Product Data

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

IPL10535

Fast, precision amplifiers with 'zero offset'

Surface mount package versions available to order

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.

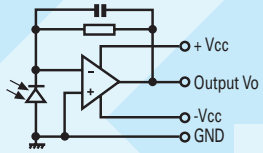
In this family of products, speed of response is determined by discrete components and as a result it is possible to tailor specifications for components to meet ***customer requirements*** in relatively small manufacturing batches.

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.

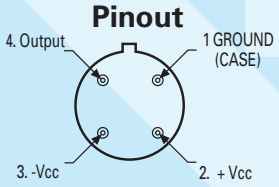
Application Notes

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. 0.1µF 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.

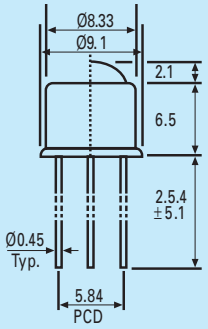
Basic Circuit



Pinout



Dimensions (mm)



Product Data

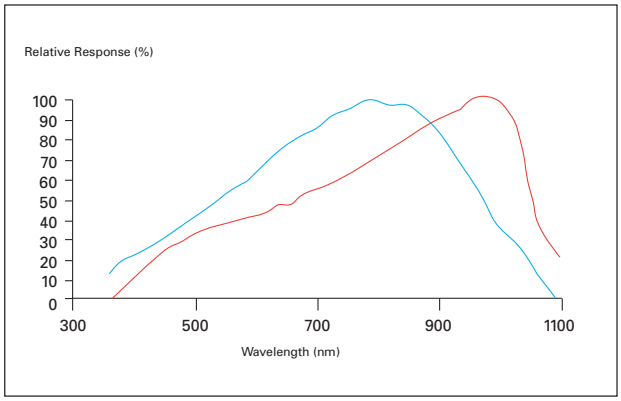
Typical Characteristics @ 25˚C

			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	380
10% - 90% @ 1V	Fall Time	nS	11	15	38	95	380
Step Response	Rise Time	nS	11	15	38	95	380
10%-90%@100mV	Fall Time	nS	11	15	38	95	380
Temperature Range	Operating	˚C	-20 to +80	-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	-30 to +100
Photodiode Active Area		(mm)^2	0.25	0.25	0.66	1.75	1.75

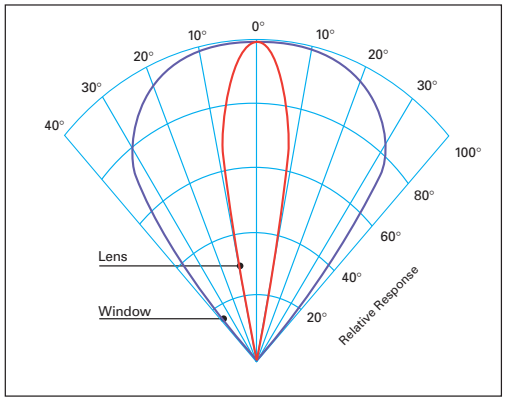
Filter Options
Eye response (BG18) or N.I.R. Bandpass (RG850) Many other options are available upon request.

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.

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