Thin Film Technology Corp.

Product Family: High Frequency Crossover Chip

Part Number Series: XOB1208F100S

Construction:

- High purity alumina substrate
- Copper micro-strip transmission line
- Epoxy-resin overcoat
- Lead free, 12mil diameter BGA termination (Gnd-Signal-Gnd)

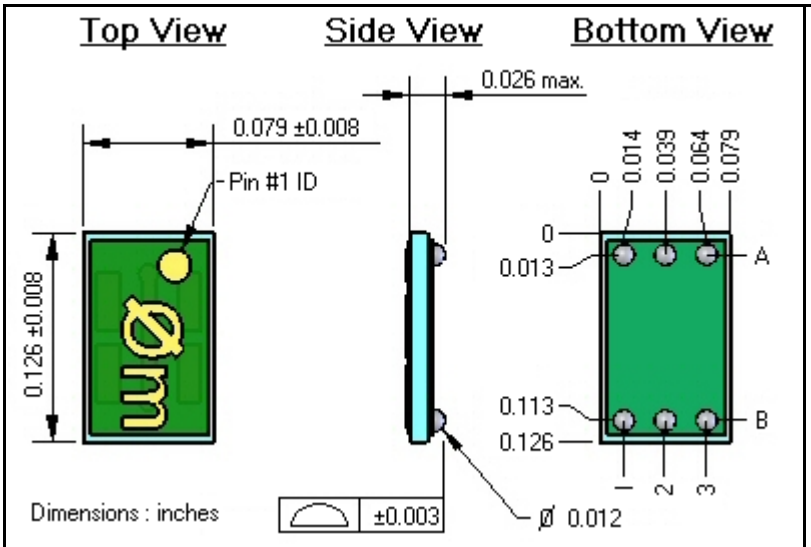
Features:

- Tightly controlled 50Ω impedance
- High frequency bandwidth, 10GHz
- BGA Gnd-Signal-Gnd termination for high frequency lead-in, lead-out
- High volume production suitable for commercial and special applications
- Competitive pricing

Description:

- **Significance:** This high frequency crossover device is a surface mount component that provides excellent signal integrity characteristics beyond 10 GHz to be achieved while allowing circuit routing transitions with traditional BGA manufacturing techniques on single layer board layouts that normally require significantly more expensive multi-layer RF and microwave PCB manufacturing or RF cabling assemblies.
- **Applications**: High frequency applications addressed by this type of device include optical to electrical modules, test instrument load boards, test instrument modules, and any other systems with signal bandwidths beyond 5GHz embedded in single layer, high frequency design environments.
- **Field Reports / Reference Customers:** Thin Film Technology has demonstrated very good high frequency component packaging with many optical module companies through 40Gbps applications. TFT utilizes simulation techniques and also capitalizes on the advantages of thin film construction to realize high performance electrical components. These devices are realized using high performance service for your design support including fast turn custom prototypes to full production capacity, start to finish.

Product Dimensions:



Item	Specification
Package Size	1208 English (3220 Metric)
Solder Ball Composition	RoHS compliant (Pb Free) 95.5% Sn / 3.8% Ag / 0.7% Cu
Passivation	Top and bottom sides
Marking	Pin #1 identified, TFT "Don't Stop" logo, Manufacturing Code
Pin #1 Identifier	Corner of Pin # A1

Note: To ensure high frequency performance, reference the suggested footprint shown on the next page.

Part Numbering: XOB1208F100S*

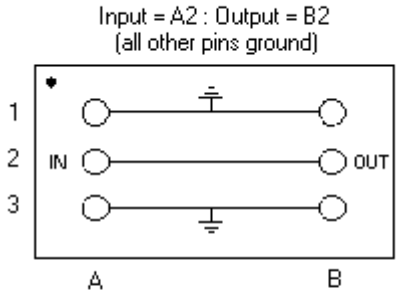
Product Designator	Electrode Type	English Size (Metric Size)	Number of Electrodes	Frequency Performance	Custom Code	Packaging Qty*
XO	**B** = Ball Grid Array	**1208** (3220)	**F** = 6 balls	**100** = 10.0 GHz	**S** = Standard	**-T1** = 100 pcs/reel **-T5** = 500 pcs/reel

*Note: T&R package quantity (-T##) will be appended by us to the end of the part number. Refer to the following page for standard package sizes.

Electrical Specifications & Schematic:

Part Number	XOB1208F100S*
Construction Type	Transmission line structure
Characteristic Impedance	50Ω ± 5%
Bandwidth (defined by insertion loss)	DC to 10GHz < 1dB insertion loss
Return Loss	DC to 5GHz <20dB 5 to 10GHz <12dB
Isolation to Crossover Transmission Line	DC to 6GHz <40dB 6 to 10GHz <30dB
Rise Time	< 100ps
DC Resistance	0.5Ω max.
Rated Current	100 mA
Isolation Resistance to Package Ground Plane	> 100 MΩ @ 50Vdc
Operating Temperature	-40°C to 125°C
Storage Temperature	-55°C to 155°C
Packaging (tape & reel)	100 pcs/reel (T1) or 500 pcs/reel (T5)

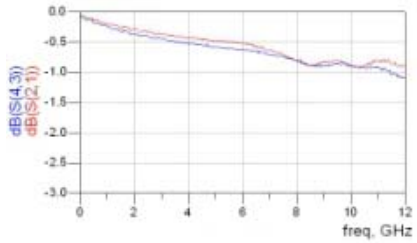
Schematic



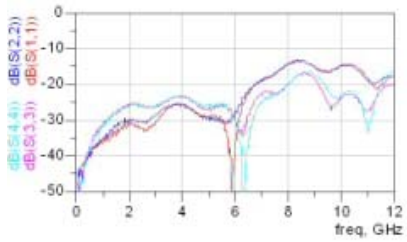
Notes:
1) Top view (BGA grid facing down)
2) Gnd-Signal-Gnd BGA Configuration

Typical Frequency Characteristics:

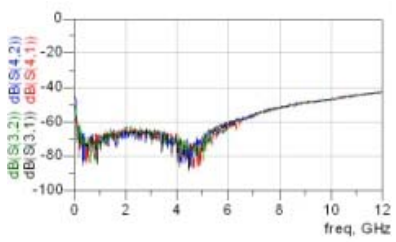
Insertion Loss (Component)



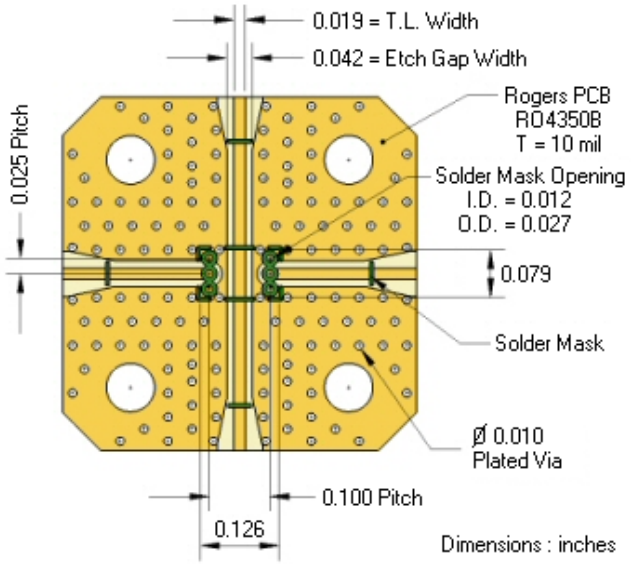
Return Loss (Component)



Isolation to X-over Transmission Line



Recommended Land Pattern:



Note: DXF output of land pattern available by calling factory

Item	Specification
Recommended Pad Material	Copper
Minimum Land Pad Thickness	1/2 Ounce Copper
T.L. Copper Pad Diameter	0.012 ±0.002 inches
Solder Mask Opening	0.012 ±0.002 inches
Solder Volume per Pad	~865 cu. mils
Recommended Reflow Limits (Sn95.5/Ag3.8/Cu0.7, RoHS compliant / Lead Free solder finish) Max. Temperature Max. Temp Soak Time	 260°C 120 Seconds
Mis-registration Recovery	0.004 inches

Notes:
1) Using the above land pattern and test board produced the frequency performance shown in the above plots.
2) Deviation from this recommended footprint could affect the frequency performance of this device.