

# 13mm (0.5") photomultiplier L13D21H series data sheet



## 1 description

The L13D21H is a 13mm (0.5") diameter, end window photomultiplier with a blue-green sensitive bialkali photocathode and 10 high gain, high stability, SbCs dynodes of linear focused design.

## 2 applications

- scintillation counting
- general purpose low light level detection

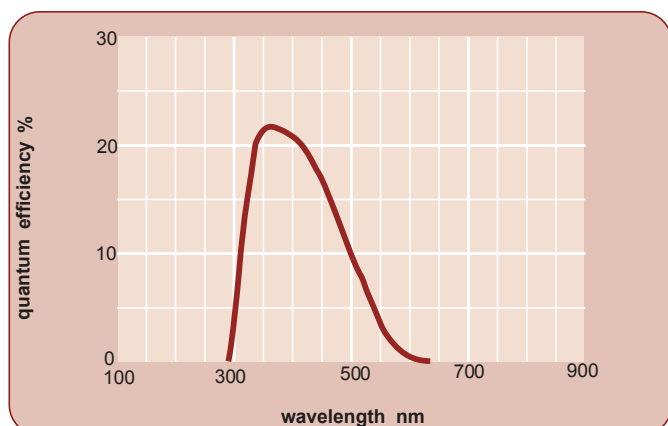
## 3 features

- low dark current
- good energy resolution

## 4 window characteristics

| L13D21H<br>hard glass |         |
|-----------------------|---------|
| spectral range*(nm)   | 290-630 |
| refractive index (n)  | 1.49    |
| K (ppm)               |         |
| Th (ppb)              | (tbd)   |
| U (ppb)               |         |

## 5 typical spectral response curves

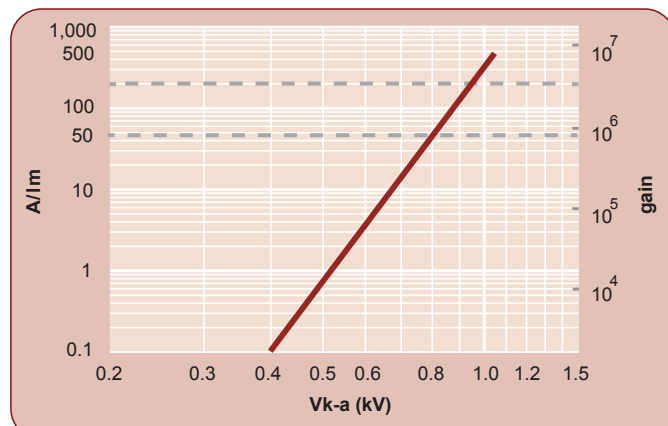


## 6 characteristics

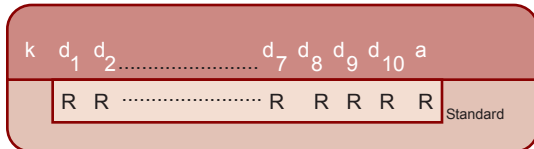
|   | unit                       | min | typ | max  |
|---|----------------------------|-----|-----|------|
| <b>photocathode: bialkali</b>                         |                            |     |     |      |
| active diameter                                       | mm                         |     | 9   |      |
| quantum efficiency at peak                            | %                          |     | -   |      |
| luminous sensitivity                                  | $\mu\text{A/lm}$           |     | 60  |      |
| with CB filter  |                            | 5   | 9   |      |
| with CR filter  |                            |     | 0.5 |      |
| <b>dynodes: 10LFSbCs</b>                              |                            |     |     |      |
| <b>anode sensitivity:</b>                             |                            |     |     |      |
| nominal anode sensitivity                             | A/lm                       |     | 50  |      |
| max. rated anode sensitivity                          | A/lm                       |     | 200 |      |
| overall V for nominal A/ml                            | V                          |     | 800 | 1100 |
| overall V for max. rated A/ml                         | V                          |     | 925 |      |
| gain at nominal A/ml                                  | $\times 10^6$              |     | 0.8 |      |
| <b>dark current at 20°C:</b>                          |                            |     |     |      |
| dc at nominal A/lm                                    | nA                         |     | 0.3 | 1.5  |
| dc at max. Rated A/lm                                 | nA                         |     | 1.2 |      |
| dark count rate                                       | $\text{s}^{-1}$            |     | -   |      |
| <b>pulsed linearity(-5% deviation)</b>                | mA                         |     | -   |      |
| <b>rate effect(I for <math>\Delta</math> g/g+1%):</b> | $\mu\text{A}$              |     |     |      |
| <b>magnetic field sensitivity:</b>                    |                            |     |     |      |
| the field for which the output decreases by 50%       |                            |     | -   |      |
| most sensitive direction                              | $\text{Tx} \times 10^{-4}$ |     | -   |      |
| <b>temperature coefficient:</b>                       | % C                        |     | -   |      |
| <b>timing: at 1000 V</b>                              |                            |     |     |      |
| multi electron rise time                              | ns                         |     | 2.1 |      |
| multi electron width (fwhm)                           | ns                         |     | 5.5 |      |
| transit time  | ns                         |     | 22  |      |
| <b>weight:</b>  | g                          |     | 10  |      |
| <b>maximum ratings:</b>                               |                            |     |     |      |
| anode current   | $\mu\text{A}$              |     |     | 50   |
| cathode current                                       | nA                         |     |     | 50   |
| gain  | $\times 10^6$              |     |     | 7    |
| anode sensitivity                                     | A/lm                       |     |     | 200  |
| temperature   | °C                         | -30 |     | 60   |
| V (k-a) <sup>(1)</sup>                                | V                          |     |     | 1500 |
| V (k-d1)  | V                          |     |     | 200  |
| V (d-d) <sup>(2)</sup>                                | V                          |     |     | 200  |
| 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

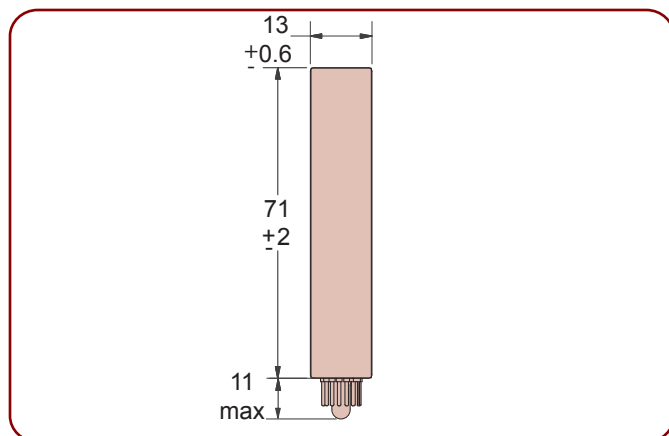


## 8 voltage divider distribution



Characteristics contained in this data sheet refer to standard divider.

## 9 external dimensions mm



## 11 ordering information

The L13D21 meets the specifications given in this data sheet. At the present time the L13D21H is the only option offered. Contact the manufacturer for flying lead availability.

Product with special test requirements, integral voltage divider network or with one or more of the shielding options below will be assigned a suffix with the letter A followed by a unique 3 digit number to designate the requirement.

### base options

- H hard pin, no cap
- S capped
- L temporary B14 cap

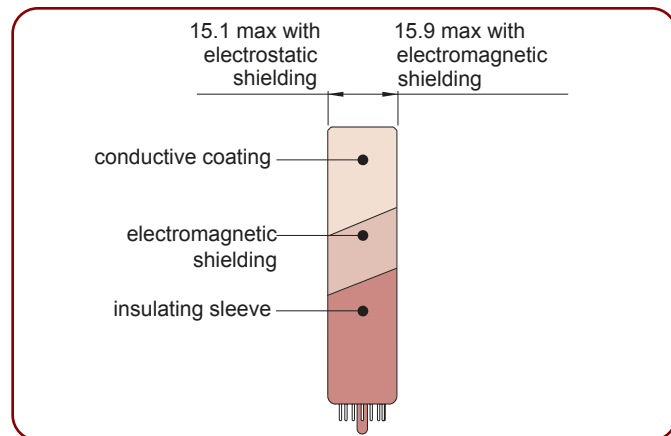
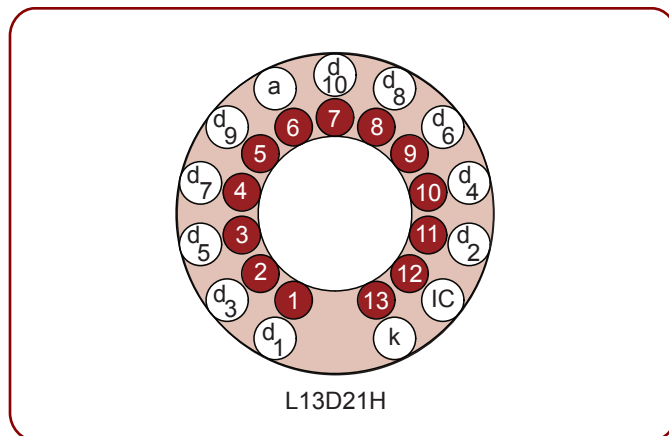
**L13D21**

### specification options

- A nnn special requirements  
unique designator

**L13D21**

## 10 base configuration (viewed from below)



The L13D21H can be supplied with a custom designed voltage divider installed.

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