

# 90 mm (3.5") photomultiplier

## 9306KB series data sheet

### 1 description

The 9306KB is a 90mm (3.5") diameter, end window photomultiplier with blue-green sensitive bialkali photocathode and 10 high gain, high stability, SbCs dynodes of linear focused design for good linearity and timing.

### 2 applications

- radiometry
- scintillation spectroscopy

### 3 features

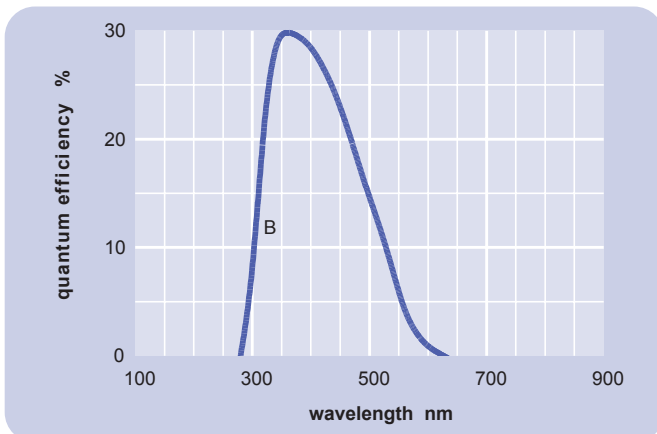
- good SER
- good pulse height resolution
- larger diameter version of 9305KB

### 4 window characteristics

9306KB borosilicate	
spectral range**(nm)	295 - 630
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

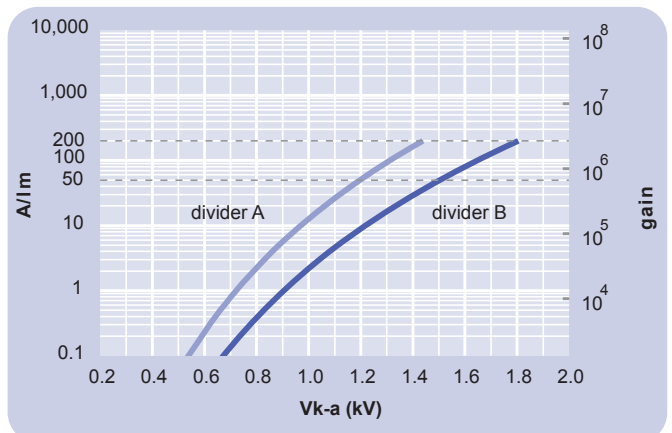


### 6 characteristics

	unit	min	typ	max
<b>photocathode: bialkali</b>				
active diameter	mm		80	
quantum efficiency at peak	%		30	
luminous sensitivity	$\mu\text{A}/\text{lm}$		75	
with CB filter		8	12	
with CR filter			2	
<b>dynodes: 10LFSbCs</b>				
<b>anode sensitivity in divider A:</b>				
nominal anode sensitivity	$\text{A}/\text{lm}$		50	
max. rated anode sensitivity	$\text{A}/\text{lm}$		200	
overall V for nominal $\text{A}/\text{lm}$	V		1200	1450
overall V for max. rated $\text{A}/\text{lm}$	V		1450	
gain at nominal $\text{A}/\text{lm}$	$\times 10^6$		0.7	
<b>dark current at 20 °C:</b>				
dc at nominal $\text{A}/\text{lm}$	nA		1	10
dc at max. rated $\text{A}/\text{lm}$	nA		4	
dark count rate	$\text{s}^{-1}$		1000	
<b>pulsed linearity (-5% deviation):</b>				
divider A	mA		30	
divider B	mA		100	
<b>pulse height resolution:</b>				
single electron peak to valley	ratio		2	
<sup>137</sup> Cs with 3" x 3" NaI(Tl)	%		7.5	
<b>rate effect (<math>I_a</math> for <math>\Delta g/g=1\%</math>):</b>	$\mu\text{A}$		20	
<b>magnetic field sensitivity:</b>				
the field for which the output decreases by 50 %				
most sensitive direction	$\text{T} \times 10^{-4}$			
<b>temperature coefficient:</b>	$\% \text{ } ^\circ\text{C}^{-1}$		$\pm 0.5$	
<b>timing:</b>				
multi electron fwhm	ns		15	
multi electron rise time	ns		7.5	
transit time	ns		45	
<b>weight:</b>	g		210	
<b>maximum ratings:</b>				
anode current	$\mu\text{A}$			100
cathode current	nA			300
gain	$\times 10^6$			3
sensitivity	$\text{A}/\text{lm}$			200
temperature	$^\circ\text{C}$	-30		60
V (k-a) <sup>(1)</sup>	V			2100
V (k-d1)	V			450
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



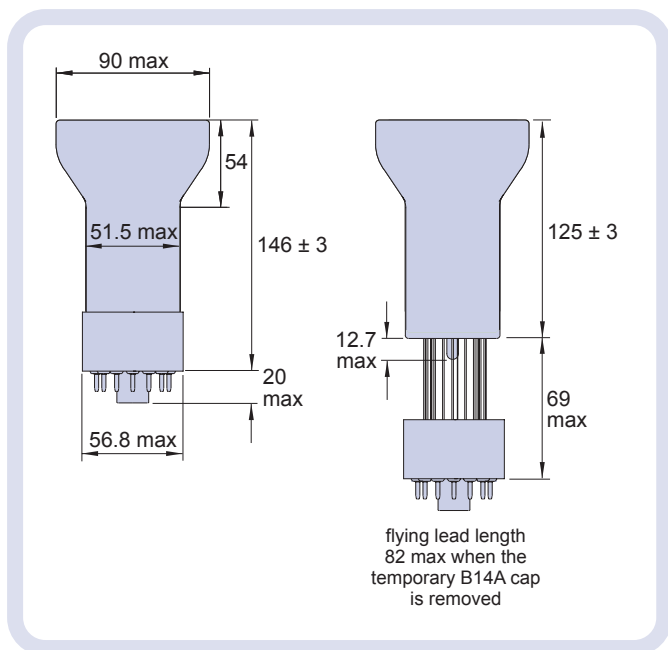
## 8 voltage divider distribution

	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	3R	R	.....		R	R	R	R	R	Standard
B	3R	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 9306KB with the B14A cap fitted, and the 9306KFLB in flying lead format with the temporary B14A cap fitted. The cap is attached as agreed.



## 11 ordering information

The 9306KB 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 9306KA. 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.

9306

**base options**

**KFL** flying lead base with temporary B14A cap as given in data sheet

**specification options**

**B** single order to

**A** selected specification

**Bnn** repeat order to selected specification

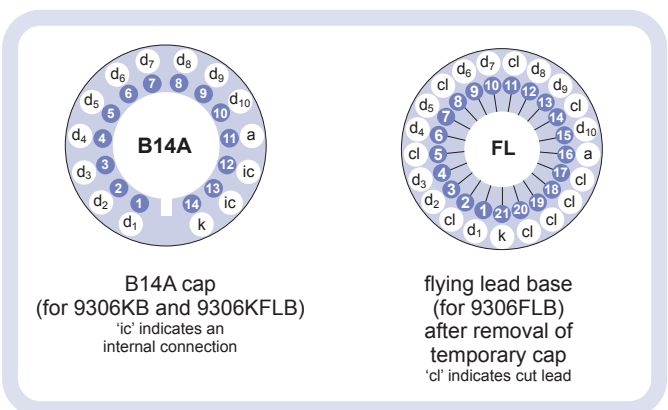
## 12 voltage dividers

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

9306KB	9306FLB	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
C636P	C655P	3R	R	.....		R	R	R	R	R	
C636R	C655R	3R	R	.....		R	2R	3R	4R	3R	
C636S	C655S	300 V	R	.....		R	R	R	R	R	
C636T	C655T	300 V	R	.....		R	2R	3R	4R	3R	

R = 330kΩ

## 10 base configuration (viewed from below)



Our range of B14A sockets is available to suit the B14A cap. The socket range includes versions with or without a mounting flange, and versions with contacts for mounting directly onto printed circuit boards.

choose accessories for this pmt on our website

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DS\_9306KB Issue 7 (02/06/16)