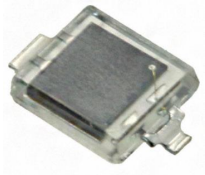
Silicon PIN Photodiode

PD700C

Features



High sensitivity

Low capacitance

Short switching time

Wide temperature range

Small package

Pb free

The product itself will remain within RoHS compliant version.

Compliance with EU REACH.

Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).

Application

High speed photo detector

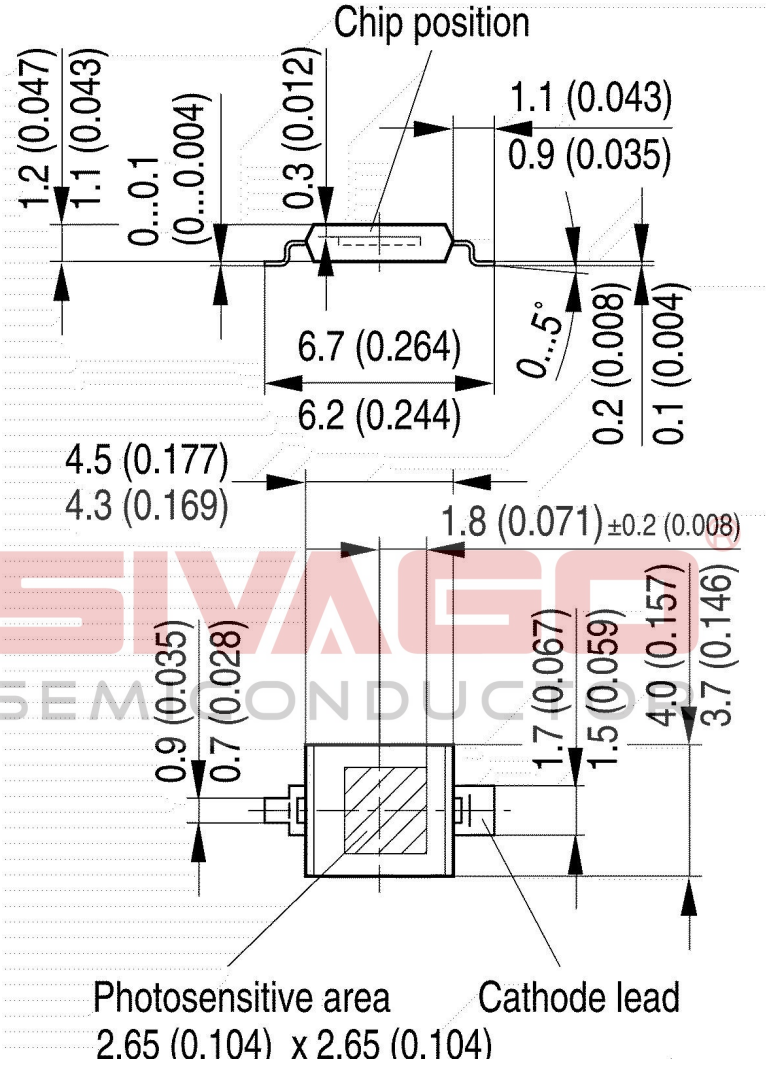
Copier

Elevator

Description

The PD700C is high sensitivity, fast switching times, low capacitance, compact size,and lack of measurable degradation make it suitable for diverse applications, such as TV and appliance

PACKAGE DIMENSIONS



NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25mm(.010") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.

Maximum Ratings

T_A = 25 °C

Parameter	Symbol		Values
Operating Temperature	T_{op}	min.	-40 °C
		max.	100 °C
Storage temperature	T_{stg}	min.	-40 °C
		max.	100 °C
Reverse voltage	V_R	max.	32 V
Total power dissipation	P_{tot}	max.	150 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}	max.	2 kV

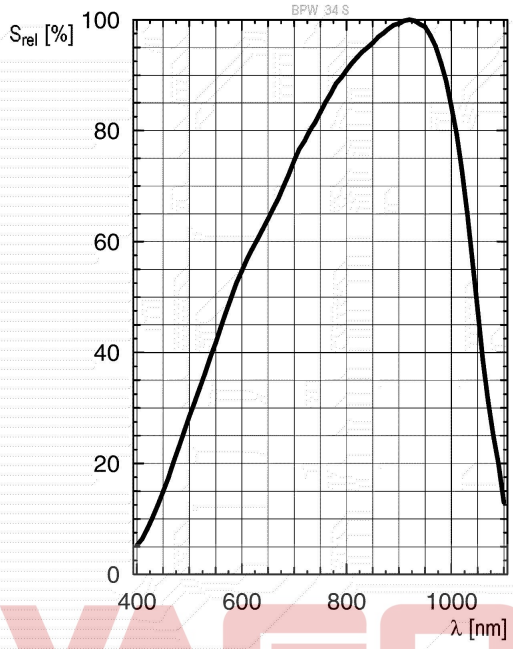
Characteristics

T_A = 25 °C

Parameter	Symbol		Values
Wavelength of max sensitivity	$\lambda_{S\,max}$	typ.	920 nm
Spectral range of sensitivity	$\lambda_{10\%}$	typ.	420 ... 1120 nm
Radiant sensitive area	A	typ.	7.02 mm²
Dimensions of active chip area	L x W	typ.	2.65 x 2.65 mm x mm
Half angle	φ	typ.	60 °
Dark current V_R = 10 V	I_R	typ. max.	2 nA 30 nA
Spectral sensitivity of the chip λ = 850 nm	S_λ	typ.	0.62 A / W
Quantum yield of the chip λ = 850 nm	η	typ.	0.90 Electrons / Photon
Open-circuit voltage E_v = 1000 lx; Std. Light A; V_R = 0 V	V_O	min. typ.	300 mV 365 mV
Short-circuit current E_v = 1000 lx; Std. Light A; V_R = 0 V	I_{SC}	typ.	80 µA
Rise time V_R = 5 V; R_L = 50 Ω; λ = 850 nm	t_r	typ.	0.02 µs
Fall time V_R = 5 V; R_L = 50 Ω; λ = 850 nm	t_f	typ.	0.02 µs
Forward voltage I_F = 100 mA; E = 0	V_F	typ.	1.3 V
Capacitance V_R = 0 V; f = 1 MHz; E = 0	C_0	typ.	72 pF
Temperature coefficient of voltage	TC_V	typ.	-2.6 mV / K
Temperature coefficient of short-circuit current Std. Light A	TC_I	typ.	0.18 % / K
Noise equivalent power V_R = 10 V; λ = 850 nm	NEP	typ.	0.041 pW / $Hz^{1/2}$
Detection limit V_R = 10 V; λ = 850 nm	D*	typ.	6.5e12 cm x $Hz^{1/2}$ / W

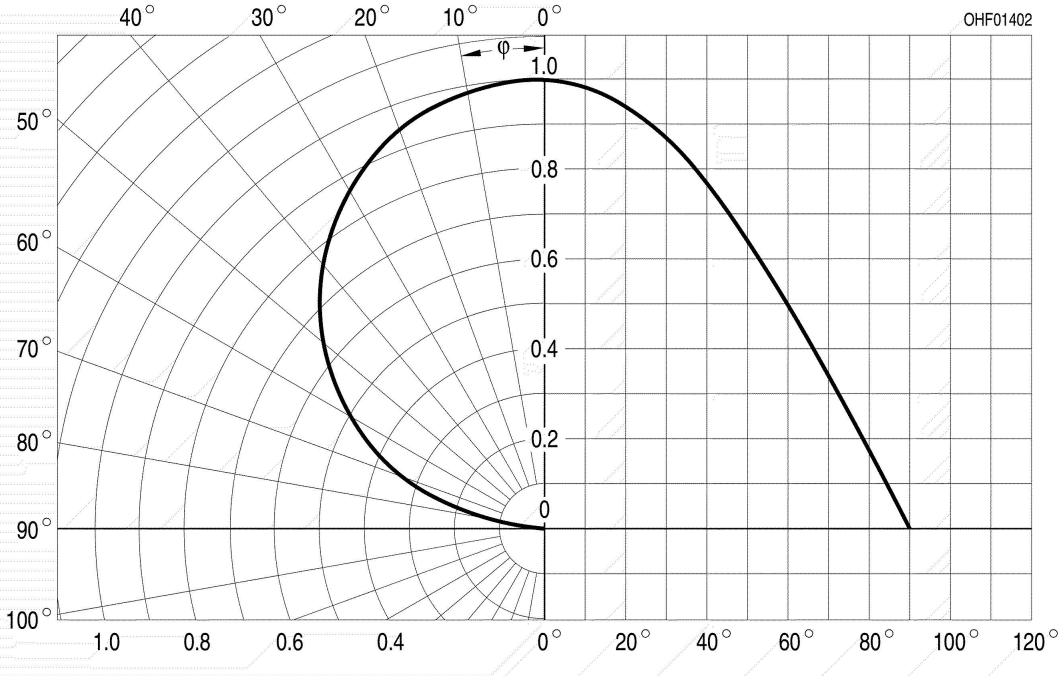
Relative Spectral Sensitivity 2), 3)

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



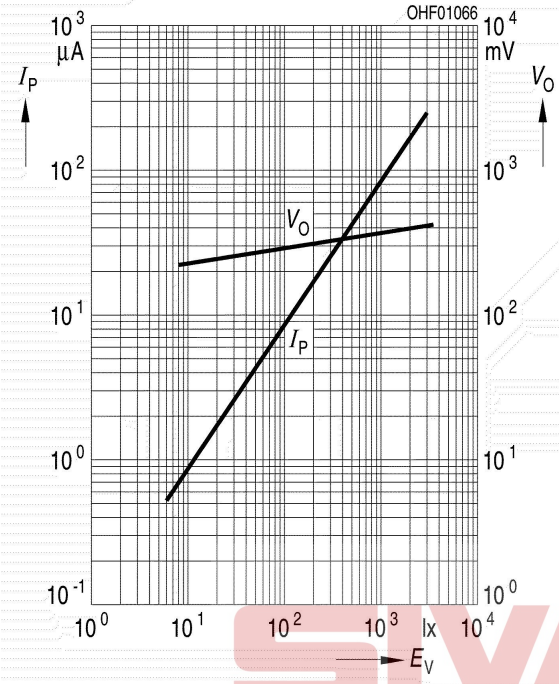
Directional Characteristics 2), 3)

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



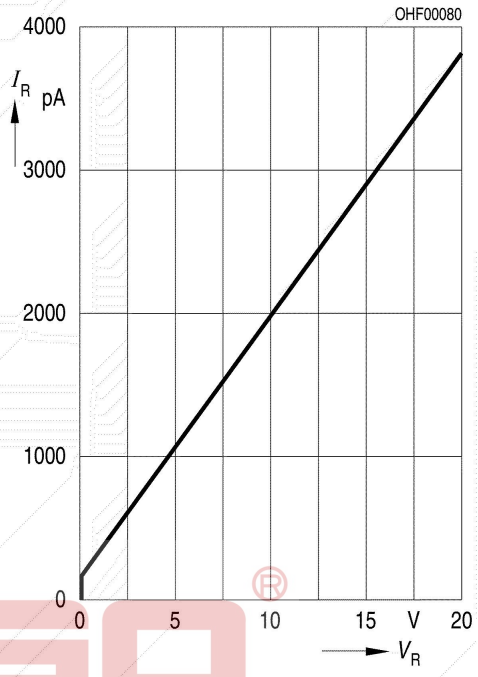
Photocurrent/Open-Circuit Voltage 2), 3)

I_P (V_R = 5 V) / V_O = f (E_v)



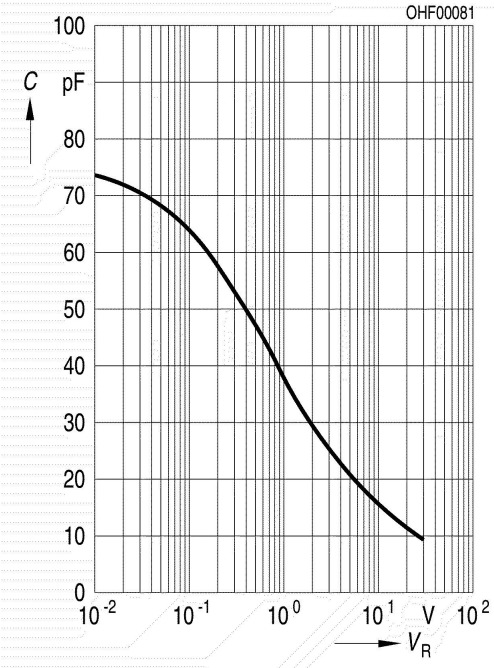
Dark Current 2), 3)

I_R = f (V_R); E = 0



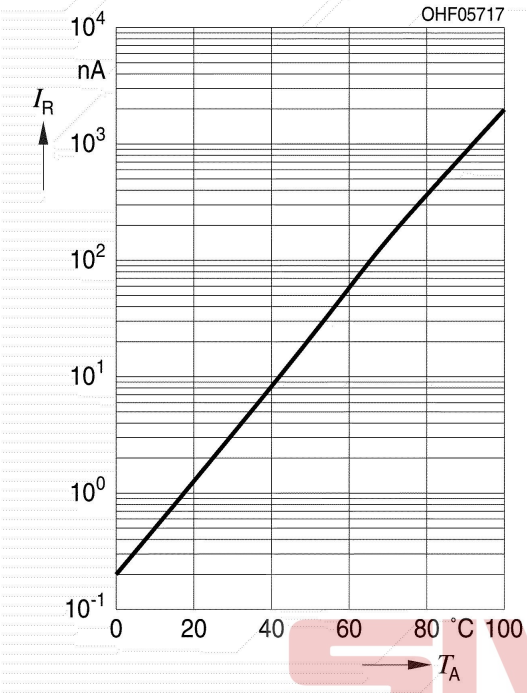
Capacitance 2), 3)

C = f (V_R); f = 1MHz; E = 0; T_A = 25°C



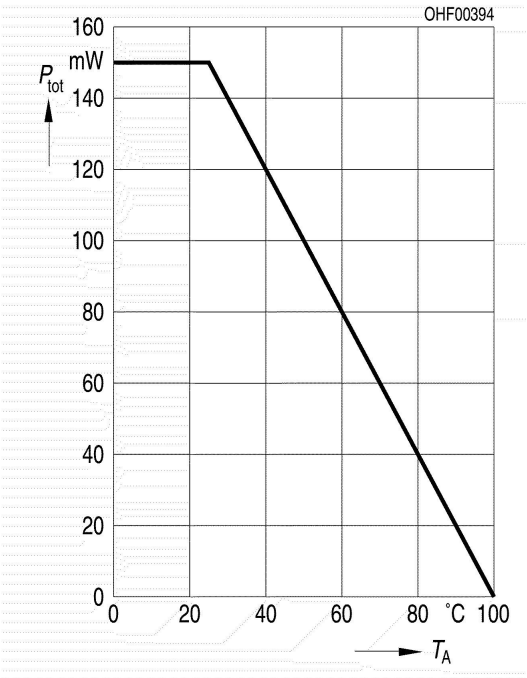
Dark Current 2)

$I_R = f(T_A)$; E = 0; V_R = 10 V

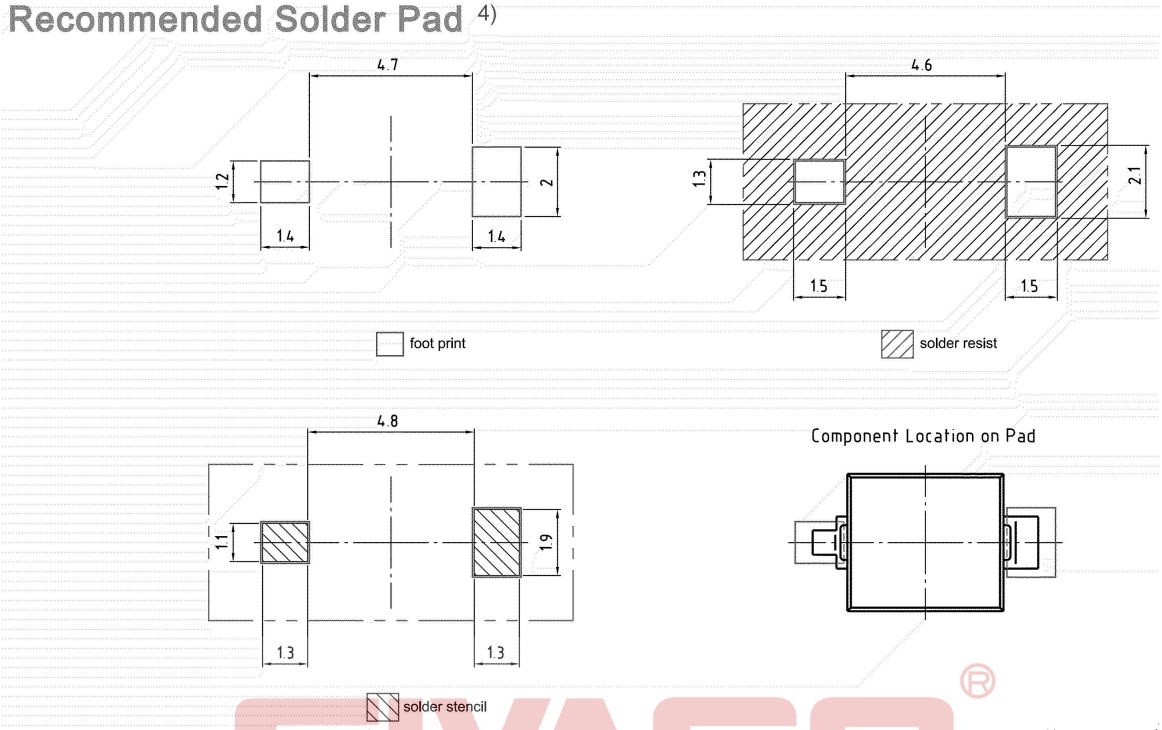


Power Consumption

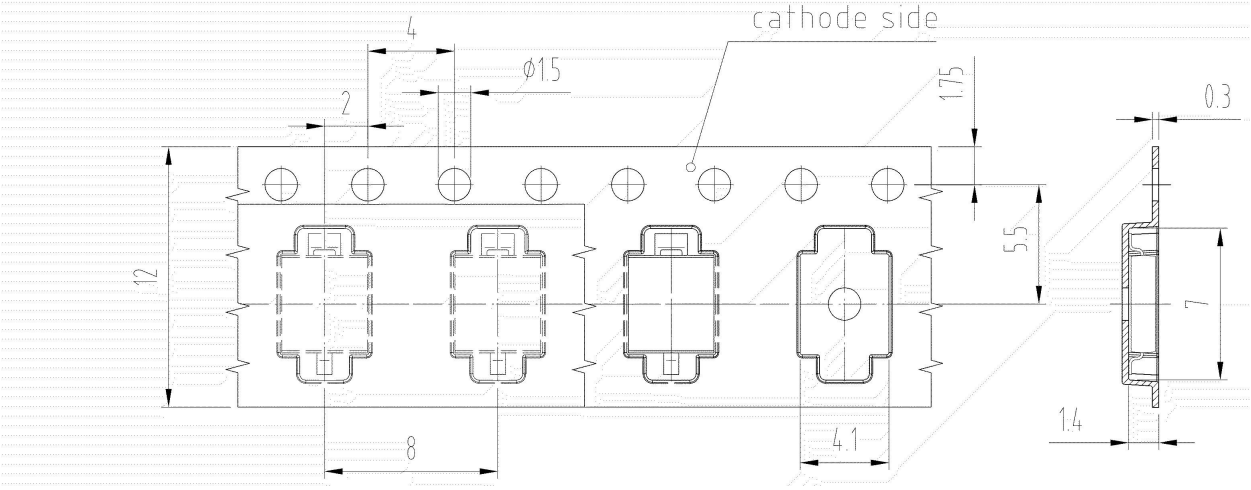
$P_{tot} = f(T_A)$



Recommended Solder Pad 4)



Taping 4)



Packing Quantity Specification

1. 1500Pcs/1Bag, 10 Bag/1Box

2. 4Boxes/1Carton

Label Form Specification

- PRODUCT: Part Number
- CODE NO.: Product Serial Number
- QTY: Packing Quantity
- LOT No: Lot Number
- REMARKS:Remarks

Notes

Lead Forming

1.During lead frame bending, the lead frame should be bent at a distance more than 3mm from bottom of the epoxy.

Note: Must fix lead frame and do not touch epoxy before bending to avoid Photodiode broken.

2.Lead forming should be done before soldering.

3.Avoid stressing the Photodiode package during leads forming. The stress to the base may damage the Photodiode's characteristics or it may break the Photodiode.

4.Cut the Photodiode lead frame at room temperature. Cutting the lead frame at high temperatures may cause failure of the Photodiode.

5.When mounting the Photodiode onto a PCB, the PCB holes must be aligned exactly with the lead position of the Photodiode. If the Photodiode are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the Photodiode.

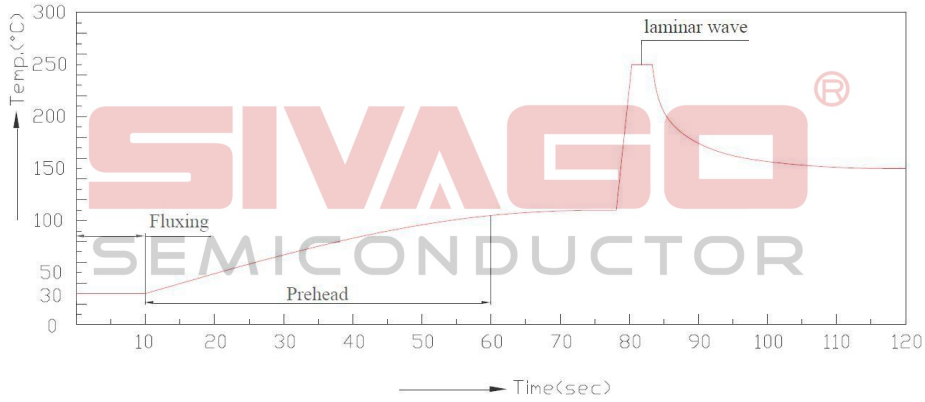
Soldering

1. Careful attention should be paid during soldering. When soldering, leave more than 3mm from solder joint to epoxy bulb, and soldering beyond the base of the tie bar is recommended.

2. Recommended soldering conditions:

Hand Soldering		DIP Soldering	
Temp. at tip of iron	300°C Max. (30W Max.)	Preheat temp.	100°C Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp. & time	260 Max., 5 sec Max
Distance	3mm Min.(From solder joint to epoxy bulb)	Distance	3mm Min. (From solder joint to epoxy bulb)

3. Recommended soldering profile



4.Avoiding applying any stress to the lead frame while the Photodiode are at high temperature particularly when soldering.

5.Dip and hand soldering should not be done more than one time

6.After soldering the Photodiode, the epoxy bulb should be protected from mechanical shock or vibration until the Photodiode return to room temperature.

7.A rapid-rate process is not recommended for cooling the Photodiode down from the peak temperature.

8.Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the Photodiode.

9.Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

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