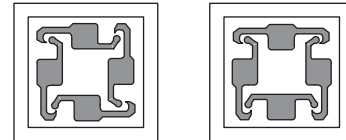


**DATA SHEET**

# Silicon Beamless Schottky Diodes—Pairs and Quads

## Applications

- For microwave MIC assembly & 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 8-diode rings
- Use in ring or crossover designs in double balanced mixer designs
- Virtually any LO requirement can be met with choice of barrier height
- 100% DC tested on wafer
- Available in film frame or waffle pack
- Lead (Pb)-free, RoHS-compliant, and Green™

## Description

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

**NEW**



Skyworks Green™ products are RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, are halogen free according to IEC-61249-2-21, and contain <1,000 ppm antimony trioxide in polymeric materials.

**Electrical Specifications (Per Junction)**

Part Number	Band	Barrier	$V_F$ $I_F = 1.0 \text{ mA (mV)}$		$\Delta V_F$ $I_F = 1.0 \text{ mA (mV)}$	$C_J^{(1,2)}$ $V_R = 0 \text{ V,}$ $f = 1 \text{ MHz (pF)}$		$R_S$ $I_F = 5 \text{ mA } (\Omega)$	$V_B \text{ (V)}$ $@ 10 \text{ }\mu\text{A}$	Outline Drawing Number
			Min.	Max.	Max.	Min.	Max.		Min.	
Ring Quad <sup>(3)</sup>										
DMF3926-000	S	Low	200	260	10	0.3	0.5	5	—	551-002
DME3927-000	S	Medium	300	400	10	0.3	0.5	5	—	551-002
DMJ3928-000	S	High	500	600	10	0.3	0.5	5	—	551-002
DMF3942-000	X	Low	250	310	10	0.15	0.3	8	—	551-002
DME3943-000	X	Medium	325	425	10	0.15	0.3	8	—	551-002
DMJ3944-000	X	High	550	650	10	0.15	0.3	8	—	551-002
Bridge Quad <sup>(3)</sup>										
DMF3929-000	S	Low	200	260	10	0.3	0.5	5	2	551-004
DME3930-000	S	Medium	300	400	10	0.3	0.5	5	3	551-004
DMJ3931-000	S	High	500	600	10	0.3	0.5	5	4	551-004
Series Pair <sup>(3)</sup>										
DMF3932-000	S	Low	200	260	10	0.3	0.5	5	2	551-012
DME3933-000	S	Medium	300	400	10	0.3	0.5	5	3	551-012
DMJ3934-000	S	High	500	600	10	0.3	0.5	5	4	551-012
Back-to-Back Ring Series Pair <sup>(3)</sup>										
DMF3935-000	S	Low	200	260	10	0.3	0.5	5	—	551-056
DME3936-000	S	Medium	300	400	10	0.3	0.5	5	—	551-056
DMJ3937-000	S	High	500	600	10	0.3	0.5	5	—	551-056
Octoquad Ring <sup>(4)</sup>										
DMF3938-000	S-X	Low	400	520	15	0.15	0.3	16	—	556-020
DME3939-000	S-X	Medium	600	800	15	0.15	0.3	16	—	556-020
DMJ3940-000	S-X	High	1000	1200	15	0.15	0.3	16	—	556-020
Back-to-Back Crossover Quad (To 6 GHz)										
DMF3945-000	S	Low	200	260	15	0.3	0.5	5	—	588-065
DME3946-000	S	Medium	300	400	15	0.3	0.5	5	—	588-065
DMJ3947-000	S	High	525	625	15	0.3	0.5	5	—	588-065

1.  $C_J$  represents total capacitance.2. Maximum  $C_J$  unbalance @ 0 V, 1 MHz = 0.025 pF.3. Matching criteria  $V_F$  @ 1 mA  $\leq$  15 mV available for matched sets.4. Matching criteria  $V_F$  @ 1 mA  $\leq$  20 mV available for matched sets.**Spice Parameters (Per Junction)**

Part Number Prefix	$I_S$ (A)	$R_S$ ( $\Omega$ )	N	$T_T$ (s)	$C_{J0}$ (pF)	M	$E_G$ (eV)	$V_J$ (V)	XTI	$F_C$	$B_V$ (V)	$I_{BV}$ (A)
DMF3920	2.5E-7	4	1.04	1.E-11	0.42	0.32	0.69	0.51	2	0.5	2	1E-5
DME3927	1.3E-9	4	1.04	1.E-11	0.39	0.34	0.69	0.65	2	0.5	3	1E-5
DMJ3928	9E-13	4	1.04	1.E-11	0.39	0.42	0.69	0.84	2	0.5	3	1E-5

## Absolute Maximum Ratings

Characteristic	Value
$T_{STG}$	-65 °C to +175 °C
$T_{OP}$	-65 °C to +150 °C
$P_{DISS}$ CW	75 mW/junction
$I_{MAX}$	50 mA V
PIV	$V_B$ rating

Performance is guaranteed only under the conditions listed in the specifications table and is not guaranteed under the full range(s) described by the Absolute Maximum Ratings. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

**CAUTION:** Although these devices are designed to be robust, ESD (Electrostatic Discharge) can cause permanent damage. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.

## Assembly and Handling Procedure

The process flow for assembly is:

1. Die attach using nonconductive epoxy
2. Wire bond
3. 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. Vacuum release gel pack.
2. Wafer on film frame (rejects are marked with ink).
  - Diced, ready for pick and place
  - Unsaun whole wafer, 7 mil thick, max.

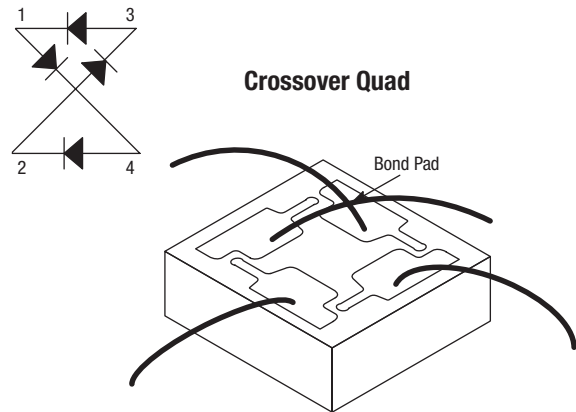
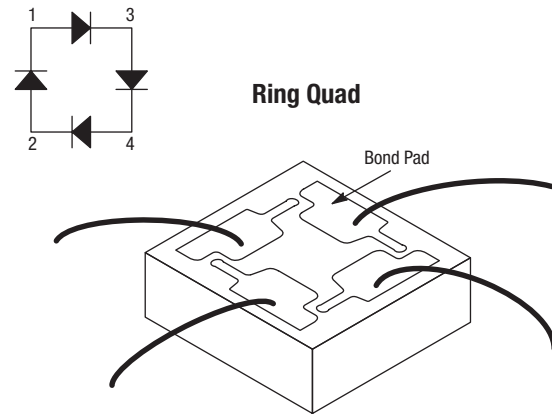
## Wire Bonding

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

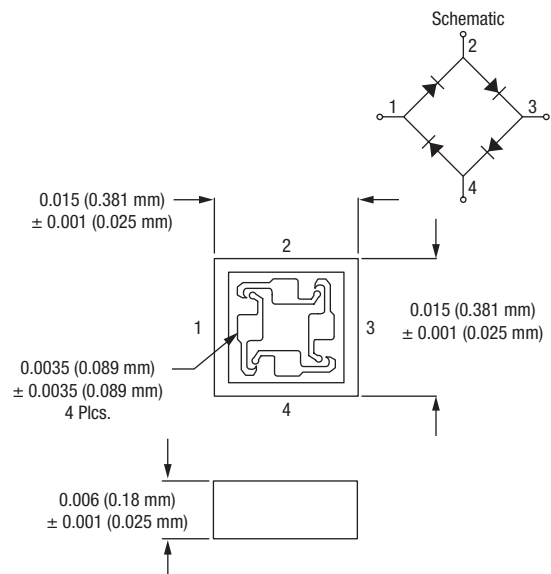
- Thermocompression
- Ballbonding

Skyworks recommends use of pure gold wire

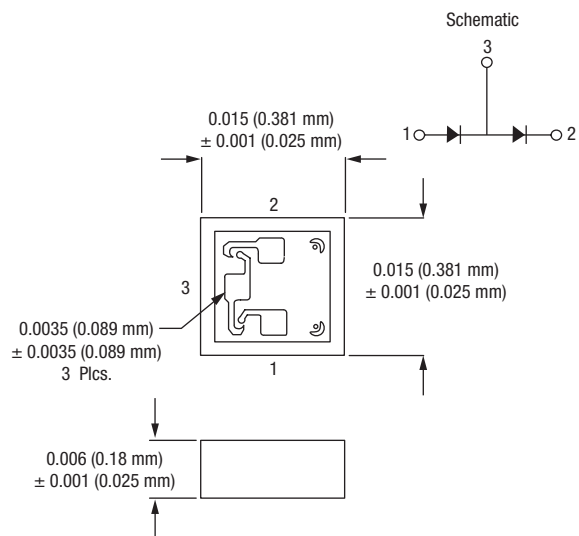
## Typical Bonding Configuration



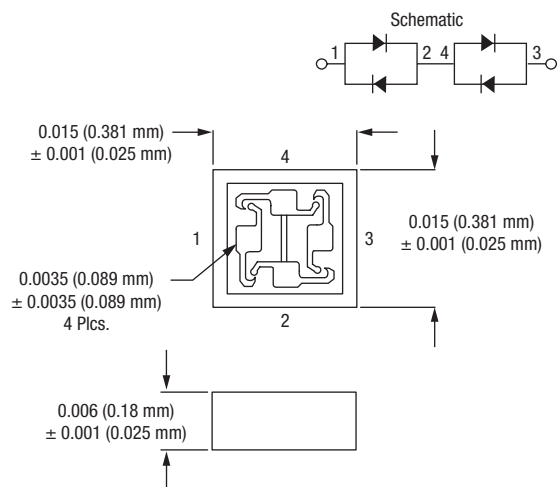
**551-002**



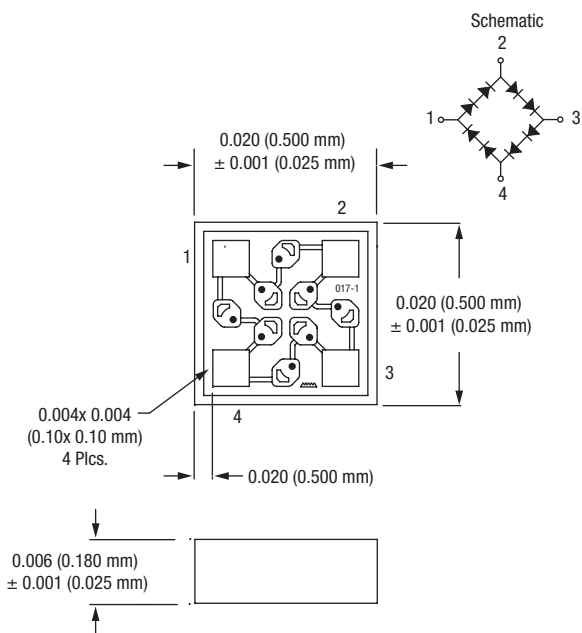
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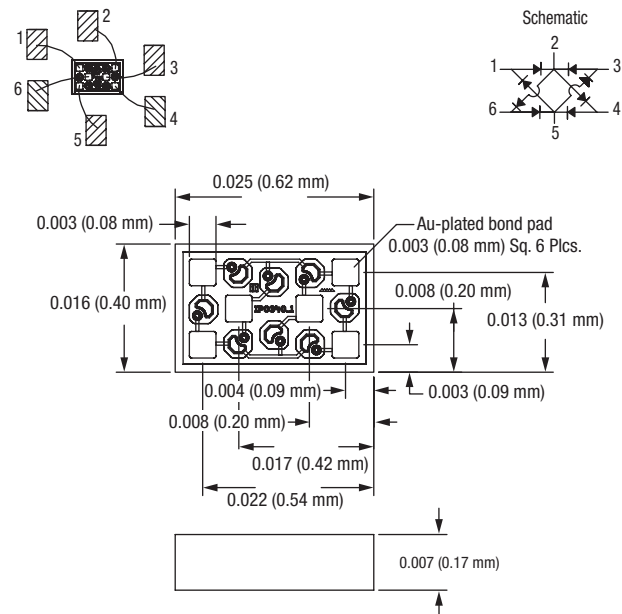
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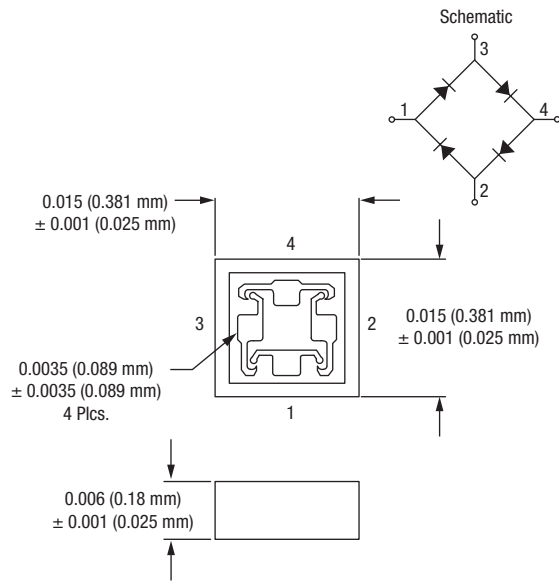
## 556-020



## 588-065



All dimensions in inches (mm) ± 0.001 (± 0.025)

**551-004**

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