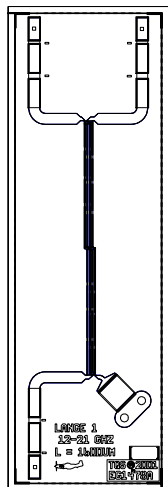
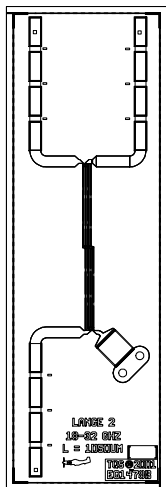


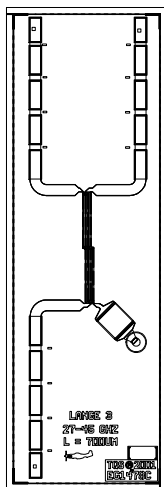
Lange Coupler Set



TGB2001
12-21GHz



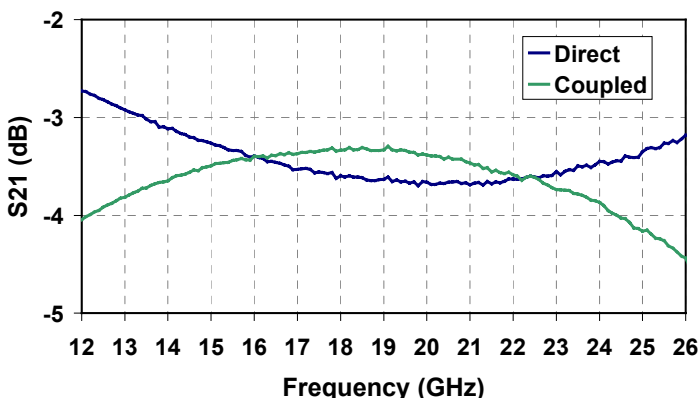
TGB4001
18-32GHz



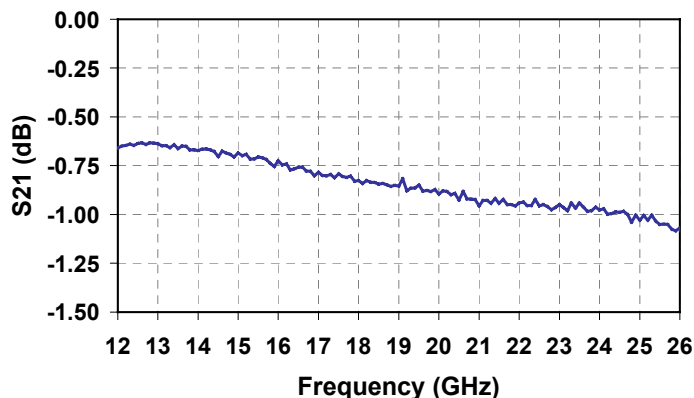
TGB4002
27-45GHz

Preliminary Measured Data

TGB2001



TGB2001 Back-to-Back



Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.

**TABLE I
MAXIMUM RATINGS**

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

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

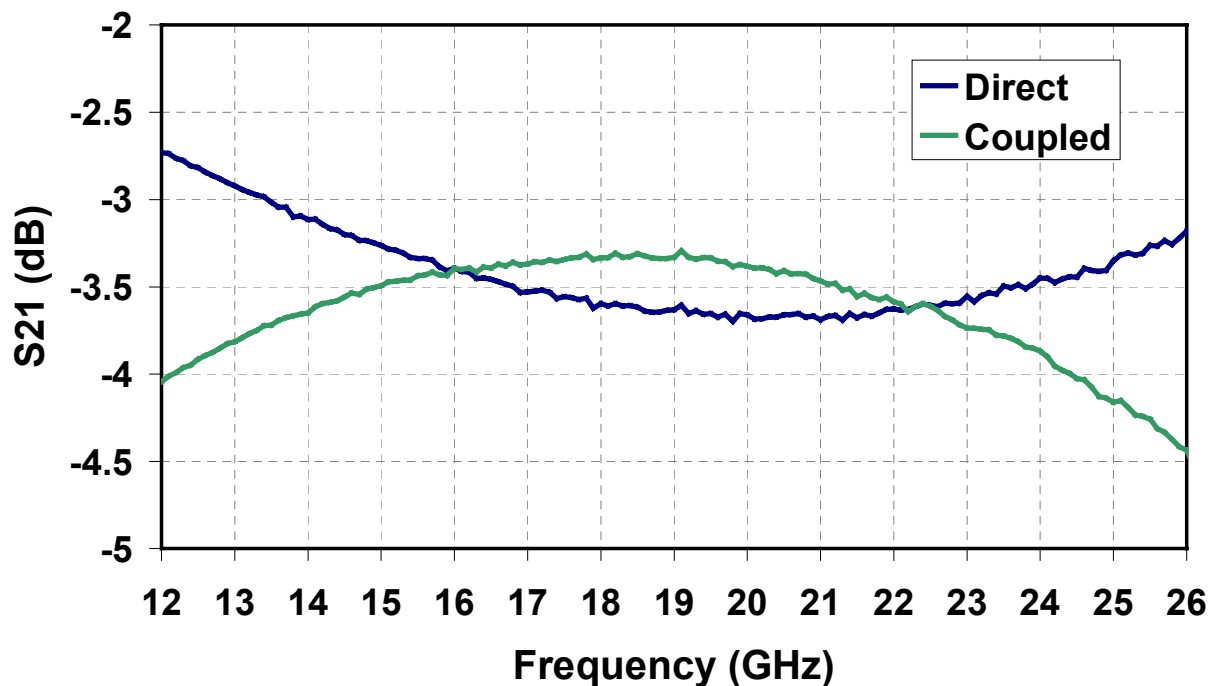
Typical Fixtured Performance

TGB2001

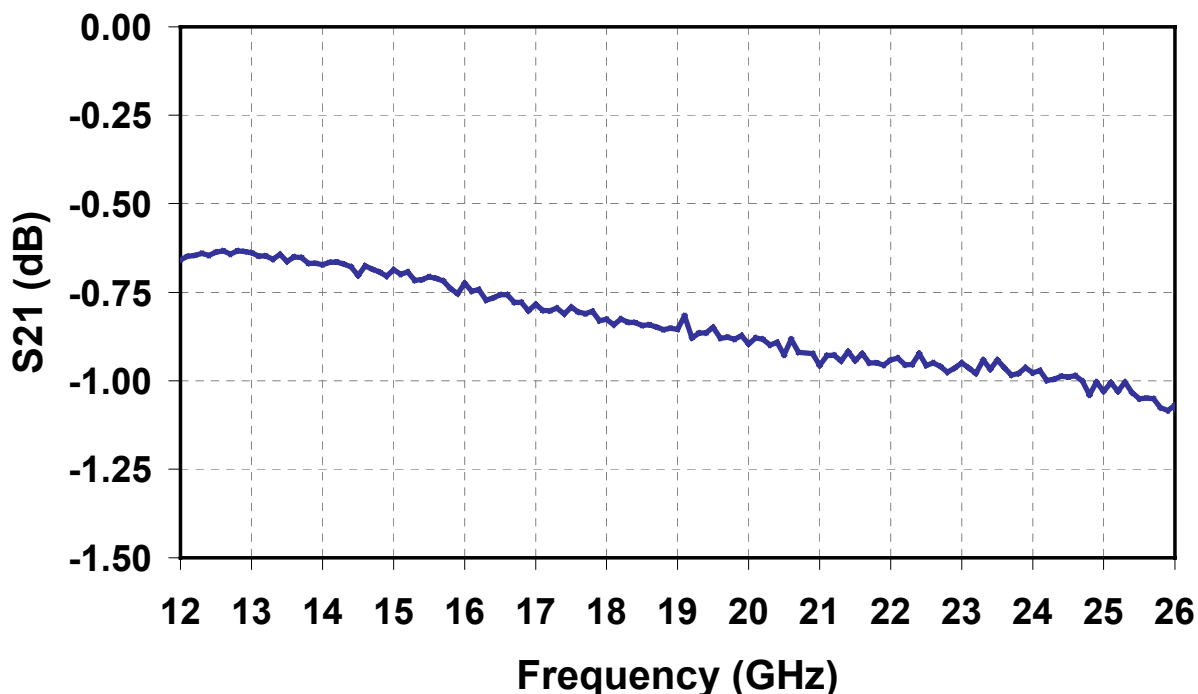
TGB2001-EPU

TGB4001-EPU

TGB4002-EPU



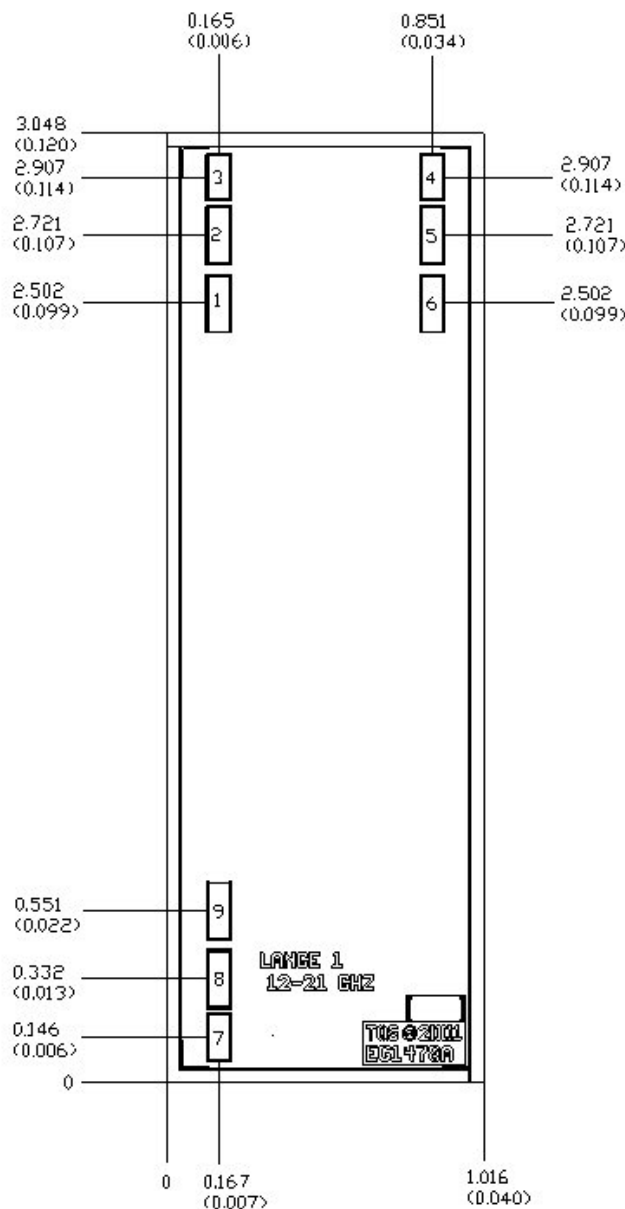
TGB2001 Back-to-Back



Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.

Mechanical Drawing TGB2001-EPU

TGB2001-EPU
TGB4001-EPU
TGB4002-EPU



Units: millimeters (inches)

Thickness: 0.100 (0.004)

Chip edge to bond pad dimensions are shown to center of bond pad

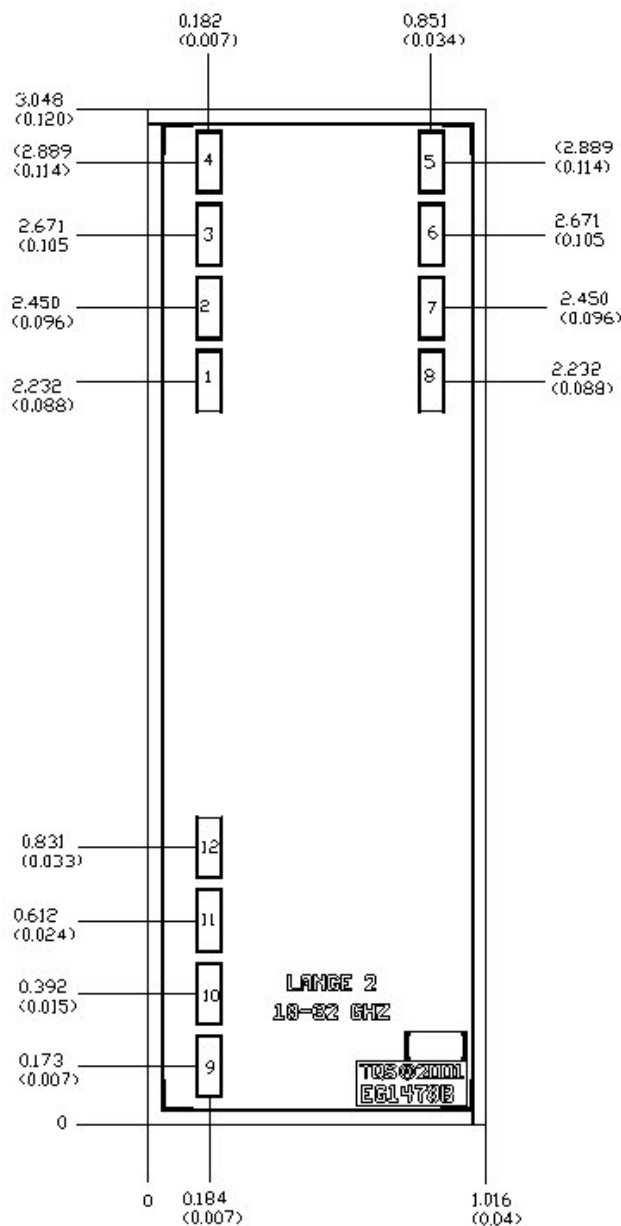
Chip size tolerance: +/- 0.051 (0.002)

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)

Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.

TGB2001-EPU
TGB4001-EPU
TGB4002-EPU

Mechanical Drawing
TGB4001-EPU

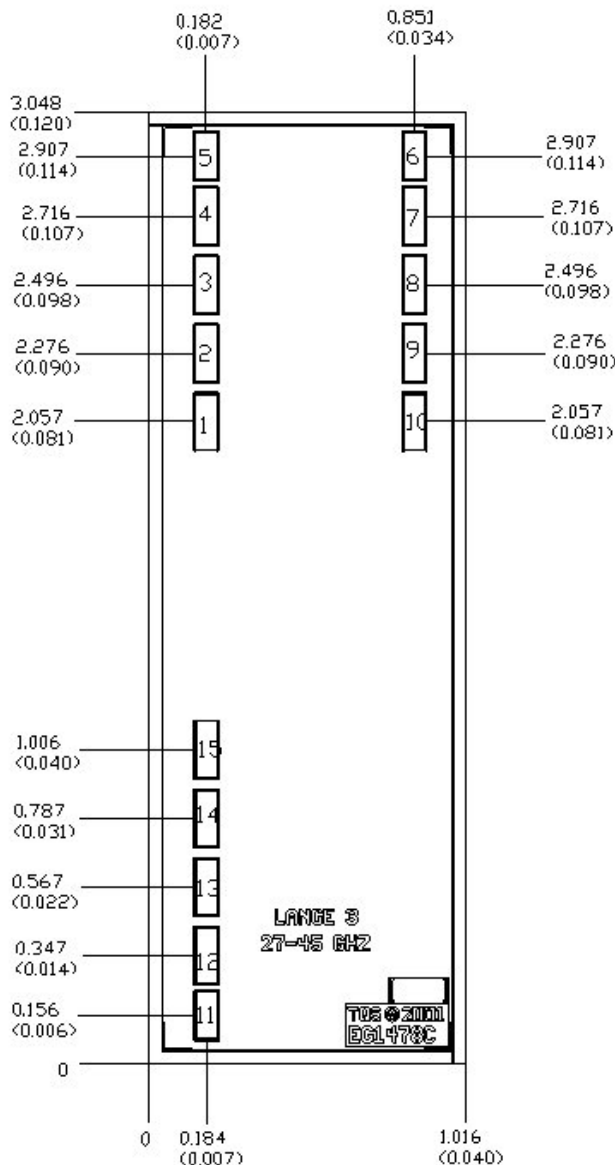


Units: millimeters (inches)
Thickness: 0.100 (0.004)
Chip edge to bond pad dimensions are shown to center of bond pad
Chip size tolerance: +/- 0.051 (0.002)

Bond pad #	Port	Size (mm)	Size (in)
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 0.190	<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>

Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.

Mechanical Drawing
TGB4002-EPU



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 0.190 (0.003 x 0.007)

Bond pad #4: (Port 1) 0.08 x 0.190 (0.003 x 0.007)

Bond pad #5: (Port 1) 0.08 x 0.163 (0.003 x 0.006)

Bond pad #6: (Port 2) 0.08 x 0.163 (0.003 x 0.006)

Bond pad #7: (Port 2) 0.08 x 0.190 (0.003 x 0.007)

Bond pad #8: (Port 2) 0.08 x 0.190 (0.003 x 0.007)

Bond pad #9: (Port 2) 0.08 x 0.190 (0.003 x 0.007)

Bond pad #10: (Port 2) 0.08 x 0.188 (0.003 x 0.007)

Bond pad #11: (Port 3) 0.08 x 0.163 (0.003 x 0.006)

Bond pad #12: (Port 3) 0.08 x 0.190 (0.003 x 0.007)

Bond pad #13: (Port 3) 0.08 x 0.190 (0.003 x 0.007)

Bond pad #14: (Port 3) 0.08 x 0.190 (0.003 x 0.007)

Bond pad #15: (Port 3) 0.08 x 0.188 (0.003 x 0.007)

Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.

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.

Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications are subject to change without notice.