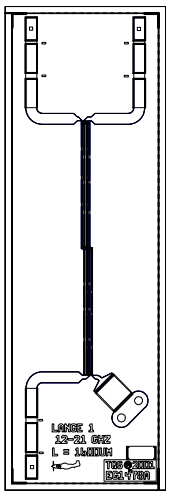
TriQuint SEMICONDUCTOR

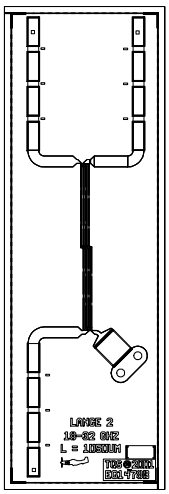
Product Data Sheet
Aug 5, 2008

TGB2001
TGB4001
TGB4002

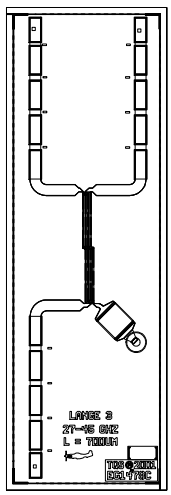
Lange Coupler Set



TGB2001
12-21GHz



TGB4001
18-32GHz



TGB4002
27-45GHz

Key Features and Performance

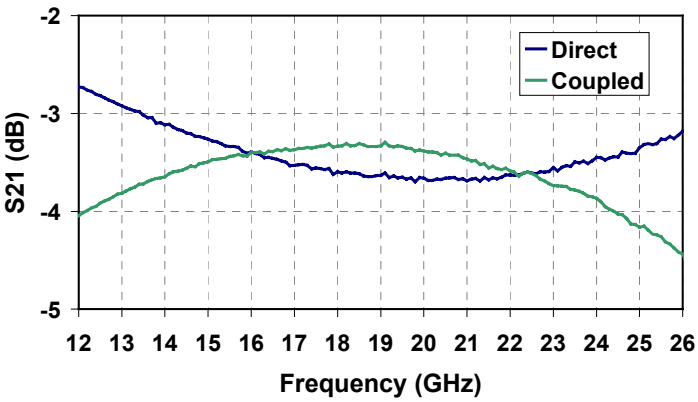
- Very Low Loss (<0.25dB Typical)
- High Power 1W 50Ω Termination
- Broadband 3dB Power Split
- Chip dimensions: 1.0 x 3.0 x 0.1 mm (40 x 120 x 4 mils)
- 3 sizes Cover 12GHz - 45GHz

Primary Applications

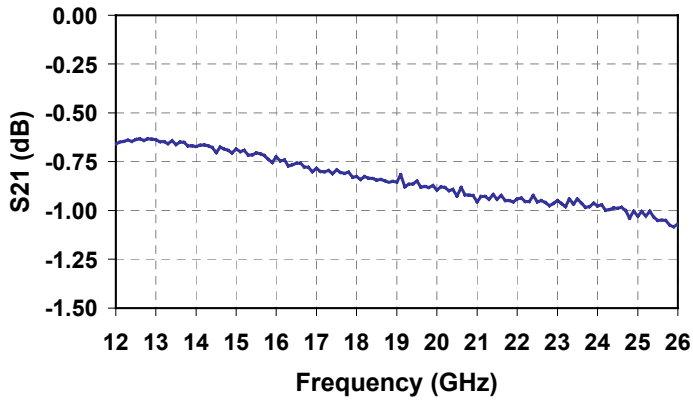
- Power Combining

Preliminary Measured Data

TGB2001



TGB2001 Back-to-Back



Note: Datasheet is subject to change without notice.

TABLE I
MAXIMUM RATINGS

Symbol	Parameter 1/	Value	Notes
P_{IN}	Input Continuous Wave Power	TBD dBm	
T_M	Mounting Temperature	320 ^{0}C	
T_{STG}	(30 Seconds) Storage Temperature	-65 to 150 ^{0}C	

1/ These ratings represent the maximum operable values for this device.

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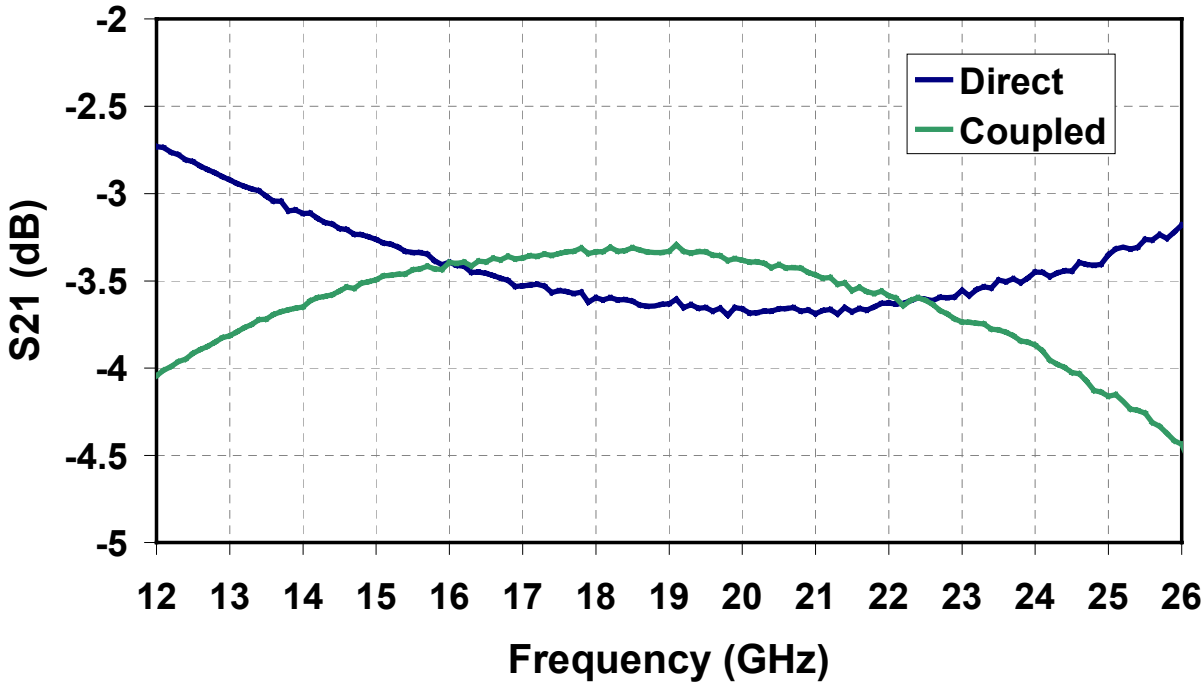
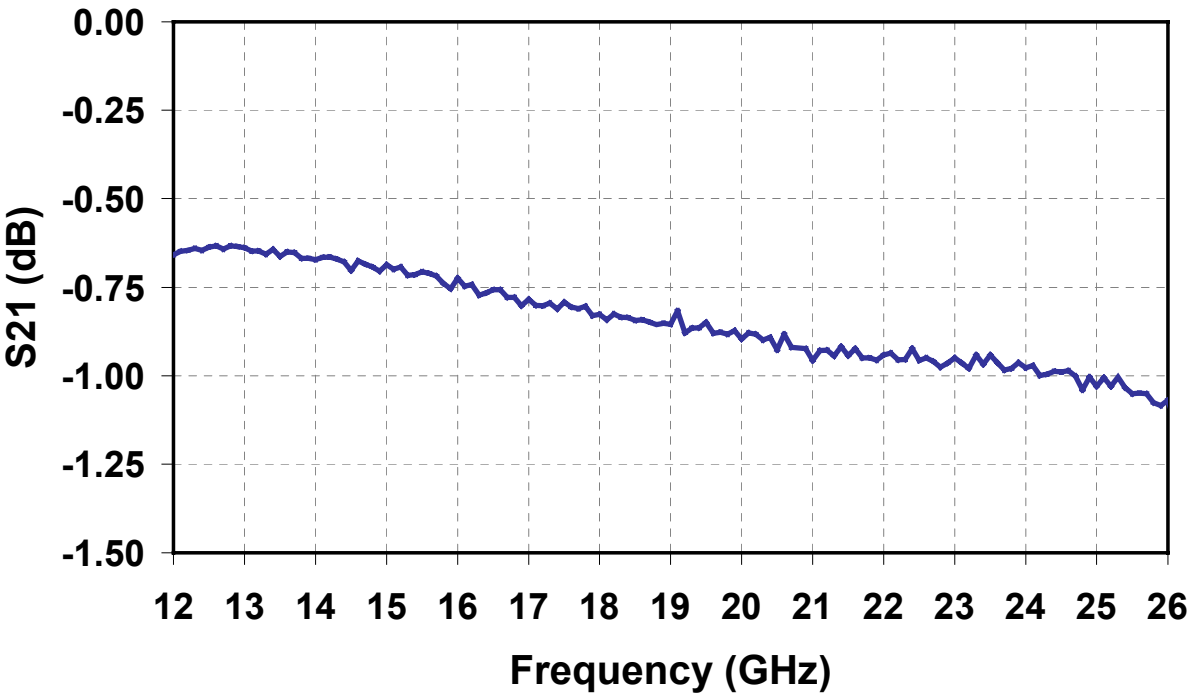
Typical Fixtured Performance

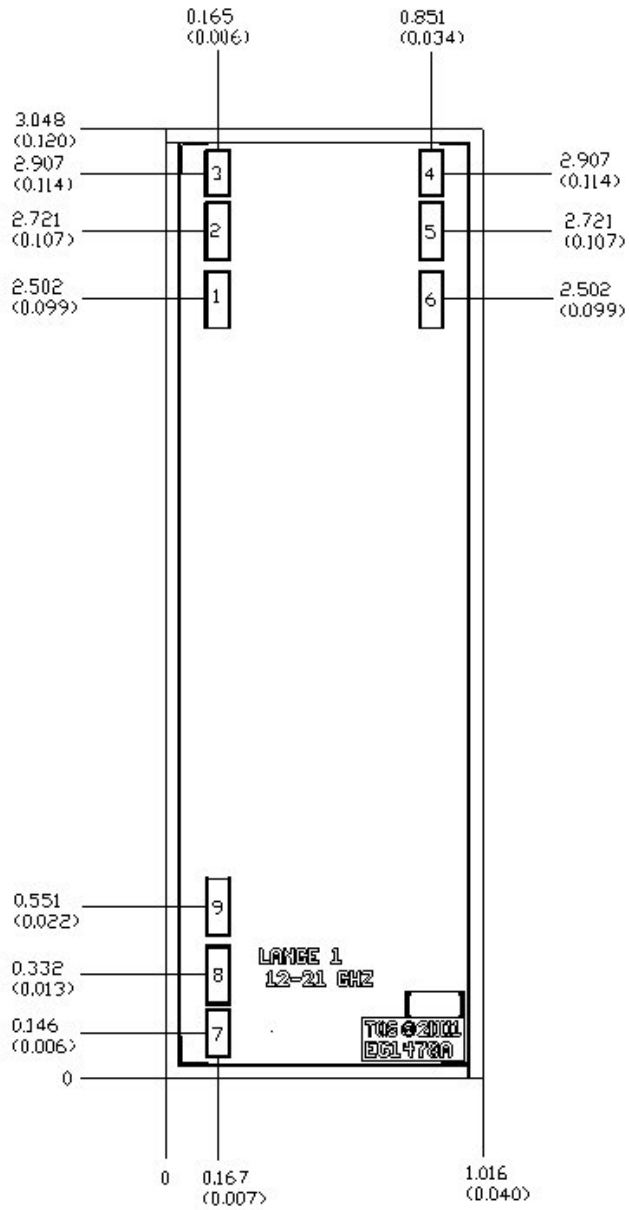
TGB2001



TGB2001 Back-to-Back



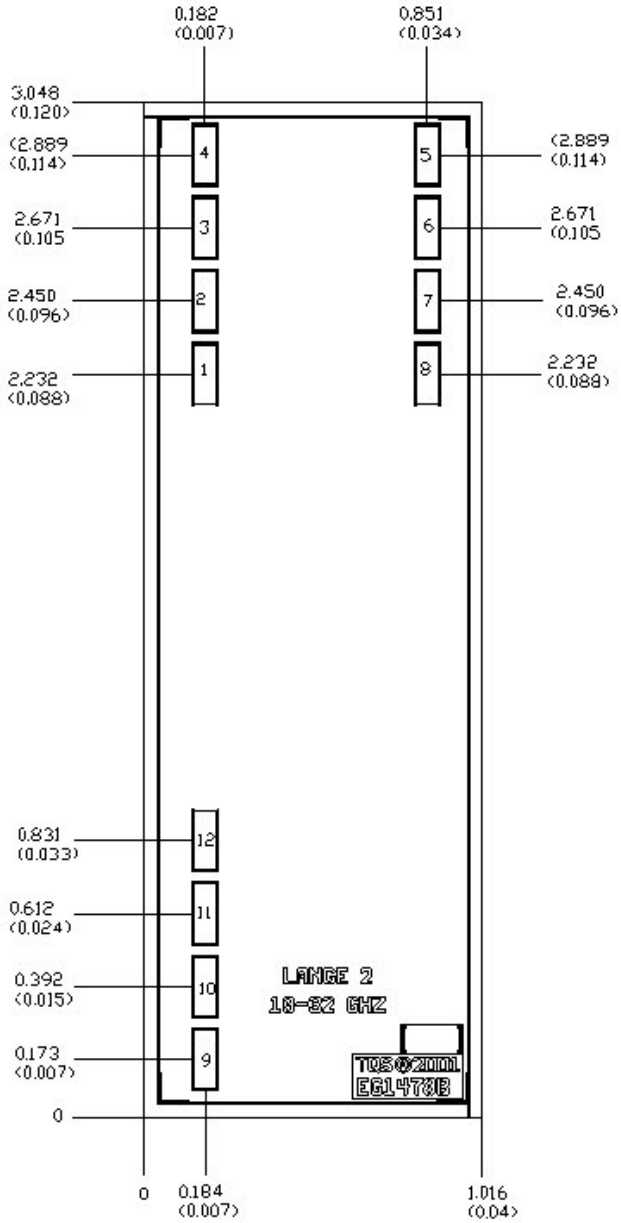
Mechanical Drawing
TGB2001



Units: millimeters (inches)
Thickness: 0.100 (0.004)
Chip edge to bond pad dimensions are shown to center of bond pad
Chip size tolerance: +/- 0.051 (0.002)

Bond pad #1:	(Port 1)	0.08 x 0.188	(0.003 x 0.007)
Bond pad #2:	(Port 1)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #3:	(Port 1)	0.08 x 0.153	(0.003 x 0.006)
Bond pad #4:	(Port 2)	0.08 x 0.153	(0.003 x 0.006)
Bond pad #5:	(Port 2)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #6:	(Port 2)	0.08 x 0.188	(0.003 x 0.007)
Bond pad #7:	(Port 3)	0.08 x 0.153	(0.003 x 0.006)
Bond pad #8:	(Port 3)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #9:	(Port 3)	0.08 x 0.188	(0.003 x 0.007)

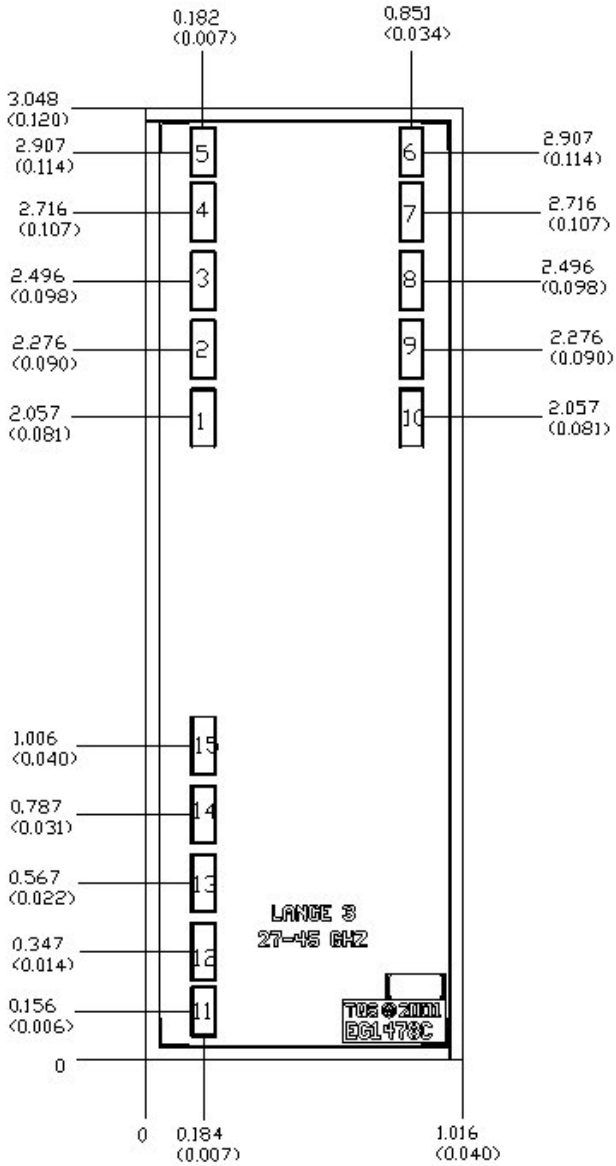
Mechanical Drawing
TGB4001



Units: millimeters (inches)
Thickness: 0.100 (0.004)
Chip edge to bond pad dimensions are shown to center of bond pad
Chip size tolerance: +/- 0.051 (0.002)

Bond pad #1:	(Port 1)	0.09 x 0.188	(0.003 x 0.007)
Bond pad #2:	(Port 1)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #3:	(Port 1)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #4:	(Port 1)	0.08 x 0.188	(0.003 x 0.007)
Bond pad #5:	(Port 2)	0.08 x 0.188	(0.003 x 0.007)
Bond pad #6:	(Port 2)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #7:	(Port 2)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #8:	(Port 2)	0.08 x 0.188	(0.003 x 0.007)
Bond pad #9:	(Port 3)	0.08 x 0.188	(0.003 x 0.007)
Bond pad #10:	(Port 3)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #11:	(Port 3)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #12:	(Port 3)	0.08 x 0.188	(0.003 x 0.007)

Mechanical Drawing
TGB4002



Units: millimeters (inches)
Thickness: 0.100 (0.004)
Chip edge to bond pad dimensions are shown to center of bond pad
Chip size tolerance: +/- 0.051 (0.002)

Bond pad #1:	(Part 1)	0.08 x 0.188	(0.003 x 0.007)
Bond pad #2:	(Part 1)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #3:	(Part 1)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #4:	(Part 1)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #5:	(Part 1)	0.08 x 0.163	(0.003 x 0.006)
Bond pad #6:	(Part 2)	0.08 x 0.163	(0.003 x 0.006)
Bond pad #7:	(Part 2)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #8:	(Part 2)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #9:	(Part 2)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #10:	(Part 2)	0.08 x 0.188	(0.003 x 0.007)
Bond pad #11:	(Part 3)	0.08 x 0.163	(0.003 x 0.006)
Bond pad #12:	(Part 3)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #13:	(Part 3)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #14:	(Part 3)	0.08 x 0.190	(0.003 x 0.007)
Bond pad #15:	(Part 3)	0.08 x 0.188	(0.003 x 0.007)

Assembly Process Notes

Reflow process assembly notes:

- Use AuSn (80/20) solder with limited exposure to temperatures at or above 300°C. (30 seconds maximum)
- An alloy station or conveyor furnace with reducing atmosphere should be used.
- No fluxes should be utilized.
- Coefficient of thermal expansion matching is critical for long-term reliability.
- Devices must be stored in a dry nitrogen atmosphere.

Component placement and adhesive attachment assembly notes:

- Vacuum pencils and/or vacuum collets are the preferred method of pick up.
- Air bridges must be avoided during placement.
- The force impact is critical during auto placement.
- Organic attachment can be used in low-power applications.
- Curing should be done in a convection oven; proper exhaust is a safety concern.
- Microwave or radiant curing should not be used because of differential heating.
- Coefficient of thermal expansion matching is critical.

Interconnect process assembly notes:

- Thermosonic ball bonding is the preferred interconnect technique.
- Force, time, and ultrasonics are critical parameters.
- Aluminum wire should not be used.
- Discrete FET devices with small pad sizes should be bonded with 0.0007-inch wire.
- Maximum stage temperature is 200°C.

GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.