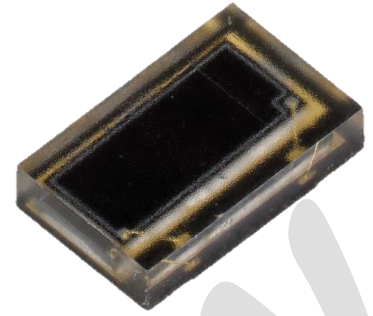


SA3220P03CV00 Datasheet



Broadband Silicon PIN Photodiode



Applications

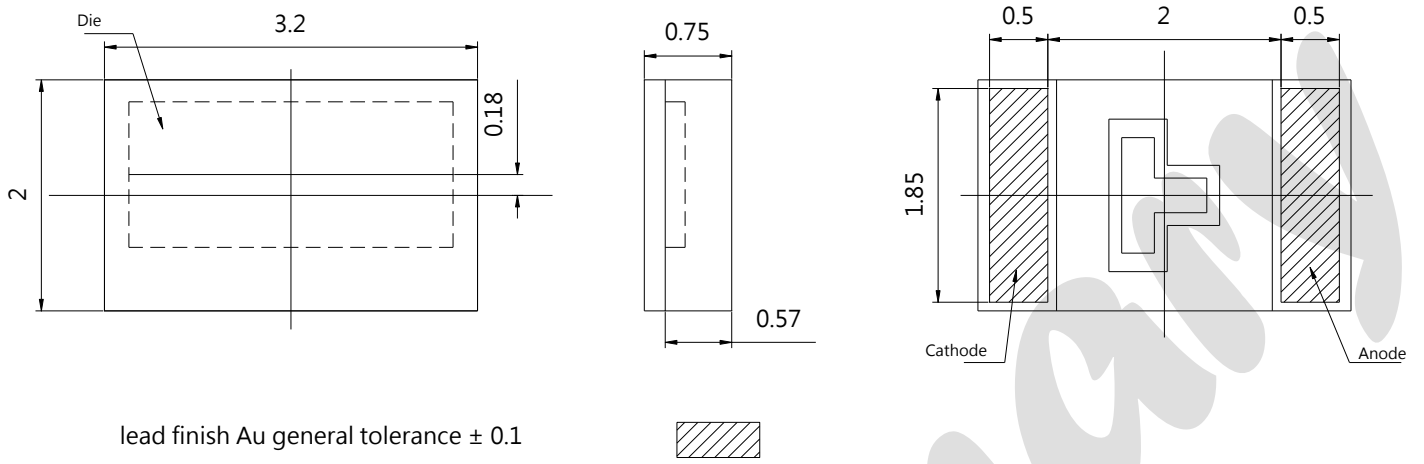
- Health Monitoring (Heart Rate Monitoring, Pulse Oximetry)

Features

- Package: clear epoxy
- ESD: 2KV acc. to ANSI/ESDA/JEDEC JS-001 (HBM)
- Suitable for reflow soldering
- Especially suitable for applications from 400 nm to 1100 nm
- Small package (L x W x H) : 3.2 mm x 2.0 mm x 0.75 mm (W x D x H)

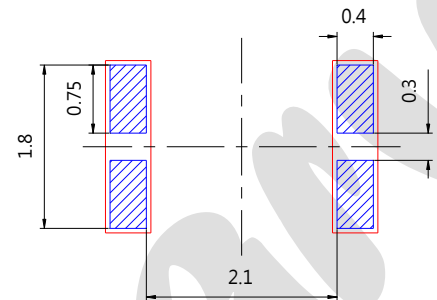
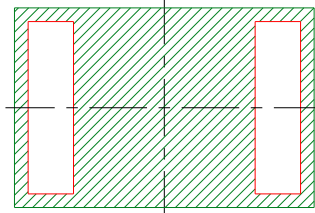
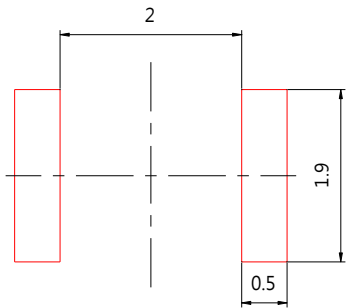
SA3220P03CV00

Dimensional Drawing



1. Dimensions are in millimeters.
2. General tolerance is ± 0.1 mm.

Recommended Solder Pad

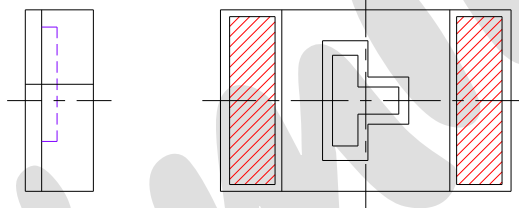
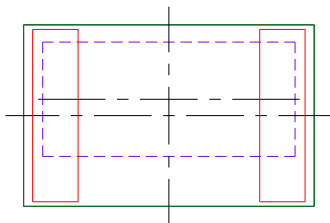


□ foot print

□ solder resist

□ solder stencil recommended
stencil thickness 120 um

Component Location on Pad



SA3220P03CV00

Maximum Ratings

T_A : 25 °C

Parameter	Symbol	Values
Operating temperature	T _{op}	Min. -40 °C
		Max. 85 °C
Storage temperature	T _{stg}	Min. -40 °C
		Max. 85 °C
Reverse voltage	V _R	Max. 16 V
ESD withstand voltage acc. to ANSI/ESDA/JEDC JS-001 (HBM)	V _{ESD}	Max. 2 kV

Characteristics

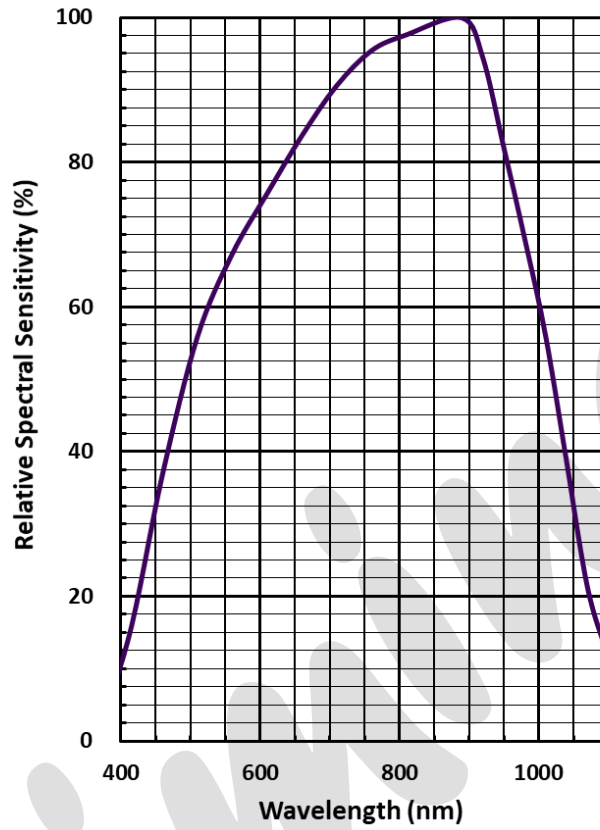
T_A : 25 °C

Parameter	Symbol		Values
Wavelength of max sensitivity	$\lambda_{S \max}$	Typ.	890 nm
Spectral range of sensitivity	$\lambda_{10\%}$	Typ.	400 ... 1100 nm
Photocurrent E _e = 0.1 mW/cm ² ; λ = 530 nm; V _R = 5 V	I _P	Typ.	1.1 μ A
Photocurrent E _e = 1 mW/cm ² ; λ = 530 nm; V _R = 5 V	I _P	Typ.	11.18 μ A
Photocurrent E _e = 0.1 mW/cm ² ; λ = 660 nm; V _R = 5 V	I _P	Typ.	1.6 μ A
Photocurrent E _e = 1 mW/cm ² ; λ = 660 nm; V _R = 5 V	I _P	Typ.	15.82 μ A
Photocurrent E _e = 0.1 mW/cm ² ; λ = 940 nm; V _R = 5 V	I _P	Typ.	1.8 μ A
Photocurrent E _e = 1 mW/cm ² ; λ = 940 nm; V _R = 5 V	I _P	Typ.	19.36 μ A
Radiant sensitive area	A	Typ.	2.81 mm ²
Dimensions of chip area	L x W	Typ.	2.75 x 1.23 mm x mm
Half angle	φ	Typ.	60°
Dark current V _R = 5 V	I _R	Typ. Max.	0.3 nA 5 nA
Rise time V _R = 5 V; R _L = 50 Ω ; λ = 530 nm	t _r	Typ.	0.063 μ s
Rise time V _R = 5 V; R _L = 50 Ω ; λ = 940 nm	t _r	Typ.	3.6 μ s
Fall time V _R = 5 V; R _L = 50 Ω ; λ = 530 nm	t _f	Typ.	0.07 μ s
Fall time V _R = 5 V; R _L = 50 Ω ; λ = 940 nm	t _f	Typ.	3.5 μ s
Forward voltage I _F = 10 mA; E = 0	V _F	Typ.	2.91 V
Capacitance V _R = 5 V; f = 1 MHz; E = 0	C	Typ.	15.7 pF

SA3220P03CV00

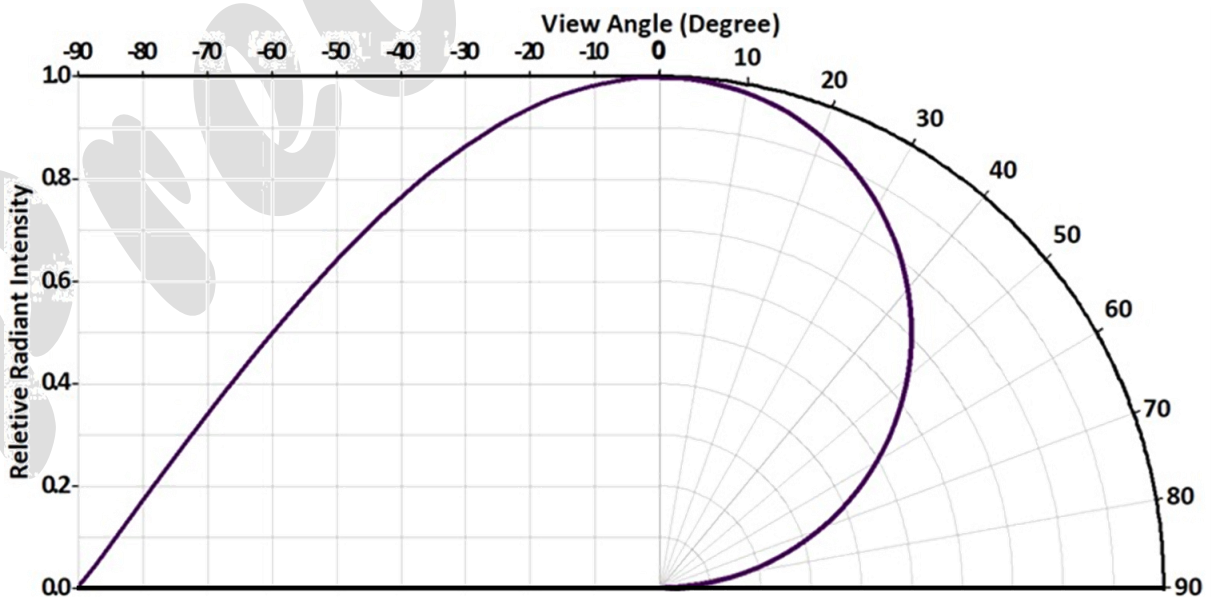
Relative Spectral Sensitivity

$$S_{rel} = f(\lambda)$$



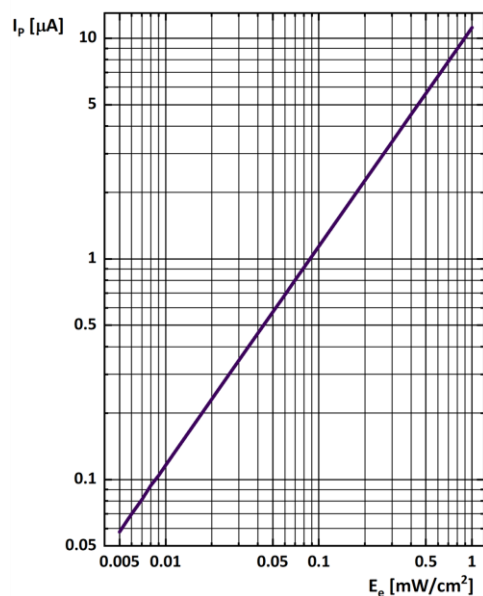
Directional Characteristics

$$S_{rel} = f(\lambda)$$



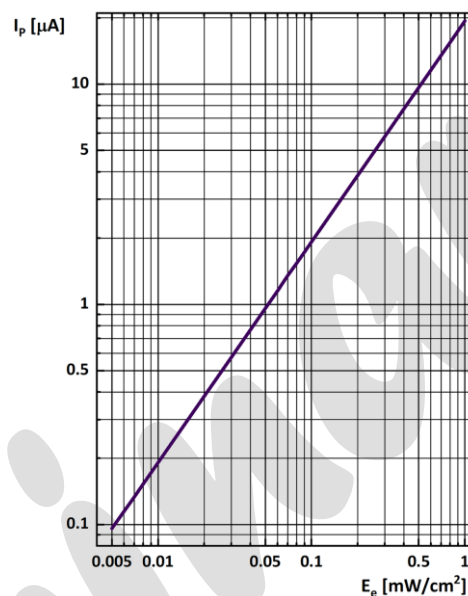
Photocurrent

$$I_p = f(E_e); \lambda = 530 \text{ nm}; V_R = 5 \text{ V}$$



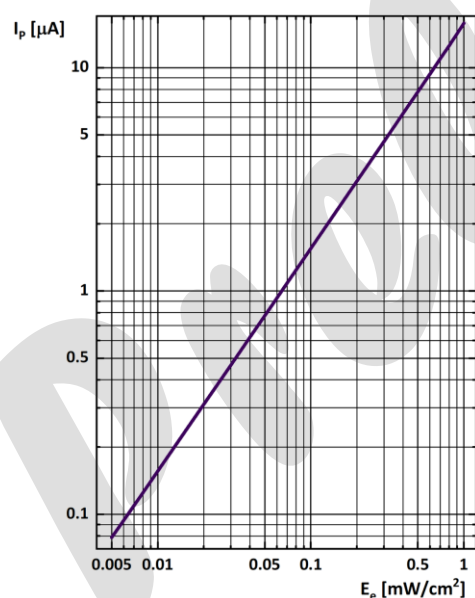
Photocurrent

$$I_p = f(E_e); \lambda = 940 \text{ nm}; V_R = 5 \text{ V}$$



Photocurrent

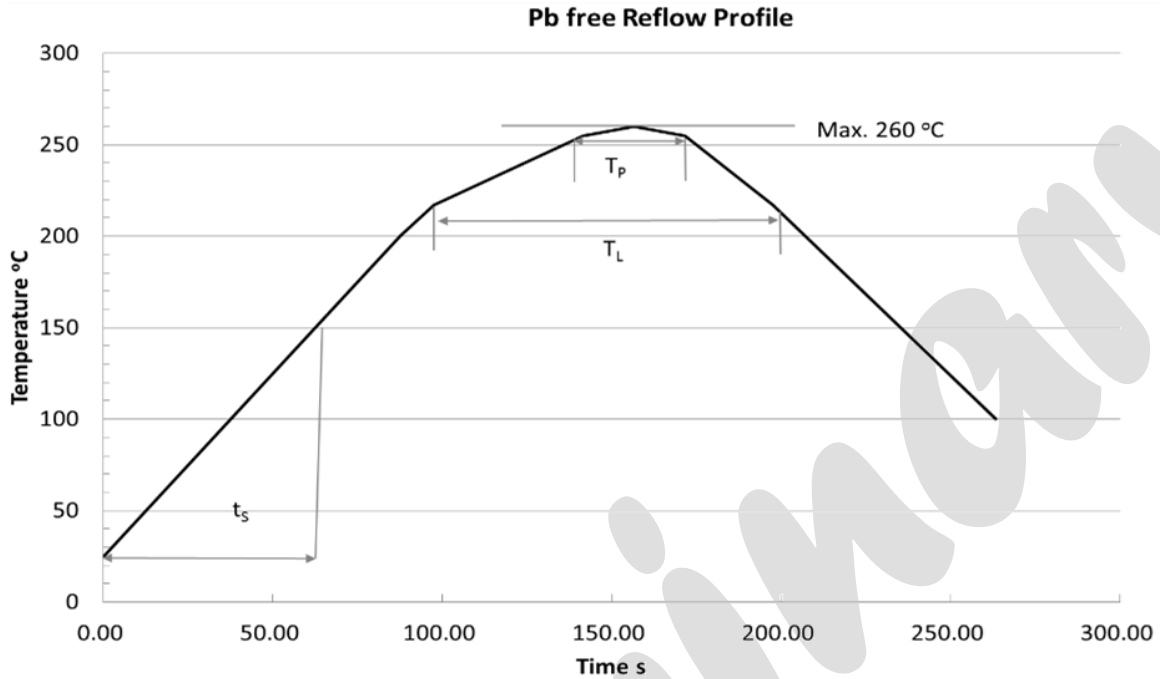
$$I_p = f(E_e); \lambda = 660 \text{ nm}; V_R = 5 \text{ V}$$



SA3220P03CV00

Reflow Soldering Profile

Product complies to MSL Level 3 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat 25 °C to 150 °C			2	3	K/s
Time t_s T_{Smin} to T_{Smax}	t_s	60	100	120	s
Ramp-up rate to peak T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	t_L		80	100	s
Peak temperature	T_P		245	260	°C
Time within 5 °C of the specified peak temperature T_P - 5 K	T_P	10	20	30	s
Ramp-down Rate T_P to 100 °C			3	4	K/s
Time 25 °C to T_P				480	s

1. Do not stress the silicone resin while it is exposed to high temperature.
2. The reflow process should not exceed 2 times.

Disclaimer

1. Brightek reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets Brightek published specification for a period of one year from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. Brightek assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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