

Product Data

High Speed Integrated Photodiode Amplifiers (Frequencies up to 35MHz)

This range of sensitive photo-amplifiers is made up of PIN photodiodes integrated with FET input op-amps and packaged into four pin TO5 window packages. The hybrid integration technology used provides an easy solution to achieve **fast, low noise** performance in both **visible** and IR measurement and detection applications.

In this family of products, speed of response is determined by discrete components and as a result it is possible to tailor specifications for components to meet **customer requirements** in relatively small manufacturing batches.

These versions are available with plain windows or lensed versions. The lensed version are highly directional and have an additional on-axis sensitivity factor of approximately ten. Any of these devices can be supplied with optical filters to limit sensitivity to specified bands. Typical filters, available off-the-shelf, include "approximation to **eye response**" and **IR** band pass.

Application Notes

Customers PCB layout for these devices has been simplified by integrating within the package supply rail decoupling capacitors. However it is recommended that additional capacitors (eg. 0.1 μ F multilayer ceramics) be added to the PCB to minimise second order interactions that may occur in the associated circuit.

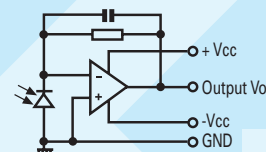
The very low offset of this amplifier make it ideal for applications requiring **DC to HF** performance.

IPL10535

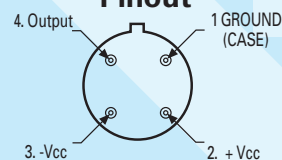
Fast, precision amplifiers with 'zero offset'

Surface mount package versions available to order

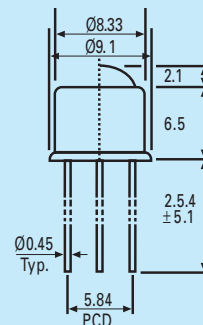
Basic Circuit



Pinout



Dimensions (mm)



All characteristics are typical values at 25°C. IPL reserves the right to change the product shown on this leaflet in the interests of improving specification. No responsibility is assumed for the use of information contained herein, nor for any infringement of patent or rights of others which may result from such use. No licence is granted by implication or otherwise under any patent or patent right of Integrated Photomatrix Limited or others.

Product Data

Typical Characteristics @ 25°C

		35MHz	25MHz	10MHz	5MHz	1MHz
PARAMETER	UNITS	10535AAL	10535BAL	10535CAL	10535DAL	10535EAL
DC Supply Voltage	V	±5V	±5V	±5V	±5V	±5V
(Dual Rail) Vcc		(±0.25V)	(±0.25V)	(±0.25V)	(±0.25V)	(±0.25V)
Quiescent Current	mA	25	25	25	25	25
Short Circuit Current mA	140	140	140	140	140	
Saturation @ High Light Level	V	3.4	3.4	3.4	3.4	3.4
Detector Frequency Response Small Signal (Vout = 10mV p-p)	MHz	35	25	10	5	1.2
Detector Frequency Response Large Signal (Vout = 2V p-p)	MHz	35	25	10	5	1
Detector Output Offset (MAX)	mV	±2	±2	±2	±2	±2
Detector Output Offset (MAX) with Temperature	mV	±2	±2	±2	±2	±2
Dark Level Noise (RMS) full BW ²	mV	300	280	370	600	1500
Sensitivity @ 880nm 1	mV(W ⁻¹ mm ⁻²)	12.5	19	100	430	1750
Responsivity @ 880nm 1	mV(W-1)	50	75	150	250	1000
Step Response	Rise Time	nS	11	15	38	95
	Fall Time	nS	11	15	38	95
Step Response 10%-90% @ 1V	Rise Time	nS	11	15	38	95
	Fall Time	nS	11	15	38	95
Step Response 10%-90% @ 100mV	Rise Time	nS	11	15	38	95
	Fall Time	nS	11	15	38	95
Temperature Range	Operating	°C	-20 to +80	-20 to +80	-20 to +80	-20 to +80
	Storage	°C	-30 to +100	-30 to +100	-30 to +100	-30 to +100
Photodiode Active Area	(mm) ²	0.25	0.25	0.66	1.75	1.75

Filter Options

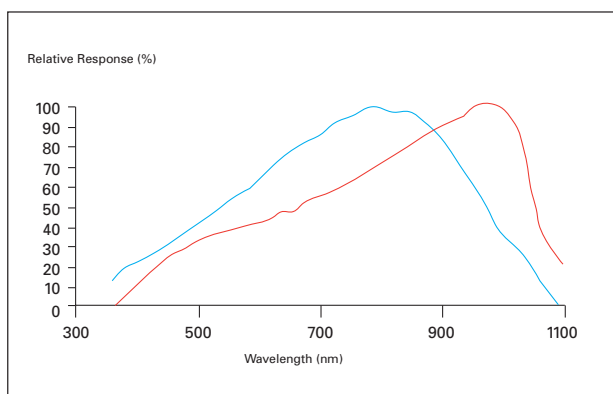
Eye response (BG18) or N.I.R. Bandpass (RG850) Many other options are available upon request.

Note

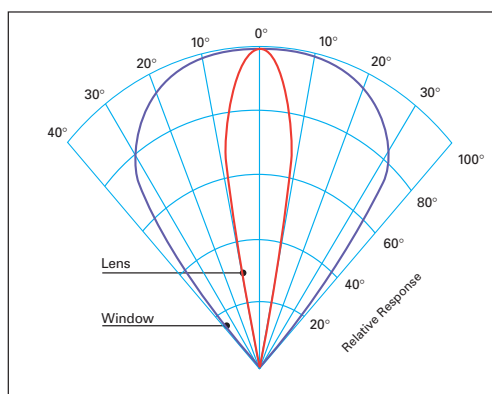
¹ Figure apply to on -axis responsivity of version with lens, for plain window divide by factor 10.

⁴ Noise measured over 20MHz bandwidth at amplifier output.

Silicon Relative Spectral Response



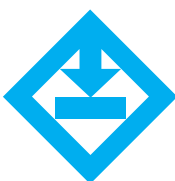
Polar Response



Responsivity can be estimated from graph above.

Integrated Photomatrix Limited

Paceycombe Way, Poundbury, Dorchester DT1 3SY UK
Tel: +44 (0) 1305 263673 Fax: +44 (0) 1305 263679
E-mail: sales@ipl-uk.com Website: <http://www.ipl-uk.com>



Integrated Photomatrix Inc.

4282 Reynolds Drive, Hilliard Ohio 43026, USA
Tel: +614 771 2775 Fax: +614 529 7242
E-mail: ipi@photoinc.com Website: <http://www.photoinc.com>