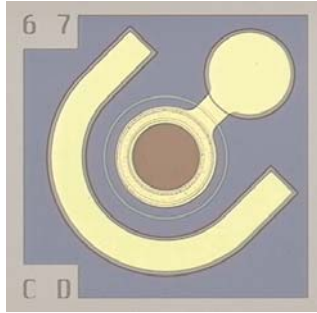


2.5 Gb/s Front-Illuminated APD Chip



Key Features

- Front illuminated device for ease of assembly, with 53 micron diameter active region
- -40 to 85 °C operating temperature range
- -33 dBm typical sensitivity (TIA dependent)
- Better than -6 dBm overload performance (TIA dependent)
- Uses proven, highly reliable JDSU APD designs

Applications

- GPON
- SONET OC-48
- Ethernet

Compliance

- Fully qualified for Telcordia GR-468-CORE
- RoHS compliant

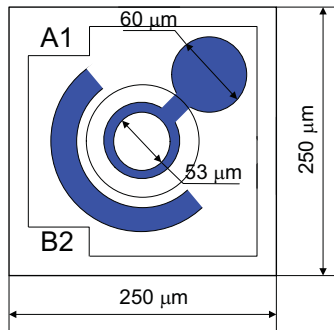
The JDSU 2.5 Gb/s front-illuminated avalanche photodiode (FI-APD) is designed for Gigabit Passive Optical Networks (GPON) that enable data transmissions for fiber-to-the-home (FTTH) offerings. As a result of their internal gain, APDs can significantly enhance receiver sensitivity relative to a standard PI photodiode.

This FI-APD uses JDSU proprietary APD designs known for their superior reliability. The dark current at 95% of breakdown voltage is typically in the sub-nano-amp range. It has an optical window of 53 μm , and a remote metal bond pad of 60 μm . The FI-APD has an operating temperature range from -40 °C to 85 °C, and the sensitivity with a low noise TIA can reach -33 dBm.

All APD chips come from wafers that have JDSU qualified. Qualification includes burn-in and functional testing of a sample quantity of chips from each wafer. Each die shipped is tested at 25 °C.

2

Dimensions Diagram: P-side

(Specifications in μm unless otherwise noted.)

Die size	250 μm x 250 μm
Die thickness	125 \pm 15 μm
Optical window	\varnothing 53 μm
Metal bond pad	\varnothing 60 μm
P-metal	Ti/PtAu (500/500/6000 \AA)
N-metal	AuSn (1000 \AA)
An identification number appears on p-side of chip	

Absolute Maximum Ratings

Parameter	Minimum	Maximum
Soldering temperature		250 $^{\circ}\text{C}$
APD voltage supply (V_{APD})		V_{br} V
Maximum optical input power		3 mW
Reverse current		5 mA
Forward current		10 mA
ESD threshold (HBM)	300 V	
Storage temperature	-40 $^{\circ}\text{C}$	+100 $^{\circ}\text{C}$
Operating temperature	-40 $^{\circ}\text{C}$	+90 $^{\circ}\text{C}$

Specifications

Parameter	Test Conditions	Minimum	Typical	Maximum
Electrical / Optical ¹				
Diameter		-	53 μm	-
APD responsivity	λ =1550 nm, M=1	0.85 A/W	-	-
Breakdown voltage, V_{br}	I_{d} =10 μA	33 V	-	53 V
V_{br} temperature coefficient		0.1%/ $^{\circ}\text{C}$	-	0.3%/ $^{\circ}\text{C}$
Total dark current	V_{br} -2 V	-	1 nA	10 nA
APD gain	V_{br} -2 V, P_{o} =1 μW	9	10	-
Bandwidth	M=9, P_{o} =1 μW	3 GHz	-	-
Capacitance	V_{br} -2 V, f=1 MHz	-	-	0.6 pF
Operating Conditions				
Operating wavelength		1260 nm	-	1575 nm
Operating temperature		-40 $^{\circ}\text{C}$	-	+90 $^{\circ}\text{C}$
Overload		-6 dBm	-	-

1. Test Conditions: 25 $^{\circ}\text{C}$, 50 ohm load, 1550 nm, beginning of Life (BOL), unless otherwise specified.

Device Qualification

All shipped bare die come from wafers that meet JDSU APD qualification. The wafer qualification includes electrical, optical, RF and 168-hour reliability testing.

In accordance with Telcordia GR-468-CORE, each shipped bare die is fully tested at 25 °C, including breakdown voltage and dark current at $V_{br}-2V$.

JDSU recommends that all assembled devices be burned in prior to installation.

Electrostatic Discharge (ESD)

Take precautions to protect the FI-APD from ESD during handling. Failure to do so may result in damage to product.

Ordering Information

For more information on this or other products and their availability, please contact your local JDSU account manager or JDSU directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at customer.service@jdsu.com.

Sample: RXA M DC51 081 01 - 003

RXA M DC51 081 0 -003

Code	Package
01	Shipped in a Gel pak
02	Shipped on blue tape