Custom designed sensors provide greater freedom within systems by eliminating the adaptation necessary with many standard products. To meet specific custom requirements and ensure a successful design, Vishay’s optical, electronic, and mechanical engineers utilize several simulation tools and work in close collaboration with customers.

**BENEFITS**
- Designed to specifically meet custom applications
- Over 15 years of experience in creating precise, efficient, and effective solutions
- Diverse portfolio of semiconductor components to achieve maximum sensor performance
- Optical and mechanical modelling
- In-house characterization

**FEATURES**
- Emitters with visible and infrared wavelengths
- Photo detectors with specific wavelength sensitivities
- Application-specific ICs and custom signal processing
- Packages that direct and control light

**APPLICATIONS**
- Automotive sensors
- Printer/copier sensors
- Medical sensors

**RESOURCES**
- Optoelectronics portfolio: [http://www.vishay.com/optoelectronics/](http://www.vishay.com/optoelectronics/)
- For technical questions, contact CustomOpticalSensors@Vishay.com
Capabilities:

Research and Development:
- Average of 18 years of experience in optoelectronics design
- In-house chip development: GaAs and Si
- IC design
- Partnering with design house and wafer fab
- Optical ray tracing
- Full in-house optical, electrical, chemical, and physical analysis

Packaging:
- Leadframe-based molding technology
- Filled and unfilled molding
- Leadframe-based double mold technology (couplers)
- Premolded leadframe
- FAM (Foil Assisted Molding)
- PCB-based casting technology
- Leadless package technology
- Hybrid assembly
- Lens design
Running Projects

Climate Control Sensor
Integrated Thermo-Optical Sensor
Developed by Vishay, this automotive climate control sensor is used to determine the position and angle of the sun. The sensor's unique package combines a photodiode and thermocouple in a custom-molded lens. The information delivered by the sensor triggers the dual-zone climate control system to boost the speed or lower the temperature of the air directed toward the sunny side of the car.

Rain Sensor
When water hits a car’s windshield, Vishay's custom rain sensor - mounted on the inside of the glass - measures the degree of change in light being reflected off the windshield to determine the rate of falling rain. The sensor incorporates several bare-die infrared emitters, phototransistors, and photodiodes manufactured in Vishay’s own fabrication plant with in-house assembly, lens designing, and molding.

Steering Angle Sensor
This steering angle sensor developed by Vishay offers extremely high resolution in determining the position of the steering wheel, the direction of steering, and the velocity at which the wheel is being turned. The high-quality results delivered by the sensor are a result of its 12-phototransistor sensor design.

Climate Control Sensor
Dual Zone
Developed by Vishay, this dual-zone climate control sensor measures the power and direction of sunlight. This information is used to distribute cooling to different air outlets in order to achieve a comfortable temperature for all passengers in the car. Custom angle-mounted photodiodes and custom holders are implemented in the sensor’s design.

Printer Sensor
For over 15 years, Vishay has been creating custom printer sensors that offer excellent performance, high reliability, and unique designs. Vishay printer sensors are able to detect manuscript size, paper, and toner intensity, find the top / edge of media in a print zone, and determine the presence of the drops ejected by each of the print head’s nozzles.
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