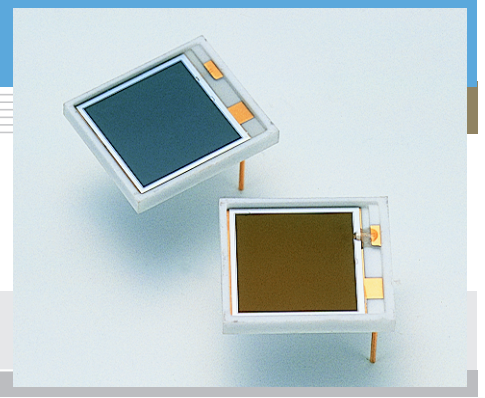


# Si PIN photodiode

## S3590-18/-19

Large area Si PIN photodiode for scintillation counting



### Features

- Suitable for coupling with blue scintillator (LSO, GSO, etc.)
- Internal quantum efficiency: 100 % ( $\lambda=420$  nm)
- S3590-19: bare chip type (without window)

### Applications

- Radiation detection (PET, etc.)
- X-ray detection

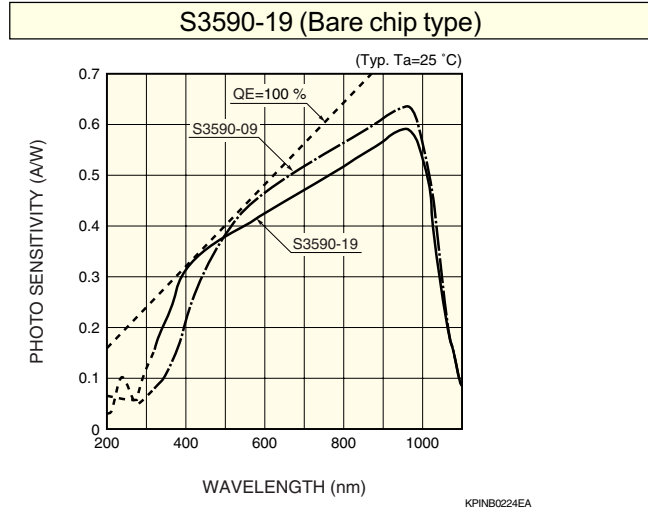
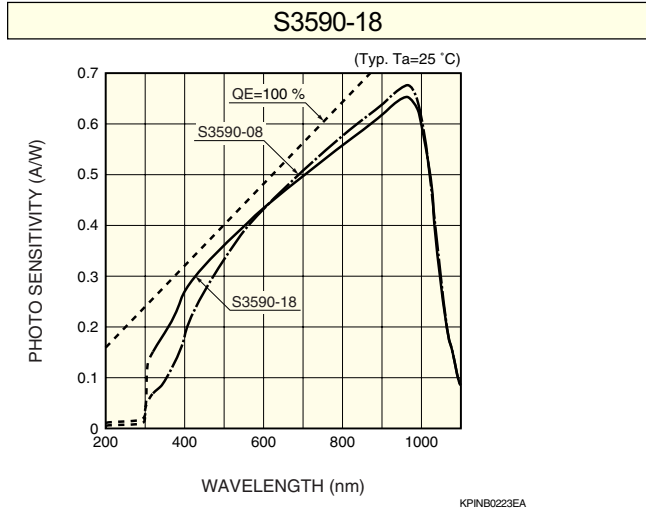
### ■ Absolute maximum ratings

Parameter	Symbol	Value	Unit
Reverse voltage	$V_R$	100	V
Power dissipation	P	100	mW
Operating temperature	$T_{opr}$	-20 to +60	°C
Storage temperature	$T_{stg}$	-20 to +80	°C

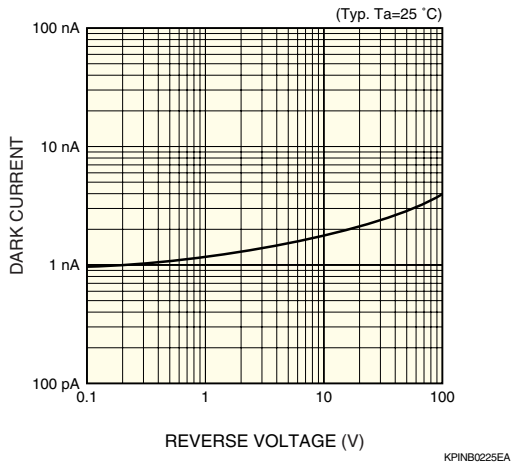
### ■ Electrical and optical characteristics ( $T_a=25$ °C)

Parameter	Symbol	Condition	S3590-18			S3590-19			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	$\lambda$		-	320 to 1100	-	-	320 to 1100	-	nm
Peak sensitivity wavelength	$\lambda_p$		-	960	-	-	960	-	nm
Photo sensitivity	S	$\lambda=\lambda_p$	-	0.65	-	-	0.58	-	A/W
		$\lambda=420$ nm (LSO)	-	0.28	-	-	0.33	-	A/W
		$\lambda=480$ nm (BGO)	-	0.34	-	-	0.37	-	A/W
		$\lambda=540$ nm (Csl)	-	0.38	-	-	0.4	-	A/W
Short circuit current	$I_{sc}$	100 lx	-	100	-	-	86	-	$\mu$ A
Dark current	$I_D$	$V_R=70$ V	-	4	10	-	4	10	nA
Temperature coefficient of $I_D$	$T_{CID}$		-	1.12	-	-	1.12	-	times/°C
Cut-off frequency	$f_c$	$V_R=70$ V, -3 dB $R_L=50$ $\Omega$	-	40	-	-	40	-	MHz
Terminal capacitance	$C_t$	$V_R=70$ V, $f=1$ MHz	-	40	-	-	40	-	pF
Noise equivalent power	NEP		-	$7.6 \times 10^{-14}$	-	-	$7.6 \times 10^{-14}$	-	W/Hz <sup>1/2</sup>

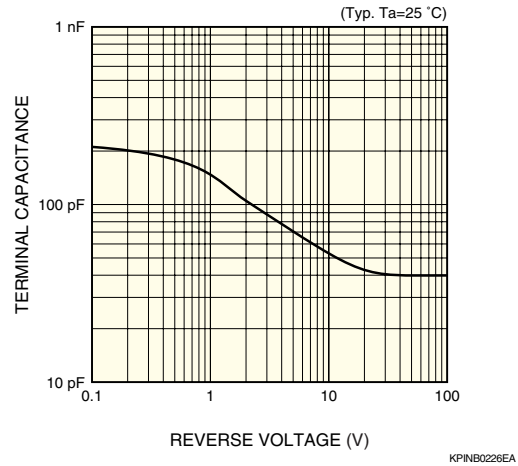
■ Spectral response



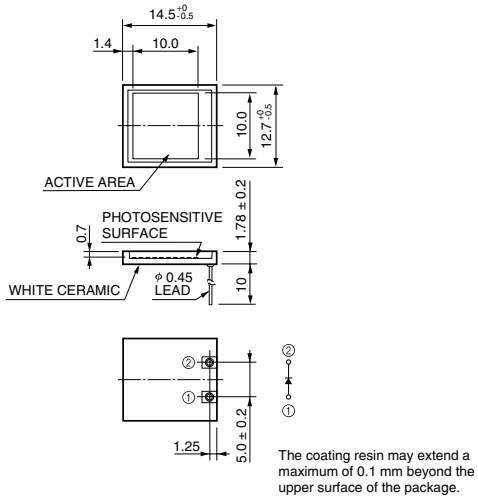
■ Dark current vs. reverse voltage



■ Terminal capacitance vs. reverse voltage



■ Dimensional outline (unit: mm)



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