

**DESCRIPTION**

Microsemi's GaAs Coplanar PIN Photo Diode chips are ideal for high bandwidth 850nm optical networking applications.

The device family offers superior noise performance and sensitivity in single die, 1x4 array die or 1x12 array die.

The LX304X family of photo diodes are currently offered in die form allowing manufacturers the versatility of custom assembly using either bond wire or flip chip configurations.

This device is ideal for manufacturers of optical receivers, transponders, optical transmission modules and combination PIN photo diode – transimpedance amplifier.

**KEY FEATURES**

- LX3044 Single Die
- LX3045, 1x4 Array Die
- LX3046, 1x12 Array Die
- Coplanar Waveguide, 50ohm
- High Responsivity
- Low Dark Current
- High Bandwidth
- Anode/Cathode on Illuminated Side
- 125mm Pad pitch
- Die Good for Bond Wire or Flip Chip Applications

**APPLICATIONS**

- Short Reach Optical Networks
- 10Gigabit Ethernet, Fibre Channel
- VCSEL Array Receiver

**BENEFITS**

- Large Wirebond Contact Pads
- Low Contact Resistance

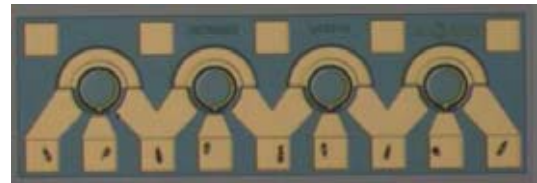
**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

**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



Single Die



1x4 Die



1x12 Die

**PACKAGE ORDER INFO**

T <sub>J</sub> (°C)	Die	Die	Active Area, A (μm)	Die Dimension <sup>1</sup> (μm)		Pad Dimension <sup>1</sup> (μm)		Pad Pitch, p <sup>1</sup> (μm)	Die Thickness <sup>1</sup> (μm)
				Y	X	w	v		
0 to 70	LX3044		75	450	450	75	75	125	152
	LX3045			450	1200	75	75		203
	LX3046			450	3200	75	75		203

1. See Package Dimensions (page 4)

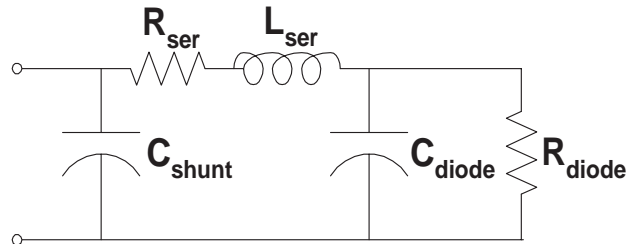
Note: Available in Tape & Reel. Append the letter "T" to the part number. (i.e. LX3044T)

**ELECTRICAL CHARACTERISTICS**

 Unless otherwise specified, the following specifications apply over the following test conditions:  $T_A = 25^{\circ}\text{C}$ ,  $V_R = 5\text{ Volts}$ 

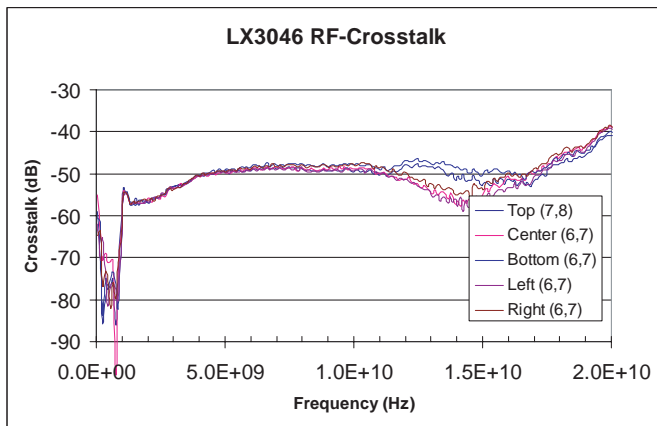
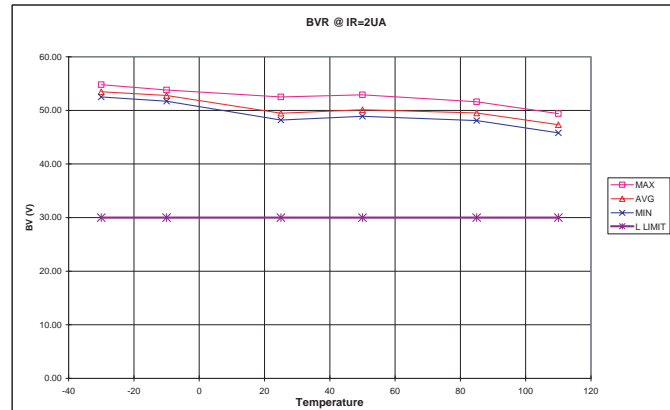
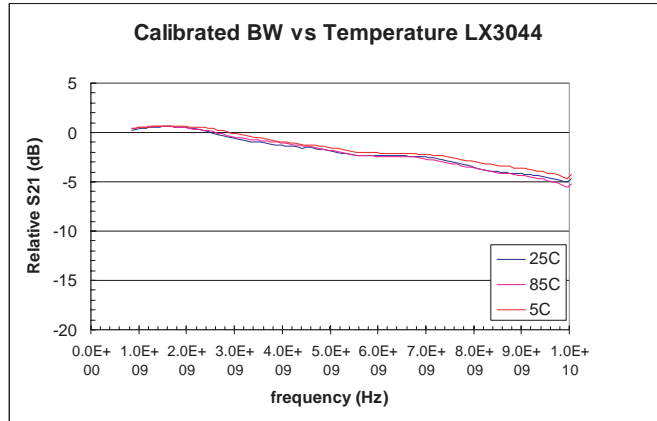
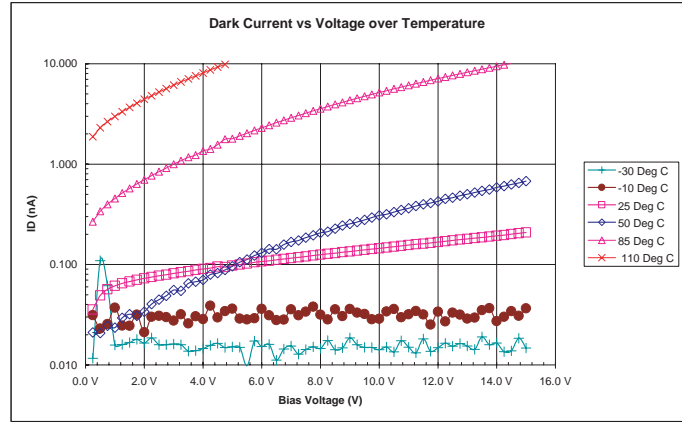
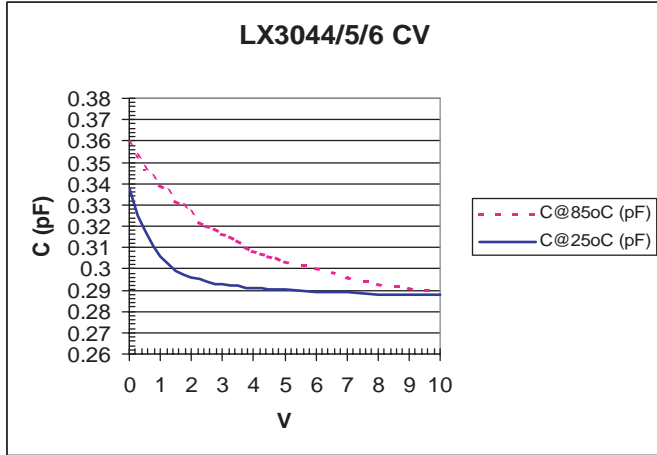
Parameter	Symbol	Test Conditions	LX304x			Units
			Min	Typ	Max	
<b>▶ MAXIMUM RATINGS</b>						
Operating Junction Temperature Range	$T_J$		-20		+100	$^{\circ}\text{C}$
Storage Temperature Range	$T_{\text{STG}}$		-55		+125	$^{\circ}\text{C}$
Maximum Soldering Temperature		10 seconds maximum at temperature			260	$^{\circ}\text{C}$
<b>▶ ELECTRICAL CHARACTERISTICS</b>						
Active Area Diameter				75		$\mu\text{m}$
Responsivity	$R$	$V_R = 5\text{V}, \lambda = 850\text{nm}$	0.55	0.6		A/W
Dark Current	$I_D$	$V_R = 5\text{V}$		0.1	0.5	nA
Breakdown Voltage	$BV_R$	$I_R = 2\mu\text{A}$	30	47		Volts
Capacitance	$C$	$V_R = 5\text{V}$		0.3	0.33	pF
Bandwidth (1)	BW	$V_R = 5\text{V}, \lambda = 850\text{nm} @ -3\text{dB}$	7.8	8.1		GHz
RF Cross-Talk	$S_{21}$	1x4 and 1x12array only @ 10GHz			-40	dB

 Note: 1. Bandwidth is measured at  $-3\text{dB}$  electrical power (photocurrent drops to 71% of DC value) into a  $50\Omega$  load.

**CIRCUIT MODEL**


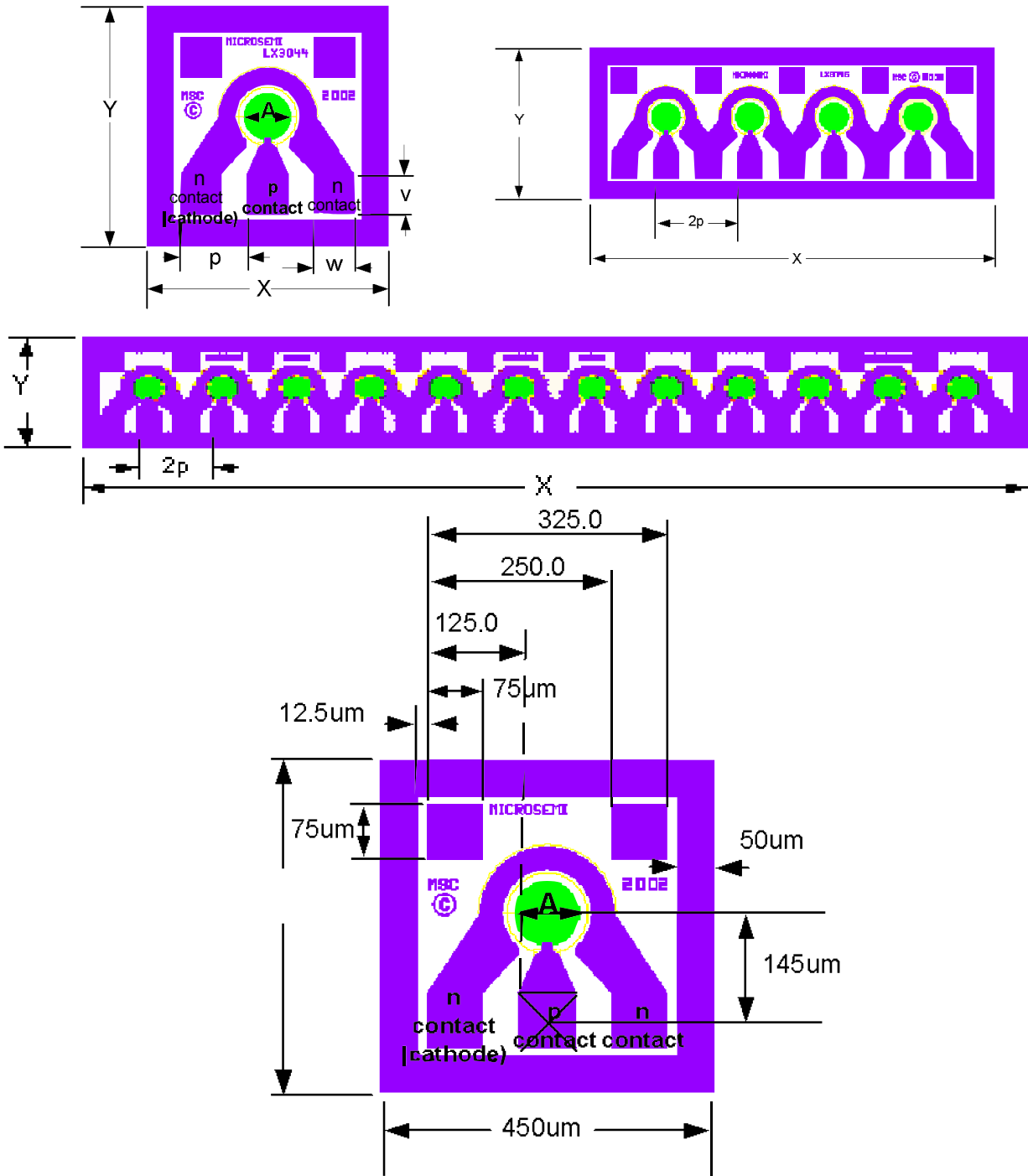
Part #	Rser ( $\Omega$ )	Lser (nH)	Cshunt (fF)	Cdiode (fF)	Rdiode ( $\text{M}\Omega$ )
LX304x	12.3	0.12	118.5	172	187

CHARACTERISTIC CURVES



PACKAGE DIMENSIONS

Die LX304x



NOTES

PRODUCTION DATA - Information contained in this document is proprietary to Microsemi and is current as of publication date. This document may not be modified in any way without the express written consent of Microsemi. Product processing does not necessarily include testing of all parameters. Microsemi reserves the right to change the configuration and performance of the product and to discontinue product at any time.