

INFRARED EMITTERS AND PHOTO DETECTORS

VSMB10940X01, VEMD10940FX01, VSMB11940X01, VEMD11940FX01

AEC-Q101 Qualified, High-Speed Emitters and Photodiodes for IR Touch Panels



MINIATURE SIDE-VIEW IR EMITTERS AND DETECTORS

The low-profile VSMB10940X01 / VEMD10940FX01 emitters and VSMB11940X01 / VEMD11940FX01 photodiodes are optimized for IR touch panels in a wide range of consumer, medical, industrial and automotive applications. The 0.6 mm profile of the emitters allows for slimmer designs, while the larger photo sensitive area of the photodiodes enables a higher signal output.

FEATURES AND BENEFITS

Emitters – VSMB10940X01, VSMB11940X01

- Emitting wavelength, $\lambda_p = 940 \text{ nm}$
- Height: 1.0 mm / 0.6 mm
- Angle of half intensity, $\varphi = \pm 75^\circ$
- Radiant Intensity, $I_e = 1 \text{ mW/sr}$ at 20 mA
- Operating temperature range: -40 to $+85^\circ \text{C}$

Detectors – VEMD10940X01, VEMD11940X01

- Wavelength of peak sensitivity, $\lambda_p = 950 \text{ nm}$
- Height: 1.0 mm / 0.6 mm
- Reverse light current, $I_{ra} = 3 \mu\text{A} / 1.1 \mu\text{A}$
- Low dark current, $I_{ra} = 1 \text{ nA}$
- Daylight filter
- Operating temperature range: -40 to $+100^\circ \text{C}$

APPLICATIONS

- IR touch display based devices such as printer displays, ebook reader, smart phones, tablets, ultrabooks, navigation devices, and automotive dashboard displays.

RESOURCES

- Datasheets: [VSMB10940X01](#), [VSMB11940X01](#), [VEMD10940FX01](#), [VEMD11940FX01](#)
- For technical questions please contact sensorstechsupport@vishay.com
- Material categorization: For definitions of compliance please see <http://www.vishay.com/doc?99912>

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Discrete Semiconductors and Passive Components



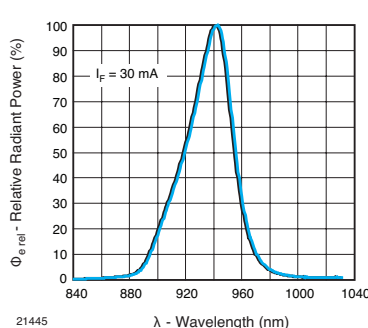
INFRARED EMITTERS AND PHOTO DETECTORS

VSMB10940X01, VEMD10940FX01, VSMB11940X01, VEMD11940FX01

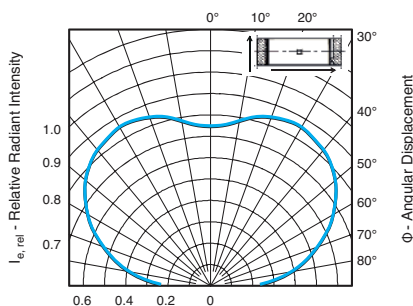
ANGULAR DISPLACEMENT, INTENSITY AND SENSITIVITY

Offered in clear, untinted plastic packages, the VSMB10940X01 and VSMB11940X01 infrared emitters feature GaAlAs multi quantum well (MQW) technology. The devices provide high radiant intensity of 1 mW/sr typical at 20 mA, a low forward voltage of 1.3 at 20 mA, and fast switching times of 15 ns. The VEMD10940FX01 and VEMD11940FX01 photodiodes feature a daylight blocking filter matched with 830 nm to 950 nm IR emitters, and offer reverse light current of 1.1 μ A and 3 μ A, respectively. Both devices provide high radiant sensitivity from 780 to 1050 nm, low dark current of 1 nA, and 950 nm wavelength of peak sensitivity. All devices offer an ultra-wide $\pm 75^\circ$ angle of half intensity.

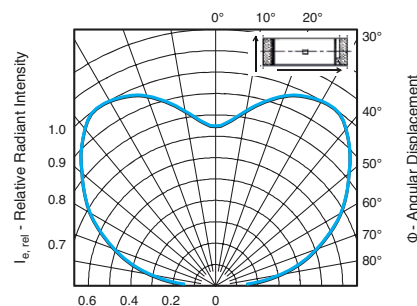
INFRARED EMITTERS (VSMB10940X01 — VSMB11940X01 —)



Relative Radiant Power vs. Wavelength

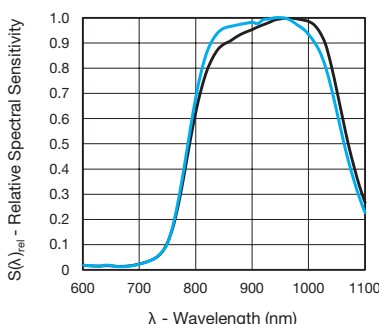


Relative Radiant Intensity vs. Angular Displacement (Horizontal)

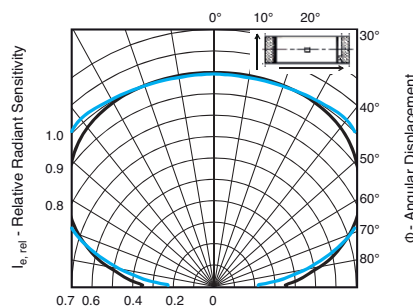


Relative Radiant Intensity vs. Angular Displacement (Vertical)

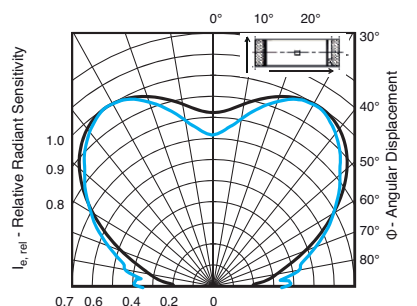
PHOTODIODES (VEMD10940FX01 — VEMD11940FX01 —)



Relative Spectral Sensitivity vs. Wavelength



Relative Radiant Sensitivity vs. Angular Displacement (Horizontal)



Relative Radiant Sensitivity vs. Angular Displacement (Vertical)

KEY SPECIFICATIONS

INFRARED EMITTERS	VSMB10940X01	VSMB11940X01	PHOTODIODES	VEMD10940FX01	VEMD11940FX01
Peak wavelength	940 nm		Wavelength of peak sensitivity	950 nm	
Technology	GaAlAs multi quantum well		Technology	Silicon PIN photodiode	
Radiant intensity @ 20 mA	1 mW/sr typical		Reverse light current	3.0 μ A	1.1 μ A
Forward voltage @ 20 mA	1.3 V		Dark current	1 nA	
Switching time	15 ns		Switching time	1000 ns	
Case size (mm)	3 x 2 x 1	3 x 2 x 0.6	Case size (mm)	3 x 2 x 1	3 x 2 x 0.6