Si Pigtailed Photodiodes



Overview

The device is a compound Si-PIN structure. To reach high response, back side hole etching process is used for thinner I layer, when carrier go through the floating area, optical current will appear .Slow optical carrieIP are shorted for fast response purpose.We has our Patented package Desgin-“Bullet” design adopts Two optimized chips special for different wavelength.
One we called Circle Chip and the other is square Chip.
Circle chip has the peak response wavelength near 950nm.It has good response to the wavelength near 1060nm.
Square Chip has the peak response wavelength near 900nm.It has good response to the wavelength @450nm~650nm Devices can be pigtailed with any size optical fiber that is compatible with its active area size. Pigtails range in core size from 3um to 100 micron. One meter is the standard length, but any length or connector termination may be specified. Pigtails may be terminated with ST, FC, SC and LC connectors with either PC or APC polish.

Features

- Large Sensitive Area
- Low Dark Current
- High Responsivity
- High Reliability

E/O Characteristics

Tsub=25°C, CW bias unless stated otherwise

Circle chip

Parameters	Sym.	Test conditions	Min	Typ		Max		Unit
Response Spectrum	λ	-	400~1100					nm
Circle Active diameter	φ	-	0.2	0.5	1.0	2.0	4.0	mm

Reponsivity	Re	λ=1060nm,VR=40V	0.2	0.2	0.2	0.23	0.23	A/W
Response time	Tr	RL=50Ω,VR=40V,	2.0	5.0	6.0	8.0	12.0	ns
Reverse breakdown voltage	VBR	I R =10μA	80	100	80	100	100	V
Dark current	ID	V R =40V	1	5	8	10	40	nA
Capacitance	C	F=1MHZ,V R =40V	0.5	0.8	2.0	5.0	12	PF
Operating Voltage	VR	-	40					V

Note: Saturated optic power ≤0.3w/cm2

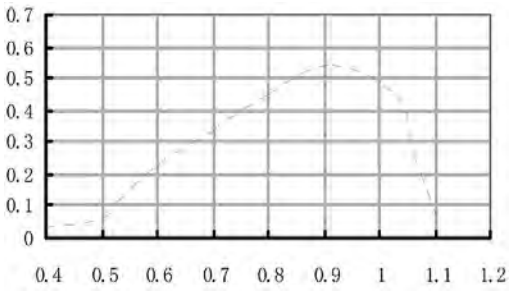
Square chip

Parameters	Sym.	Test conditions	Min		Typ	Max		Unit
Response Spectrum	λ	-	400~1100					nm
Circle Active diameter	φ	-	1x1	4x4	1.3x1.3	2x2	3x3	mm
Reponsivity	Re	λ=635nm,VR=10V	0.38					A/W
Response time	Tr	RL=50Ω,VR=10V,	25	100	45	50	50	ns
Reverse breakdown voltage	VBR	I R =10μA	50					V
Dark current	ID	V R =10V	3	15	3	5	7	nA
Capacitance	C	F=1MHZ,V R =10V	15	350	50	300	500	PF
Operating Voltage	VR	-	10					V

Note: Saturated optic power ≤0.3w/cm2

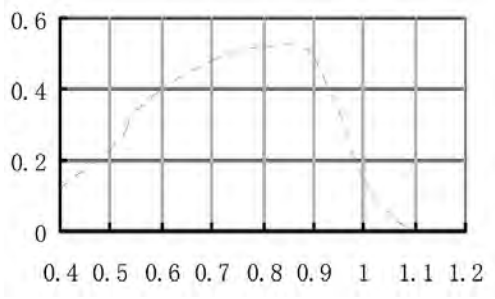
Typical characteristical curve

Responsivity, R (A/W)



Circle chip Wavelength, λ (nm)

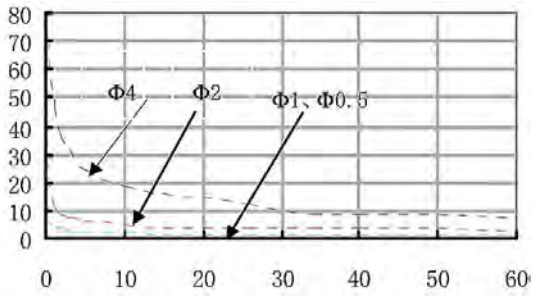
Responsivity, R (A/W)



Square chip Wavelength, λ (nm)

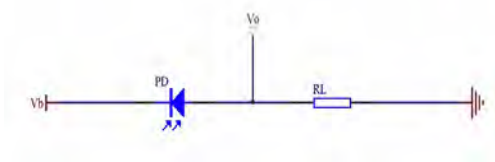
Capacitance vs voltage Curve

capacitance

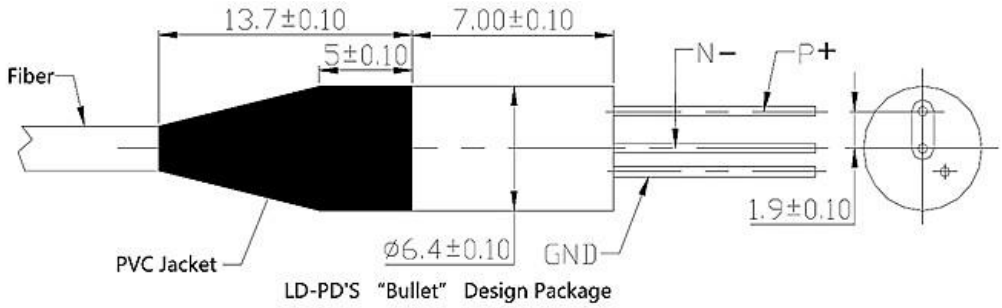


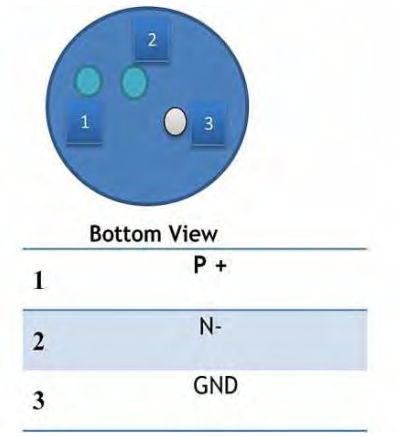
Voltage（V）

Application electric circuit



Dimensions and Pin definitions





SMF-28E Fiber Nominal Characteristics and Tolerances

Parameters	Specification
Cut off wavelength	920nm
Max Attenuation	2.1dB/km
Cladding Diameter	125um
Coating Diameter	250um
Core Cladding Concentricity	≤0.5um
Mode Field diameter	9.5um

Absolute maximum ratings

Item	Symbol	Unit	Min	Typ	Max	Testing Condition
Case Temperature	TOP	℃	-5	25	70	
Forward Voltage	VR	V	5	10	15	
Axial Pull Force		N	-	-	5N	3x10s
Side Pull Force		N	-	-	2.5N	3x10s
Fiber Bend Radius			16mm			-
Reverse Voltage(PD)	VPD	V	-	-	10	C=100pF,R=1.5KΩ，HBM
PD electrostatic Discharge	VESD-PD	V		-	500	
PD Forward Current	IPF	mA		-	10	
Lead Soldering time		S		-	10s	260℃
Store Temperature	TSTG	℃	-40	-	+85	2000hr
Operating Temperature	TOP	℃	-55	-	+125	
Relative Humidity	RH		5%	-	95%	Noncondensing

Application

- Distance measurement
- 0.4-1.1μm Transient Process
- Fast Physical and Chemical Process Optical detection
- Light Detection, YAG Pulse Power measurement,
- Fiber Optical Communication Detection

Ordering Info

PL-□□□□-☆-AR▽-XX-TO

□□□□：Cut off Wavelength

0400:400nm

0900:900nm

1700:1700nm

2100:2100nm

2400:2400nm

2700:2700nm

☆ ：Material

IG：InGaAs

Si：Si

▽：Active Area

1：1mm

2：2mm

1X1: 1x1mm

2X2: 2X2mm

XX: Package/Fiber and Connector Type

TO:TO46 Package

FSA=SMF-28E Fiber coupled+ FC/APC

FSP=SMF-28E Fiber coupled + FC/PC

FPP=PM Fiber Fiber coupled + FC/PC

FPA=PM Fiber Fiber coupled + FC/APC

User Safety

Safety and Operating Considerations

This device operates under reverse bias voltage, and the polarity of the device can't be reversed.

Operating the Photodiode outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with this component cannot exceed maximum peak optical power.

ESD PROTECTION—Electrostatic discharge (ESD) is the primary cause of unexpected laser diode failure. Take extreme precaution to prevent ESD. Use wrist straps, grounded work surfaces, and rigorous antistatic techniques when handling Photodiodes.