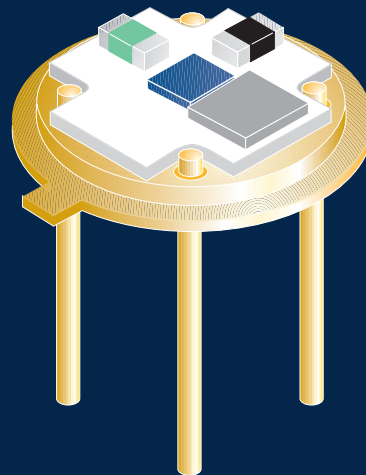
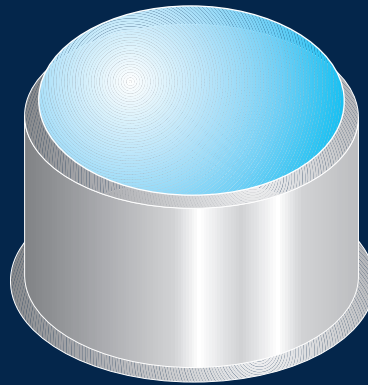


## IPL 10530 Integrated Photodiode Amplifiers

*Photodiode detectors  
with transimpedance amplifiers*



- Fully-integrated construction
- High interference rejection
- Low thermal drift
- Analogue amplified voltage output
- Range of devices to suit applications in process monitoring, environmental monitoring and general industries





# IPL 10530 Integrated Photodiode Amplifiers

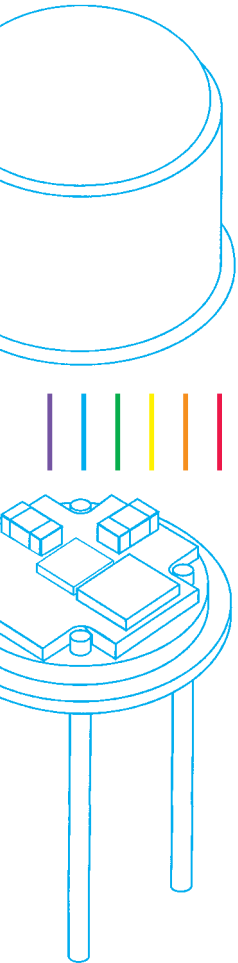
IPL 10530 Integrated Photodiode Amplifiers are a family of light-sensitive detectors, providing a voltage output proportional to the incident light level. The devices will operate from single or dual rail power sources, allowing simple interfacing with logic circuits or voltage comparators.

IPL Photodiode Amplifiers consist of silicon photodiodes close-coupled to amplifiers. These are mounted on ceramic substrates and hermetically sealed within T05 type metal packages to give exceptional rejection of electrical noise in arduous environments. This family provides various gain/bandwidth options to suit a wide range of applications.

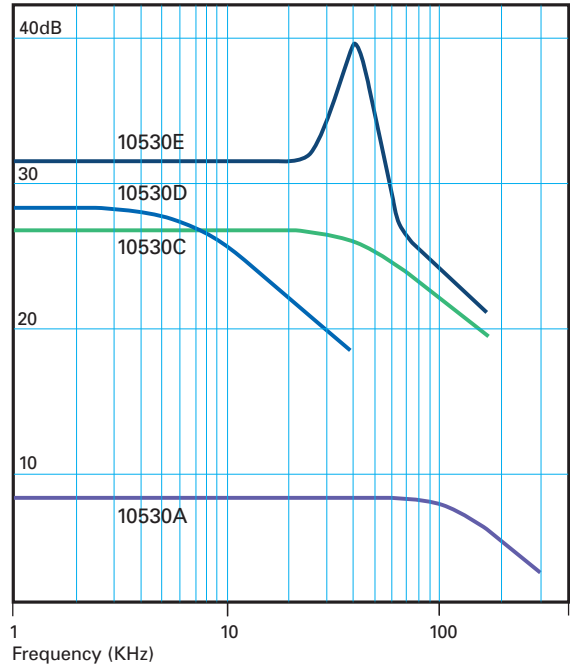
## Applications

The IPL 10530 range of Integrated Photodiode Amplifiers provide positive output voltage for increased light levels. These devices are especially suited to low light level applications, or those where high sensitivity or high interference rejection is required.

Ideal for use with the IPL range of Self-Monitoring Emitters, these devices provide the complete solution for the monitoring of particulate pollution in liquids and gases, water turbidity measurement or gas detection by virtue of spectral absorption bands. Gas pollution sensing, obscuration or "clouding" (nephelometry) techniques are alternative, proven applications.



## Frequency Response



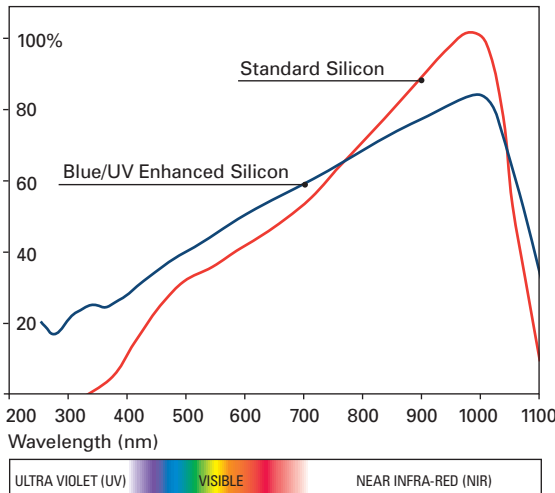
## Amplifier Options

Standard feedback configurations are available to provide high sensitivity and high speed in various combinations. Undercompensated versions are available for sensitive pulse detection. Where feasible, IPL will manufacture to custom requirements.

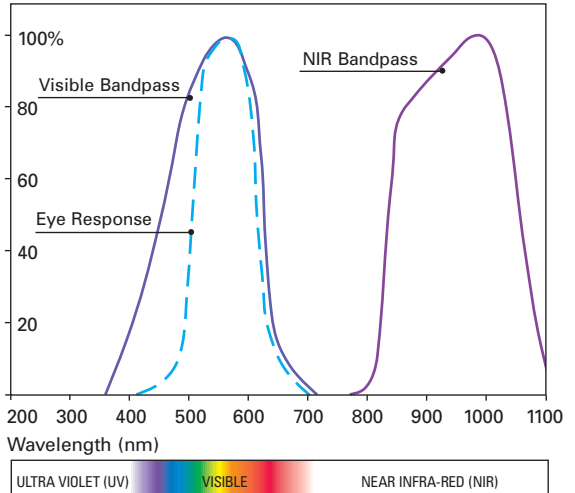
## Filter Options

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

## Silicon Relative Spectral Response



## Normalised Response of Typical Filters

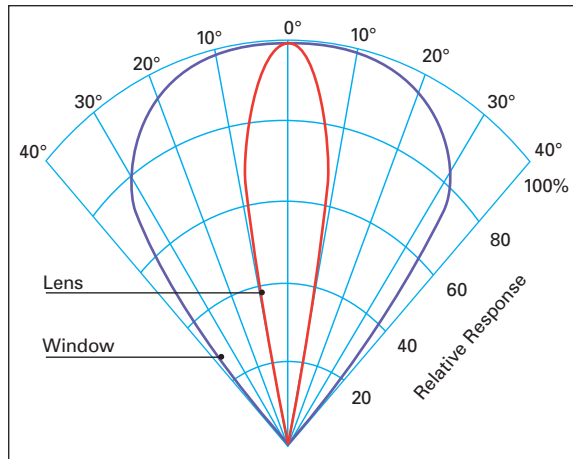


# Product Data

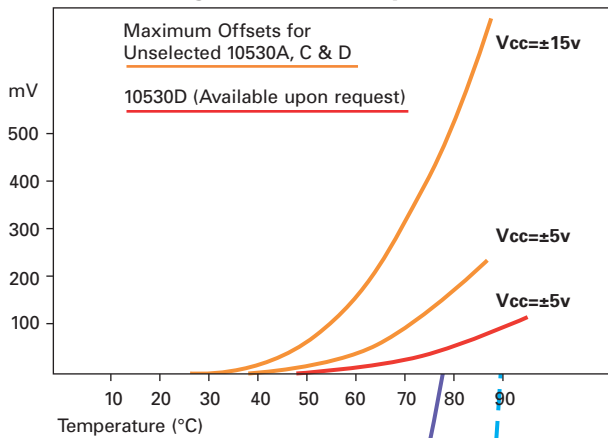
## Lens and Window Options

Devices are supplied in TO5 cans with flat or lensed windows. Either window option can be provided with integral filters. Typical filters are "eye response" or IR. Specialist filters such as UV transmissive or bandpass are also available on request.

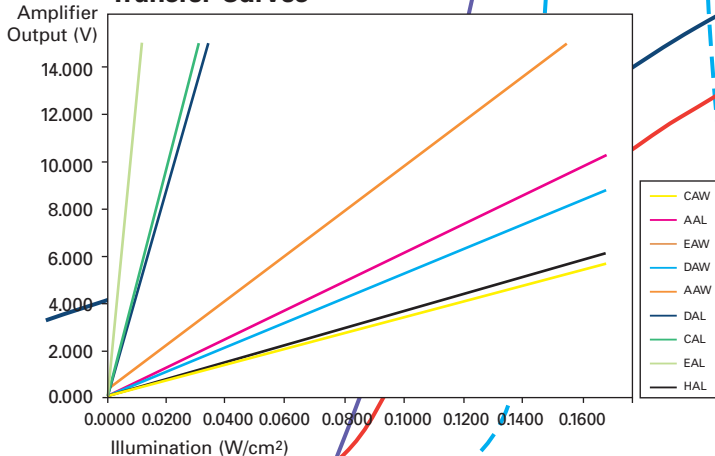
## Polar Response



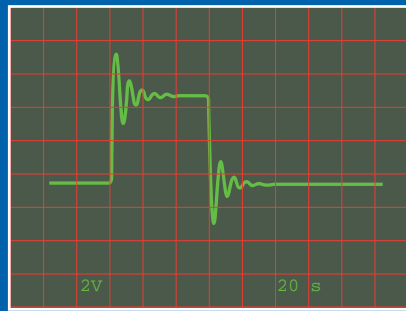
## Dark Voltage Offset v Temperature



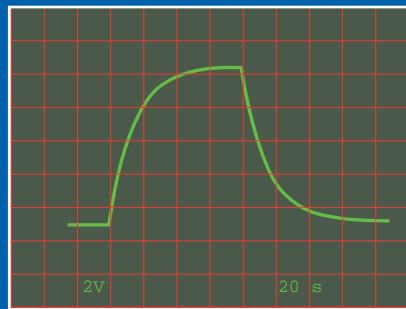
## Transfer Curves



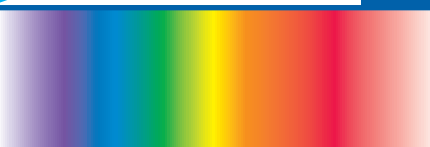
## Pulse Response



10530A



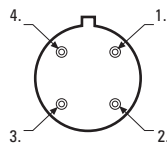
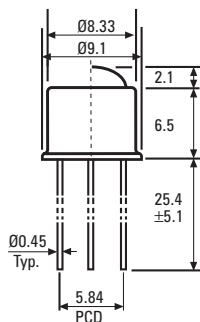
10530D



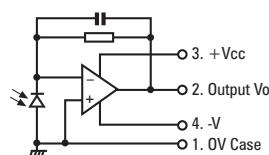
## Typical Characteristics @25°C

DETECTORS		HIGH FREQUENCY		PULSE		GENERAL PURPOSE			HIGH GAIN	
PARAMETER	UNITS	10530AAL (with lens)	10530AAW (flat window)	10530CAL (with lens)	10530CAW (flat window)	10530DAL (with lens)	10530DAW (flat window)	10530HAL (with lens)	10530EAL (with lens)	10530EAW (flat window)
DC Supply Voltage (Dual Rail) Vcc	V	±2 to ±18	±2 to ±18	±2 to ±18	±2 to ±18	±2 to ±18	±2 to ±18	±2 to ±18	±2 to ±18	±2 to ±18
DC Supply Voltage (Single Rail) Vcc	V	+4 to +36	+4 to +36	+4 to +36	+4 to +36	+4 to +36	+4 to +36	+4 to +36	+4 to +36	+4 to +36
Quiescent Current	mA	4.0	4.0	4.0	4.0	4.0	4.0	1.6	4.0	4.0
Dissipation (up to 55°C) (above 55°C derate linearly 6.67mW/°C)	mW	630	630	630	630	630	630	630	630	630
Dark Level Noise (RMS)	mV	1.0	1.0	1.0	1.0	0.3	0.3	0.3	1.5	1.5
Detector Output Offset (MAX)	mV	±5	±5	±5	±5	±6	±6	±5	±7	±7
Detector Output Voltage Vo (LED - Wavelength 880nm)	V <sub>μW</sub> <sup>2</sup> mm <sup>2</sup>	8.0	0.8	50.0	5.0	60.0	6.0	5.0	90.0	9.0
Detector Frequency Response (-3dB)	KHz	230	230	80	80	12	12	100	62	62
Detector Output Current	Sink	mA	10	10	10	10	10	1	10	10
	Source	mA	1	1	1	1	1	10	1	1
Short Circuit Output Duration	s	∞	∞	∞	∞	∞	∞	∞	∞	∞
Temperature Range	Operating	°C	-20 to +80	-20 to +80	-20 to +80	-20 to +80	-20 to +80	-20 to +85	-20 to +80	-20 to +80
	Storage	°C	-30 to +100	-30 to +100	-30 to +100	-30 to +100	-30 to +100	-30 to +100	-30 to +100	-30 to +100
Step Response 10% - 90%	Rise Time	μs	2.0	2.0	4.5	4.5	40	40	1	6.0
	Fall Time	μs	1.5	1.5	4.2	4.2	40	40	7	5.5
Saturation @Peak Wavelength	V	Vcc-2.0	Vcc-2.0	Vcc-2.0	Vcc-2.0	Vcc-2.0	Vcc-2.0	Vcc-2.0	Vcc-2.0	Vcc-2.0
Photodiode Active Area	(mm <sup>2</sup> )	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75

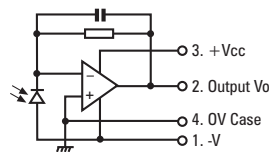
### Dimensions (mm) Pinout



### Basic Circuit



### Basic Circuit 10530HAL



DS-014 ISSUE 2

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