

# 78 mm (3") photomultiplier

## 7305KB series data sheet

### 6 characteristics

#### 1 description

The 7305KB 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. It is a high QE version of the 9305KB.

#### 2 applications

- scintillation spectroscopy

#### 3 features

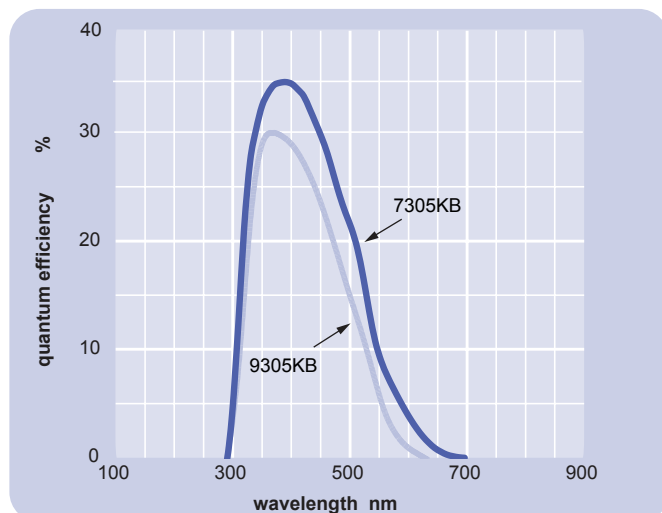
- good pulse height resolution

#### 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

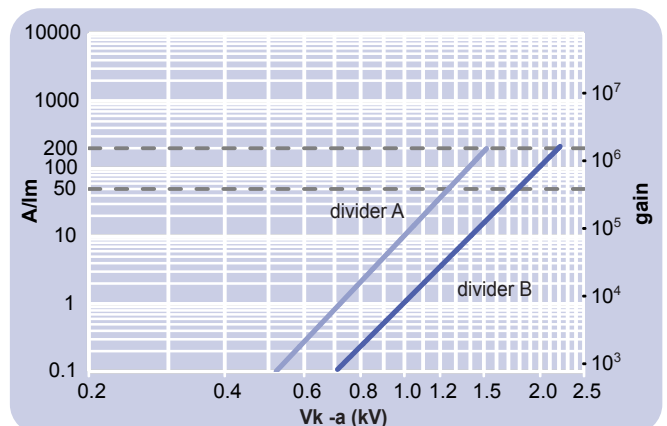
#### 5 typical spectral response curves



	unit	min	typ	max
<b>photocathode: bialkali</b>				
active diameter	mm		70	
quantum efficiency at peak	%		35	
luminous sensitivity	$\mu\text{A/lm}$		130	
with CB filter		12	15	
with CR filter			10	
<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			1250	1700
overall V for max. rated A/lm	V		1500	
gain at nominal A/lm	$\times 10^6$		0.4	
<b>dark current at 20 °C:</b>				
dc at nominal A/lm	nA		5	10
dc at max. rated A/lm	nA		20	
dark count rate	$\text{s}^{-1}$		5000	
<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)	%		6.8	
<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	$T \times 10^{-4}$		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



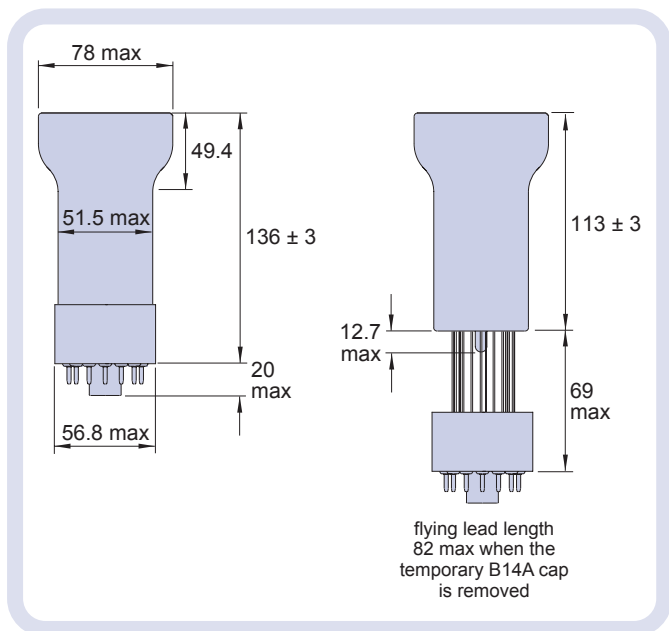
## 8 voltage divider distribution

	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

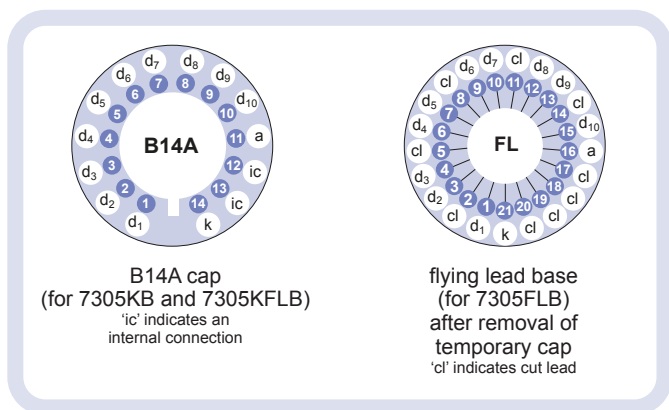
Characteristics contained in this data sheet refer to divider A unless stated otherwise.

## 9 external dimensions mm

The drawings below show the 7305KB with the B14A cap fitted, and the 7305KFLB in flying lead format with the temporary B14A cap fitted. The cap is attached as agreed.



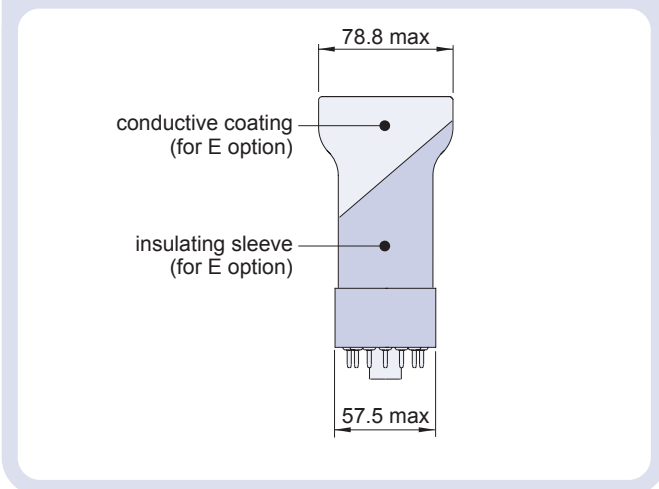
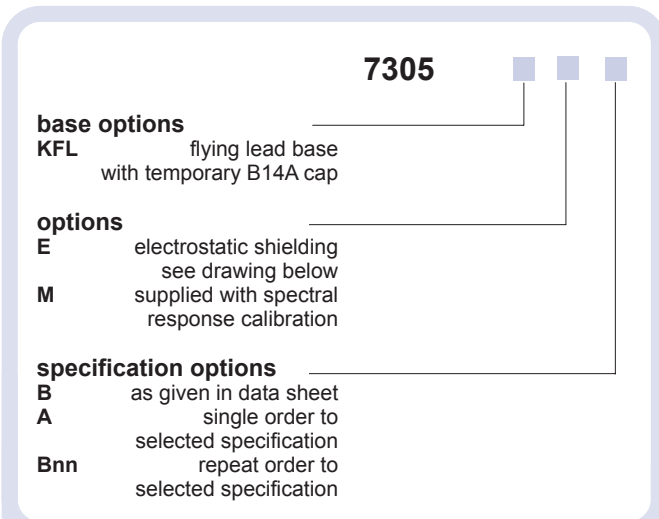
## 10 base configuration (viewed from below)



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

## 11 ordering information

The 7305KB 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 a one-off order, then the product will be referred to as 7305KA. For a repeat order, ET Enterprises Limited 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:

7305KB	7305FLB	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

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