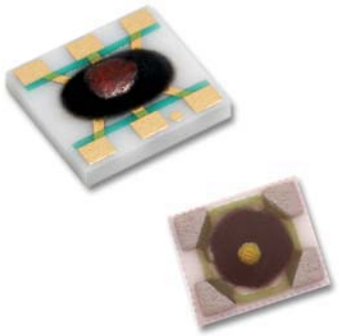
DATA SHEET

Chip-On-Board Mixer Quads

NOTE: These products have been discontinued. The Last Time Buy opportunity expires on 12 April 2010.

Applications

- Double-balanced mixers
- Sampling circuits
- Microwave MIC assembly and automated, high-volume manufacturing



Features

- Mechanically rugged design
- 100 percent DC tested
- Three barrier heights for customized mixer performance

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.

Description

Skyworks ceramic Chip-On-Board (COB) mixer quads are designed for high performance RF and microwave receiver applications. These devices use Skyworks advanced silicon beamless Schottky technology combined with precision ceramic COB assembly techniques to achieve a high degree of device reliability in commercial applications.

Table 1. COB Mixer Quads Absolute Maximum Ratings

Parameter	Symbol	Minimum	Typical	Maximum	Units
Power dissipation, CW (per junction)	P_{DIS}			75	mW
Maximum current	I_{MAX}			50	mA
Operating temperature	T_{OP}	–65		+150	°C
Storage temperature	T_{STG}	–65		+175	°C

Note: 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.

***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. The COB Mixer Quads are Class 0 Human Body Model (HBM) ESD devices.*

Electrical and Mechanical Specifications

The absolute maximum ratings of the COB mixer quads are provided in Table 1. Electrical specifications are provided in Table 2.

The associated SPICE model parameters are listed in Table 3.

Package dimensions are provided in Figures 1 through 4.

Package and Handling Information

Instructions on the shipping container label regarding exposure to moisture after the container seal is broken must be followed. Otherwise, problems related to moisture absorption may occur when the part is subjected to high temperature during solder assembly.

The COB mixer quads are rated to Moisture Sensitivity Level 1 (MSL1) at 260 °C. They can be used for lead or lead-free soldering. For additional information, refer to the Skyworks Application Note, *Solder Reflow Information*, document number 200164.

Care must be taken when attaching this product, whether it is done manually or in a production solder reflow environment. Production quantities of this product are shipped in a standard tape and reel format. For packaging details, refer to the Skyworks Application Note, *Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation*, document number 200083.

Table 2. COB Mixer Quads Electrical Specifications (Note 1)
(T_{OP} = +25 °C, Unless Otherwise Noted)

Part Number	Barrier	V_F @ I_F = 1 mA (mV)	Max ΔV_F @ I_F = 1 mA (Note 2) (mF)	C_J @ 0 V, f = 1 MHz (Note 3) (pF)	Max ΔC_T @ 0 V (pF)	Max R_T @ I_F = 10 mA (Ω)	Min V_B @ 10 µA (V)	Outline Drawing
Ring Quads (to 6 GHz)								
DMF3926-101	Low	200-260	15	0.3-0.5	0.07	8	–	549-002
DME3927-101	Medium	300-400	15	0.3-0.5	0.07	8	–	549-002
DMJ3928-101	High	525-625	15	0.3-0.5	0.07	8	–	549-002
Crossover Ring Quads (to 6 GHz)								
DMF3926-100	Low	200-260	15	0.3-0.5	0.07	8	–	549-010
DME3927-100	Medium	300-400	15	0.3-0.5	0.07	8	–	549-010
DMJ3928-100	High	525-625	15	0.3-0.5	0.07	8	–	549-010
Back-to-Back Crossover Ring Quads (to 6 GHz)								
DMF3945-103	Low	200-260	15	0.3-0.5	0.07	8	–	545-065
DME3946-103	Medium	300-400	15	0.3-0.5	0.07	8	–	545-065
DMJ3947-103	High	525-625	15	0.3-0.5	0.07	8	–	545-065
Bridge Quads (to 6 GHz)								
DMF3929-102	Low	200-260	15	0.3-0.5	0.07	8	2	545-065
DME3930-102	Medium	300-400	15	0.3-0.5	0.07	8	3	545-065
DMJ3931-102	High	525-625	15	0.3-0.5	0.07	8	4	545-065

Note 1: Performance is guaranteed only under the conditions listed in this Table and is not guaranteed over the full operating or storage temperature ranges. Exceeding any of the conditions listed here may result in permanent damage to the device. Operation at elevated temperatures may reduce reliability of the device.

Note 2: Forward voltage difference between package electrodes.

Note 3: Capacitance difference between package electrodes.

Table 4. SPICE Model Parameters (per Junction)

Parameter	Unit	DMF3926 DMF3929 DMF3945	DME3927 DME3930 DME3946	DMJ3928 DMJ3931 DMJ3947
I_S	A	2.5e–07	1.3e–09	9e–13
R_S	Ω	4	4	4
N		1.04	1.04	1.04
TT	sec	1e–11	1e–11	1e–11
C_{JO}	pF	0.42	0.39	0.39
M		0.32	0.37	0.42
E_G	eV	0.69	0.69	0.69
XTI		2	2	2
F_C		0.5	0.5	0.5
B_V	V	2	3	4
I_{BV}	A	1e–05	1e–05	1e–05
V_J	V	0.495	0.595	0.800

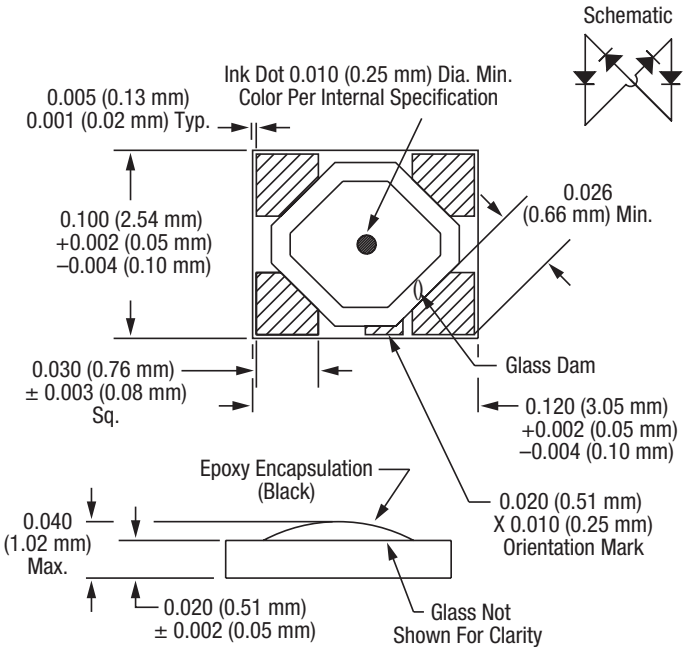


Figure 1. -100 Package

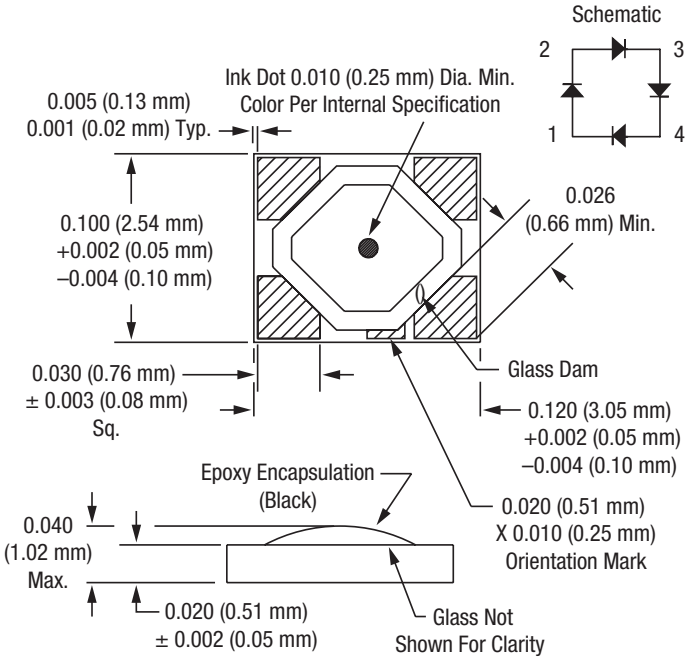


Figure 2. -101 Package

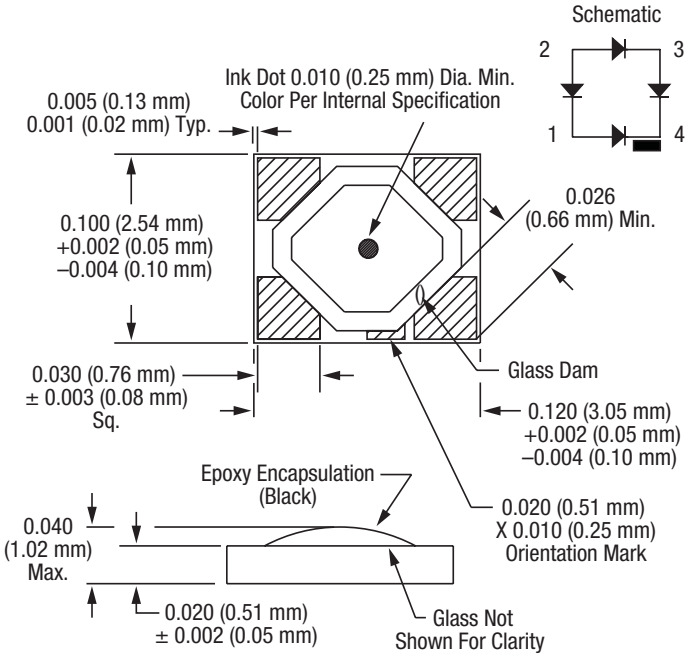
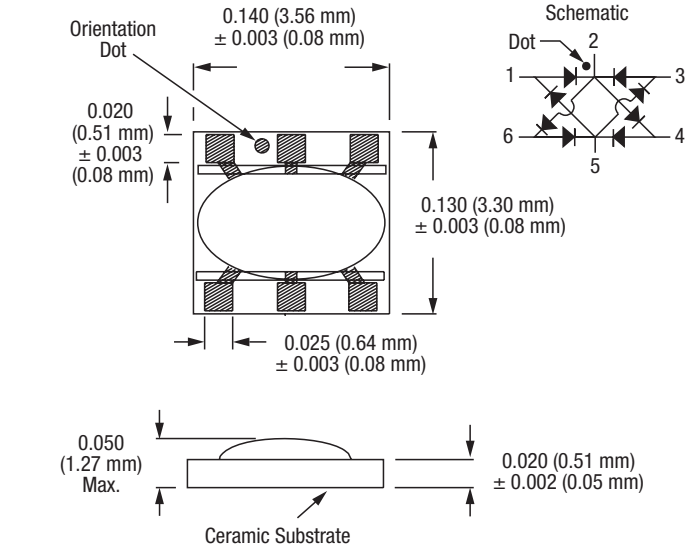


Figure 3. -102 Package



Bottom side is free of metallization.
The minimum specified area of the contact pads (0.017 x 0.022) shall be free of epoxy.

Figure 4. -103 Package