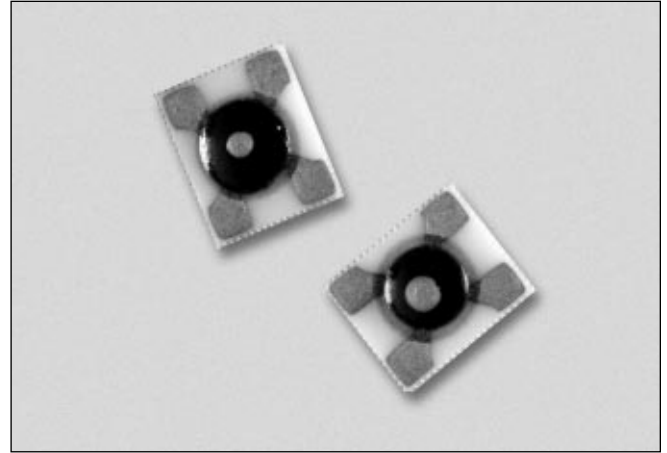


Features

- High Volume Automatic Assembly
- For Microwave MIC Assembly and Automated High Volume Manufacturing
- Mechanically Rugged Design
- 100% DC Tested
- Three Barrier Heights for Customized Mixer Performance

Description

Alpha's ceramic Chip on Board (COB) mixer quads are designed for high performance RF and microwave receiver applications. These devices utilize Alpha's advanced silicon beamless Schottky technology, combined with precision ceramic COB assembly techniques, to achieve a high degree of device reliability in commercial applications. Performance to 10 GHz is available with the ring quads in the 106 package, which employs via hole technology resulting in metalized contacts on the bottom side and eliminating the need for wire bonds to topside contacts.



Absolute Maximum Ratings

| Characteristic | Value |
|------------------------------------|-----------------|
| Maximum Current (I_{MAX}) | 50 mA |
| Power Dissipation (P_D) CW | 75 mW/Junction |
| Storage Temperature (T_{ST}) | -65°C to +175°C |
| Operating Temperature (T_{OP}) | -65°C to +150°C |
| ESD Human Body Model | Class 1B |

Electrical Specifications at 25°C

| Part Number | Barrier | V _F @ 1 mA (mV) | | (Δ) V _F @ 1 mA ¹ (mV) | C _J @ 0V (pF) | | (Δ) C _T @ 0V ² (pF) | R _T @ 10 mA (Ω) | Outline Drawing |
|-----------------------------------------------|---------|----------------------------|------|---------------------------------------------|--------------------------|------|-------------------------------------------|----------------------------|-----------------|
| | | Min. | Max. | Max. | Min. | Max. | Max. | Max. | |
| Ring Quad (to 6 GHz) | | | | | | | | | |
| DMF3926-101 | Low | 200 | 260 | 15 | 0.3 | 0.5 | 0.07 | 8 | 101 |
| DME3927-101 | Medium | 300 | 400 | 15 | 0.3 | 0.5 | 0.07 | 8 | 101 |
| DMJ3928-101 | High | 525 | 625 | 15 | 0.3 | 0.5 | 0.07 | 8 | 101 |
| Ring Quad (to 10 GHz) | | | | | | | | | |
| DMF3948-106 | Low | 250 | 310 | 15 | 0.05 | 0.15 | 0.07 | 15 | 106 |
| DME3949-106 | Medium | 350 | 450 | 15 | 0.05 | 0.15 | 0.07 | 15 | 106 |
| DMJ3950-106 | High | 575 | 675 | 15 | 0.05 | 0.15 | 0.07 | 15 | 106 |
| Crossover Ring Quad (to 6 GHz) | | | | | | | | | |
| DMF3926-100 | Low | 200 | 260 | 15 | 0.3 | 0.5 | 0.07 | 8 | 100 |
| DME3927-100 | Medium | 300 | 400 | 15 | 0.3 | 0.5 | 0.07 | 8 | 100 |
| DMJ3928-100 | High | 525 | 625 | 15 | 0.3 | 0.5 | 0.07 | 8 | 100 |
| Back-to-Back Crossover Quad (to 6 GHz) | | | | | | | | | |
| DMF3945-103 | Low | 200 | 260 | 15 | 0.3 | 0.5 | 0.07 | 8 | 103 |
| DME3946-103 | Medium | 300 | 400 | 15 | 0.3 | 0.5 | 0.07 | 8 | 103 |
| DMJ3947-103 | High | 525 | 625 | 15 | 0.3 | 0.5 | 0.07 | 8 | 103 |

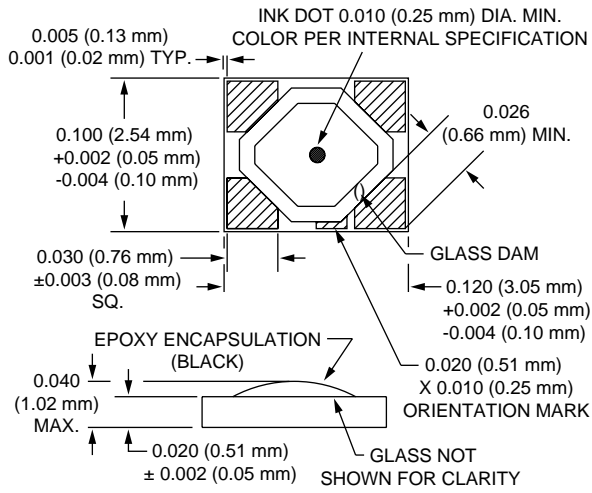
| Part Number | Barrier | V _F @ 1 mA (mV) | | (Δ) V _F @ 1 mA ¹ (mV) | C _J @ 0V (pF) | | (Δ) C _T @ 0V ² (pF) | R _T @ 10 mA (Ω) | V _B @ 10 μA (V) | Outline Drawing |
|-------------------------------|---------|----------------------------|------|---------------------------------------------|--------------------------|------|-------------------------------------------|----------------------------|----------------------------|-----------------|
| | | Min. | Max. | Max. | Min. | Max. | Max. | Max. | Min. | |
| Bridge Quad (to 6 GHz) | | | | | | | | | | |
| DMF3929-102 | Low | 200 | 260 | 15 | 0.3 | 0.5 | 0.07 | 8 | 2 | 102 |
| DME3930-102 | Medium | 300 | 400 | 15 | 0.3 | 0.5 | 0.07 | 8 | 3 | 102 |
| DMJ3931-102 | High | 525 | 625 | 15 | 0.3 | 0.5 | 0.07 | 8 | 4 | 102 |

1. Forward voltage difference between package electrodes.
2. Capacitance difference between package electrodes.

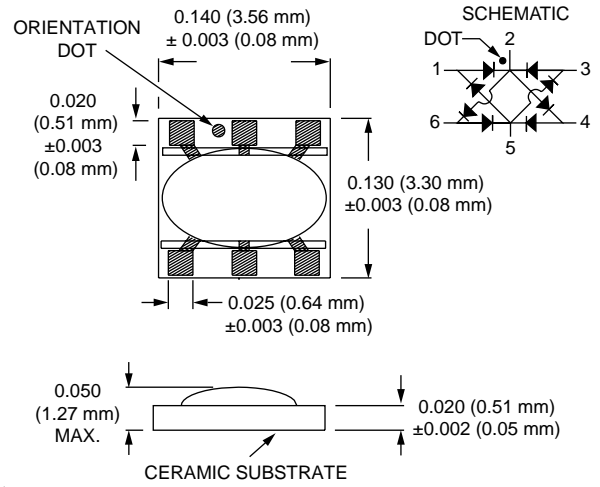
SPICE Model Parameters (Per Junction)

| Parameter | Unit | DMF3926 DMF3929 DMF3945 | DME3927 DME3930 DME3946 | DMJ3928 DMJ3931 DMJ3947 | DMF3948 | DME3949 | DMJ3950 |
|-----------------|------|-------------------------------|-------------------------------|-------------------------------|---------|---------|---------|
| IS | A | 2.5E-07 | 1.3E-09 | 9.0E-13 | 4.4E-08 | 9.3E-10 | 3.3E-13 |
| R _S | Ω | 4 | 4 | 4 | 9 | 9 | 9 |
| N | | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 |
| TT | s | 1E-11 | 1E-11 | 1E-11 | 1E-11 | 1E-11 | 1E-11 |
| C _{J0} | pF | 0.42 | 0.39 | 0.39 | 0.11 | 0.10 | 0.10 |
| M | | 0.32 | 0.37 | 0.42 | 0.32 | 0.37 | 0.42 |
| E _G | eV | 0.69 | 0.69 | 0.69 | 0.69 | 0.69 | 0.69 |
| XTI | | 2 | 2 | 2 | 2 | 2 | 2 |
| F _C | | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| B _V | V | 2 | 3 | 4 | 3 | 4 | 5 |
| I _{BV} | A | 1.0E-05 | 1.0E-05 | 1.0E-05 | 1.0E-05 | 1.0E-05 | 1.0E-05 |
| V _J | V | 0.495 | 0.595 | 0.800 | 0.495 | 0.595 | 0.800 |

100, 101, 102



103



Notes:

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

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