

**Coplanar InGaAs/InP PIN Photo Diode**
**PRODUCTION DATA SHEET**
**DESCRIPTION**

Microsemi's InGaAs/InP PIN custom assembly configurations including traditional wirebond or flip chip assembly are ideal for high bandwidth 1310nm and 1550nm optical networking applications.

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

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

The LX3055 4 Gbps coplanar waveguide photodiode is currently offered in die form allowing manufacturers the versatility of

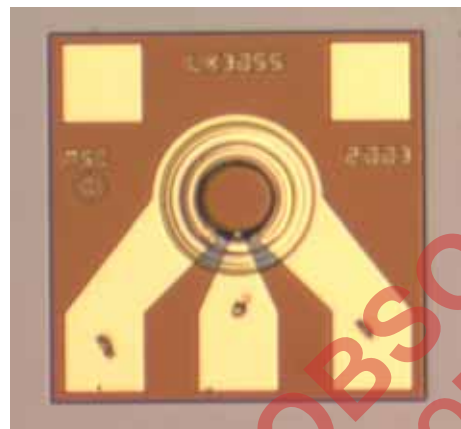
**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

**KEY FEATURES**

- LX3055 single die
- Coplanar Waveguide , 50Ω
- High Responsivity
- Low Dark Current
- High Bandwidth
- Anode/Cathode on Illuminated Side
- 125μm Pad pitch
- Die good for bond wire or flip chip applications

**APPLICATIONS**

- 4 Gigabit Fiber Channel
- 1310nm CATV Optical Applications
- SONET/SDH OC-48, ATM
- 2.5Gb/s or 3.125Gb/s Ethernet
- 1310nm VCSEL receivers
- Optical Backplane

**PRODUCT HIGHLIGHT**


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

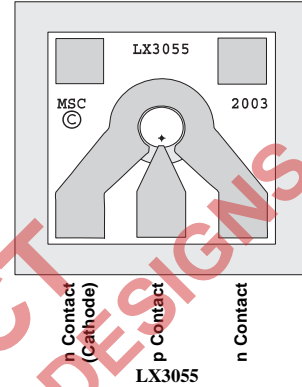
**BENEFITS**

- Large wire bond contact pads
- Low contact resistance
- Wire bond or flip chip applications
- Ground- Signal-Ground pad configuration for standard RF test probes

**ABSOLUTE MAXIMUM RATINGS**

Operating Junction Temperature.....	-20 to +85 °C
Storage Temperature Range.....	-55 to +125 °C
Maximum Soldering Temperature (10 seconds maximum).....	260 °C

Note: Exceeding these ratings could cause damage to the device.

**PACKAGE PIN OUT**

**ELECTRICAL CHARACTERISTICS**

Test conditions:  $T_A = 25^\circ\text{C}$ ,  $V_R = 2\text{V}$

Parameter	Symbol	Test Conditions	LX3055			Units
			Min	Typ	Max	
<b>ELECTRICAL CHARACTERISTICS</b>						
Active Area Diameter				60		$\mu\text{m}$
Responsivity <sup>1</sup>	$R$	$V_R = 2\text{V}$ , $\lambda = 1550\text{nm}$	0.85	1.0		A/W
		$V_R = 2\text{V}$ , $\lambda = 1310\text{nm}$	0.80	0.90		
Dark Current	$I_D$	$V_R = 5\text{V}$		0.6	6	nA
Breakdown Voltage	$BV_R$	$I_R = 10\mu\text{A}$	30	44		V
Capacitance	$C$	$V_R = 2\text{V}$		0.35	0.40	pF
Bandwidth <sup>2</sup>	$BW$	$V_R = 2\text{V}$ , $\lambda = 1550\text{nm}$ @ -3dB	6.5	8		GHz

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

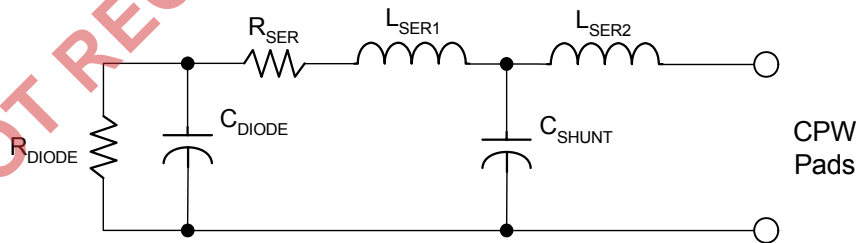
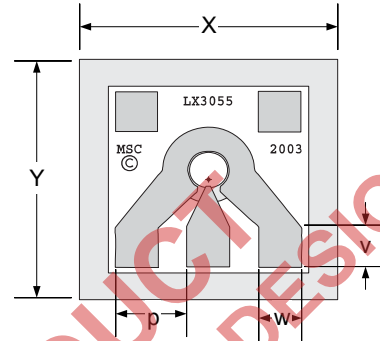
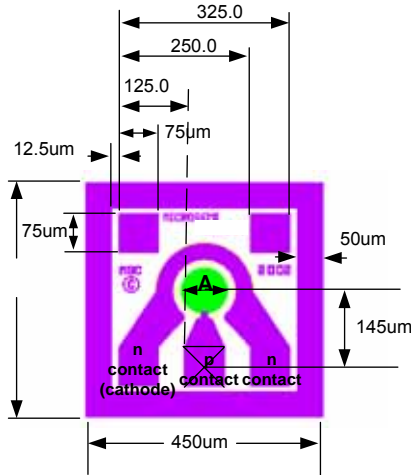
**APPLICATION CIRCUITS**


Figure x – Typical VRM Application

Results	RSET (Ohm)	LSER1 (pH)	LSER2 (pH)	CSHUNT (fF)	CDIODE (fF)	RDIODE (M Ohm)
LX3055	20.1	1.6	1.5	7.1	311	730

**SPARE TABLE**


Active Area, $\mu\text{m}$ (A)	Die Dimension, $\mu\text{m}$		Pad Dimension, $\mu\text{m}$		Pad Pitch, $\mu\text{m}$ (p)	Die thickness, $\mu\text{m}$
	Y	X	w	v		
60	450	450	75	75	125	152

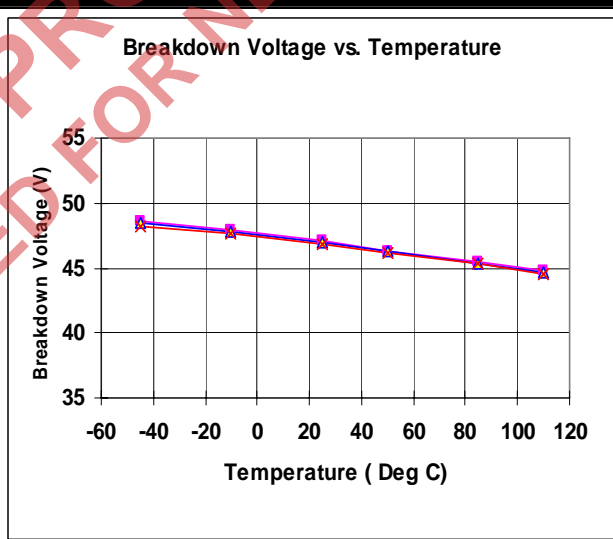
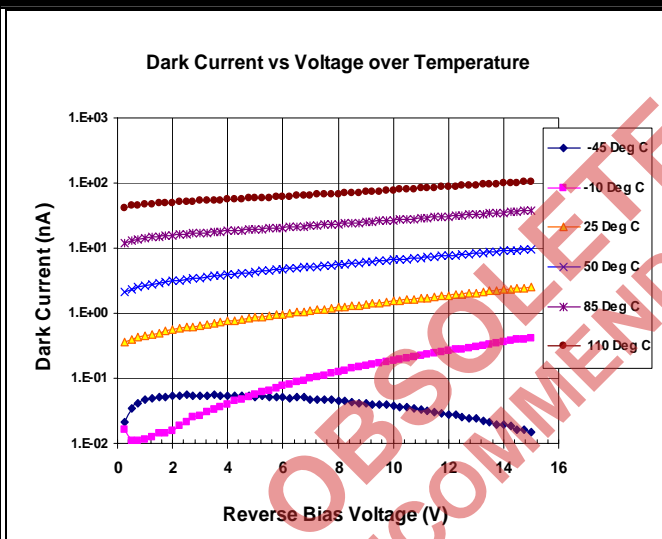
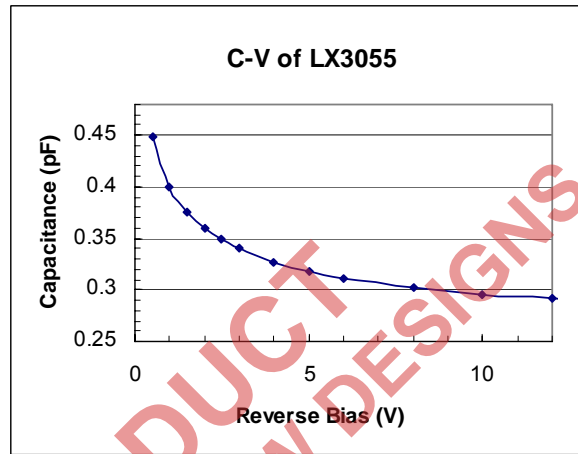
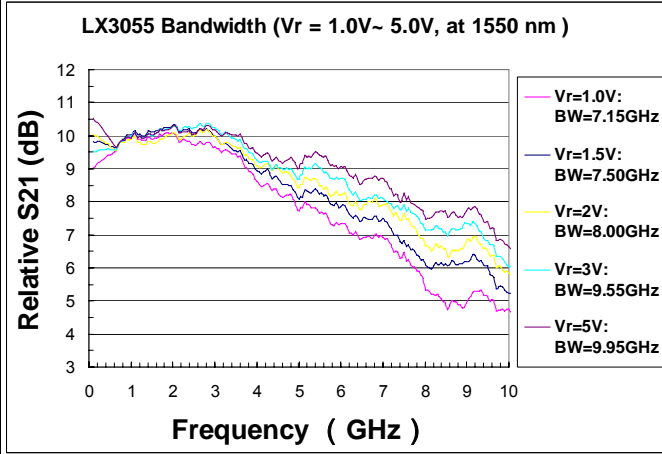
**NOTES**

OBSOLETE PRODUCT NOT RECOMMENDED FOR NEW DESIGNS

**PRECAUTIONS FOR USE**

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

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NOT RECOMMENDED FOR NEW DESIGNS