

Si photodiode

S2592/S3477 series

Thermoelectrically cooled photodiode for low-light-level detection in UV to near IR



S2592/S3477 series sensors combine a UV to near infrared Si photodiode with a thermoelectric cooler. A thermistor is also included in the same package to sense the Si photodiode chip temperature. This allows stable operation over long periods of time, making these sensors suitable for low-light-level detection where a high S/N is required.

S2592 series is hermetically sealed in a TO-8 package, and S3477 series in a TO-66 package. A dedicated temperature controller (C1103-04) and heatsink (A3179 series) are also available as options (sold separately).

Features

- High S/N
- High UV sensitivity
- Built-in thermistor allows stable operation

Applications

- Low-light-level detection

■ General ratings

Parameter	S2592-03	S3477-03	S2592-04	S3477-04	Unit
Built-in photodiode		S1336 series			-
Window material		Sapphire glass			-
Active area	2.4 × 2.4		5.8 × 5.8		mm
Package	TO-8	TO-66	TO-8	TO-66	

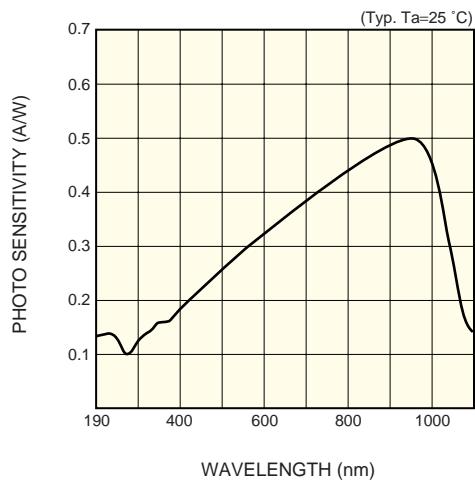
■ Absolute maximum ratings

Parameter	Symbol	Value	Unit
Reverse voltage	VR	5	V
Operating temperature	Topr	-40 to +70	°C
Storage temperature	Tstg	-55 to +85	°C
Allowable current for thermoelectric cooler	Ite	1.5	A
Thermistor power dissipation	Pth	0.2	mW

■ Electrical and optical characteristics (Typ. Ta=25 °C)

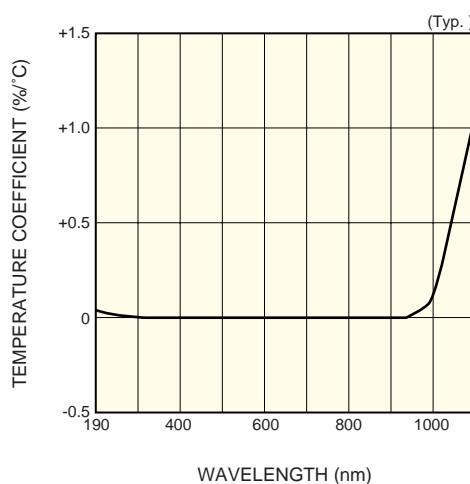
Parameter	Symbol	Condition	S2592-03	S3477-03	S2592-04	S3477-04	Unit
Spectral response range	λ			190 to 1100			nm
Peak sensitivity wavelength	λ_p			960			nm
Photo sensitivity	S	$\lambda=\lambda_p$		0.5			A/W
Short circuit current	Isc	100 lx, 2856 K	5		28		μA
Dark current	Id	VR=10 mV	10		25		pA
Temperature coefficient of dark current	T CID			1.15			times/°C
Rise time	tr	VR=0 V, RL=1 kΩ	0.2		1		μs
Terminal capacitance	Ct	VR=0 V	65		380		pF
Shunt resistance	Rsh	VR=10 mV	1		0.4		GΩ
Noise equivalent power	NEP		8.1 × 10 ⁻¹⁵		1.3 × 10 ⁻¹⁴		W/Hz ^{1/2}
Cooling temperature	ΔT			35			°C

■ Spectral response



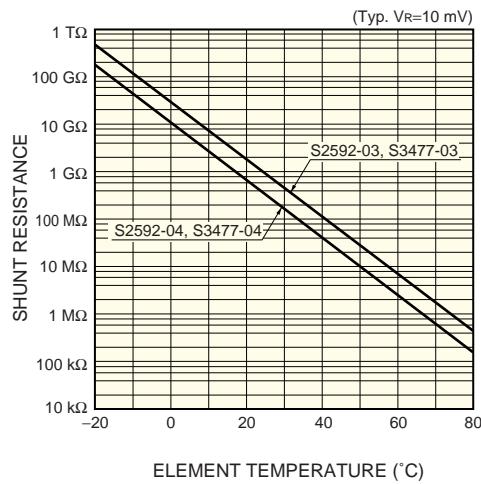
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■ Photo sensitivity temperature characteristic



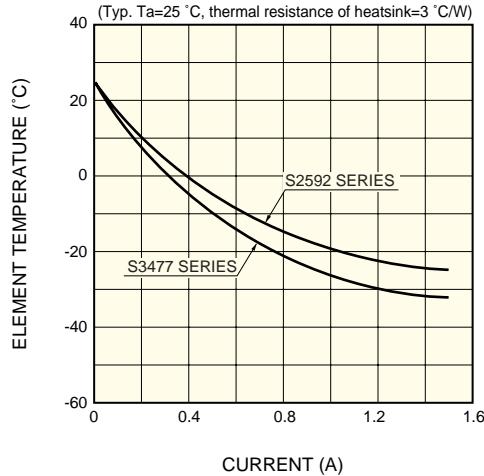
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■ Shunt resistance vs. element temperature



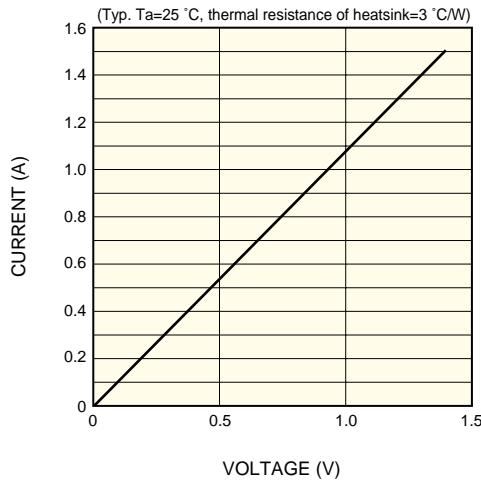
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■ Cooling characteristics of TE-cooler



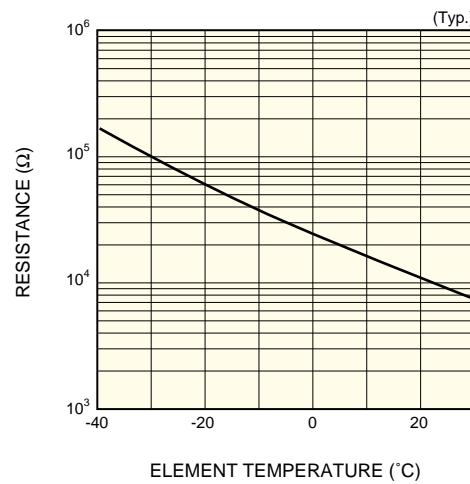
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■ Current vs. voltage characteristic of TE-cooler



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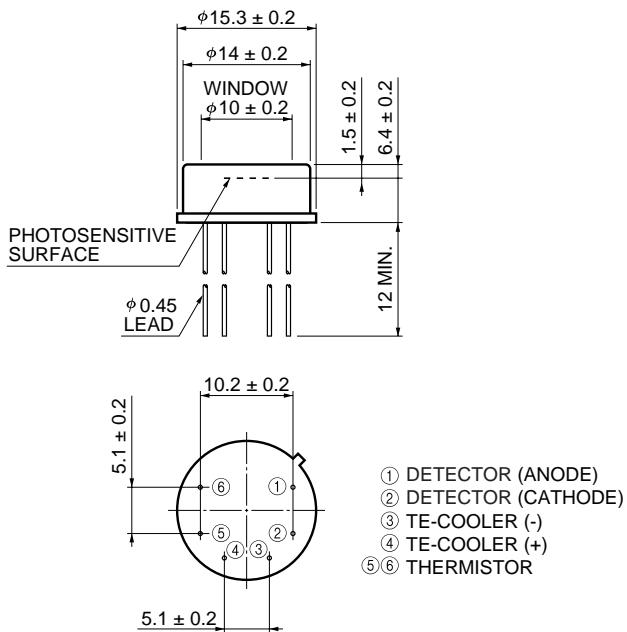
■ Thermistor temperature characteristic



KIRDB0116EA

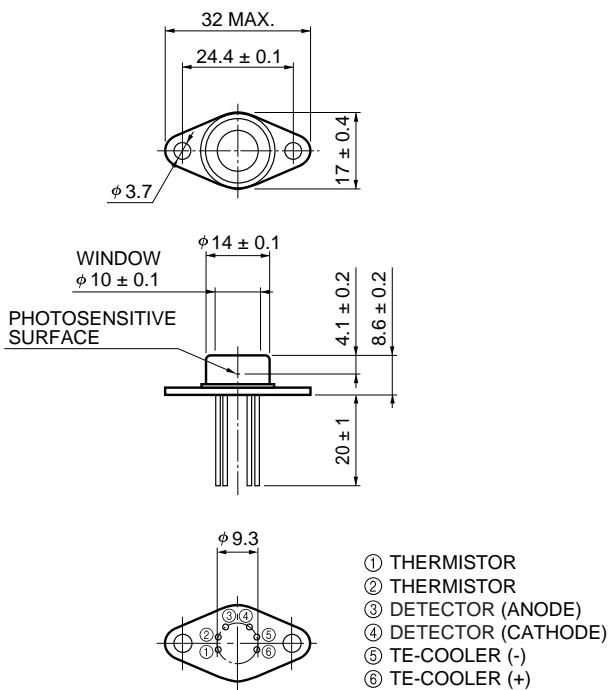
■ Dimensional outlines (unit: mm)

S2592 series



KSPDA0133EA

S3477 series



KSPDA0134EC

