

# 78 mm (3") photomultiplier

## 9305KB series data sheet

### 1 description

The 9305KB is a 78mm (3") 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

- scintillation spectroscopy

### 3 features

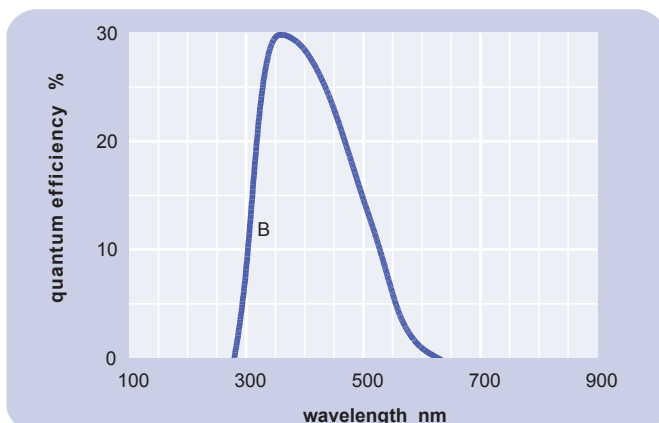
- good pulse height resolution

### 4 window characteristics

		9305KB/FLB 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

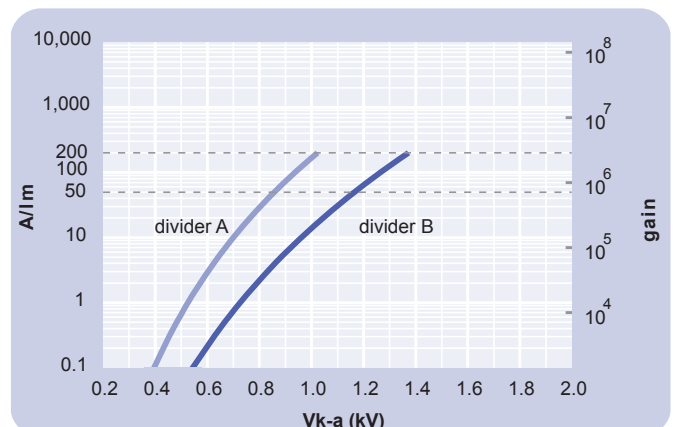


### 6 characteristics

	unit	min	typ	max
<b>photocathode: bialkali</b>				
active diameter	mm		70	
quantum efficiency at peak	%		30	
luminous sensitivity	$\mu\text{A/lm}$		75	
with CB filter		8	12	
with CR filter			2	
<b>dynodes: 10LFSbCs</b>				
<b>anode sensitivity in divider A:</b>				
nominal anode sensitivity	A/lm		50	
max. rated anode sensitivity	A/lm		200	
overall V for nominal A/lm	V		850	1700
overall V for max. rated A/lm	V		1000	
gain at nominal A/lm	$\times 10^6$		0.7	
<b>dark current at 20 °C:</b>				
dc at nominal A/lm	nA		0.5	10
dc at max. rated A/lm	nA		2	
dark count rate	$\text{s}^{-1}$		500	
<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	
$^{137}\text{Cs}$ with 3" x 3" NaI(Tl)	%		7.3	
<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	$\text{T} \times 10^{-4}$		1.7	
<b>temperature coefficient:</b>	$\% \text{ } ^\circ\text{C}^{-1}$		$\pm 0.5$	
<b>timing:</b>				
single electron rise time	ns		3	
single electron fwhm	ns		4	
multi electron fwhm	ns		15	
multi electron rise time	ns		7.5	
transit time	ns		42	
<b>weight:</b>	g		130	
<b>maximum ratings:</b>				
anode current	$\mu\text{A}$			100
cathode current	nA			200
gain	$\times 10^6$			3
sensitivity	A/lm			200
temperature	$^\circ\text{C}$	-30		60
V (k-a) <sup>(1)</sup>	V			2700
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



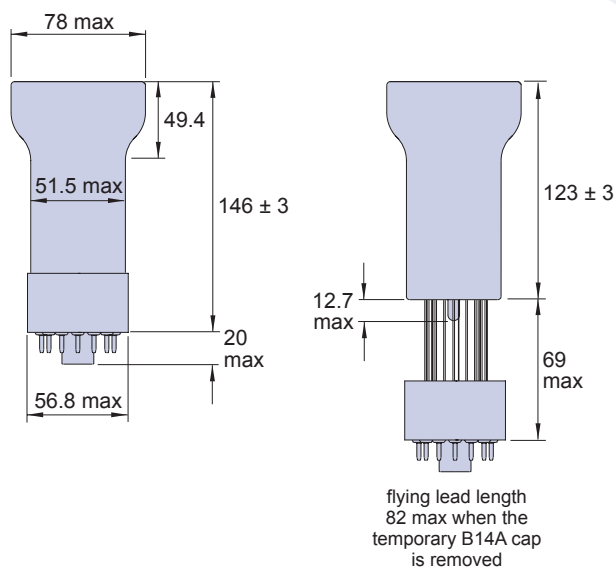
## 8 voltage divider distribution

	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

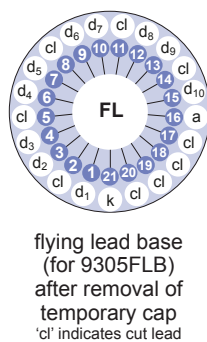
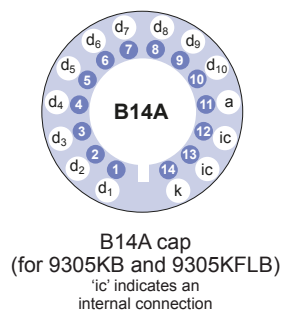
Characteristics contained in this data sheet refer to divider A unless stated otherwise.

## 9 external dimensions mm

The drawings below show the 9305KB with the B14A cap fitted, and the 9305KFLB in flying lead format with the temporary B14A cap fitted. The cap is attached as agreed.



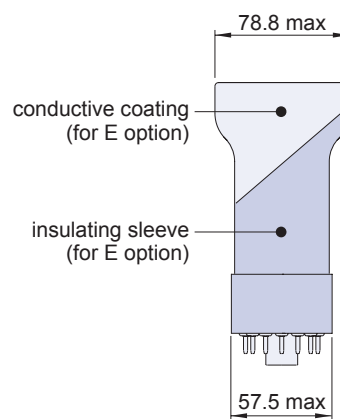
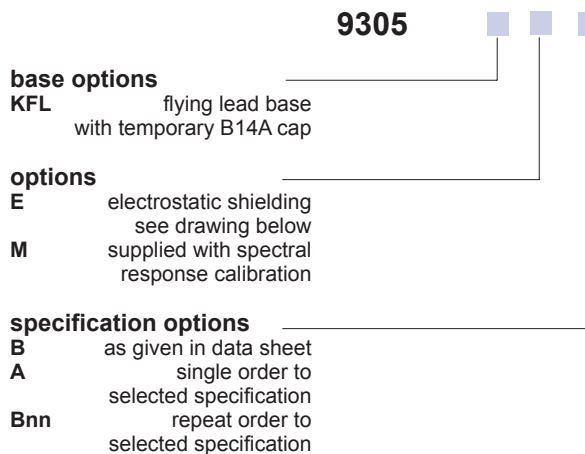
## 10 base configurations (viewed from below)



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.

## 11 ordering information

The 9305KB 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 9305KA. 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.



## 12 voltage dividers

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

9305KB	9305FLB	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	2R	R	.....		R	R	R	R	R	
C636R	C655R	2R	R	.....		R	2R	3R	4R	3R	
C636S	C655S	150 V	R	.....		R	R	R	R	R	
C636T	C655T	150 V	R	.....		R	2R	3R	4R	3R	

R = 330kΩ

**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 registered company

The company reserves the right to modify these designs and specifications without notice. Developmental devices are intended for evaluation and no obligation is assumed for future manufacture. While every effort is made to ensure accuracy of published information the company cannot be held responsible for errors or consequences arising therefrom.



© ET Enterprises Ltd, 2012  
DS\_ 9305KB Issue 7 (23/01/12)