

Si PIN photodiodes



S10783

S10784

High-speed detectors with plastic package

The S10783 and S10784 are high-speed APC (auto power control) detectors developed for monitoring laser diodes with a peak wavelength of 660 nm or 780 nm. The S10783 is designed for surface mount and the S10784 is a plastic package with $\phi 3$ mm lens.

Features

- **High-speed response**
300 MHz Typ. ($\lambda=650$ nm, $V_R=2.5$ V)
250 MHz Typ. ($\lambda=780$ nm, $V_R=2.5$ V)
- **High sensitivity**
S10783: 0.46 A/W Typ. ($\lambda=650$ nm)
S10784: 0.45 A/W Typ. ($\lambda=650$ nm)

Applications

- **Laser diode monitor of optical disk unit (high-speed APC)**
- **Sensor for red laser diode**

General ratings

Parameter	Symbol	S10783	S10784	Unit
Active area size	-	$\phi 0.8$	$\phi 3.0$	mm
Effective active area	-	0.5	7.0	mm ²

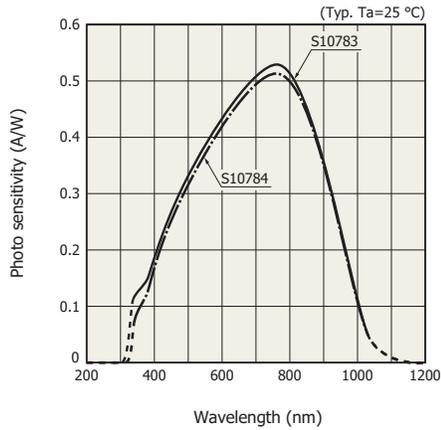
Absolute maximum ratings

Parameter	Symbol	S10783	S10784	Unit
Reverse voltage	V_R Max.	20		V
Power dissipation	P	50		mW
Operating temperature	T_{opr}	-25 to +85		°C
Storage temperature	T_{stg}	-40 to +100		°C

Electrical and optical characteristics

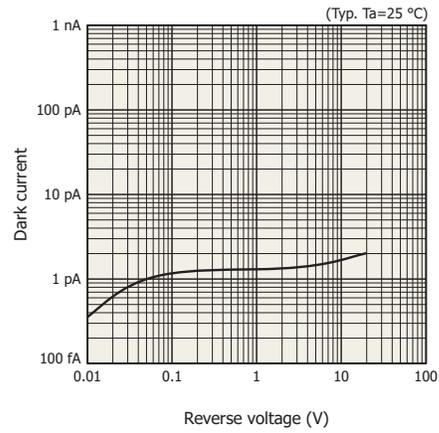
Parameter	Symbol	Condition	S10783			S10784			Unit	
			Min.	Typ.	Max.	Min.	Typ.	Max.		
Spectral response range	λ		330 to 1040			340 to 1040			nm	
Peak sensitivity wavelength	λ_p		-	760	-	-	760	-	nm	
Photo sensitivity	S	$\lambda=660$ nm	0.41	0.46	-	0.40	0.45	-	A/W	
		$\lambda=780$ nm	0.47	0.52	-	0.46	0.51	-		
Dark current	I_D	$V_R=2.5$ V	-	0.01	1.0	-	0.01	1.0	nA	
Temperature coefficient of I_D	T_{CID}		-	1.15	-	-	1.15	-	times/°C	
Cut-off frequency	f_c	$V_R=2.5$ V	$\lambda=660$ nm	150	300	-	150	300	-	MHz
		$R_L=50$ Ω		$\lambda=780$ nm	125	250	-	125	250	
Terminal capacitance	C_t	$V_R=2.5$ V, $f=1$ MHz	-	4.5	9	-	4.5	9	pF	
Noise equivalent power	NEP	$V_R=2.5$ V	-	3.5×10^{-15}	-	-	3.5×10^{-15}	-	W/Hz ^{1/2}	

Spectral response



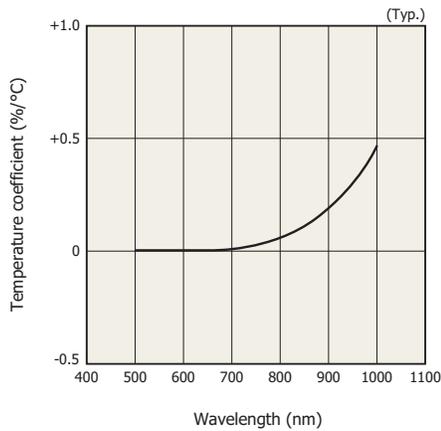
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Dark current vs. reverse voltage



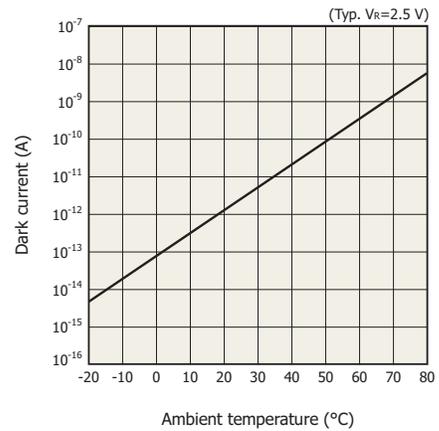
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Photo sensitivity temperature characteristic



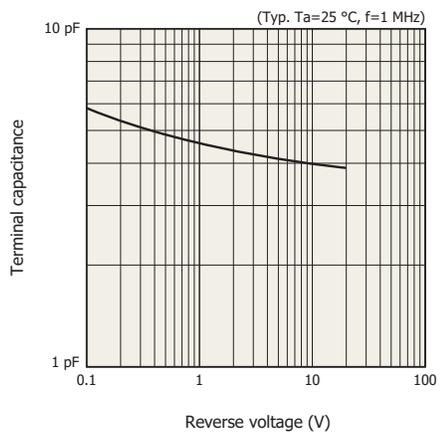
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Dark current vs. ambient temperature



KPINB0363EA

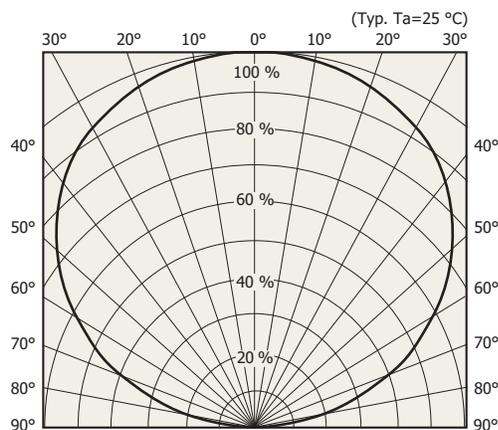
Terminal capacitance vs. reverse voltage



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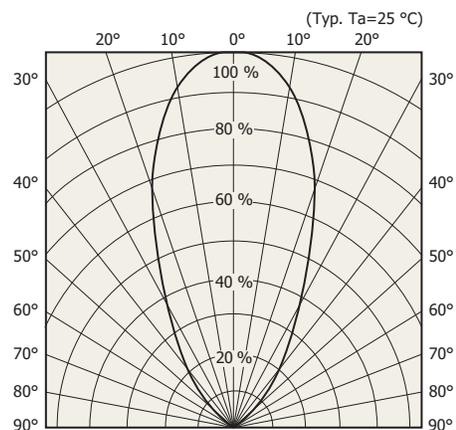
Directivity

S10783



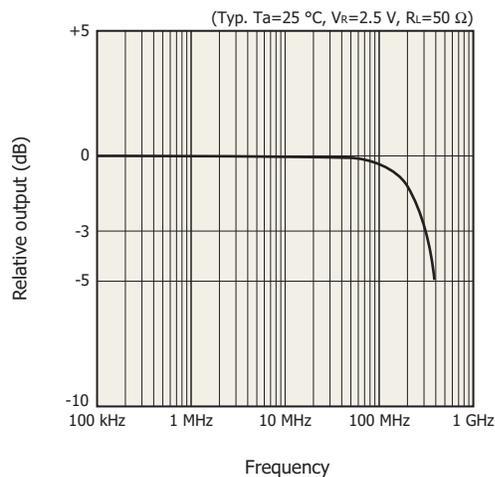
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S10784

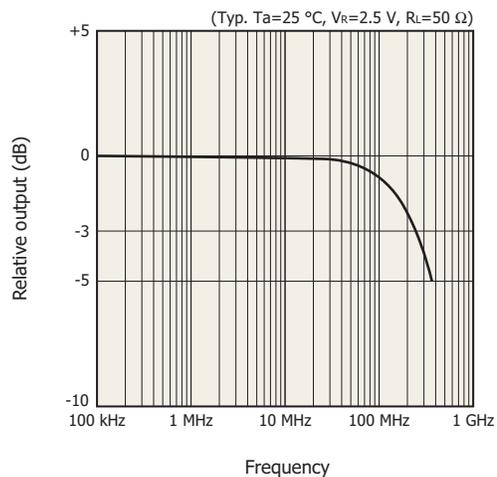


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Frequency characteristics

 $\lambda=660\text{ nm}$ 

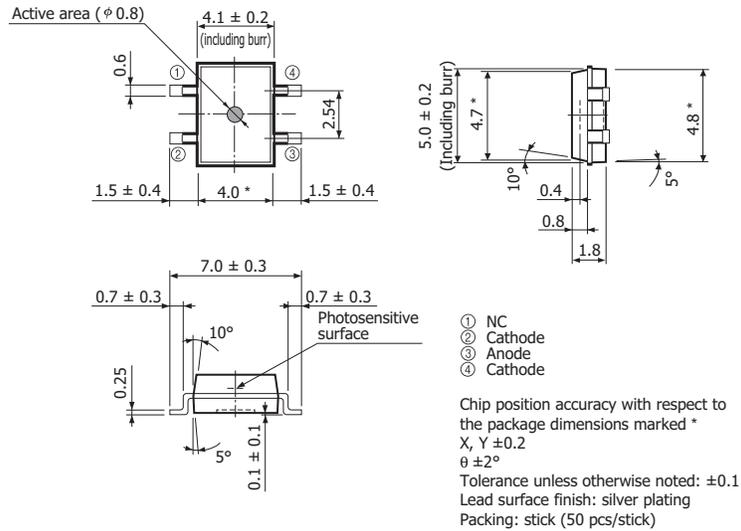
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 $\lambda=780\text{ nm}$ 

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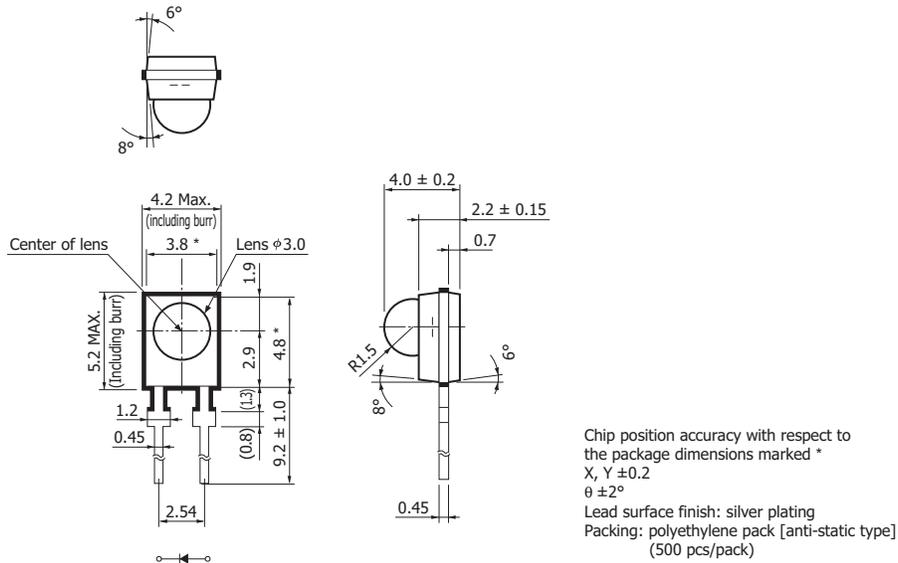
Dimensional outlines (unit: mm)

① S10783



KPINA0105EB

② S10784



KPINA0032EB

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