

OptoElectronics

Subsidiary of **TEXTRON** Defense Systems

OTC-11-5/OTC-11-7

Series single stage thermoelectrically cooled lead selenide detectors

SPECIAL FEATURES

- High sensitivity in the 1 to 5 micron spectral band
- Thermoelectrically cooled
- Proven solid state stability
- Hermetically sealed
- Rugged, compact
- Prompt delivery
- Low cost

BRIEF DESCRIPTION

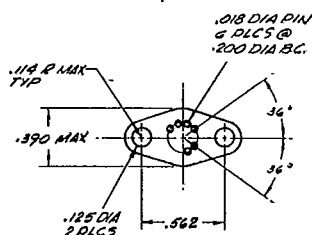
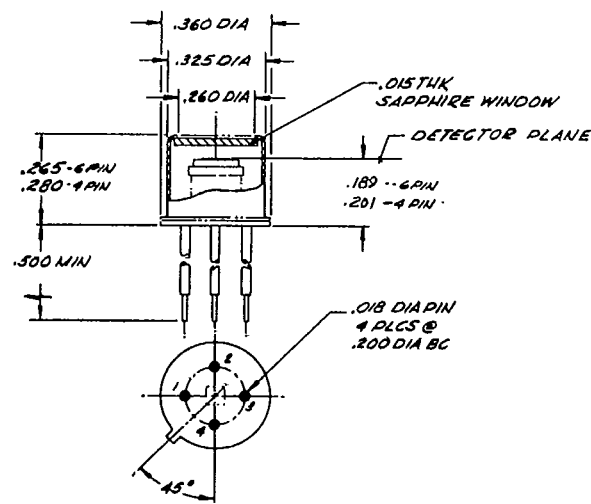
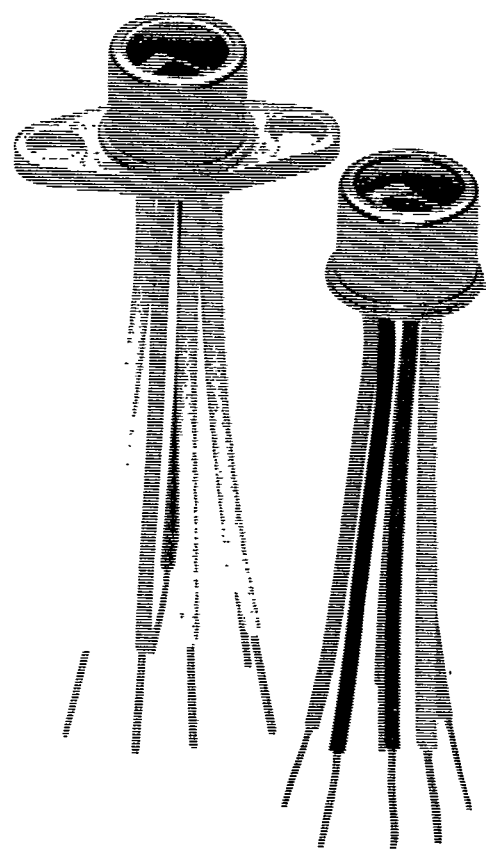
OTC-11-5 series infrared sensors are OPTOELECTRONICS lead selenide (PbSe) detectors mounted on single stage thermoelectric coolers and packaged in TO-5 cans.

Designed for use in applications requiring detectors with high sensitivity in the $1\mu\text{m}$ to $5\mu\text{m}$ spectral region, these sensors offer an economical means for obtaining cooled photoconductive detector performance without the bulk and inconvenience of liquid cooling.

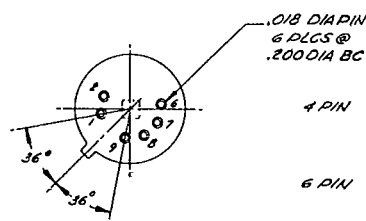
OTC-11-5 detector packages are hermetically sealed, incorporating advanced packaging concepts such as all fused and welded construction; in addition, the PbSe detector elements in these sensors are fully passivated with a protective overcoat. This passivation technique, developed by OPTOELECTRONICS, eliminates instabilities generally associated with PbSe detectors when they are subjected to visible and/or ultraviolet radiation.

Particularly suitable for use in high volume, low cost systems operating in the $1\mu\text{m}$ to $5\mu\text{m}$ spectral region, OTC-11 series detectors provide sensitivity and reliability exceeding that of any other previously available photodetector of comparable size or cost.

For mounting convenience and improved heat sinking, specify OTC-11-7 units (with integral TO-37 headers). OTC-11-7 units 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 (-)
142	VEL	THERMISTOR
647	WH	DETECTOR
8	BLK	COOLER (-)
9	RED	COOLER (+)

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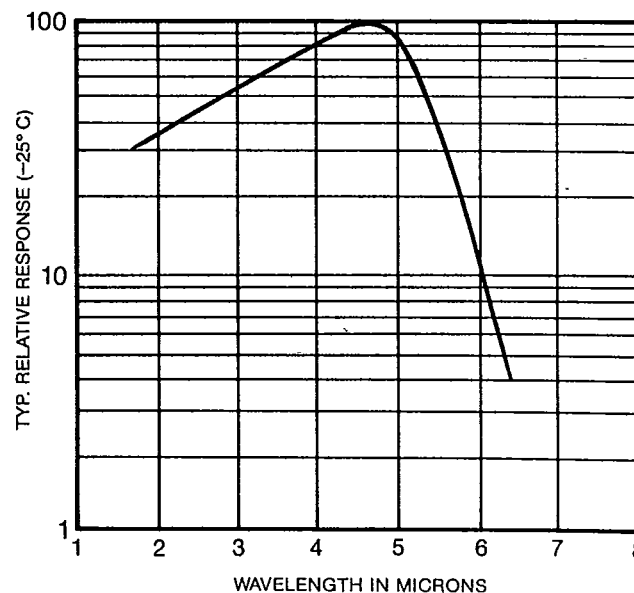
SPECIFICATIONS

Characteristic	Operating Conditions	Performance			Units
		Minimum	Typical	Maximum	
Ambient temperature			+25	+65	°C
Element temperature	Package base at 25°C		-25		°C
D* (detectivity)	500°K, 1KHz, 1Hz	6.0×10^8	1.0×10^9		$\text{cmHz}^{1/2}\text{W}^{-1}$
D* (detectivity)	λ_{pk} , 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	λ_{pk} , 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 1M Ω 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		OTC-11-5	OTC-11-7		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	Type
OTC-11-51	1mm x 1mm	OTC-11-71
OTC-11-52	2mm x 2mm	OTC-11-72
OTC-11-53	3mm x 3mm	OTC-11-73

- Other element sizes available on special orders.
- Max. element size is 4mm x 4mm. Refer to other data sheets for packages which will accommodate larger elements.
- 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. Note the six lead configuration for OTC-11 units with thermistors (reverse side).
- OTC-21-7 units with integral TO-37 headers.



For price and delivery or additional information and application assistance, please contact: Marketing Department,

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