

## High Speed 840–960 nm Photodetector up to 112 Gbit/s

### Product Code:

D30-SWDM-C1 1x1

D30-SWDM-C4 4x1

### Product Description

High-speed 840-960 nm top-illuminated InP-based pin photodetector chip for data rates of up to 112 Gbit/s PAM-4 for application in the next-generation data communication systems. These photodetectors are available as single chip or as 4-channel chip array with a 250 µm pitch, allowing alignment to multi-mode fibers. The chips can be wire bonded.

Active area: 23µm diameter, ~425 µm<sup>2</sup>



#### Features

- Single chip or 4-channel chip array
- Up to 112 Gbit/s PAM4 per channel
- High temperature stability

#### Applications

- SWDM Optical Interconnects
- Active Optical Cables
- Chip-to-Chip Interconnects

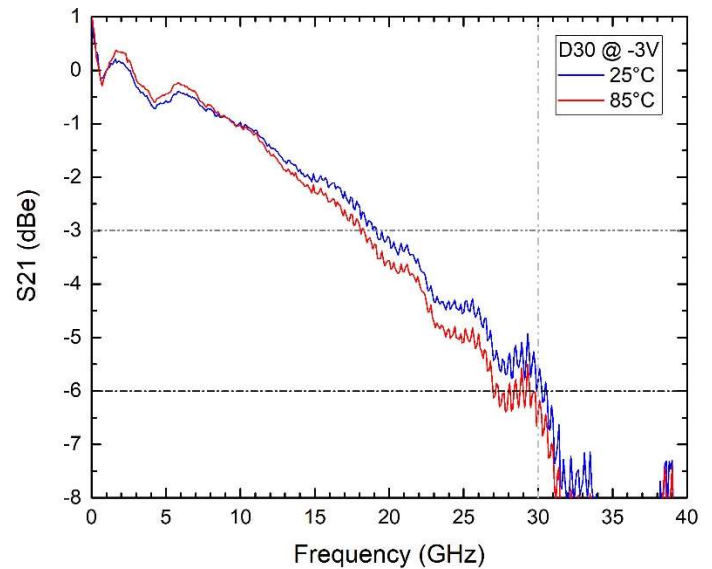
Parameter	Typical	Notes
Operating Wavelength	840 - 960 nm	
Data Rate	up 112 Gbit/s per channel	PAM-4
Responsivity	min 0.5 A/W	at 850 nm
Small signal -3dBo bandwidth	> 30 GHz	typ.

### Electro-Optical Specifications (T = 0 to 85°C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Dark current	$I_d$	$V_{Bias} = -2.5 V$			4	nA
$S_{21}$ 3 dB Bandwidth	$BW_{f_{3dB}}$	-2.5V 50Ω load	30		35	GHz
Operating wavelength	$\lambda$		840		960	nm
Responsivity	R	850 nm	0.50	0.50		A/W
	R	880 nm	0.50	0.52		A/W
	R	910 nm	0.50	0.54		A/W
	R	940 nm	0.50	0.56		A/W
	R	1310 nm*	0.70	0.75		A/W
	R	1550 nm*	0.70	0.75		A/W
Capacitance	C					pF
Series resistance	$R_s$					Ohm

\*anti-reflection coating is optimized for <1% reflectivity within the range 840 nm - 960 nm

### Frequency response graph



*S21 and S11 measurements can be supplied upon request*

### Absolute Maximum Ratings

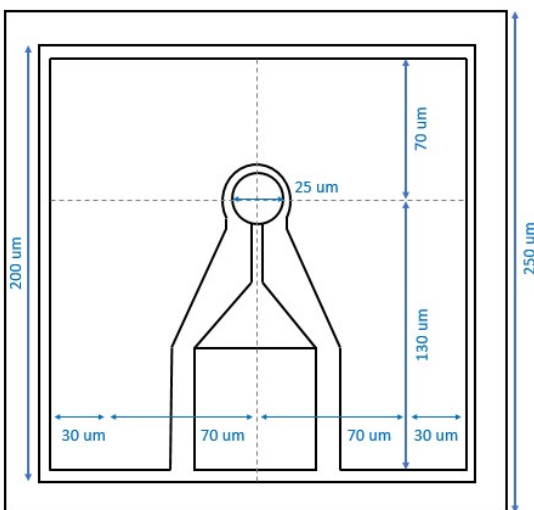
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating temperature	$T_{op}$		0		85	°C
Storage temperature	$T_{st}$		-40		85	°C
Soldering temperature	$T_{sl}$	10 sec			260	°C
Forward current	$I_{FW}$				10	mA
Reverse Voltage	$V_R$				10	V
HBM ESD Threshold	$V_{ESD}$				90	V

Stress in excess of any of the individual Absolute Maximum Ratings can cause immediate irreversible damage to the component even if all other parameters are within the electro-optical specifications. Exposure to any of the Absolute Maximum Ratings for extended periods can adversely affect the reliability of these chips.

### Mechanical Dimensions

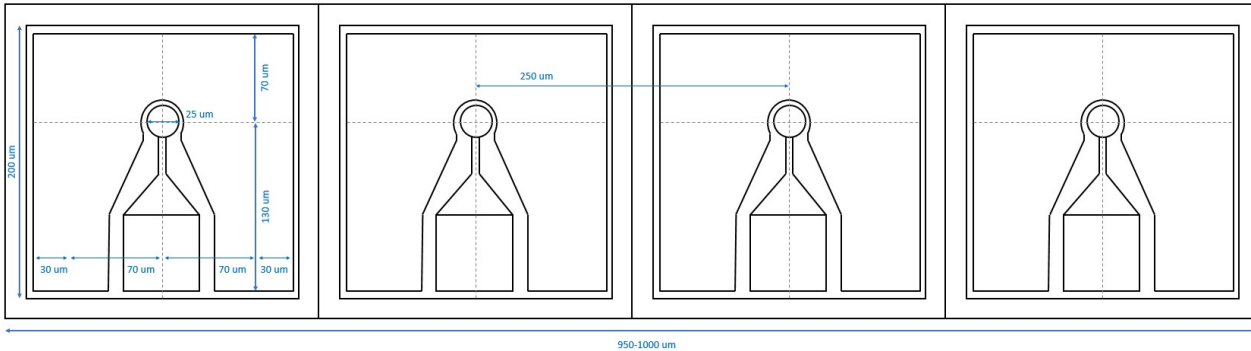
Parameter	Type	Min	Typ	Max	Unit
Length	Dxx-BROAD-C1		250	260	µm
	Dxx-BROAD-C4		1000	1040	µm
Height			150		µm
Width			250	260	

### Dimensions of DXX-SWDM-C1



Contact shape  
Active area: 23µm diameter, ~425 µm<sup>2</sup>

### Dimensions of DXX-SWDM-C4



### Qualification Notification

The DXX-SWDM-Cxx chips have been tested to meet the specifications outlined in this datasheet. A reliability assessment report is available as a separate document upon request.

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