CDS Light-Dependent Photoresistors

Light-Dependent Photoresistors for Sensor Applications

Preview

The cadmium sulfide (CdS) or light dependent resistor (LDR) whose resistance is inversly dependent on the amount of light falling on it, is known by many names including the photo resistor, photoresistor, photoconductor, photoconductive cell, or simply the photocell.

A typical structure for a photoresistor uses an active semiconductor layer that is deposited on an insulating substrate. The semiconductor is normally lightly doped to enable it to have the required level of conductivity. Contacts are then placed either side of the exposed area.

The photo-resistor, CdS, or LDR finds many uses as a low cost photo sensitive element and was used for many years in photographic light meters as well as in other applications such as smoke, flame and burglar detectors, card readers and lighting controls for street lamps.

Providing design engineers with an economical CdS or LDR with high quality performance, Token Electronics now offers commercial grade PGM photoresistor. Designated the PGM Series, the photoresistors are available in 5mm, 12mm and 20mm sizes, the conformally epoxy or hermetical package offer high quality performance for applications that require quick response and good characteristic of spectrum.

Token has been designing and manufacturing high performance light dependent resistors for decades. Our product offerings are extensive and our experience with custom photoresistor is equally extensive. Contact us with your specific needs.

Features

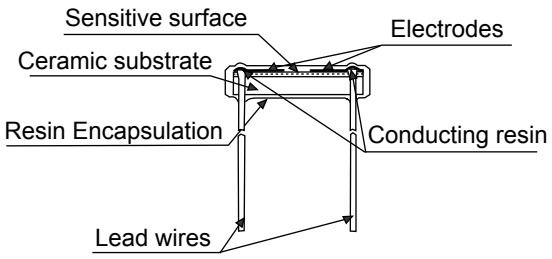
- Quick Response
- Reliable Performance
- Epoxy or hermetical package
- Good Characteristic of Spectrum

Applications

- Photoswitch
- Photoelectric Control
- Auto Flash for Camera
- Electronic Toys, Industrial Control

Terminology

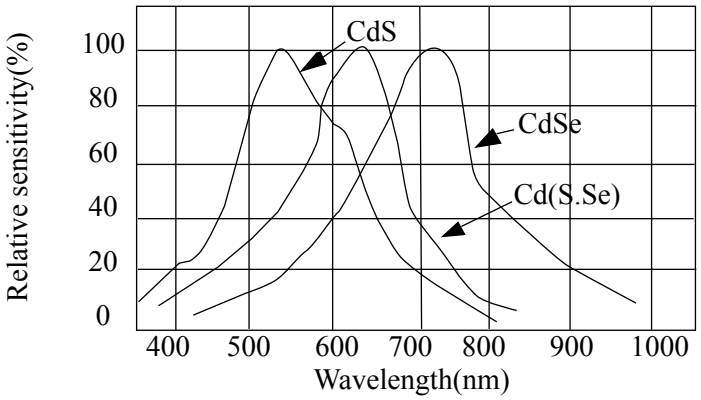
- **Light Resistance :**
  Measured at 10 lux with standard light A (2854K-color temperature) and 2hr. preillumination at 400-600 lux prior testing.



- **Dark Resistance :**
  Measured at 10th seconds after closing 10 lux.

- **Gamma characteristic :**
  Under 10 lux and 100 lux and given by $\gamma = \log(R10/R100) / \log(100/10) = \log(R10/R100)$
  R10, R100: resistance at 10 lux and 100 lux.
  The tolerance of γ is ±0.1.

- **Pmax :**
  Max. power dissipation at ambient temperature of 25°C.At higher ambient temperature,the maximum power permissible may be lowered.



- **Vmax :**
  Max. voltage in darkness that may be applied to the device continuously.

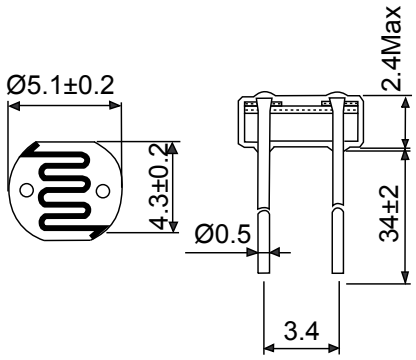
- **Spectral peak :**
  Spectral sensitivity of photoresistors depends on the wavelength of light they are exposed to and in accordance with figure ‘Spectral Response’.
  The tolerance of spectral peak is ±50nm.

Physical and Environmental Characteristics

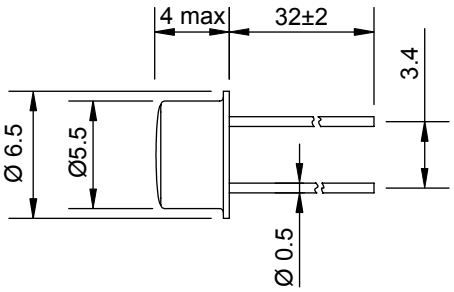
ITEM	CONDITIONS	PERFORMANCE
Solderability	Put the terminals into welding tank at temp. 230±5°C for 2±0.5s (terminal roots are 5mm away from the tin surface).	wetting>95%
Temperature Changing	Change of temperature in accordance with: TA: -40°C TB: +60°C Number of cycles: 5 Exposure duration: 30min	Drift of R10 = ± 20% No visible damage
Constant humidity and heat	1. Put the device in test box at Temperature: 60±5° CHumidity: 90-95% Illumination: 0lux Duration: 100h 2. Take the device and measure after24h at normal temperature and humidity.	Drift of R10= ± 30% No visible damage
Constant load Temperature	At 25±5°C Illumination: 150lux at rated power Duration: 600h	No visible damage
Wire Terminals Strength	Bend the wire terminal at its root to 90 degree,and then bend it to a opposite direction.	No visible damage
Vibration	Frequency: 50Hz Swing: 1.5mm with Directions: parallel to ceramic substrate normal to ceramic substrate. Duration:2h	No visible dam

Configurations & Dimensions

PGM5**** series
Epoxy resin package



PGM55**-MP series
Hermetical package



Note: All dimensions are in mm and NTS.

Electronics Characteristics

Model	Vmax (VDC)	Pmax (mW)	Ambient Temp (°C)	Spectral Peak (nm)	Photo Resistance (10Lx) (KΩ)	Dark Resistance (MΩ)min	γ min	ResponseTime (ms)	
								Rise	Decay
PGM5506	100	90	-30 ~ +70	540	2 ~ 6	0.15	0.6	30	40
PGM5516	100	90	-30 ~ +70	540	5 ~ 10	0.2	0.6	30	40
PGM5526	150	100	-30 ~ +70	540	8 ~ 20	1.0	0.6	20	30
PGM5537	150	100	-30 ~ +70	540	16 ~ 50	2.0	0.7	20	30
PGM5539	150	100	-30 ~ +70	540	30 ~ 90	5.0	0.8	20	30
PGM5549	150	100	-30 ~ +70	540	45 ~ 140	10.0	0.8	20	30
PGM5616D	150	100	-30 ~ +70	560	5 ~ 10	1.0	0.6	20	30
PGM5626D	150	100	-30 ~ +70	560	8 ~ 20	2.0	0.6	20	30
PGM5637D	150	100	-30 ~ +70	560	16 ~ 50	5.0	0.7	20	30
PGM5639D	150	100	-30 ~ +70	560	30 ~ 90	10.0	0.8	20	30
PGM5649D	150	100	-30 ~ +70	560	50 ~ 160	20.0	0.8	20	30
PGM5659D	150	100	-30 ~ +70	560	150 ~ 300	20.0	0.8	20	30

Electronics Characteristics

Model	Vmax (VDC)	Pmax (mW)	Ambient Temp (°C)	Spectral Peak (nm)	Photo Resistance (10Lx) (KΩ)	Dark Resistance (MΩ)min	γ min	Response Time (ms)	
								Rise	Decay
PGM5506-MP	100	90	-30 ~ +70	540	2 ~ 6	0.15	0.6	30	40
PGM5516-MP	100	90	-30 ~ +70	540	5 ~ 10	0.2	0.6	30	40
PGM5526-MP	150	100	-30 ~ +70	540	8 ~ 20	1.0	0.6	20	30
PGM5537-MP	150	100	-30 ~ +70	540	16 ~ 50	2.0	0.7	20	30
PGM5539-MP	150	100	-30 ~ +70	540	30 ~ 90	5.0	0.8	20	30
PGM5549-MP	150	100	-30 ~ +70	540	45 ~ 140	10.0	0.8	20	30