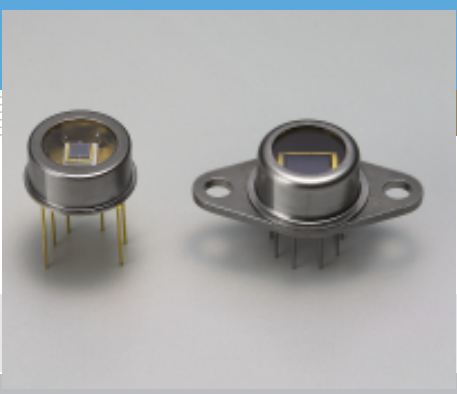


Si photodiode S2592/S3477 series

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	

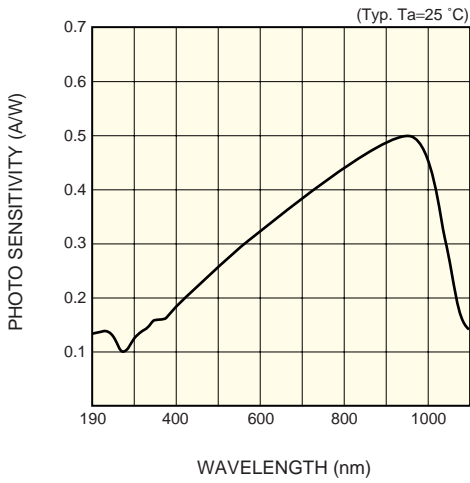
Absolute maximum ratings

Parameter	Symbol	Value	Unit
Reverse voltage	V_R	5	V
Operating temperature	T_{opr}	-40 to +70	°C
Storage temperature	T_{stg}	-55 to +85	°C
Allowable current for thermoelectric cooler	I_{te}	1.5	A
Thermistor power dissipation	P_{th}	0.2	mW

Electrical and optical characteristics (Typ. $T_a=25\text{ }^\circ\text{C}$)

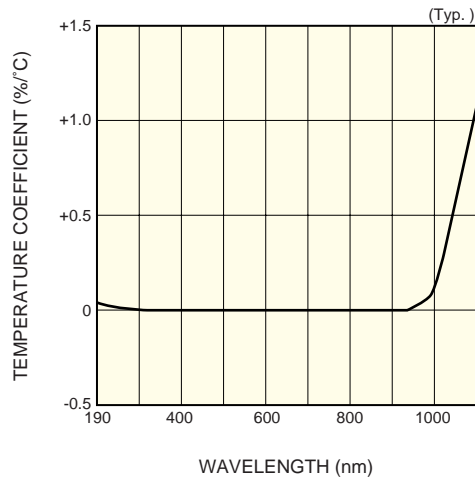
Parameter	Symbol	Condition	S2592-03	S3477-03	S2592-04	S3477-04	Unit
Spectral response range	λ		190 to 1100				nm
Peak sensitivity wavelength	λ_p		960				nm
Photo sensitivity	S	$\lambda=\lambda_p$	0.5				A/W
Short circuit current	I_{sc}	100 lx, 2856 K	5		28		μA
Dark current	I_D	$V_R=10\text{ mV}$	10		25		pA
Temperature coefficient of dark current	T_{CID}		1.15				times/°C
Rise time	t_r	$V_R=0\text{ V}$, $R_L=1\text{ k}\Omega$	0.2		1		μs
Terminal capacitance	C_t	$V_R=0\text{ V}$	65		380		pF
Shunt resistance	R_{sh}	$V_R=10\text{ mV}$	1		0.4		G Ω
Noise equivalent power	NEP	$V_R=0\text{ V}$, $\lambda=\lambda_p$	8.1×10^{-15}		1.3×10^{-14}		W/Hz ^{1/2}
Cooling temperature	ΔT		35				°C

■ Spectral response



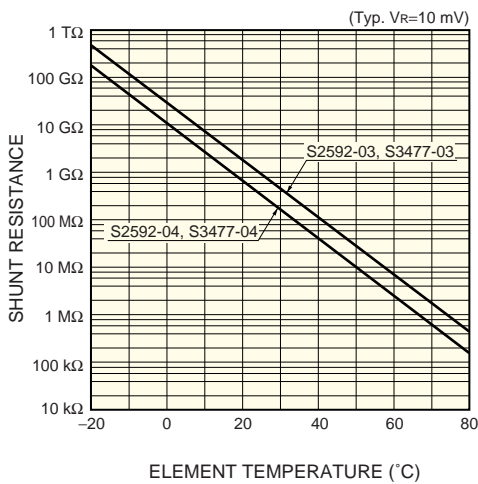
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■ Photo sensitivity temperature characteristic



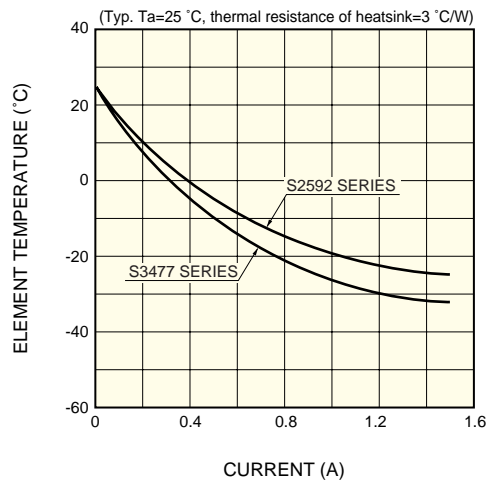
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■ Shunt resistance vs. element temperature



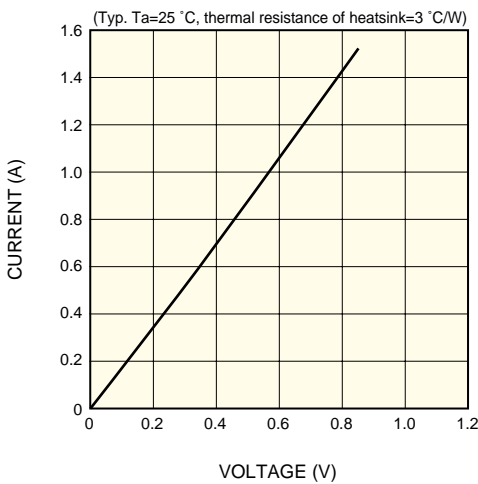
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■ Cooling characteristics of TE-cooler



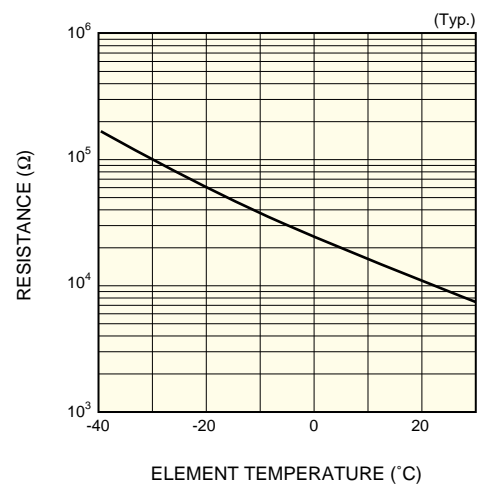
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■ Current vs. voltage characteristic of TE-cooler



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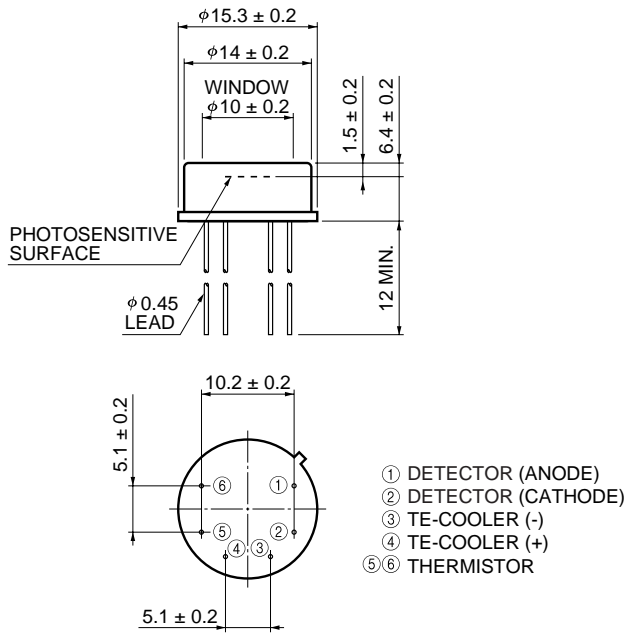
■ Thermistor temperature characteristic



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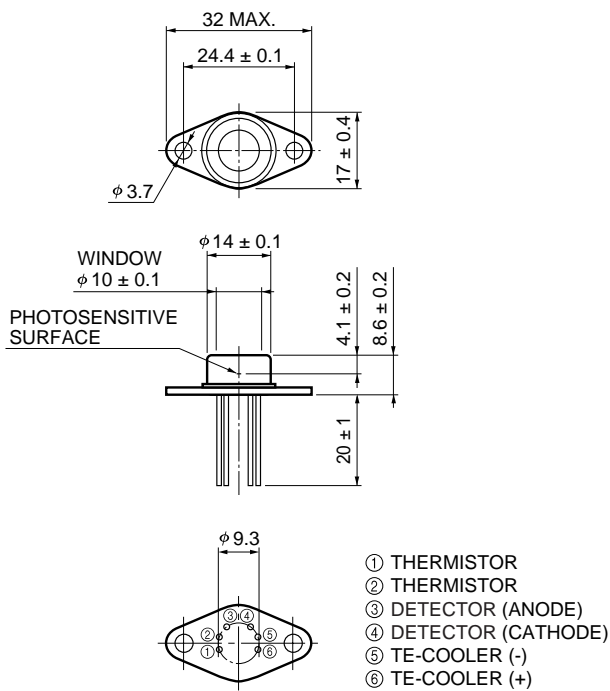
■ Dimensional outlines (unit: mm)

S2592 series



KSPDA0133EA

S3477 series



KSPDA0134EC

Temperature controller for TE-cooled detector

C1103-04



By adjusting the current flowing through the thermoelectric cooler in a one-stage or two-stage thermoelectrically cooled detector, C1103-04 maintains the detector element at a constant temperature. The cooling temperature can be easily set by using the control knob on the front panel.

■ Accessories

Instruction manual

4-conductor cable (with a connector)

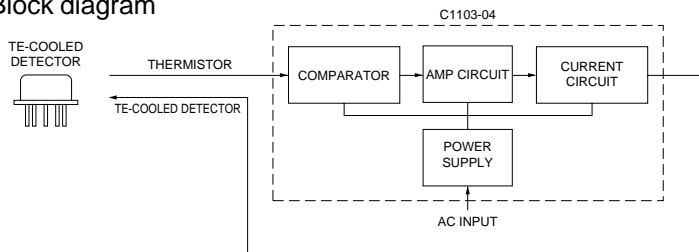
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■ Specifications (common)

Setting element temperature	-30 to +20 °C
Applicable detectors	One-stage or two-stage thermoelectrically cooled detectors
Temperature stability	Within ± 0.1 °C
Temperature control output current	1.2 A Max.
Power supply	100 V \pm 10 % · 50/60 Hz *
Power consumption	30 VA
Dimensions and weight	108 (W) \times 87 (H) \times 190 (D) mm/1.9 kg approx.
Operating temperature	+10 to +40 °C
Operating humidity	Equal to or less than 90 %
Storage temperature	+10 to +40 °C

* Power requirement (AC line voltage) can be selected from among 100 V, 115 V and 230 V at the factory prior to shipping.

■ Block diagram



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KOTH0005EA



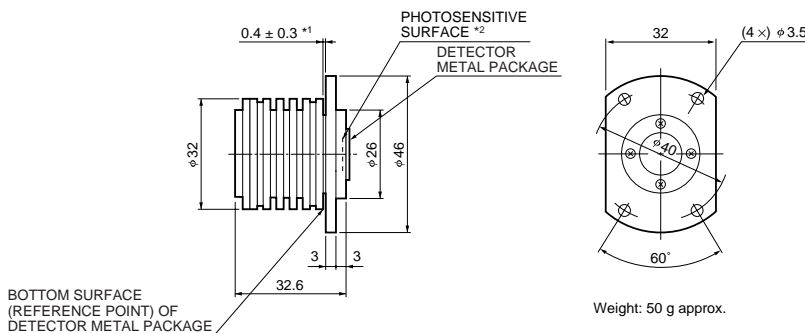
C1103-04 conforms to European EMC directives (89/336/EEC) and LVD (73/23/EEC).

Heatsink for TE-cooled detector (TO-8 package)

A3179

A3179 series heatsinks are designed for thermoelectrically cooled detectors having a 6-pin TO-8 package. Heat dissipation capacity for A3179 is about 35 °C versus the ambient temperature 25 °C.

■ Dimensional outlines (unit: mm)



Weight: 50 g approx.

*1: When detector element is installed.
*2: The position of the photosensitive surface differs according to the detector element used.
Refer to the dimensional outline for the detector.

KIRDA0018EB

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