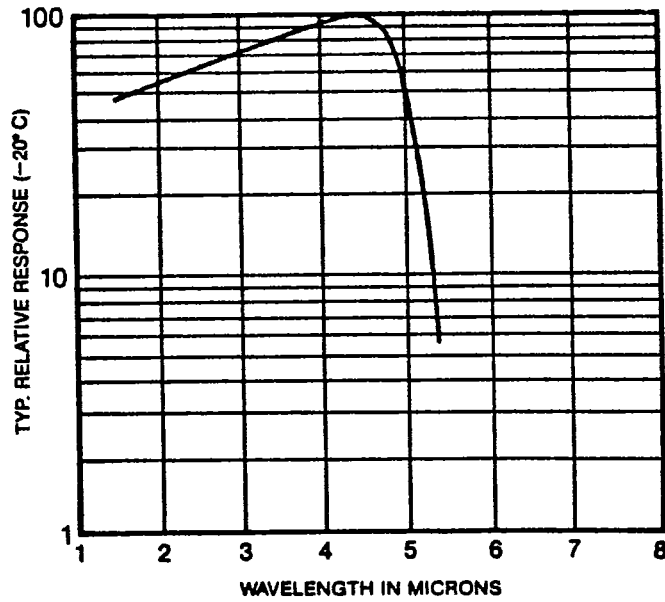


BT1 SERIES Single Stage Thermoelectrically Cooled Lead Selenide Detectors



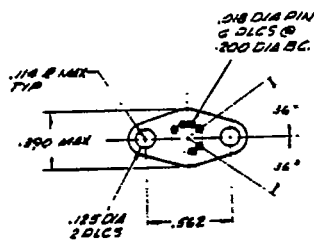
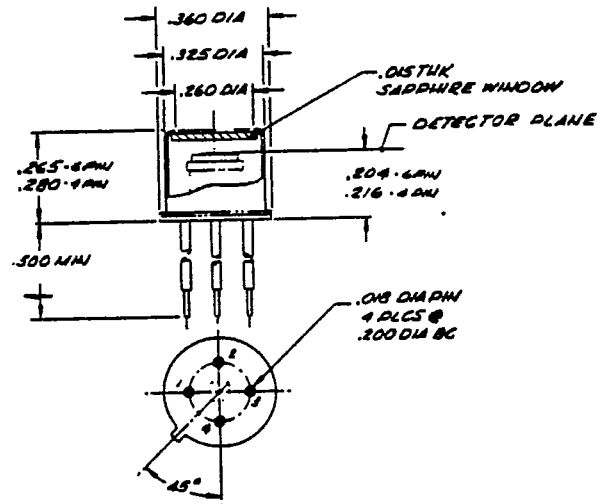
DESCRIPTION:

BT1 series Lead Selenide (PbSe) detectors are mounted on single stage thermoelectric coolers and packaged in either TO-5 or TO-8 cans. P/N BT1-25-TC Example PbSe, Single Stage Cooler, 2mm sq., TO-5, Calibrated Thermistor. (see order data)

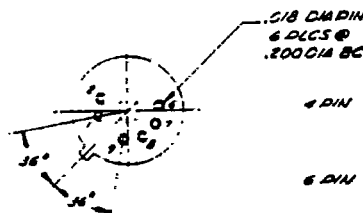
These detectors offer an economical choice with high sensitivity in the 1 to 5 micron spectral region without the expense and inconvenience of liquid cooling techniques.

BT1 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 optional integral T0-37 headers. These units will have an overall height of .310 and a detector plane height of .222.



UNITS WITH THERMISTORS (OPTIONAL)



PIN FUNCTIONS		
PIN NO.	COLOR	FUNCTION
213	WH	DETECTOR
1	RED	COOLER (-)
4	BLK	COOLER (-)
192	VEL	THERMISTOR
887	WH	DETECTOR
8	BLK	COOLER (-)
9	RED	COOLER (+)

BT1 SERIES PbSe DETECTORS FEATURE:

High sensitivity over the 1 to 5 μm spectral region
 Thermoelectrically cooled -20°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	$^\circ\text{C}$
Element temperature	Package base at 25°C		-20		$^\circ\text{C}$
D^* (detectivity)	500°K , 1KHz, 1Hz	7.0×10^9	1.0×10^9		$\text{cmHz}^{1/2}\text{W}^{-1}$
D^* (detectivity)	λpk , 1KHz, 1Hz	5.0×10^9	7.5×10^9		$\text{cmHz}^{1/2}\text{W}^{-1}$
Wavelength of max. response		4.1	4.3 to 4.5		μm
Element resistance (dark)		0.2	0.7 to 2.0	5.0	Meg ohms/ \square
Time constant	(not measured)		10	20	μsec
Cooler power required			1.2	1.5	Volts
			1.8	1.8	Amps
Power dissipation required			2		Watts
Responsivity	λpk , 1KHz				VW^{-1}
Element size 1mm x 1mm		6,000	9,000		
Element size 2mm x 2mm		3,000	5,000		
Element size 3mm x 3mm		2,000	3,000		
Optimum detector bias	With $1\text{M}\Omega$ 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			105	100	
Element size 2mm x 2mm			95	81	
Element size 3mm x 3mm			80	56	

When ordering standard detectors, specify:

Type	Element Size
BT1-15	1mm x 1mm
BT1-25	2mm x 2mm
BT1-35	3mm x 3mm

1. Other element sizes available on special orders.
2. Max. element size is 4mm x 4mm. 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.