

Sumitomo Electric Industries, Ltd.

Part No.: SPV3200 Series

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Technical Specification
of
Long Wavelength PIN Photodiode Module
for Wide Frequency-range CATV Receiver

SPV3200 Series

RoHS Compliant



1. General

SPV3200 Series are InGaAs/InP PIN photodiode modules designed for fiber optic CATV receiver and other high-speed analog receiver. These modules have low inter-modulation distortion and high responsivity at 1310nm and 1550nm, and are ideally suitable for wide frequency range receiver up to 1GHz.

A photodiode is mounted into a low capacitance coaxial package integrated with a single mode fiber pigtail.

2. Package dimension and pin assignment

(See attached appendix.)

3. Absolute maximum ratings

Parameter	Symbol	Ratings	Unit
Storage temperature	Tstg	-40~+85	°C
Operating case temperature	Top	-40~+85	°C
Reverse voltage	Vr	15	V
Reverse current	Ir	5	mA
Forward current	If	50	mA
Soldering temperature (≤10s)	Stemp	260	°C

4. Electrical and optical characteristics (Vr=12V, Tc=+25°C, unless otherwise noted.)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Responsivity	R	CW, $\lambda=1310\text{nm}$, (*1)	0.8	0.9	—	A/W
		CW, $\lambda=1550\text{nm}$, (*1)	0.8	0.9	—	
Bandwidth	fc	$\lambda=1310\text{nm}$, 3dB down, RL=50 Ω	2.5	—	—	GHz
		$\lambda=1550\text{nm}$, 3dB down, RL=50 Ω	2.5	—	—	
Second order inter-modulation distortion	IMD2	$\lambda=1310\text{nm}$, (*2)	—	—	-70	dBc
		$\lambda=1550\text{nm}$, (*2)	—	—	-70	
Third order inter-modulation distortion	IMD3	$\lambda=1310\text{nm}$, (*2)	—	—	-80	dBc
		$\lambda=1550\text{nm}$, (*2)	—	—	-80	
Dark current	Id	Vr=5V	—	—	1	nA
		Vr=5V, Tc=85°C	—	—	100	
Total capacitance	Cp	Vr=5V, f=1MHz, (*3)	—	0.6	0.8	pF
Polarisation dependency	Psr	CW, $\lambda=1310\text{nm}$	-0.1	—	+0.1	dB
		CW, $\lambda=1550\text{nm}$	-0.1	—	+0.1	
Optical return loss	ORL	$\lambda=1310\text{nm}$	—	—	-40	dB
		$\lambda=1550\text{nm}$	—	—	-40	
Active diameter	ϕ	—	—	60	—	μm

Note: *1. Measured with the standard equipment of SEI.

- *2. Two tone two laser test (373.25MHz, 451.25MHz), OMI=40%, 0.5mW per laser,
Load impedance for PIN diode=230 Ω (insert 180 Ω in front of 50 Ω -transmission line)
IMD2: 373.25MHz+451.25MHz
IMD3: 2x451.25MHz-373.25MHz

*3. Measured at anode-cathode, case open and not grounded.

5. Fiber pigtail specification

Parameter	Min.	Typ.	Max.	Unit
Type	Single Mode			—
Mode field diameter@1310nm	8.5	9.5	10.5	μm
Cladding diameter	122	125	128	μm
Outer jacket diameter	0.8	0.9	1.0	mm
Bending radius	30	—	—	mm

6. Ordering information

Part number	Pin assignment	Connector type	Flange type (hole pitch)	Old Part number	RoHS compliance of old part number
SPV3203-CN/RH1	Type A	SC/PC	Flangeless	SPV3203-CN	Not Compliant (*5)
SPV3203-CP/RH1			Vertical (12mm)	SPV3203-CP	
SPV3203-CS/RH1			Horizontal (12.7mm)	SPV3203-CS	
SPV3203-XN		No connector	Flangeless	SPV3203-XN	Compliant
SPV3203-XP			Vertical (12mm)	SPV3203-XP	
SPV3203-XS			Horizontal (12.7mm)	SPV3203-XS	
SPV3205-CN/RH1	Type B	SC/PC	Flangeless	SPV3205-CN	Not Compliant (*5)
SPV3205-CP/RH1			Vertical (12mm)	SPV3205-CP	
SPV3205-CS/RH1			Horizontal (12.7mm)	SPV3205-CS	
SPV3205-XN		No connector	Flangeless	SPV3205-XN	Compliant
SPV3205-XP			Vertical (12mm)	SPV3205-XP	
SPV3205-XS			Horizontal (12.7mm)	SPV3205-XS	

Note:*5. Some products in this category have been already RoHS compliant.

If any query, please contact us with part number and serial number.

7. Precaution

- (1) The modules should be handled in the same manner as ordinary semiconductor devices to prevent the electro-static damages. For safe keeping and carrying, the modules should be packaged with ESD proof material. To assemble the modules on PCB, the workbench, the soldering iron and the human body should be grounded.
- (2) The stress to the fiber pigtail may cause the damage on the performance. The fiber pigtail may snap off by dropping the module.
- (3) Please pay special attention to the atmosphere condition because the dew on the module may cause some electrical damages.
- (4) Under such a strong vibration environment as in automobile, the performance and reliability are not guaranteed.

8. RoHS Compliancy

On January 27, 2003, the European Parliament and the Council of the European Union issued the directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

Member States shall ensure that, from July 1, 2006, new electrical and electronic equipment put on the market does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

Applications listed in the Annex are exempted.

This product is compliant with RoHS 6/6 directive with exemptions "Lead in glass of cathode ray tubes, electronic components and fluorescent tubes" and "Lead as an alloying element in steel containing up to 0.35 % lead by weight, aluminium containing up to 0.4 % lead by weight and as a copper alloy containing up to 4 % lead by weight".

Appendix

Part No.: SPV320 □-□□/□□□

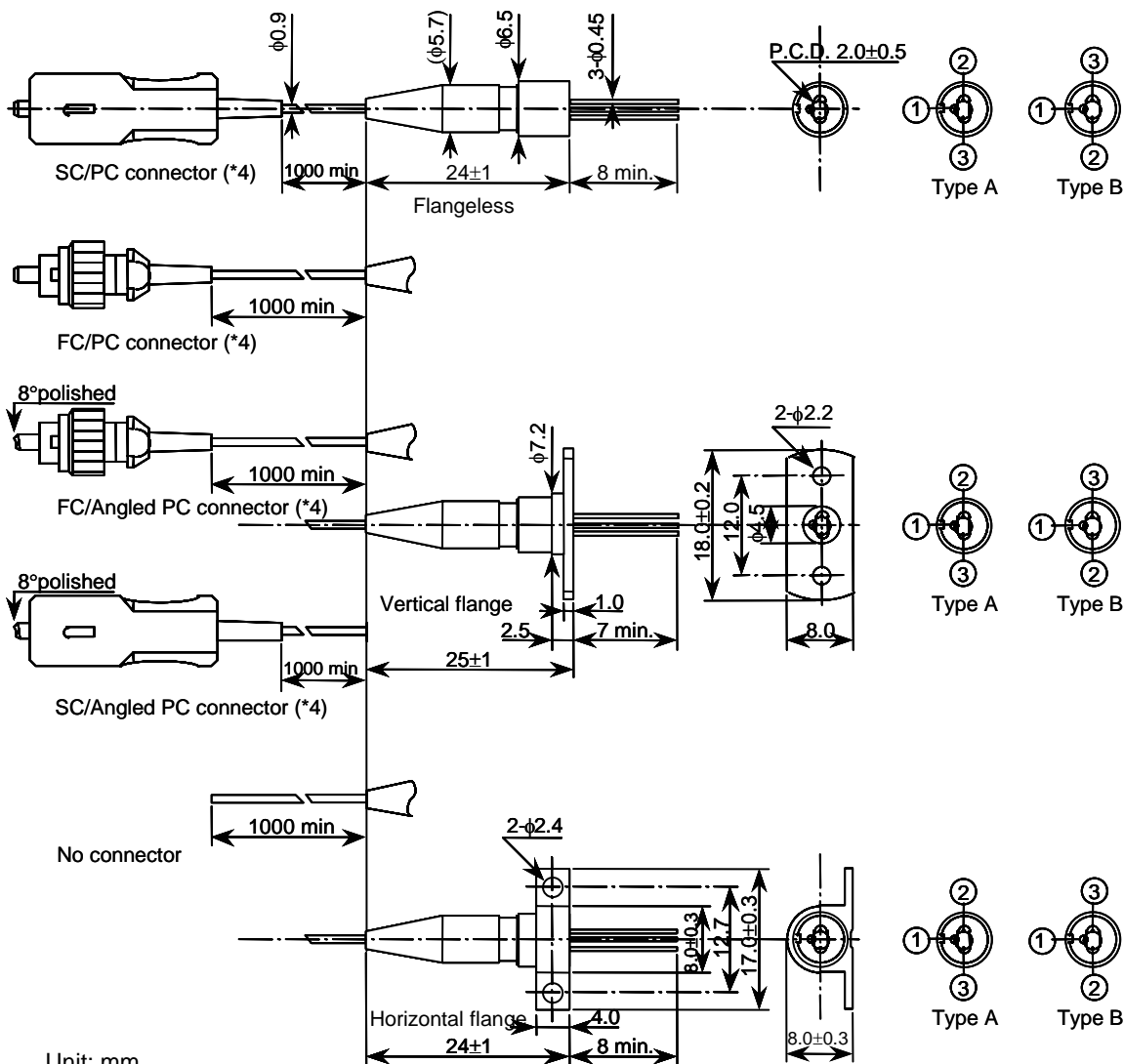
(Customize code)

Code	Connector type	Code	Flange type	Code	Pin assignment	Pin No.	Pin function for typeA and typeB
C	SC/PC	N	Flangeless	3	Type A	1	(CASE)
D	FC/PC	P	Vertical	5	Type B	2	PD cathode
P	FC/Angled PC	S	Horizontal			3	PD anode
Q	SC/Angled PC	X	(Customize)				
X	No connector						

Connector type

Flange type

Pin assignment



Unit: mm

Tolerance: ±0.1mm, unless otherwise noted

Note:*4. IEC and JIS compliant. Detailed design not specified in the IEC and JIS standards is a subject to change without notice.

8. For More Information

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Revision Record

Document No.	Date of issue	Description	Incorporated by	Checked by	Approved by
HUW0424132-01A	Nov./05/04	Preliminary Issue.	Y. Yamasaki	M. Furumai T. Kounosu	M. Yoshimura
HUW0424132-01B	Jun./21/06	Added RoHS compliancy.	H. Kobayashi	Y. Yamasaki	M. Yoshimura
HUW0424132-01C	Aug./07/06	Removed expression "Preliminary".	H. Kobayashi	Y. Yamasaki	M. Yoshimura
HUW0424132-01D	Apr./27/07	Revised general comments.	M. Furumai	H. Kobayashi	T. Nakabayashi
HUW0424132-01E	Mar./03/08	Revised RoHS compliancy description	T. Takagi	H. Kobayashi N. Fukushima	H. Michikoshi