

# TFMD5000B

## Silicon PIN Photodiode

### ❖ Description

TFMD5000 is a new device has a super low profile and an overall dimension of 5 x 4 x 1.1 mm. It can accept a PIN photodiode chip with an active area up to 10 mm square. In order to meet the strict requirements for different sensing applications, this device comes in 3 different versions: standard clear encapsulation lens for responsivity from visible to 1000nm; a red encapsulant lens for applications that are required to filter out visible ambient light interference; and a black encapsulant lens for application where higher responsivity in the infrared region is required.



This device provides enhanced performance and optimum packaging for various applications.

### ❖ Versions

Parameter	Encapsulation
TFMD5000	Clear
TFMD5000R	Red
TFMD5000B	Black

### ❖ Features

- Large radiant sensitive area (8.1 mm<sup>2</sup>)
- Wide angle of half sensitivity  $\phi = \pm 65^\circ$
- High photo sensitivity
- Fast response times
- Small junction capacitance

### ❖ Application

- Sensor
- Encoders
- Medical
- Fiber Optics
- Automotive

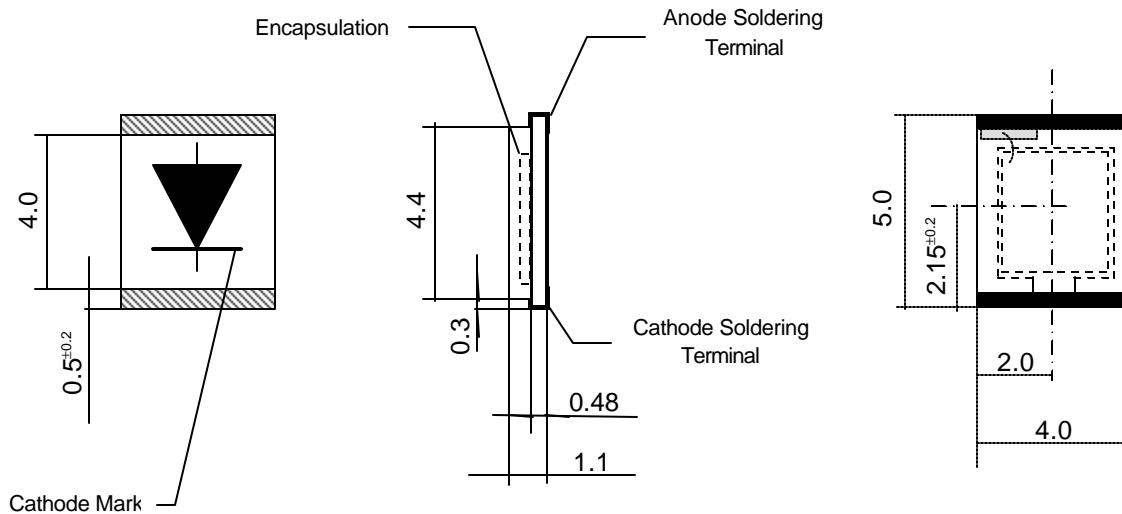
### ❖ Absolute Maximum Ratings

Parameter	Symbol	Condition	Value	Unit
Reverse Voltage	$V_R$		60	V
Power Dissipation	$P_V$	$T_{amb} \leq 25^\circ\text{C}$	215	mW
Junction Temperature	$T_j$		100	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$		-55 .. +100	$^\circ\text{C}$
Soldering Temperature	$T_{sd}$	$t \leq 3 \text{ s}$	260	$^\circ\text{C}$
Thermal Resistance Junction/Ambient	$R_{thJA}$		350	K/W

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### ❖ Dimensions



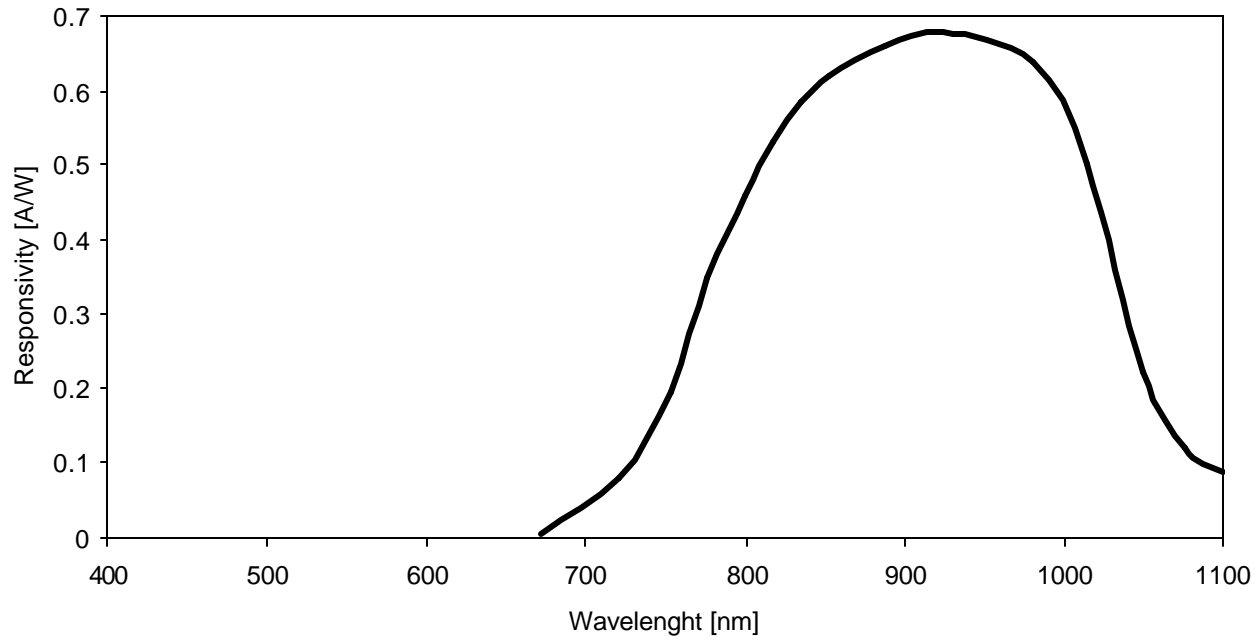
### ❖ Basic Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Breakdown Voltage	$V_{(BR)}$	$I_R = 100 \mu A, E = 0$	60	-		V
Reverse Dark Current	$I_{r0}$	$V_R = 10 V, E = 0$		5	30	nA
Diode Capacitance	$C_D$	$V_R = 3 V, f = 1 MHz, E = 0$		25		pF
Open Circuit Voltage	$V_O$	$E_e = 1 mW/cm^2, \lambda = 950 nm$		350		mV
Temp. Coefficient of $V_O$	$TK_{V_O}$	$E_e = 1 mW/cm^2, \lambda = 950 nm$		-2.6		mV/K
Short Circuit Current	$I_{SC}$	$C_T = 2870^\circ K, H = 5 mW/cm^2$		80		$\mu A$
Temp. Coefficient of $I_k$	$TK_{I_k}$	$E_e = 1 mW/cm^2, \lambda = 950 nm$		0.1		%/K
Reverse Light Current	$I_{ra}$	$E_e = 5 mW/cm^2, V_R = 5 V, C_T = 2870^\circ K$		80		$\mu A$
Angle of Half Sensitivity	$\phi$			$\pm 65$		deg
Wavelength of Peak Sensitivity	$\lambda_p$			900		nm
Range of Spectral Bandwidth	$\lambda_{0.5}$			840 ÷ 1050		nm
Noise Equivalent Power	NEP	$V_R = 10 V, \lambda = 950 nm$		$4 \times 10^{-14}$		$W / \sqrt{Hz}$
Rise / Fall Time	$t_r / t_f$	$V_R = 10 V, R_L = 1 k\Omega, \lambda = 850 nm$		50 / 50		ns

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## ❖ Spectral Sensitivity vs. Wavelength



## ❖ Pattern for the reflow soldering

