

TQM969001

PCS Duplexer



Applications

- Coverage enhancement repeaters
- Femtocells
- Test Mobiles

Product Features

- Small form factor of 3.8 X 3.8 mm
- Max height of 1.2 mm
- Max Uplink/Downlink peak power of 38dBm
- Halogen and Lead free construction

General Description

TQM969001 is a duplexer designed for US PCS base station/repeater applications. It exhibits excellent power handling, pass band flatness, rejection, and Uplink/Downlink isolation.

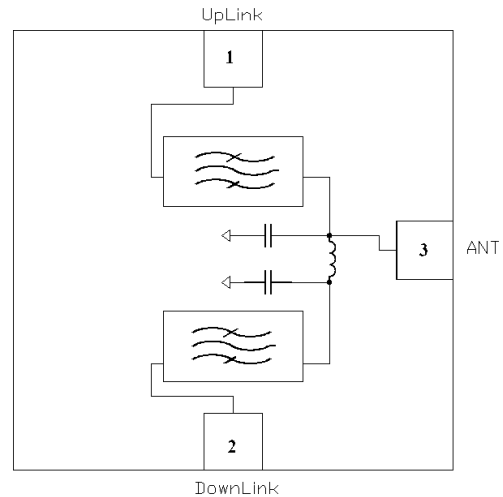
The TQM969001 increases the sensitivity and dynamic range of receivers by providing more than 50 dB attenuation of the Uplink signal at the receiver input and more than 50 dB rejection of Uplink-generated noise in the receiver band.

Typical insertion loss at the Uplink channel is only 1.32 dB and the typical insertion loss in the Downlink channel is 1.52 dB, which improves the receiver sensitivity.



3-pin 3.8x3.8mm leadless LGA package

Functional Block Diagram



Pin Configuration

| Pin # | Symbol |
|----------|--------|
| UpLink | 1 |
| DownLink | 2 |
| ANT | 3 |

Ordering Information

| Part No. | Description |
|--------------|-------------------------------|
| TQM969001 | PCS Duplexer |
| TQM969001EVB | PCS Duplexer evaluation board |

Specifications

Electrical Specifications

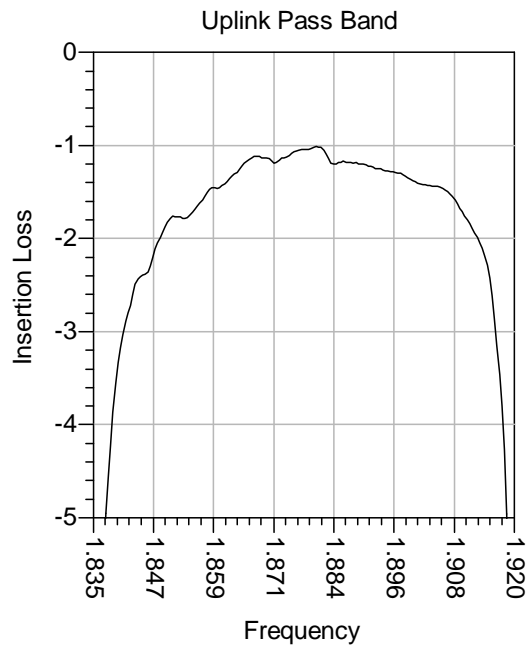
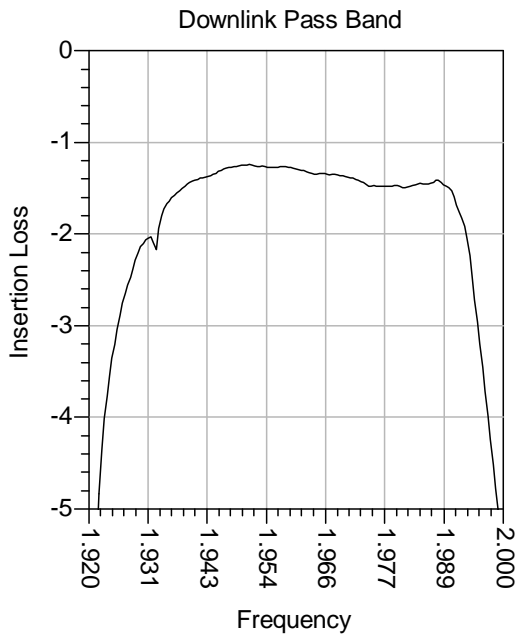
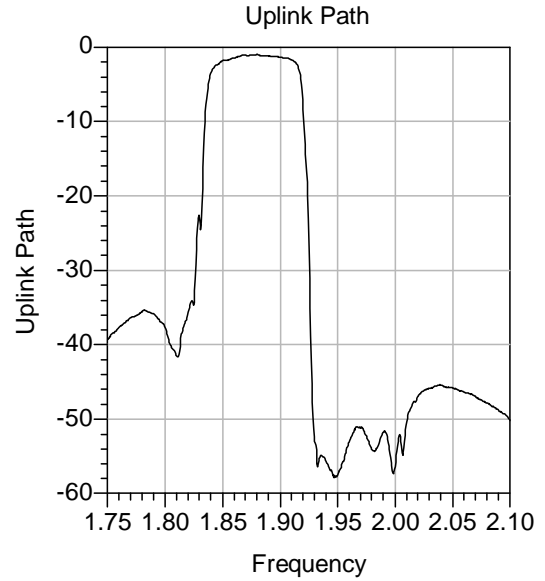
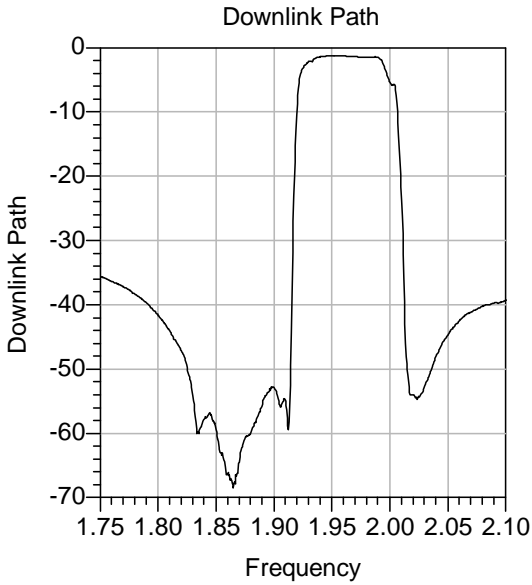
Test conditions unless otherwise noted: +25°C

| Parameter | Conditions | Min | Typical | Max | Units |
|-----------------------------|-----------------------|--------|---------|--------|-------|
| Antenna - Downlink | | | | | |
| Frequency (f _o) | | 1930.5 | | 1989.5 | MHz |
| Operating temperature | | -40 | +25 | +85 | C |
| Insertion loss | 1930.5 – 1989.5 MHz | | 1.52 | 3.0 | dB |
| Ripple (p-p) | | | 0.84 | 1.25 | dB |
| VSWR, 50 Ω | In/out | | 2.1:1 | 2.7:1 | |
| Absolute attenuation | 824 – 849 MHz | 35 | 37 | | dB |
| Absolute attenuation | 1850 – 1910 MHz | 50 | 53 | | dB |
| Absolute attenuation | 2400 – 2484 MHz | 42 | 45 | | dB |
| Absolute attenuation | 3860 – 3980 MHz | 50 | 53 | | dB |
| Antenna – Uplink | | | | | |
| Frequency (f _o) | | 1850.5 | | 1909.5 | MHz |
| Operating temperature | | -40 | +25 | +85 | C |
| Insertion loss | 1850.5 – 1909.5 MHz | | 1.32 | 2.8 | dB |
| Ripple (p-p) | | — | 0.65 | 1.45 | dB |
| VSWR, 50 Ω | In/out | | 1.8:1 | 2.1:1 | |
| Absolute attenuation | 869 – 894 MHz | 38 | 41 | | dB |
| Absolute attenuation | 1574.42 – 1576.42 MHz | 40 | 43 | | dB |
| Absolute attenuation | 1930 – 1990 MHz | 44 | 50 | | dB |
| Absolute attenuation | 3690 – 3830 MHz | 27 | 30 | | dB |
| Absolute attenuation | 5540 – 5740 MHz | 15 | 17 | | dB |
| Absolute attenuation | 7390 – 7650 MHz | 12 | 24 | | dB |
| Uplink – Downlink | | | | | |
| Uplink – Downlink isolation | 1850 – 1910 MHz | 52 | 55 | | dB |
| | 1930 – 1990 MHz | 47 | 53 | | dB |
| | 1910 - 1930 MHz | 15 | 19 | | dB |
| Peak power | | | 38 | | dBm |
| Average power | 17,344 hours @ 55°C | | 29 | | dBm |

Notes:

1. Network Analyzer is calibrated at -30 dBm power level for small signal measurements.
2. Triquint Test Board.

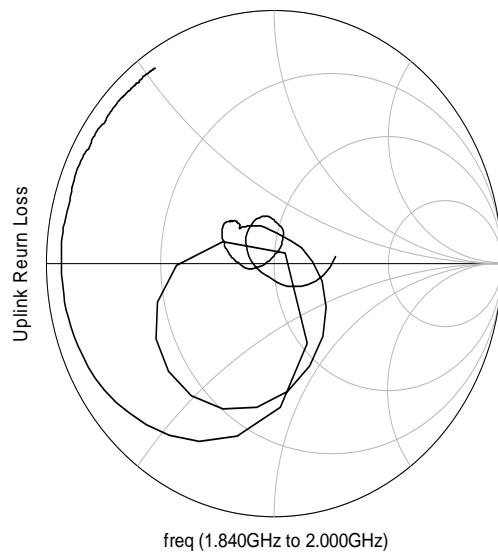
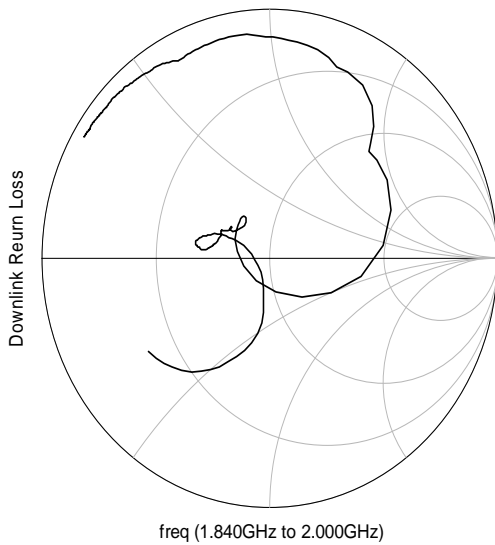
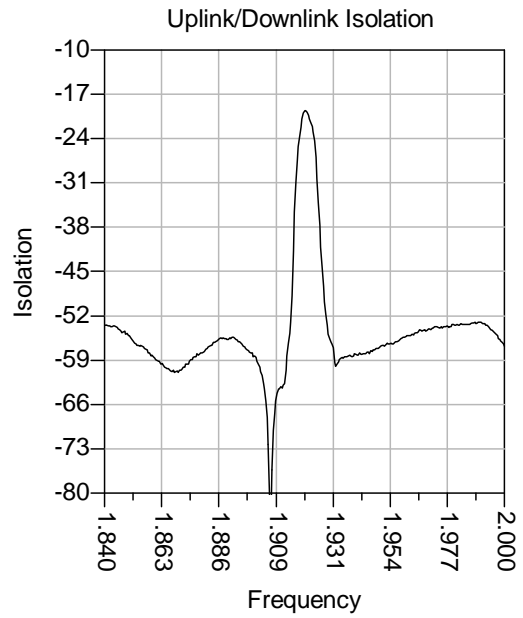
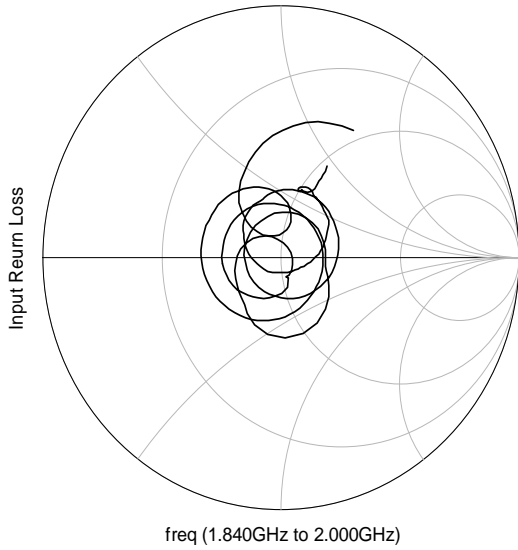
Device Characterization Data



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Device Characterization Data



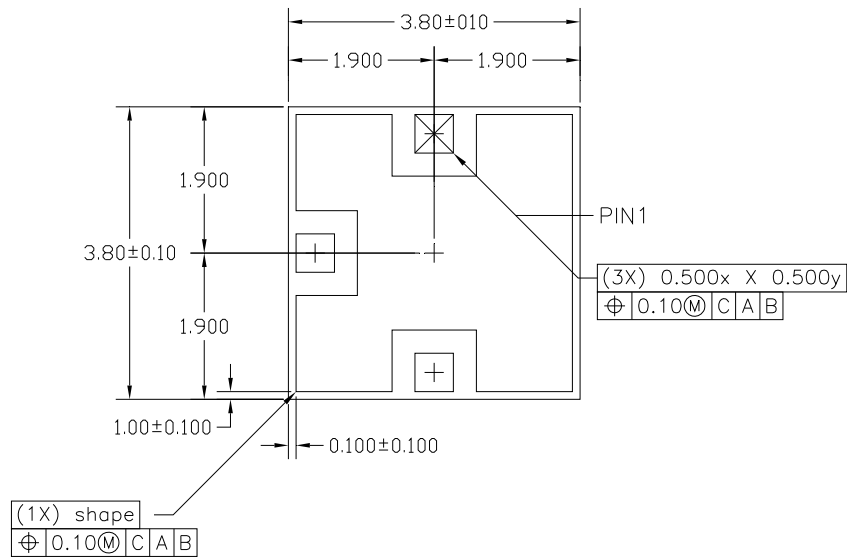
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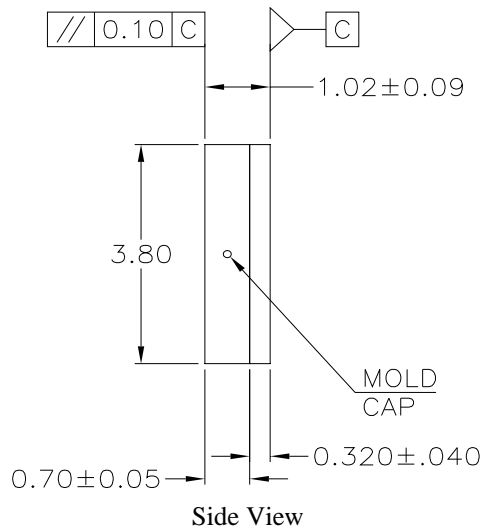
Mechanical Information

The pad pattern shown has been developed and tested for optimized assembly at TriQuint Semiconductor. The PCB land pattern has been developed to accommodate lead and package tolerances. Since surface mount processes vary from company to company, careful process development is recommended.

Package Outline Drawing:



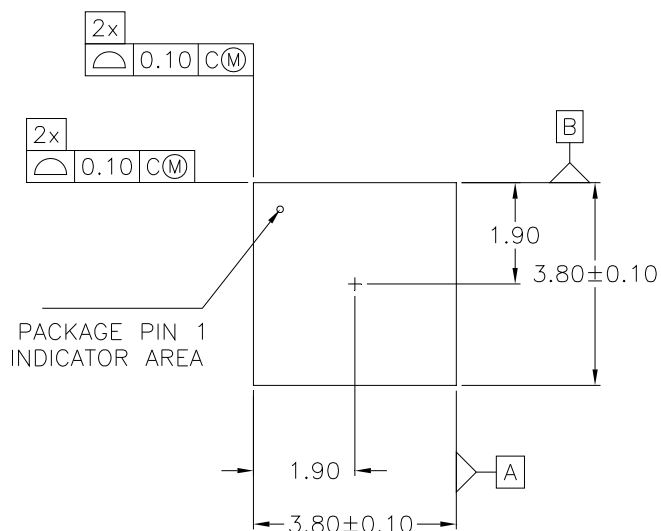
Top View



Side View

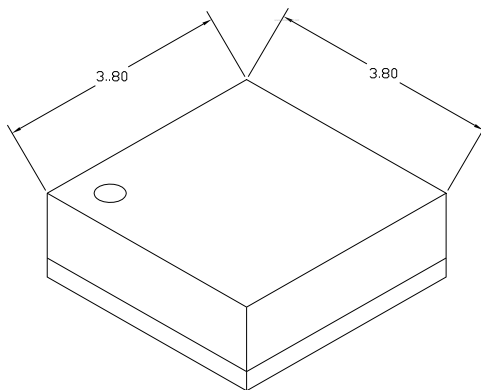
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PACKAGE PIN 1
INDICATOR AREA

Bottom View



3-D View

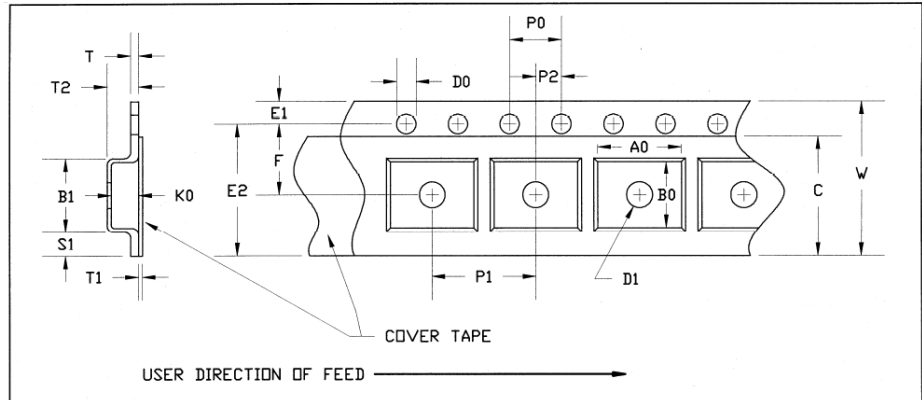
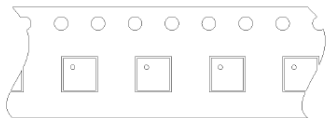
Packaging Style:

SIP LGA (system in package land grid array)

Tape and Reel Information

Tape and reel specifications for this part are also available on the TriQuint website in the “Application Notes” section.

MODULE 3.5x3.5, 3.8x3.8, 4x4, 5x5 and 6x6
User Direction of Feed →



MODULE – 3.8X3.8 CARRIER AND COVER TAPE DIMENSIONS

| Part | Feature | Symbol | Size (in) | Size (mm) |
|-----------------------------|----------------------------------------|--------|-----------|-----------|
| Cavity | Length | A0 | 0.165 | 4.10 |
| | Width | B0 | 0.165 | 4.10 |
| | Depth | K0 | 0.055 | 1.80 |
| | Pitch | P1 | 0.315 | 8.00 |
| Distance Between Centerline | Cavity to Perforation Length Direction | P2 | 0.079 | 2.00 |
| | Cavity to Perforation Width Direction | F | 0.217 | 5.50 |
| Cover Tape | Width | C | 0.362 | 9.20 |
| Carrier Tape | Width | W | 0.472 | 12.00 |

Product Compliance Information

ESD Information



Caution! ESD-Sensitive Device

ESD Rating: Class 1C
Value: Passes ≥ 1000 V min.
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: Class IV
Value: Passes ≥ 1000 V min.
Test: Charged Device Model (CDM)
Standard: JEDEC Standard JESD22-C101

Solderability

Compatible with the latest version of J-STD-020, Lead free solder, 260°

This part is compliant with EU 2002/95/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

This product also has the following attributes:

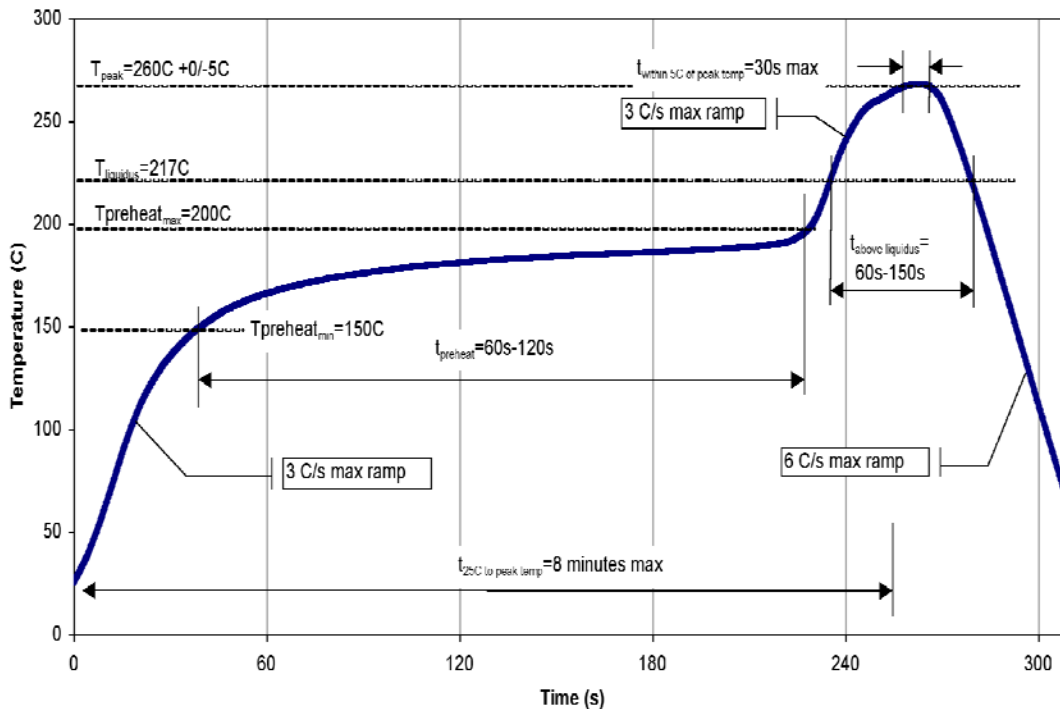
- Lead Free
- Halogen Free (Chlorine, Bromine)

MSL Rating

Level 3 at +260 °C convection reflow

The part is rated Moisture Sensitivity Level 3 at 260°C per JEDEC standard IPC/JEDEC J-STD-020.

Recommended Soldering Temperature Profile



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Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations, and information about TriQuint:

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