

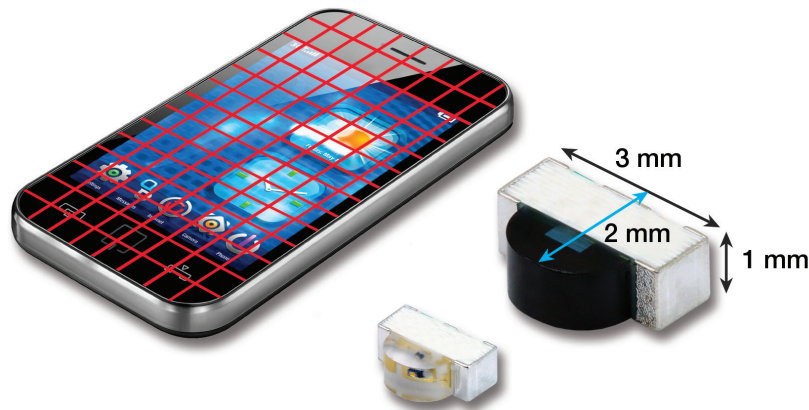


INFRARED EMITTERS AND PHOTO DETECTORS

V SMB10940, V SMG10850, V EMD10940F

Optoelectronics – Small Low-Profile Package – 3 x 2 x 1 (mm)

Low-Profile, Surface-Mount Side Lookers



1 mm Height, Side-view Infrared Emitters and Photo PIN Diodes

Vishay's 1 mm height emitters and detector have the best performance on the market. The emitters have the highest radiant intensity and feature the highest DC operating current up to 52 °C. At a 40 °C ambient temperature, the radiant intensity of the Vishay part is higher than the competing emitters by more than a factor of 2. The photo PIN diode has the lowest dark current, which results in the best signal-to-noise ratio.

FEATURES AND BENEFITS

Detector – VEMD10940F

- Wavelength of peak sensitivity, $\lambda_p = 920$ nm
- Reverse light current, $I_{ra} = 3$ μ A
- Low dark current: $I_{ro} = 1$ nA
- Daylight filter
- Operating temperature range: -40 °C to +100 °C

APPLICATIONS

- Infrared touch panels
- Space-constrained assemblies

RESOURCES

- Datasheet: [V SMB10940](#), [V SMG10850](#), [V EMD10940F](#)
- For technical questions contact sensorstechsupport@vishay.com
- Material categorization: For definitions of compliance please see <http://www.vishay.com/doc?99912>

Emitters

- Emitting wavelength, λ_p
 - V SMB10940 = 940 nm
 - V SMG10850 = 850 nm
- Angle of half intensity:
 - Horizontal: $\phi_H = \pm 77.5^\circ$
 - Vertical: $\phi_V = \pm 72.5^\circ$
- Radiant intensity, $I_e = 1$ mW/sr
- Operating temperature range: -40 °C to + 85 °C

RoHS COMPLIANT **HALOGEN FREE** **GREEN** (5-2008)

One of the World's Largest Manufacturers of
Discrete Semiconductors and Passive Components



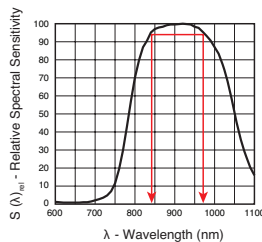


INFRARED EMITTERS AND PHOTO DETECTORS

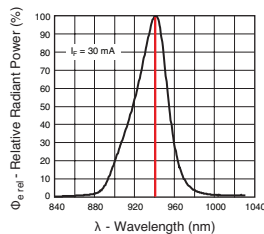
V SMB10940, V SMG10850, V EMD10940F

ANGULAR DISPLACEMENT, INTENSITY AND SENSITIVITY

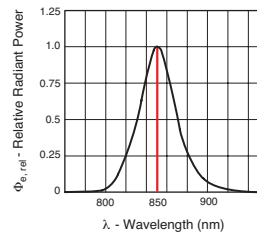
The VEMD10940F, VSMB10940, and VSMG10850 have a wide angle of half sensitivity and intensity profile, typically $\pm 75^\circ$. The VSMB10940 has a peak intensity of 940 nm while the VSMG10850 peaks at 850 nm. Both emitters provide a radiant intensity of typically 1 mW/sr at 20 mA drive current. The VEMD10940F has a peak sensitivity of 920 nm and is optimized to maintain over 95 % sensitivity for the wavelength range of 840 nm to 970 nm. Therefore, it is ideally matched to both emitters. The VEMD10940F includes a filter to block visible light and provides a typical photo current of 3 μA given an irradiance of 1 mW/cm², $V_r = 5\text{ V}$, $\lambda = 950\text{ nm}$.



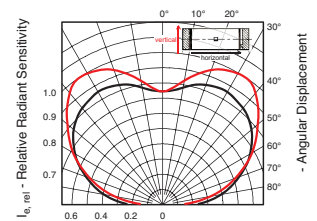
VEMD10940F
PIN Photodiode



VEMD10940F
PIN Photodiode



VSMG10850
Emitter



Angular
Displacement

BENCHMARK PERFORMANCE

PART NUMBER	COMPETITION	PEAK EMISSION WAVELENGTH λ_p (nm)	ANGLE OF HALF INTENSITY (\pm°)	RADIANT INTENSITY I_e (20 mA) (mW/sr)	FORWARD VOLTAGE V_f (20 mA) (V)	MAX FORWARD DC CURRENT UP TO T_{AMB} (mA) / ($^\circ\text{C}$)	RADIANT INTENSITY AT 40°C OPERATING TEMP. AT MAX DC CURRENT (mW/sr)	OPERATING TEMPERATURE RANGE ($^\circ\text{C}$)
VSMB10940	Vishay	940	75	1	1.3	65 / 52	2.93	- 40 to 85
TAN1101F	Stanley	940	80	0.75	1.22	50 / 25	1.35	- 30 to 85
IR12-21C	Everlight	940	75	0.8	1.2	65 / 25	1.9	- 40 to 85
LTE-S320	Liteon	940	65	0.75	1.0	50 / 25	1.35	- 40 to 85
VSMG10850	Vishay	850	75	1	1.4	65 / 52	2.93	- 40 to 85

PART NUMBER	TYPE	COMPETITION	ANGLE OF HALF SENSITIVITY Φ (\pm°)	WAVELENGTH OF PEAK SENSITIVITY λ_p (nm)	SPECTRAL SENSITIVITY RANGE (nm)	LIGHT CURRENT I_{ra} TYP. (μA)	DARK CURRENT I_{ro} MAX (nA)	OPERATING TEMPERATURE RANGE ($^\circ\text{C}$)
VEMD10940F	Diode	Vishay	75	920	780 to 1050	3	10	- 40 to 85
PP1191FB	Diode	Stanley	75	950	780 to 1050	0.36	20	- 30 to 85
LTR-S320	Diode	Liteon	65	940	750 to 1100	3.6	10	- 40 to 85