

DATA SHEET

# Silicon Beamless Schottky Diodes: Pairs and Quads

## Applications

- Microwave MIC assembly and automated high volume manufacturing lines
- Mixers

## Features

- Mechanically rugged design
- Three barrier heights for optimized mixer performance
- Wide product range: series pair, ring, bridge, and eight-diode rings
- Use in ring or crossover designs in double balanced mixers
- Virtually any LO requirement can be met with choice of barrier height
- 100% DC tested on water
- Available on film frame or waffle pack



Skyworks Green™ products are compliant with all applicable legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

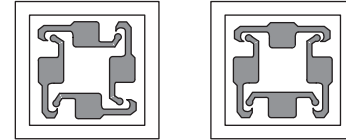
## Description

Skyworks beamless diode family is designed for a high degree of device reliability in both commercial and industrial uses. The diodes are designed to offer the utmost in performance as well as achieving price sensitive cost targets for commercial systems.

## Assembly and Handling Procedure

The process flow for assembly is:

- Die attach using nonconductive epoxy
- Wire bond
- Encapsulation (nonconductive epoxy)



## Die Attach Methods

All leadless chips are compatible with both eutectic and conductive epoxy die attach methods. Eutectic processes use Sn/Au or Sn/Pb solder. Nonconductive die attach is recommended.

## Packing Methods

1. Gel pak
2. Wafer on film frame (rejects are marked with ink):
  - Diced, ready for pick and place
  - Unsawn, whole wafer, 7-mil thick, maximum

## Wire Bonding

Two methods can be used to connect wire, ribbon, or wire mesh to the chips:

- Thermocompression
- Ballbonding

Skyworks recommends use of pure gold wire.

## Electrical and Physical Specifications

Absolute maximum ratings for the beamless Schottky diodes are provided in Table 1. Electrical specifications are noted in Table 2. SPICE model parameters are defined in Table 3.

A typical bonding configuration is illustrated in Figure 1.

**Table 1. Absolute Maximum Ratings (Note 1)**

Parameter	Symbol	Minimum	Maximum	Units
Peak inverse voltage	PIV		V <sub>B</sub>	–
Supply current	I <sub>MAX</sub>		50	mA/V
Power dissipation (CW)	P <sub>DISS</sub>		75	mW/junction
Storage temperature	T <sub>STG</sub>	–65	+175	°C
Operating temperature	T <sub>OP</sub>	–65	+150	°C
Electrostatic discharge: Human Body Model (HBM), Class 0	ESD		< 250	V

**Note 1:** Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value. Exceeding any of the limits listed here may result in permanent damage to the device.

**CAUTION:** Although this device is designed to be as robust as possible, electrostatic discharge (ESD) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions should be used at all times.

**Table 2. Electrical Specifications (Per Junction) (1 of 2) (Note 1)**

Part Number	Band	Barrier	V <sub>F</sub> I <sub>F</sub> = 1.0 mA (mV)		ΔV <sub>F</sub> I <sub>F</sub> = 1.0 mA (mV)	C <sub>J</sub> (Note 2) V <sub>R</sub> = 0 V, f = 1 MHz (pF)		R <sub>s</sub> I <sub>F</sub> = 5 mA (Ω)	V <sub>B</sub> @ 10 μA (V)	Outline Drawing Number
			Min	Max	Max	Min	Max	Max	Min	
<b>Ring Quad (Note 3)</b>										
DMF3926-000	S	Low	200	260	10	0.30	0.50	5	–	551-002
DME3927-000	S	Medium	300	400	10	0.30	0.50	5	–	551-002
DMJ3928-000	S	High	500	600	10	0.30	0.50	5	–	551-002
DMF3942-000	X	Low	250	310	10	0.15	0.30	8	–	551-002
DME3943-000	X	Medium	325	425	10	0.15	0.30	8	–	551-002
DMJ3944-000	X	High	550	650	10	0.15	0.30	8	–	551-002
<b>Bridge Quad (Note 3)</b>										
DMF3929-000	S	Low	200	260	10	0.30	0.50	5	2	551-004
DME3930-000	S	Medium	300	400	10	0.30	0.50	5	3	551-004
DMJ3931-000	S	High	500	600	10	0.30	0.50	5	4	551-004
DMF4102-000	X	Low	250	310	10	0.15	0.3	14	2	551-004
DME4101-000	X	Medium	325	425	10	0.15	0.3	14	3	551-004
DMJ4103-000	X	High	550	650	10	0.15	0.3	14	4	551-004
<b>Series Pair (Note 3)</b>										
DMF3932-000	S	Low	200	260	10	0.30	0.50	5	2	551-012
DME3933-000	S	Medium	300	400	10	0.30	0.50	5	3	551-012
DMJ3934-000	S	High	500	600	10	0.30	0.50	5	4	551-012
<b>Back-to-Back Ring Series Pair (Note 3)</b>										
DMF3935-000	S	Low	200	260	10	0.30	0.50	5	–	551-056
DME3936-000	S	Medium	300	400	10	0.30	0.50	5	–	551-056
DMJ3937-000	S	High	500	600	10	0.30	0.50	5	–	551-056

**Table 2. Electrical Specifications (Per Junction) (2 of 2) (Note 1)**

Part Number	Band	Barrier	V <sub>F</sub> I <sub>F</sub> = 1.0 mA (mV)		ΔV <sub>F</sub> I <sub>F</sub> = 1.0 mA (mV)	C <sub>J</sub> (Note 2) V <sub>R</sub> = 0 V, f = 1 MHz (pF)		R <sub>s</sub> I <sub>F</sub> = 5 mA (Ω)	V <sub>s</sub> @ 10 μA (V)	Outline Drawing Number
			Min	Max	Max	Min	Max	Max	Min	
<b>Octoquad Ring (Note 4)</b>										
DMF3938-000	S-X	Low	400	520	15	0.15	0.30	16	–	556-020
DME3939-000	S-X	Medium	600	800	15	0.15	0.30	16	–	556-020
DMJ3940-000	S-X	High	1000	1200	15	0.15	0.30	16	–	556-020
<b>Back-to-Back Crossover Quad, to 6 GHz</b>										
DMF3945-000	S	Low	200	260	15	0.30	0.50	5	–	588-065
DME3946-000	S	Medium	300	400	15	0.30	0.50	5	–	588-065
DMJ3947-000	S	High	525	625	15	0.30	0.50	5	–	588-065

**Note 1:** Performance is guaranteed only under the conditions listed in this table.

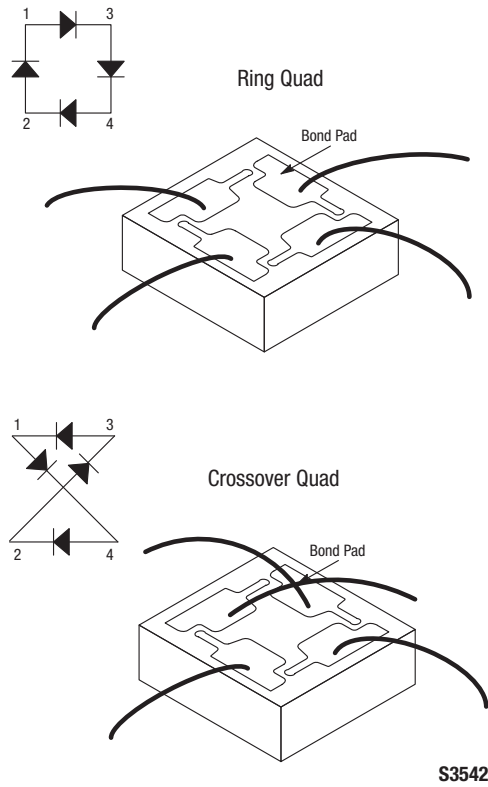
**Note 2:** C<sub>J</sub> represents total capacitance. Maximum C<sub>J</sub> unbalance @ 0 V, 1 MHz = 0.25 pF.

**Note 3:** Matching criteria V<sub>F</sub> @ 1 mA ≤ 15 mV available for matched sets.

**Note 4:** Matching criteria V<sub>F</sub> @ 1 mA ≤ 20 mV available for matched sets.

**Table 3. SPICE Model Parameters (Per Junction)**

Part Number Prefix	I <sub>s</sub> (A)	R <sub>s</sub> (Ω)	N	T <sub>T</sub> (s)	C <sub>J0</sub> (pF)	M	E <sub>G</sub> (eV)	V <sub>J</sub> (V)	X <sub>TI</sub>	F <sub>c</sub>	B <sub>v</sub> (V)	I <sub>bv</sub> (A)
DMF3926	2.5 x 10 <sup>-7</sup>	4	1.04	1 x 10 <sup>-11</sup>	0.42	0.32	0.69	0.51	2	0.5	2	1 x 10 <sup>-5</sup>
DME3927	1.3 x 10 <sup>-9</sup>	4	1.04	1 x 10 <sup>-11</sup>	0.39	0.34	0.69	0.65	2	0.5	3	1 x 10 <sup>-5</sup>
DMJ3926	9.0 x 10 <sup>-13</sup>	4	1.04	1 x 10 <sup>-11</sup>	0.39	0.42	0.69	0.84	2	0.5	3	1 x 10 <sup>-5</sup>
DMF4102	1.1 x 10 <sup>-7</sup>	6	1.04	1 x 10 <sup>-11</sup>	0.22	0.32	0.69	0.495	2	0.5	2	1 x 10 <sup>-5</sup>
DME4101	2.4 x 10 <sup>-9</sup>	6	1.04	1 x 10 <sup>-11</sup>	0.20	0.37	0.69	0.595	2	0.5	3	1 x 10 <sup>-5</sup>
DMJ4103	8.5 x 10 <sup>-13</sup>	6	1.04	1 x 10 <sup>-11</sup>	0.20	0.42	0.69	0.800	2	0.5	4	1 x 10 <sup>-5</sup>



S3542

Figure 1. Typical Bonding Configuration

**Package Information**

Skyworks silicon beamless Schottky diodes are provided in Gel paks and on film frame. Package dimensions are provided in Figures 2 through 7.

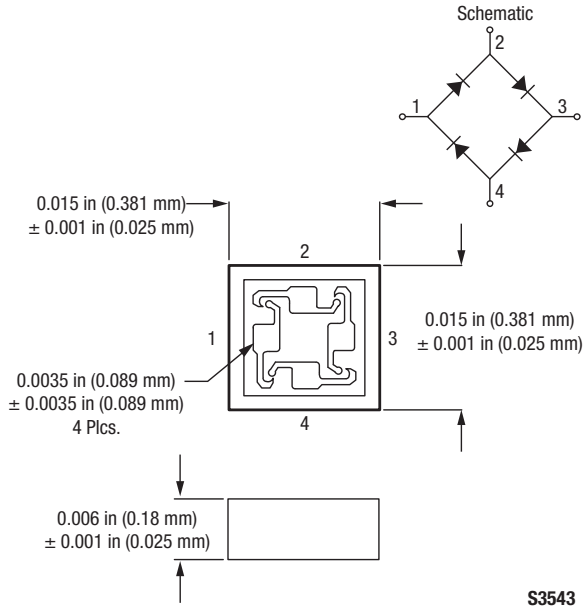


Figure 2. 551-002 Package Dimensions

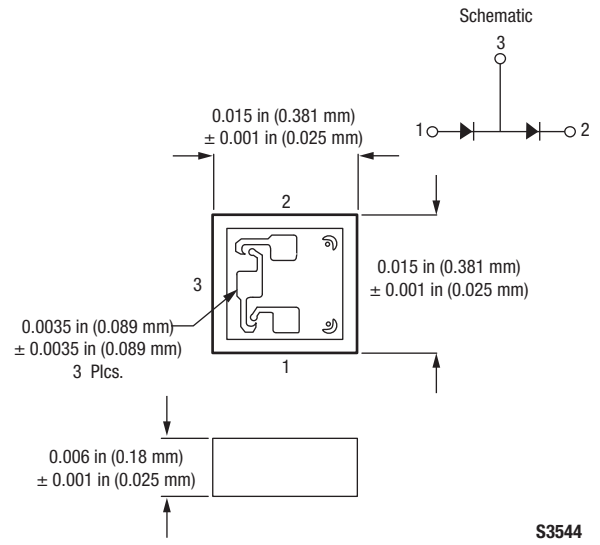


Figure 3. 551-012 Package Dimensions

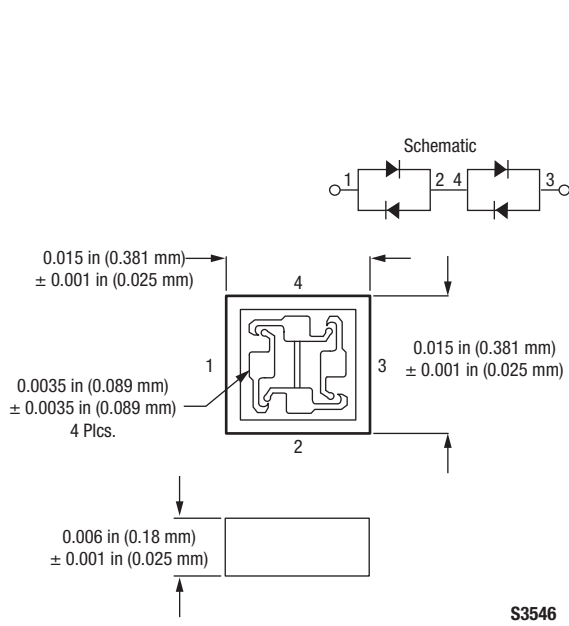


Figure 4. 551-056 Package Dimensions

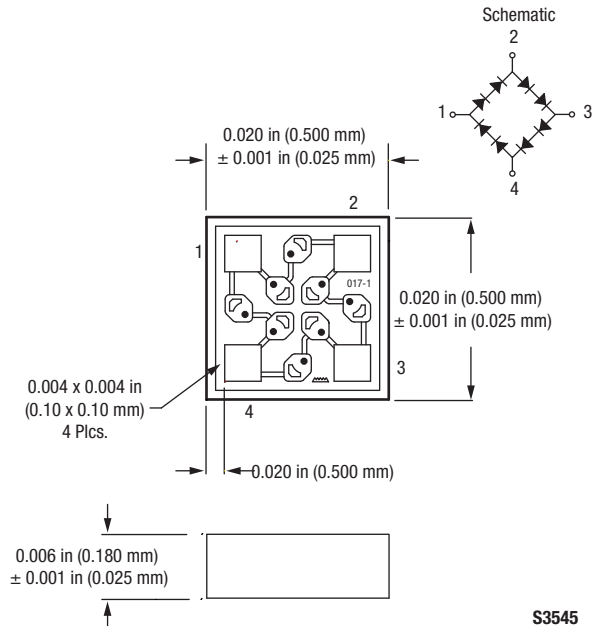
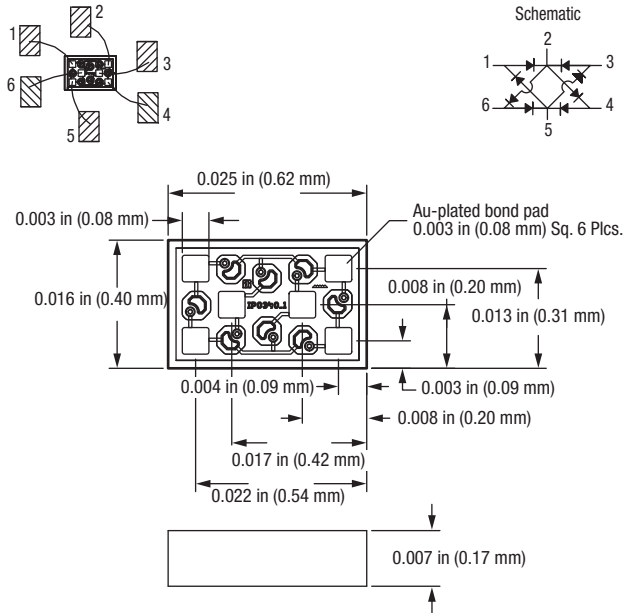
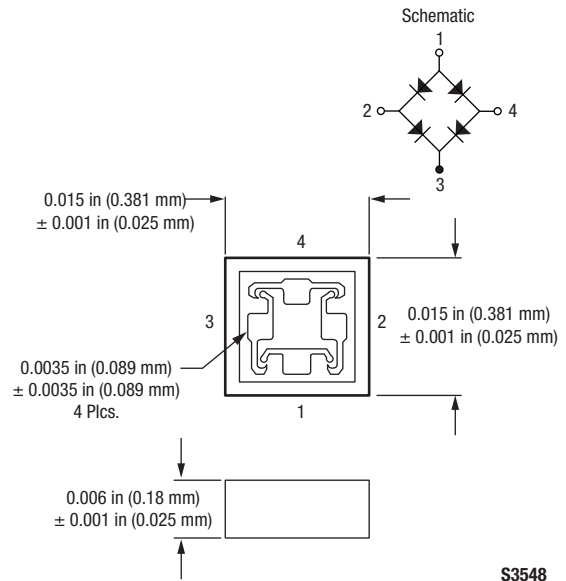


Figure 5. 556-020 Package Dimensions

**DATA SHEET • SILICON BEAMLESS SCHOTTKY DIODES**



**Figure 6. 588-065 Package Dimensions**



**Figure 7. 551-004 Package Dimensions**

Copyright © 2002-2009, 2011, 2012-2014 Skyworks Solutions, Inc. All Rights Reserved.

Information in this document is provided in connection with Skyworks Solutions, Inc. (“Skyworks”) products or services. These materials, including the information contained herein, are provided by Skyworks as a service to its customers and may be used for informational purposes only by the customer. Skyworks assumes no responsibility for errors or omissions in these materials or the information contained herein. Skyworks may change its documentation, products, services, specifications or product descriptions at any time, without notice. Skyworks makes no commitment to update the materials or information and shall have no responsibility whatsoever for conflicts, incompatibilities, or other difficulties arising from any future changes.

No license, whether express, implied, by estoppel or otherwise, is granted to any intellectual property rights by this document. Skyworks assumes no liability for any materials, products or information provided hereunder, including the sale, distribution, reproduction or use of Skyworks products, information or materials, except as may be provided in Skyworks Terms and Conditions of Sale.

THE MATERIALS, PRODUCTS AND INFORMATION ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE, INCLUDING FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, PERFORMANCE, QUALITY OR NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT; ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED. SKYWORKS DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. SKYWORKS SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING BUT NOT LIMITED TO ANY SPECIAL, INDIRECT, INCIDENTAL, STATUTORY, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THE MATERIALS OR INFORMATION, WHETHER OR NOT THE RECIPIENT OF MATERIALS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Skyworks products are not intended for use in medical, lifesaving or life-sustaining applications, or other equipment in which the failure of the Skyworks products could lead to personal injury, death, physical or environmental damage. Skyworks customers using or selling Skyworks products for use in such applications do so at their own risk and agree to fully indemnify Skyworks for any damages resulting from such improper use or sale.

Customers are responsible for their products and applications using Skyworks products, which may deviate from published specifications as a result of design defects, errors, or operation of products outside of published parameters or design specifications. Customers should include design and operating safeguards to minimize these and other risks. Skyworks assumes no liability for applications assistance, customer product design, or damage to any equipment resulting from the use of Skyworks products outside of stated published specifications or parameters.

Skyworks and the Skyworks symbol are trademarks or registered trademarks of Skyworks Solutions, Inc., in the United States and other countries. Third-party brands and names are for identification purposes only, and are the property of their respective owners. Additional information, including relevant terms and conditions, posted at [www.skyworksinc.com](http://www.skyworksinc.com), are incorporated by reference.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.