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# Typical Applications

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## Why Use Photodiodes?

Photodiodes are unique among light detectors in that when illuminated, they generate an output which is proportional to light level. Their characteristics and features can be summarized as follows:

- *Low cost visible and near-IR photodetector*
- *Excellent linearity in output photocurrent over 7 to 9 decades of light intensity*
- *Fast response times*
- *Available in a wide range of packages including epoxy coated, transfer molded, cast, and hermetic packages as well as in chip form*
- *Low noise*
- *Mechanically rugged yet compact and lightweight*
- *Available as duals, quads or as linear arrays*
- *Usable with almost any visible or near infrared light source such as LEDs; neon, fluorescent, incandescent bulbs; lasers; flame sources; sunlight; etc.*
- *Can be designed and tested to meet the requirements of your application*

## Applications

Photodiodes are used in many different types of circuits and applications. Here are a few examples of where photodiodes have been used.

### Camera

- *Light Meters*
- *Automatic Shutter Control*
- *Auto-focus*
- *Photographic Flash Control*

### Medical

- *CAT Scanners - X ray Detection*
- *Pulse Oximeters*
- *Blood Particle Analyzers*

### Safety Equipment

- *Smoke Detectors*
- *Flame Monitors*
- *Security Inspection Equipment - Airport X ray*
- *Intruder Alert - Security System*

### Automotive

- *Headlight Dimmer*
- *Twilight Detectors*
- *Climate Control - Sunlight Detector*

### Communications

- *Fiber Optic Links*
- *Optical Communications*
- *Optical Remote Control*

### Industry

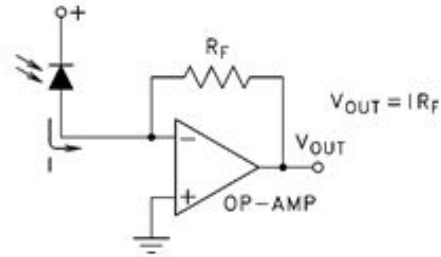
- *Bar Code Scanners*
- *Light Pens*
- *Brightness Controls*
- *Encoders*
- *Position Sensors*
- *Surveying Instruments*
- *Copiers - Density of Toner*

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# Typical Applications

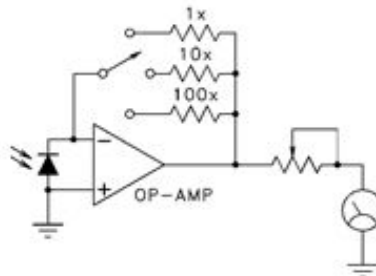
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## Typical Application Circuits



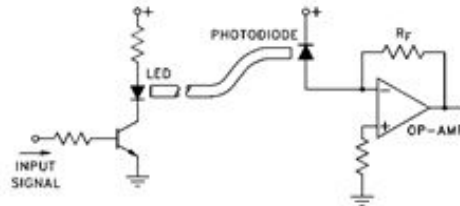
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## Basic Transimpedance Op-Amp Circuit



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## Light Meter (with three sensitivity ranges)



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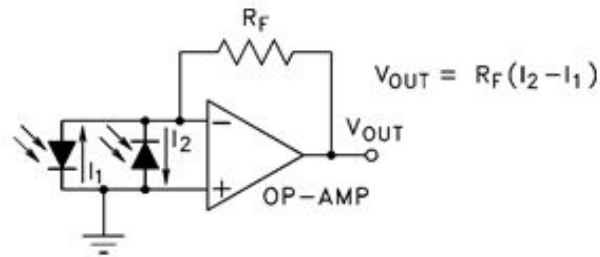
## Fiber Optic Link

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# Typical Applications

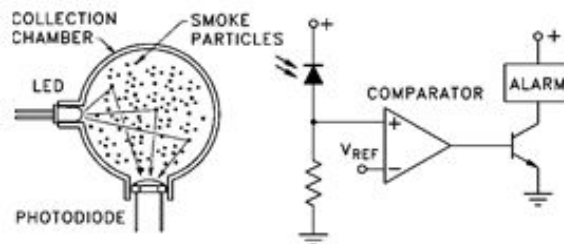
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## Typical Application Circuits (cont.)



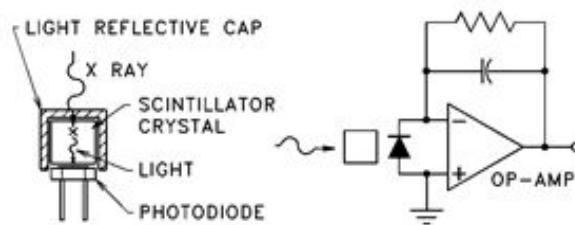
### Balancing Circuit

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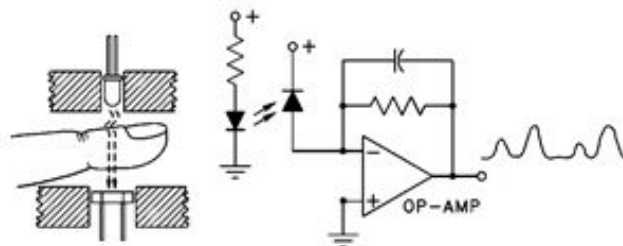
### Smoke Detector

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### CAT Scan (X ray Detector)

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### Pulse Monitor (Finger Probe)

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# Quality and Reliability

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Excelitas Technologies' only business is the design, development, and production of optoelectronic components and assemblies. Our development and manufacturing activities focus on achieving and maintaining consistent product quality and high levels of reliability. Excelitas presently provides devices and assemblies to customers in the commercial, industrial, automotive, and medical markets.

Excelitas' commitment to quality emphasizes designed-in quality, problem prevention, and closed loop corrective action. This concept of quality is implemented through the use of fully documented procedures, in-process monitoring and process control (including SPC), and 100% production testing of devices using state-of-the-art automated test equipment. As a world class manufacturer, Excelitas' concept of product quality includes Total Quality Management (TQM) and Just In Time (JIT) delivery.

Quality is a measure of how well a device conforms to its specifications. Reliability is a measure of how well a device performs over time. Excelitas insures the reliability of its products by careful design and by the periodic testing of random samples taken from the manufacturing lines. Reliability tests can include temperature cycles, thermal shock, room ambient life tests, elevated temperature life tests, high and low temperature storage, temperature / humidity tests, and water immersion.

Excelitas also performs special tests covering a wide range of environmental and life stress conditions to support non-standard, custom applications. The information generated not only assures the customer that the device will work well in a particular application, but also contributes to our data base for continual product improvement.

Driven by our goal of continual improvement and the needs of customers, Excelitas runs an active product improvement program. Excelitas continuously evaluates new materials, manufacturing processes, and packaging systems in order to provide our customers with the best possible product.

Excelitas' quality works: we are an ISO 9000 and QS 9000 certified supplier (ship to stock - no inspection required) to a number of major customers.