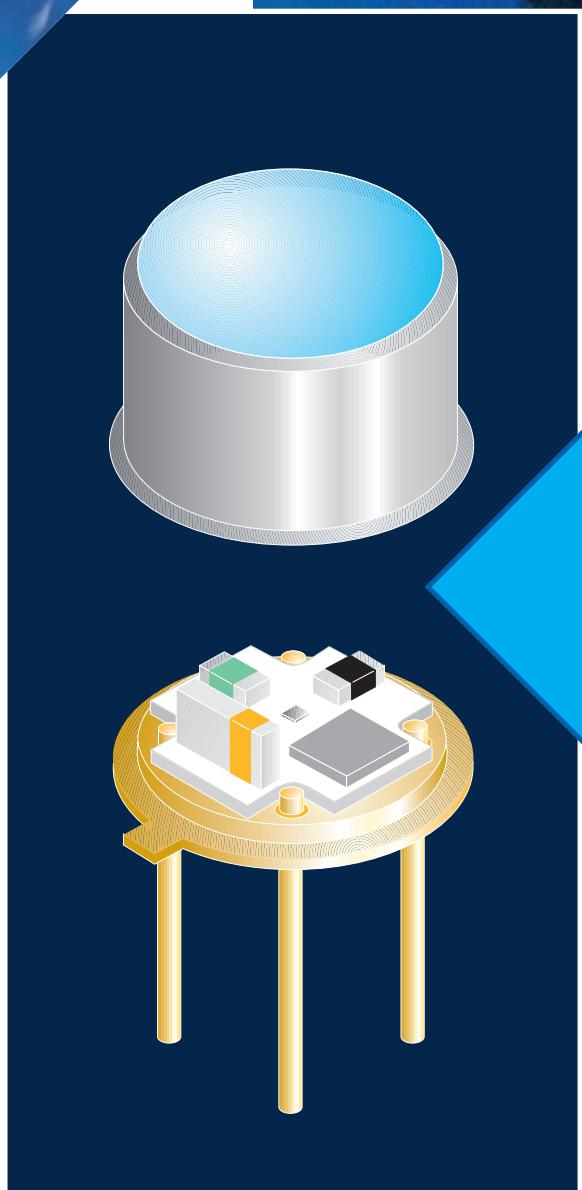




- Fully-integrated construction
- Extremely stable light output
- A full range of colours available, from blue through to infra-red
- Unique design
- Internal feedback signal for control of LED
- Range of devices to suit applications in process monitoring, environmental monitoring and general industries

IPL 10630 Self-Monitoring Emitters

LEDs with integral monitoring photoamplifier for stabilised light output



IPL 10630 Self-Monitoring Emitters

IPL 10630 Self-Monitoring Emitters are an advanced family of LED light sources, providing a controlled and stabilized light output. The devices will operate from single or dual rail power sources, allowing compatibility with logic circuits or voltage comparators.

Each Self-Monitoring Emitter consists of a carefully-selected LED with an integral monitoring silicon photodiode, close-coupled to an amplifier mounted on a ceramic substrate. The device is hermetically sealed within a T05 type metal package which gives exceptional rejection of electrical noise in arduous environments. The feedback circuit is designed to provide a variety of external circuit configurations. LEDs are available in a range of wavelengths to suit customer applications.

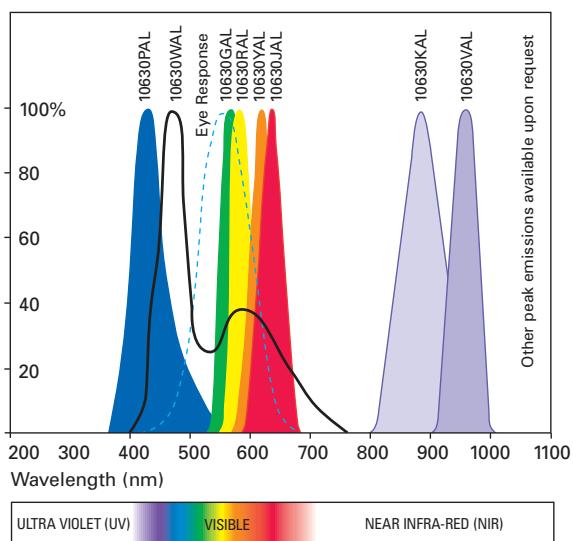
Exceptionally stable light output is achieved by utilizing a unique design which incorporates an internal monitoring photodiode. As such, the current to the LED may be controlled to maintain a constant level of light output.

Applications

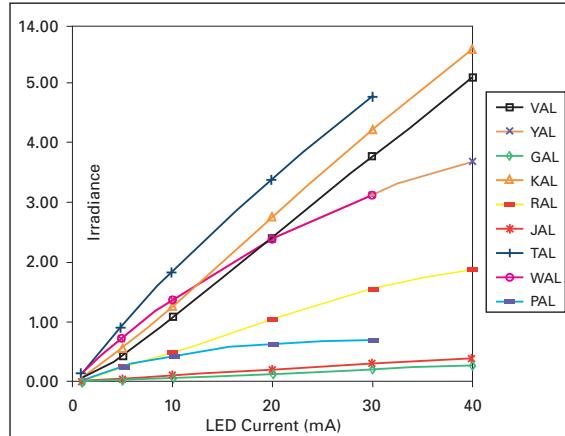
The IPI range of Self-Monitoring Emitters provide a controlled light output, making them ideal for use in control or monitoring systems which demand this level of consistency.

The devices may also be used in conjunction with the IPI range of Photodiode Amplifiers to provide the complete solution for the monitoring of particulate pollution in liquids and gases, water turbidity measurement or gas detection by virtue of absorption bands.

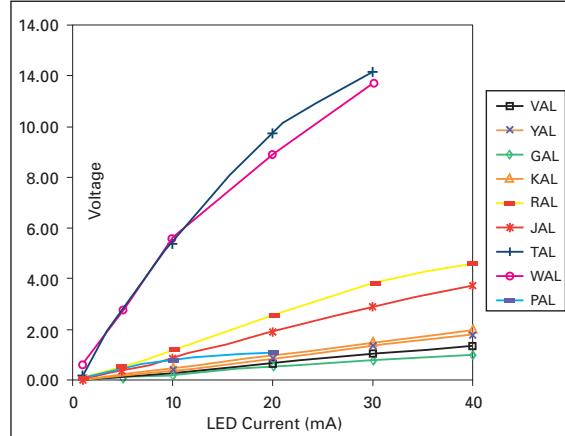
LED Spectra



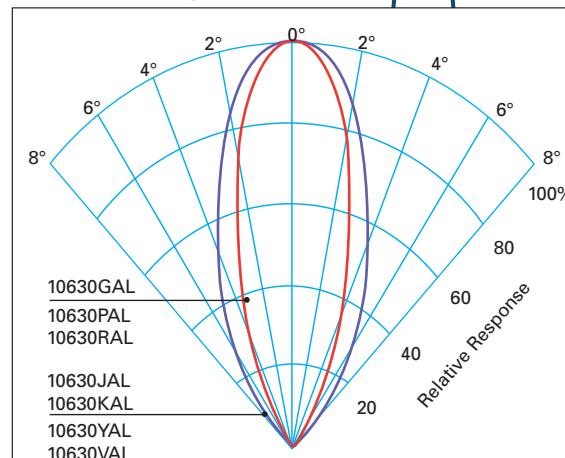
Irradiance v LED Current @25°C



Monitor Output v LED Current @25°C



LED Polar Output

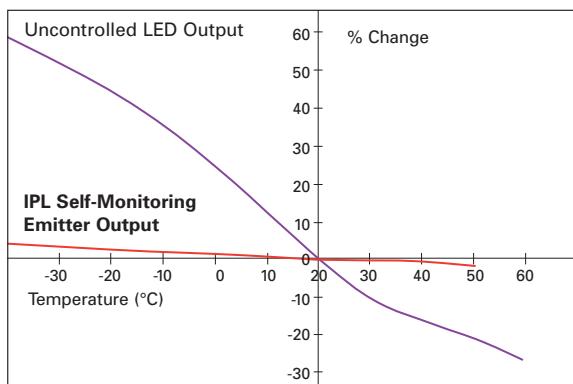


Product Data

Temperature

The light output from IPL Self-Monitoring Emitters is extremely stable with changes in temperature as can be seen from the graph below.

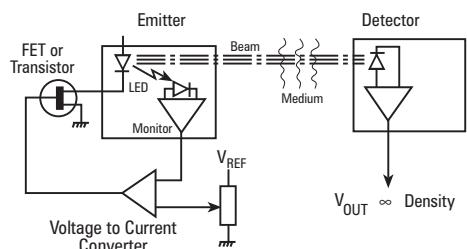
Temperature Stability



Operational Modes

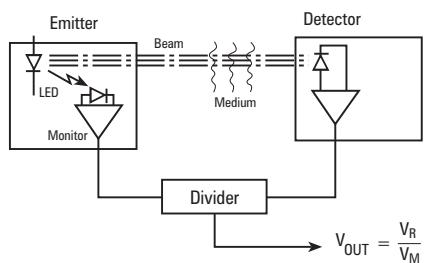
Closed-Loop

The output from the monitoring photodiode may be used to control the current flowing to the LED, in order to maintain a constant light level, irrespective of external ageing or temperature effects. The receiving detector can be used to give an absolute indication of transmissivity through the medium, since light level is held constant.



Ratiometric Methods

An alternative approach is to electrically divide the signal by the self-monitor signal. The ratio of these signals will then only be dependent upon the optical characteristics of the transmission path and not the actual light level. In this mode, wide variations of LED output can be tolerated and ageing effects within the LED are negated.



LED Pulse Response

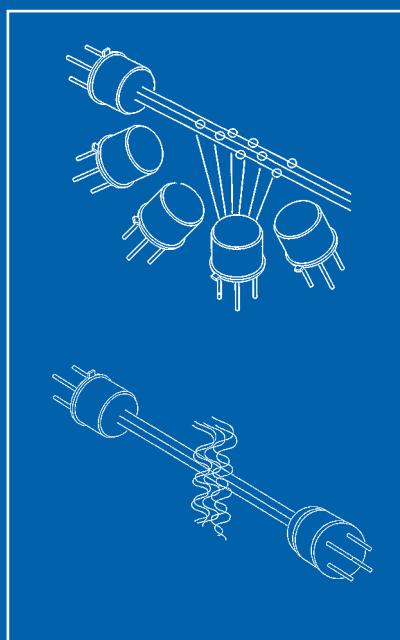
10630KAL



10630GAL



Applications



Typical Characteristics @25°C

PARAMETER	UNITS	WHITE	BLUE	BLUE	GREEN	GREEN	ORANGE	RED	INFRA RED	INFRA-RED
DC Supply Voltage (Single or Dual) 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
Quiescent Current	mA	4	4	4	4	4	4	4	4	4
Peak LED Current (MAX) (10% Duty/1KHz)	mA	80	70	80	80	100	80	100	100	100
Continuous LED Current (MAX) (Derate Linearly From +50°C @ 0.5mA/°C)*	mA	25	20	25	25	40	25	40	40	40
Forward Voltage (@20mA)	V	3.3	4.1	3.3	3.3	2	2	2	1.6	1.2
Luminous Intensity (@20mA)	cd	0.83	0.033	1.13	1.05	1.66	6.3	0.6	Not Applicable	Not Applicable
LED Irradiance @20mA (100mm Distance)	μW/mm ²	10.5	0.7	2.5	2	0.25	5.2	0.4	3	3
LED Frequency Response (-3dB Point)	KHz	30	900	20	30	400	2000	690	180	170
Peak Wavelength	nm	See LED Spectra	425	470	525	565	625	635	880	950
Spectral Bandwidth (Full Width Half Maximum)	nm		75	30	40	25	20	45	100	70
Output Beam Angle (-3dB Points)	Degrees	9	6	9	9	6	8	8	8	8
Monitor Output Voltage (@20mA LED Current)	V	3	1	3	3	0.5	1.1	2.2	0.9	0.9
Monitor Frequency Response (-3dB Point)	KHz	500	100	250	250	240	1700	185	1200	3400
Monitor Output Current	mA	1	1	1	1	1	1	1	1	1
Source	mA	10	10	10	10	10	10	10	10	10
Short Circuit Output Duration	s	∞	∞	∞	∞	∞	∞	∞	∞	∞
Temperature Range	Operating °C	-20 to +80	-20 to +80	-20 to +80	-20 to +80	-20 to +85	-20 to +85	-20 to +85	-20 to +85	-20 to +85
	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	-30 to +100

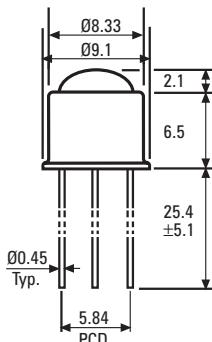
* 10630PAL-Blue, Derate Linearly From +30°C @ 0.5mA/°C

Integrated closed loop versions available on request

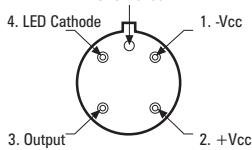
Other wavelengths available

Dimensions (mm)

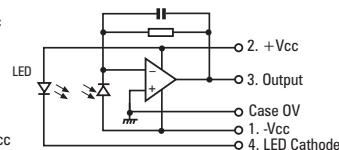
GAL, JAL, PAL, RAL, TAL, UAL, VAL, WAL, YAL variants



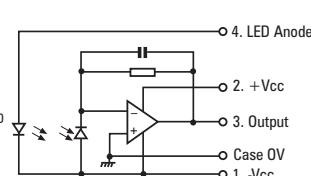
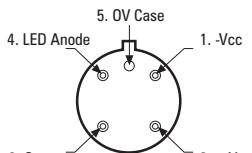
Pinout



Basic Circuit



KAL variant



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