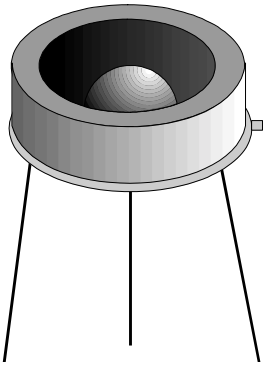
PCI-M Series
IR Photoconductors

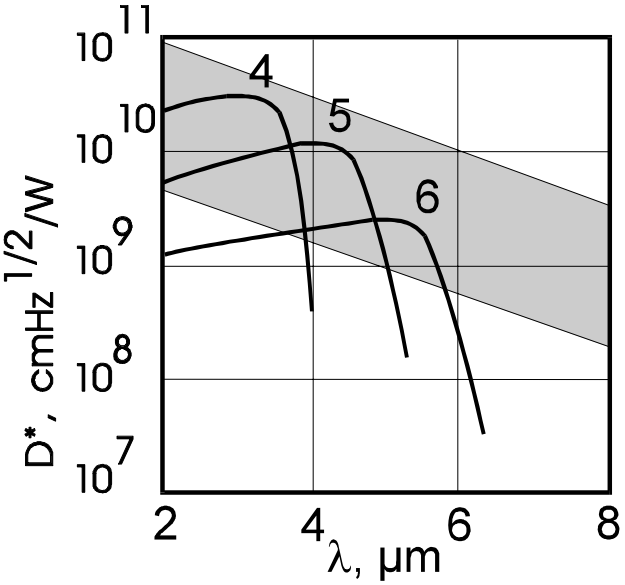
FAST 2-6 µm IR PHOTOCONDUCTORS
ROOM TEMPERATURE, OPTICALLY IMMERSED

FEATURES

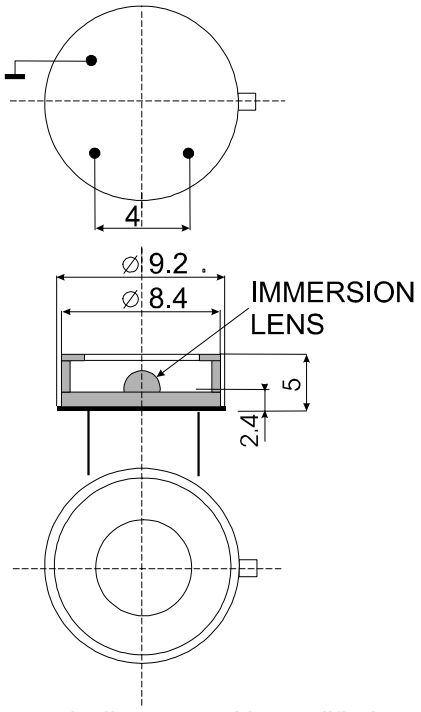
ambient temperature operation
∗spectral range of 2-6 µm
∗$D^*=10^8$-10^{11} $cmHz^{11}/W$
fast response time
low bias power requirements
wide dynamic range
lightweight, rugged and reliable



SPECTRAL RESPONSE



Spectral detectivity of PCI-4, -5 and -6 detetectors.



Devices are typically mounted in modified TO-5 cans, with no windows. Other housings with different windows are available upon request.

Boston Electronics Corporation, 91 Boylston Street, Brookline MA 02445
(800)347-5445 or (617)566-3821 * fax (617)731-0935 * boselec@boselec.com * www.boselec.com

DESCRIPTION

The PCI series photodetectors are uncooled IR photoconductors optically immersed on high refractive index CdTe hyperhemispherical lenses. These devices can be optimized for maximum performance anywhere from 2 to 12 µm. In this spectral region, these detectors perform better than all other uncooled detectors at moderate to high frequencies, but exhibit 1/f noise below 10kHz.

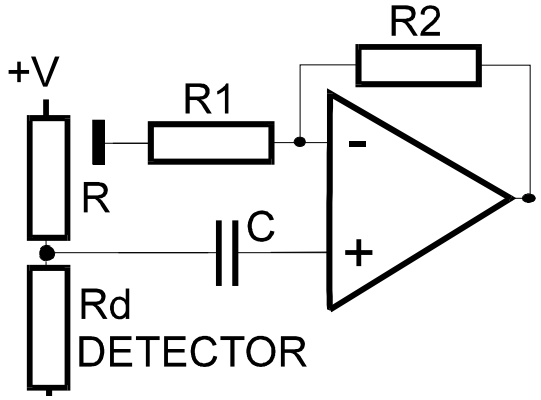
Such extraordinary performance is achieved by using a newly developed variable gap semiconductor (Hg-Cd-Zn-Te) as well as with graded composition and doping level profiles and optimization of surface processing.

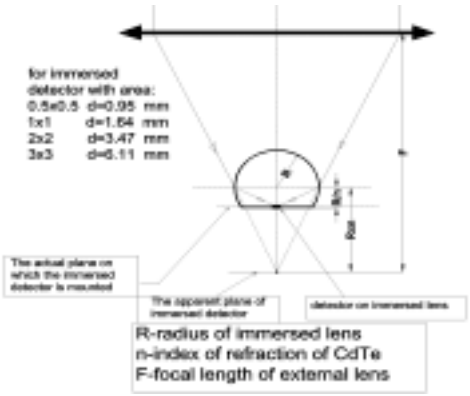
SPECIFICATIONS

Specifications are subject to change without notice. Specifications measured @20°C, 1x1 active area.

Characteristics	Units	PCI-M-4	PCI-M-5	PCI-M-6
Optimization Wavelength	µm	4	5	6
Detectivity (λ_p, 20 kHz)	$cmHz^{1/2}/W$	$>2x10^{10}$	$>6x10^{9}$	$>1x10^{9}$
Detectivity (λ_{op}, 20 kHz)	$cmHz^{1/2}/W$	$>6x10^{9}$	$>2x10^{9}$	$>5x10^{8}$
Responsivity × Widths at λ_p	V mm/W	700	180	20
Responsivity × Widths at λ_{op}	V x mm/W	>200	>60	>10
Response time	nsec	<1000	<300	<200
1/f Corner Frequency	kHz	0.5 - 5	0.5 - 5	1 - 10
Resistivity	Ω	300 - 500	150 - 300	50 - 200
Area (optical)	mm^2	0.05×0.05;0.1×0.1;0.2×0.2; 0.5×0.5; 1×1, 2×2; 3×3		
Field of view	deg	>40		

TYPICAL OPERATING CIRCUIT





CAUTION

- CW optical power must not exceed 20 W/cm^2!
- Pulses shorter than 1 µs must not exceed 10 kW/cm^2!
- Avoid overbiasing of detector!

More Information: see J. Piotrowski et al., "New generation of near-room temperature photodetectors", Optical Engineering, May 1994, Vol. 33 No. 5, pages 1413-1421

We supply compatible low-noise preamplifiers with bandwidths AC-coupled, to 500+ MHz.

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