

**DESCRIPTION**

Microsemi's InGaAs/InP PIN Photo Diode chips are ideal for high bandwidth 1310nm and 1550nm optical networking applications.

The device series offer high responsivity, low dark current, and high bandwidth for high performance and low sensitivity receiver design.

The LX3051 3Gbps coplanar waveguide photodiode is currently offered in die form allowing manufacturers the versatility of custom assembly confi-

gurations including traditional wirebond or flip chip assembly. This device is ideal for manufacturers of optical receivers, transceivers, transponders, optical transmission modules and combination PIN photo diode – transimpedance amplifier.

**IMPORTANT:** For the most current data, consult *MICROSEMI's* website: <http://www.microsemi.com>

**KEY FEATURES**

- LX3051 single die
- Coplanar Waveguide, 50 ohm
- High Responsivity
- Low Dark Current
- High Bandwidth
- Anode/Cathode on illuminated side
- 125µm Pad pitch
- Die good for wire bond or flip-chip
- Die good for non-hermetic package

**APPLICATIONS**

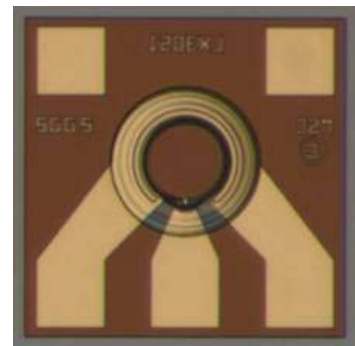
- 1310nm CATV Optical Applications
- SONET/SDH OC-48, ATM
- 2.5Gb/s or 3.125Gb/s Ethernet (8B/10B) Fibre Channel
- 1310nm VCSEL receivers
- Optical Backplane

**BENEFITS**

- Large Wirebond Contact Pads
- Low Contact Resistance
- Wire bond or flip chip applications
- Ground- signal-Ground pad configuration for standard RF test probes

**PRODUCT HIGHLIGHT**

- Coplanar Design (gnd-signal-gnd) 50 ohm characteristic impedance
- 125 um standard pad pitch for ease of test
- Large 75um x 75um pad size for ease of packaging
- Wire bond or Flip Chip capability



**CHARACTERISTICS**

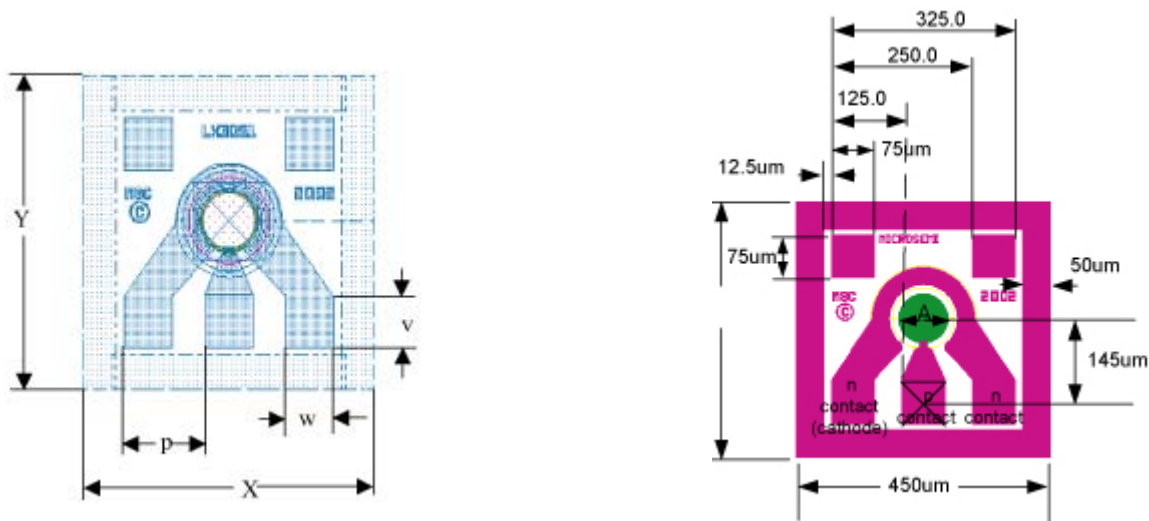
Test conditions (unless otherwise noted):  $T_A = 25^\circ\text{C}$ ,  $V_R = 5\text{ Volts}$

Parameter	Symbol	Test Conditions	LX3051			Units
			Min	Typ	Max	
<b>MAXIMUM RATINGS</b>						
Operating Junction Temperature Range	$T_J$		-20		+85	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$		-55		+125	$^\circ\text{C}$
Maximum Soldering Temperature		10 seconds maximum at temperature			+260	$^\circ\text{C}$
<b>ELECTRICAL CHARACTERISTICS</b>						
Active Area Diameter				80		$\mu\text{m}$
Responsivity (1)	$R$	$V_R = 5\text{V}, \lambda = 1550\text{nm}$	0.9	1.1		A/W
		$V_R = 5\text{V}, \lambda = 1310\text{nm}$	0.85	1.0		
Dark Current	$I_D$	$V_R = 5\text{V}$		0.4	10	nA
Breakdown Voltage	$BV_R$	$I_R = 10\mu\text{A}$	30	44		Volts
Capacitance	$C$	$V_R = 5\text{V}$		0.43	0.5	pF
Bandwidth (2)	BW	$V_R = 5\text{V}, \lambda = 1550\text{nm} @ -3\text{dB}$	4.5	5.8		GHz

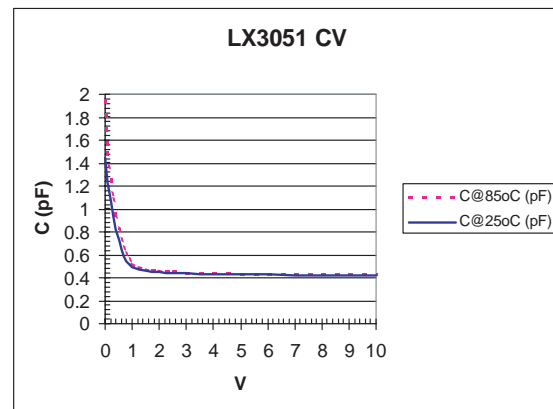
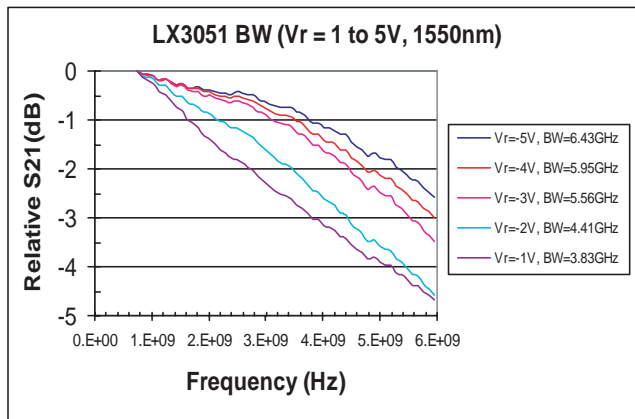
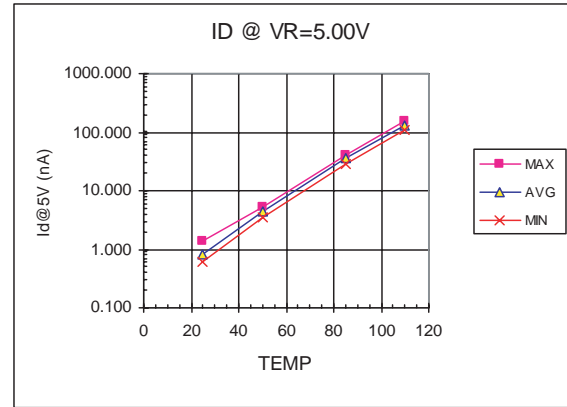
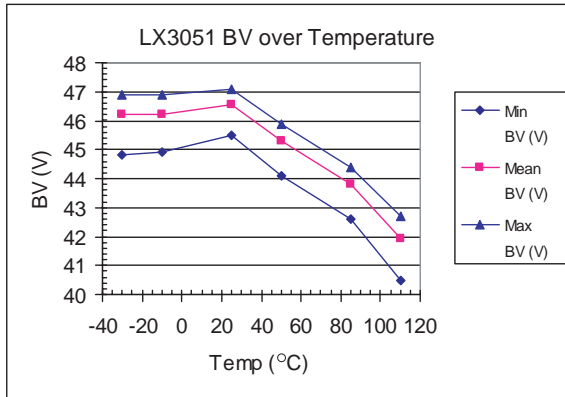
- Note
1. Antireflective coating is  $\frac{1}{4}$  wavelength at 1430nm covering 1310 and 1550nm applications
  2. Bandwidth is measured at  $-3\text{dB}$  electrical power (photocurrent drops to 71% of DC value) into a 50 Ohm load

**DIE GEOMETRY**

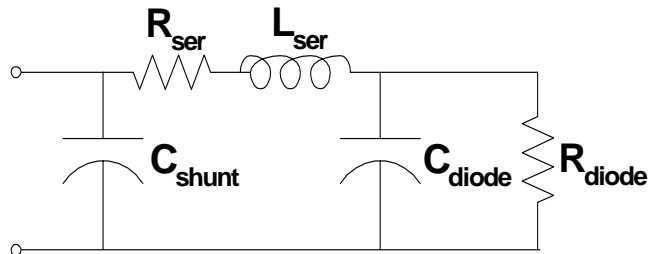
Part Number	Active Area A, $\mu\text{m}$	Die Dimension, $\mu\text{m}$		Pad Dimension, $\mu\text{m}$		Pad Pitch, p, $\mu\text{m}$	Die thickness, $\mu\text{m}$
		Y	X	w	v		
LX3051	80	450	450	75	75	125	152



**CHARACTERISTIC CURVES**



**CIRCUIT MODEL**



Part #	R <sub>ser</sub> (Ohm)	L <sub>ser</sub> (nH)	C <sub>shunt</sub> (pF)	C <sub>diode</sub> (pF)	R <sub>diode</sub> (Mohm)
LX3051	12	0.05	0.035	0.40	25

**PRECAUTIONS FOR USE**

ESD protection is important. Standard ESD protection procedures should be employed whenever handling InGaAs PIN photo diode.