b>photocathode: bialkali</b>				
active diameter	mm		32	
quantum efficiency at peak	%		28	
luminous sensitivity	μA/lm		65	
with CB filter		7	11	
with CR filter			1	
<b>dynodes: 10CFSbCs</b>				
<b>anode sensitivity in divider A:</b>				
nominal anode sensitivity	A/lm		50	
max. rated anode sensitivity	A/lm		500	
overall V for nominal A/lm	V		1000	1200
overall V for max. rated A/lm	V		1300	
gain at nominal A/lm	x 10 <sup>6</sup>		0.8	
<b>dark current at 20 °C:</b>				
dc at nominal A/lm	nA		0.1	5
dc at max. rated A/lm	nA		1	
dark count rate	s <sup>-1</sup>		200	
<b>pulsed linearity (-5% deviation):</b>				
divider A	mA		2	
divider B	mA		20	
<b>pulse height resolution:</b>				
single electron peak to valley	ratio		2	
<sup>137</sup> Cs with 1 1/8" x 1 1/8" NaI(Tl)	%		7.5	
<sup>57</sup> Co with 1 1/8" x 1 1/8" NaI(Tl)	%		11	
rate effect (I <sub>a</sub> for Δg/g=1%):	μA		20	
<b>magnetic field sensitivity:</b>				
the field for which the output decreases by 50 %				
most sensitive direction	T x 10 <sup>-4</sup>		1.3	
temperature coefficient:	% °C <sup>-1</sup>		± 0.5	
<b>timing:</b>				
multi electron rise time	ns		5	
multi electron fwhm	ns		10	
transit time delay	ns		35	
weight:	g		35	
<b>maximum ratings:</b>				
anode current	μA			100
cathode current	nA			75
gain	x 10 <sup>6</sup>			7.7
sensitivity	A/lm			500
temperature	°C	-30		60
V (k-a) <sup>(1)</sup>	V			1800
V (k-d1)	V			300
V (d-d) <sup>(2)</sup>	V			300
ambient pressure (absolute)	kPa			202

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

### 7 typical voltage gain characteristics



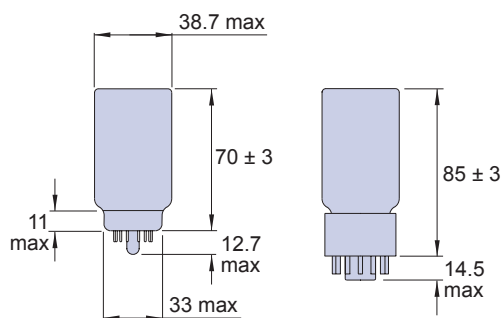
## 8 voltage divider distribution

	k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>7</sub>	d <sub>8</sub>	d <sub>9</sub>	d <sub>10</sub>	a	
A	150V	R	.....		R	R	R	R	R	Standard
B	150V	R	.....		R	R	R	2R	4R	High Pulsed Linearity

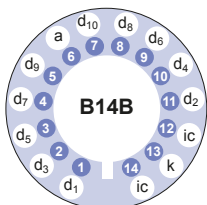
Characteristics contained in this data sheet refer to divider A unless stated otherwise.

## 9 external dimensions mm

The drawings below show the 9845B in hardpin format and the 9845KB with the B12A cap fitted.

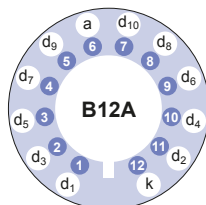


## 10 base configuration (viewed from below)



B14B hardpin base  
(for 9845B)

'ic' indicates an internal connection



B12A cap  
(for 9845KB)

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 9845B 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 9845A. 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.

9845

### base options

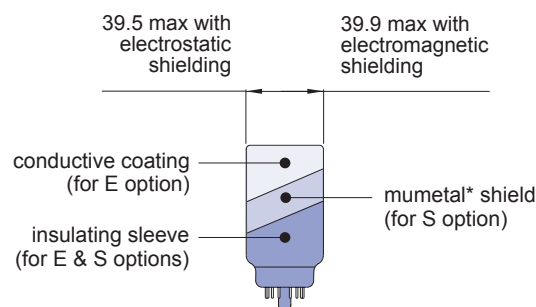
**K** capped

### 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 these pmts are tabulated below:

9845B	9845KB	k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>9</sub>	d <sub>10</sub>	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

\*mumetal is a registered trademark of Magnetic Shield Corporation

### 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) 521 8382  
fax: (325) 235 2872  
e-mail: sales@electrontubes.com  
web site: www.electrontubes.com

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DS\_ 9845B Issue 7 (21/09/10)