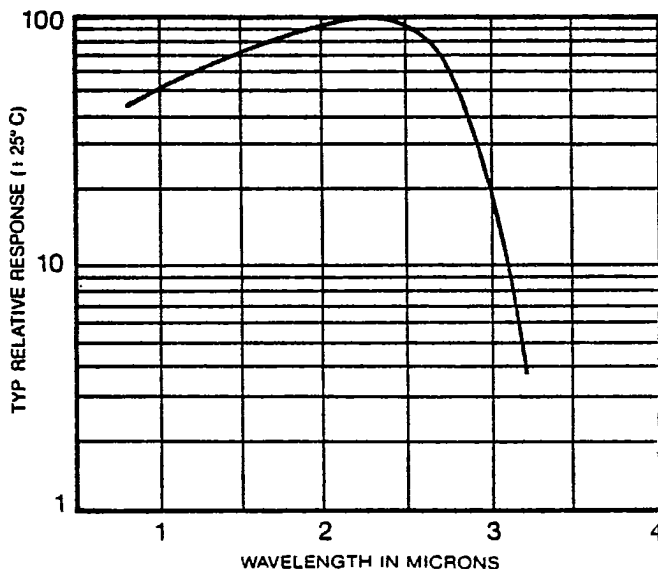


T-41-47

### AF SERIES PbS Flat Plate Detectors

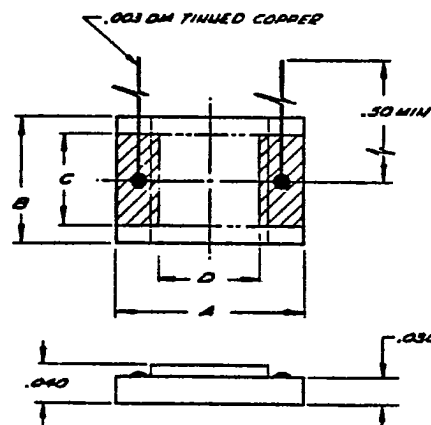


#### DESCRIPTION:

AF series Lead Sulfide (PbS) detectors are unpackaged, flat plate units.

These detectors offer an economical choice with good sensitivity in the 1 to 3 micron spectral region. The AF series detectors are manufactured under stringent controls to assure stability and long operation. A cover glass and proprietary bonding cement provide superior humidity resistance and stability.

Cal-Sensors' PbS process provides the ability to produce detectors matching system demands, yet maintaining low cost and high reliability.



## AF SERIES PbS DETECTORS FEATURE:

High sensitivity over 1 to 3 $\mu$ m spectral region  
 Room temperature operation  
 Excellent stability and reliability  
 Low cost - fast delivery

## SPECIFICATIONS

Characteristic	Operating Conditions	Performance			Units
		Minimum	Typical	Maximum	
Ambient temperature			+25	+65	°C
Element temperature	All specifications apply at		+25		°C
D* (detectivity)	500°K, 650Hz, 1Hz	$7.5 \times 10^8$	$9.4 \times 10^8$		cmHz <sup>1/2</sup> W <sup>-1</sup>
D* (detectivity)	$\lambda_{pk}$ , 650Hz, 1Hz	$8.0 \times 10^{10}$	$1.0 \times 10^{11}$		cmHz <sup>1/2</sup> W <sup>-1</sup>
Wavelength of max. response		2.2	2.4		$\mu$ m
Element resistance (dark)		0.2	0.4	2.0	Meg ohms/□
Time constant (see Note 4)	(not measured)		250	400	$\mu$ sec
Responsivity	$\lambda_{pk}$ , 650Hz				VW <sup>-1</sup>
Element size 1mm x 1mm		$2.0 \times 10^5$	$3.0 \times 10^5$		
Element size 2mm x 2mm		$1.0 \times 10^5$	$1.5 \times 10^5$		
Element size 3mm x 3mm		$6.0 \times 10^4$	$1.0 \times 10^5$		
Optimum detector bias	With 1M $\Omega$ load resistor				Volts
Element size 1mm x 1mm			50	100	
Element size 2mm x 2mm			100	200	
Element size 3mm x 3mm			150	300	

When ordering standard detectors, specify:

Type	Element		Substrate dimensions			Thickness	
	C	D	A	B			
AF-1	1mm	1mm	3.0mm	1.5mm	9mm		
AF-2	2mm	2mm	4.5mm	2.5mm	9mm		
AF-3	3mm	3mm	5.0mm	3.8mm	9mm		
AF-4	4mm	4mm	6.5mm	4.5mm	9mm		
AF-5	5mm	5mm	7.0mm	5.5mm	9mm		See Note 2
AF-6	6mm	6mm	8.0mm	6.5mm	9mm		See Note 2
AF-10	10mm	10mm	13mm	13mm	9mm		See Note 3

- Other standard element sizes including rectangular elements of reasonable aspect ratio are also available.
- Minimum D\* ( $\lambda_{pk}$ , 650, 1)  $\geq 7.0 \times 10^{10}$ .
- Minimum D\* ( $\lambda_{pk}$ , 650, 1)  $\geq 6.0 \times 10^{10}$ .
- Refer to other data sheets for cooled detectors.
- Detectors on special order may be purchased with faster time constants (e.g., less than 100 $\mu$ sec).