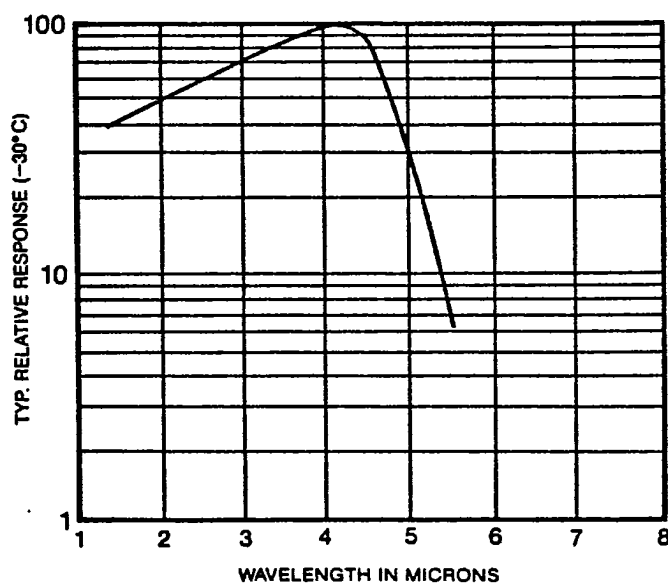


## BT2 SERIES

### Two Stage Thermoelectrically Cooled Lead Selenide Detectors



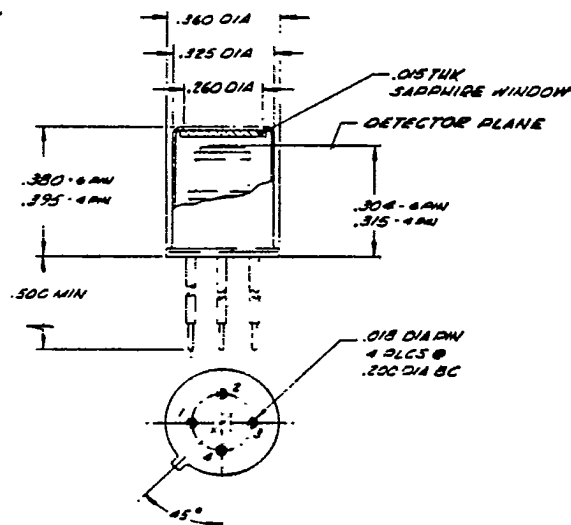
### DESCRIPTION:

BT2 series Lead Selenide (PbSe) detectors mounted on two stage thermoelectric coolers and packaged in either TO-5 or TO-8 cans. P/N BT2-25-TC Example PbSe, Two Stage Cooler, 2mm sq., TO-5, Calibrated Thermistor. (see order data)

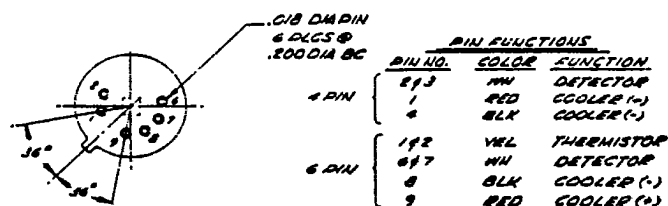
These detectors offer an economical choice with extremely high sensitivity in the 1 to 5 micron spectral region and compares with devices operating at 77 degrees K without the inconvenience of the liquid cooling.

BT2 series detectors are hermetically sealed using the latest packaging techniques to assure a long productive operation. The PbSe detectors are fully passivated with a protective overcoat. This passivation coating eliminates instabilities generally associated with PbSe detectors.

Improved heat sinking and mounting is provided with an optional integral T0-37 header. These units will have an overall height of .425 and a detector plane height of .334.



UNITS WITH THERMISTORS (OPTIONAL)



**BT2 SERIES PbSe DETECTORS FEATURE:**

Extremely high sensitivity over the 1 to 5  $\mu\text{m}$  spectral region  
 Thermoelectrically cooled - two stage 30°C operation  
 Hermetically sealed - Excellent stability and reliability  
 Moderate cost - fast delivery

**SPECIFICATIONS**

Characteristic	Operating Conditions	Performance			Units
		Minimum	Typical	Maximum	
Ambient temperature			+25	+65	°C
Element temperature	Package base at 25°C		-30		°C
D* (detectivity)	500°K, 1KHz, 1Hz	$1.1 \times 10^9$	$1.8 \times 10^9$		$\text{cmHz}^{1/2}\text{W}^{-1}$
D* (detectivity)	$\lambda_{pk}$ , 1KHz, 1Hz	$7.5 \times 10^9$	$1.3 \times 10^{10}$		$\text{cmHz}^{1/2}\text{W}^{-1}$
Wavelength of max. response		4.2	4.4 to 4.6		$\mu\text{m}$
Element resistance (dark)		0.4	1.0 to 3.0	7.0	Meg ohms/ $\square$
Time constant	(not measured)		12	25	$\mu\text{sec}$
Cooler power required			1.25	1.5	Volts
			1.6	1.6	Amps
Power dissipation required			2		Watts
Responsivity	$\lambda_{pk}$ , 1KHz				$\text{VW}^{-1}$
Element size 1mm x 1mm		9,000	13,000		
Element size 2mm x 2mm		4,500	8,000		
Element size 3mm x 3mm		3,000	5,000		
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	
Field of view		TO-5	TO-37		Degrees
Element size 1mm x 1mm		95	98		
Element size 2mm x 2mm		85	79		
Element size 3mm x 3mm		70	54		

When ordering standard detectors, specify:

Type	Element Size
BT2-15	1mm x 1mm
BT2-25	2mm x 2mm
BT2-35	3mm x 3mm

1. Other element sizes available on special orders.
2. Refer to other data sheets for packages which will accommodate larger elements.
3. Optional: At a slight increase in cost, calibrated or uncalibrated thermistors may be installed at the detector for controlling detector temperature during operation. To specify units with thermistors, add the suffix -T to the basic part number for uncalibrated sensing; add the suffix -TC for calibrated thermistors.