

78 mm (3") photomultiplier

9311KB series data sheet

1 description

The 9311KB is a 78mm (3") diameter, end window photomultiplier with infra-red sensitive S20 photocathode and 10 high gain, high stability, SbCs dynodes of linear focused design for good linearity and timing.

2 applications

- scintillation spectroscopy

3 features

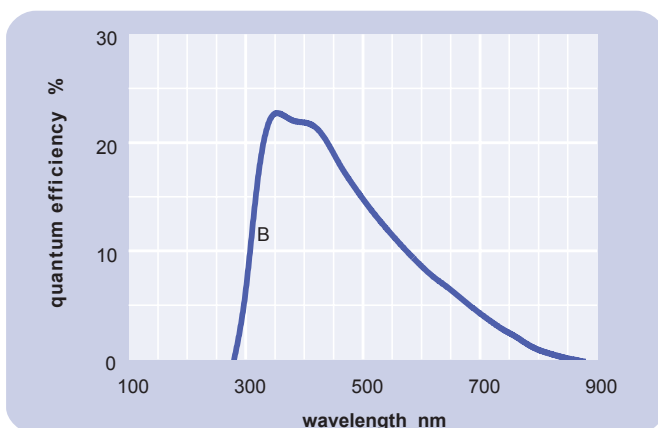
- high cathode current capability

4 window characteristics

		9311KB/FLB borosilicate
spectral range *(nm)		295 - 870
refractive index (n_d)		1.49
K (ppm)		350
Th (ppb)		250
U (ppb)		100

* wavelength range over which quantum efficiency exceeds 1 % of peak

5 typical spectral response curves

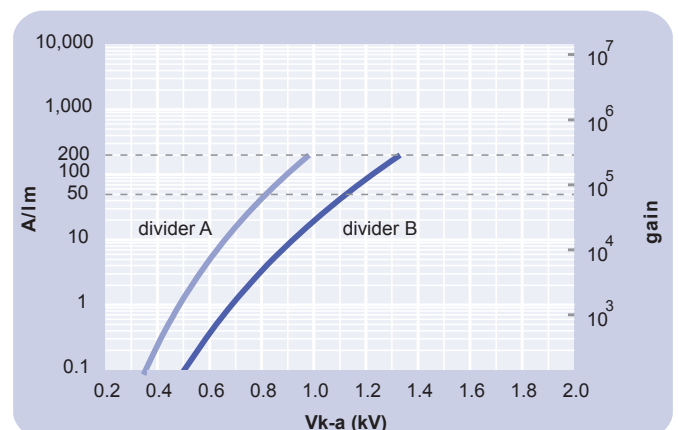


6 characteristics

	unit	min	typ	max
photocathode: S20				
active diameter	mm		70	
quantum efficiency at peak	%		23	
luminous sensitivity	$\mu\text{A/lm}$	120	220	
with CB filter			10	
with CR filter			95	
with IR filter			10	
dynodes: 10LFSbCs				
anode sensitivity in divider A:				
nominal anode sensitivity	A/lm		50	
max. rated anode sensitivity	A/lm		200	
overall V for nominal A/lm	V		800	1400
overall V for max. rated A/lm	V		1000	
gain at nominal A/lm	$\times 10^6$		0.25	
dark current at 20°C:				
dc at nominal A/lm	nA		2	20
dc at max. rated A/lm	nA		8	
dark count rate	s^{-1}		35000	
pulsed linearity (-5% deviation):				
divider A	mA		30	
divider B	mA		100	
rate effect (I_a for $\Delta g/g=1\%$):				
rate effect	μA		20	
magnetic field sensitivity:				
the field for which the output decreases by 50%				
most sensitive direction	$\text{T} \times 10^{-4}$		1.7	
temperature coefficient:	$\%^\circ\text{C}^{-1}$		± 0.5	
timing:				
single electron rise time	ns		7.5	
single electron (fwhm)	ns		15	
transit time	ns		40	
weight:	g		125	
maximum ratings:				
anode current	μA			100
cathode current	nA			2000
gain	$\times 10^6$			1
sensitivity	A/lm			200
temperature	$^\circ\text{C}$	-60		60
V (k-a) ⁽¹⁾	V			2100
V (k-d1)	V			450
V (d-d) ⁽²⁾	V			300
ambient pressure (absolute)	kPa			202

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

7 typical voltage gain characteristics



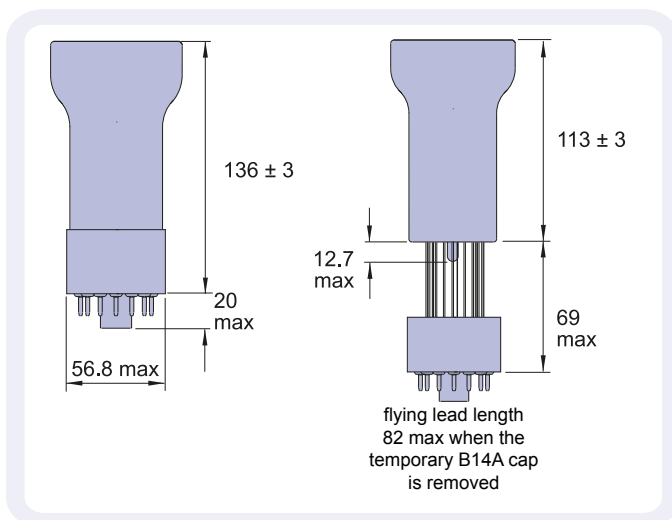
8 voltage divider distribution

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

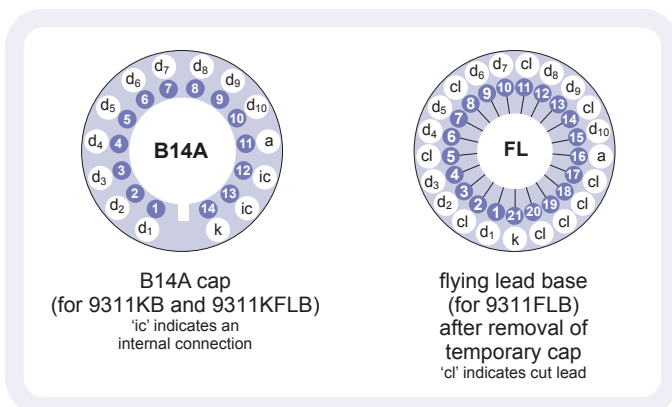
Characteristics contained in this data sheet refer to divider A unless stated otherwise.

9 external dimensions mm

The drawings below show the 9311KFLB in flying lead format, and the 9311KB with the B14A cap fitted.



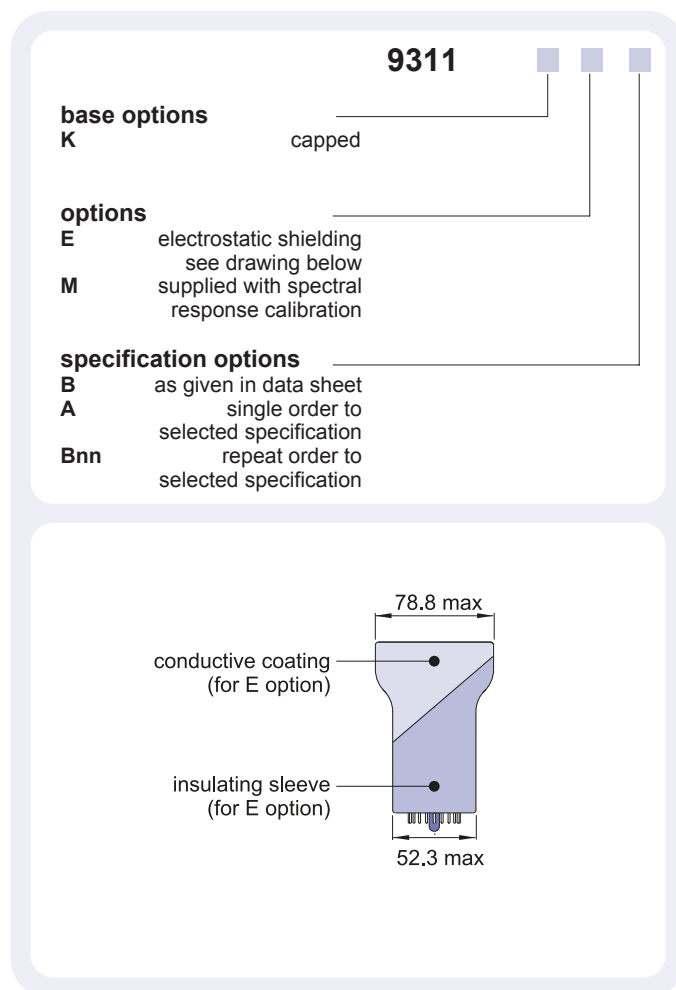
10 base configurations (viewed from below)



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 9311KB 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 9311A. 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:

9311KB	9311FLB	k	d ₁	d ₂	.....	d ₆	d ₇	d ₈	d ₉	d ₁₀	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 = 330k Ω

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@electron tubes.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
electron tubes

© ET Enterprises Ltd, 2012
DS_9311KB Issue 3 (26/01/12)