

**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 LX305X series of coplanar waveguide photo diodes are currently offered in die form allowing manufacturers the versatility of custom assembly configurations 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.

**KEY FEATURES**

- LX3050 single die
- LX3052, 1x4 array die
- Coplanar Waveguide , 50ohm
- 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**

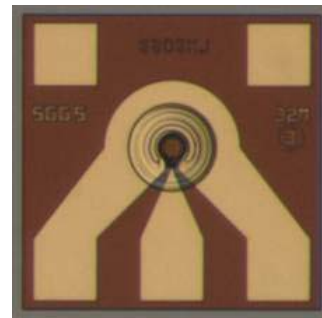
- 1310nm CATV Optical Applications
- 1550nm DWDM Optical Applications
- SONET/SDH, ATM
- 10 Gigabit Ethernet, Fibre Channel
- 1310nm VCSEL receivers

**BENEFITS**

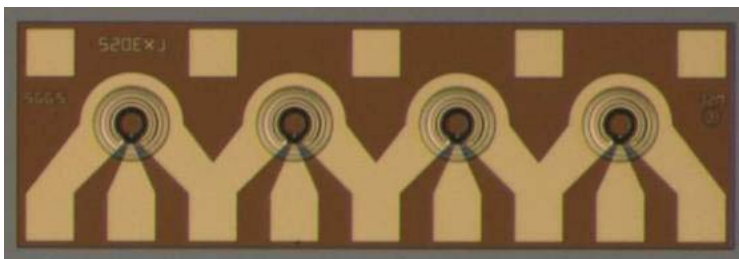
- Large Wirebond Contact Pads
- Low Contact Resistance
- Wire bond or flip chip applications
- Ground- signal-Ground pad configuration for standard RF test probes

**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



LX3050



LX3052

**CHARACTERISTICS**

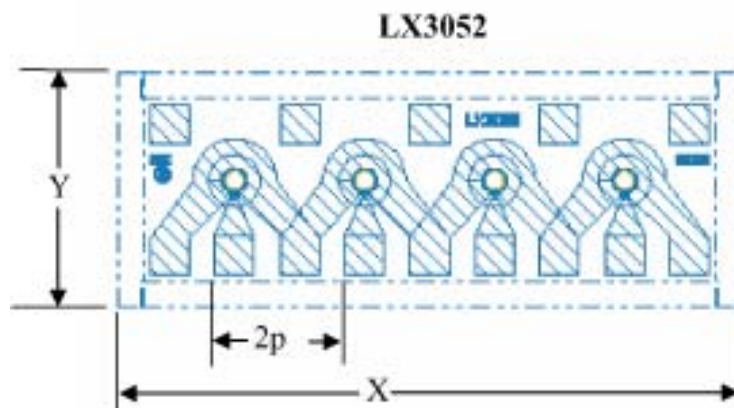
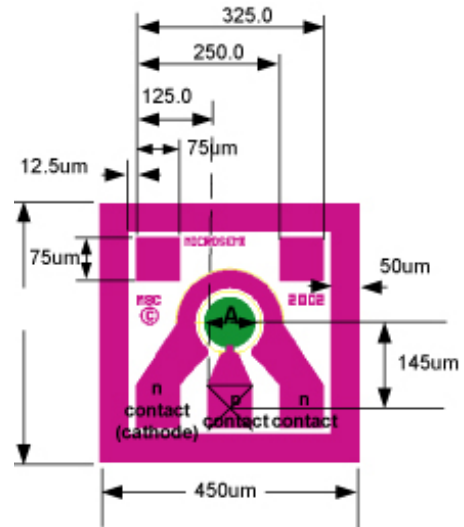
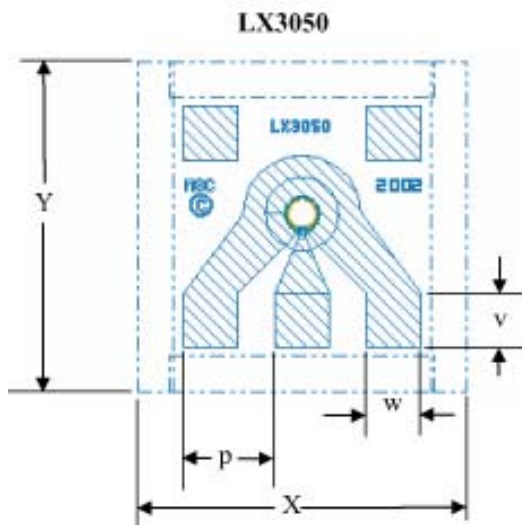
 Test conditions (unless otherwise noted):  $T_A = 25^\circ\text{C}$ ,  $V_R = 5$  Volts

Parameter	Symbol	Test Conditions	LX3050/52			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				32		$\mu\text{m}$
Responsivity (1)	$R$	$V_R = 5\text{V}, \lambda = 1550\text{nm}$	0.90	1.0		A/W
		$V_R = 5\text{V}, \lambda = 1310\text{nm}$	0.85	0.95		
Dark Current	$I_D$	$V_R = 5\text{V}$		0.2	5	nA
Breakdown Voltage	$BV_R$	$I_R = 10\ \mu\text{A}$	30	45		Volts
Capacitance	$C$	$V_R = 5\text{V}$	0.12	0.135	0.15	pF
Bandwidth (2)	$BW$	$V_R = 5\text{V}, \lambda = 1550\text{nm} @ -3\text{dB}$	13	15		GHz
Cross-talk	$S_{21}$	1x4 array only @ 10 GHz	-35			dB

- 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

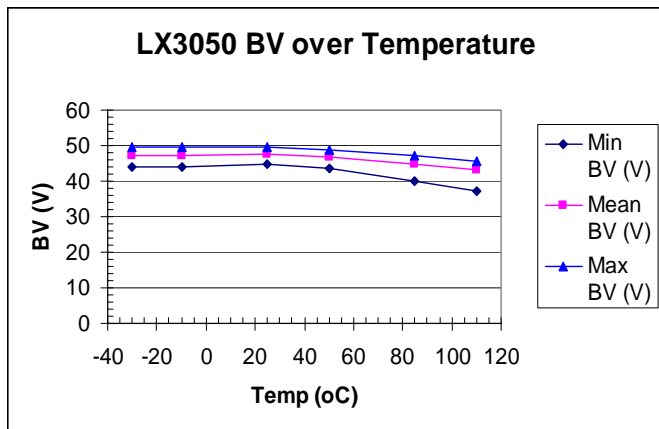
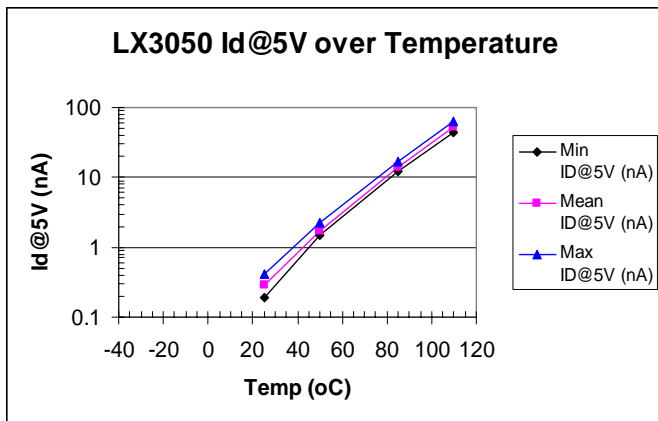
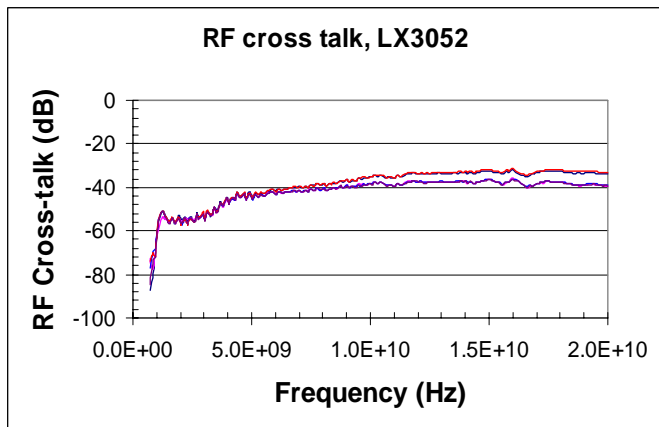
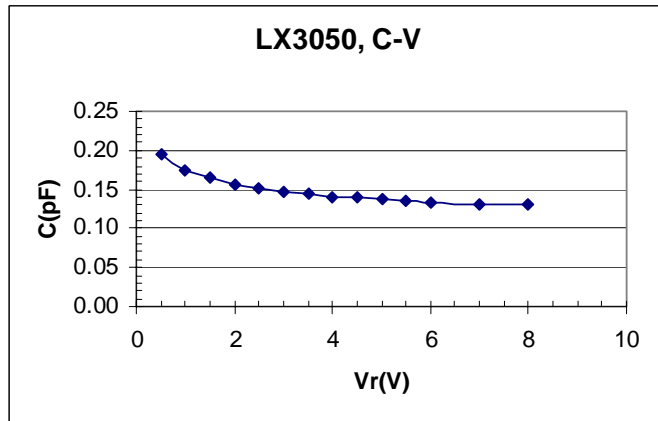
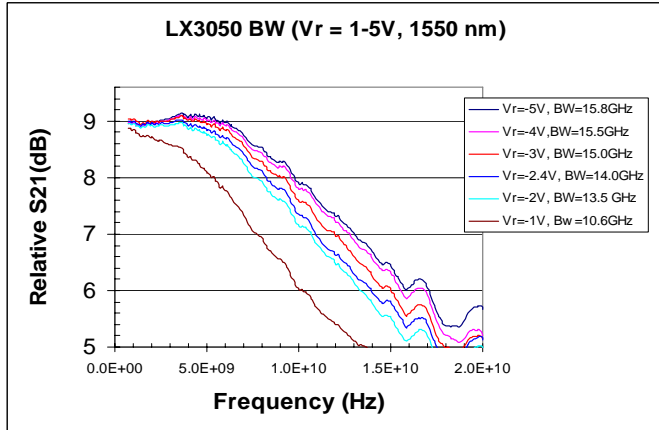
**DIE GEOMETRY**

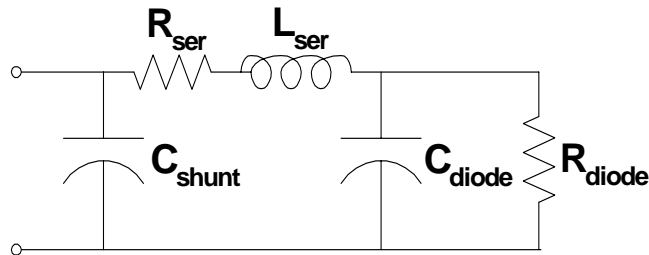
Part Number	Active Area ,A, $\mu\text{m}$	Die Dimension, $\mu\text{m}$		Pad Dimension, $\mu\text{m}$		Pad Pitch, p, $\mu\text{m}$	Die thickness, $\mu\text{m}$
		Y	X	w	v		
LX3050	32	450	450	75	75	125	152
LX3052	32	450	1200	75	75	125	152



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

**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)
LX3050	17	0.012	0.035	0.10	25

**PRECAUTIONS FOR USE**

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