

### Product Overview

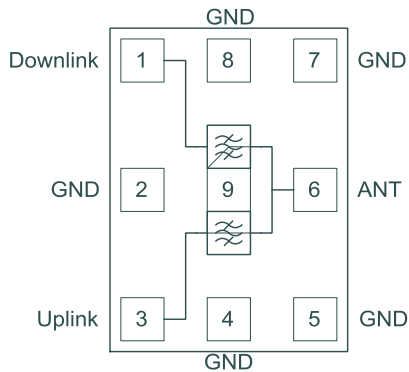
The TQQ6107 is an exceptionally high-performance BAW duplexer for Band 7. This filter is housed in a compact 2 x 2.5 mm package.

Low insertion loss, coupled with high attenuation makes this filter an ideal choice for small cell BTS needs.



9 Pad 2.00 mm x 2.50 mm x 1.00 mm SMP

### Functional Block Diagram



Top View

### Pin Configuration - Single Ended

Pin No.	Label
1	Downlink
2, 4, 5, 7, 8, 9	Ground
3	Uplink
6	ANT

### Key Features

- 70 MHz Bandwidth
- High Attenuation
- Low Loss
- Excellent Wi-Fi Rejection
- No External Matching Required
- Small Size: 2.00 x 2.50 x 1.0 mm
- Surface Mount Device
- RoHS compliant (2002/95/EC), Pb-free



### Applications

- Band 7 Duplexer for Small cell BTS
- General Purpose Wireless

### Ordering Information

Part No.	Description
TQQ6107	Band 7 Duplexer
TQQ6107-PCB	Evaluation Board

Standard T/R size = 2500 pieces on a 7" reel

### Absolute Maximum Ratings <sup>(1)</sup>

Parameter	Rating
Storage Temperature	-40 to +125°C
Operating Temperature <sup>(2)</sup>	-40 to +95 °C
Max DC Voltage	+5 V

Notes:

1. Operation of this device outside the parameter ranges given may cause permanent damage.
2. Device will function but it is not guaranteed to meet electrical specifications

### Minimum Lifetime Ratings

Conditions	Rating
+23 dBm UL, +95 °C CW <sup>(1)</sup>	>110,000 Hrs
+26 dBm UL, +95 °C CW <sup>(2)</sup>	>102,000 Hrs
+29 dBm DL, +95 °C LTE, 5MHz, PAR=8dB <sup>(3)</sup>	>102,000 Hrs

Notes:

1. Power is applied to Pin 6 (ANT).
2. Power is applied to Pin 3 (UL).
3. Power is applied to either Pin 1 (DL) or Pin 6 (ANT).

### Electrical Specifications – Downlink

Operating Temperature Range: -20 to +85 °C

Parameter	Conditions	Min	Typ <sup>(1)</sup>	Max	Units
Passband		2620	-	2690	MHz
Insertion Loss <sup>(1)</sup>	2620 – 2690 MHz	-	2.6	3.4	dB
Insertion Loss <sup>(2)</sup>	2620 – 2625 MHz	-	1.7	2.2	dB
	2625 – 2685 MHz (over any 5 MHz band)	-	2.6	3.4	dB
	2685 – 2690 MHz	-	2.5	3.4	dB
Amplitude Variation	2620 – 2690 MHz	-	1.3	2.5	dB
Return Loss <sup>(3)</sup>	Antenna port	7	8.6	-	dB
Return Loss <sup>(3)</sup>	Downlink port	6	8.5	-	dB
Attenuation	600 – 960 MHz	23	26	-	dB
	960 – 1710 MHz	20	23	-	
	1710 – 1785 MHz	20	23	-	
	1785 – 1920 MHz	20	23	-	
	1920 – 2400 MHz	20	23	-	
	2400 – 2500 MHz	38	41	-	
	2500 – 2570 MHz	45	52	-	
	2570 – 2610 MHz	1	3.4	-	
	2700 – 2720 MHz	1	3	-	
	2720 – 2800 MHz	1	6.5	-	
	2800 – 3400 MHz	33	35	-	
3400 – 3800 MHz	45	49	-		
3800 – 5150 MHz	32	38	-		
	5150 – 5850 MHz	45	51	-	
Group Delay		-	20	40	ns
Group Delay Ripple		-	10	20	ns
2 <sup>nd</sup> Harmonic Distortion <sup>(4)</sup>	Pout = +29dBm	-	65	-	dBc
Input / Output Impedance		-	50	-	Ohms

Notes:

1. Maximum value over the indicated band
2. Average value over the indicated band
3. Minimum value over the indicated band
4. Additional 2nd harmonic improvement can be achieved using appropriate application. Refer to product technical notes for details.

## Electrical Specifications – Uplink

Operating Temperature Range: -20 to +85 °C

Parameter	Conditions	Min	Typ <sup>(1)</sup>	Max	Units
Passband		2500	-	2570	MHz
Insertion Loss <sup>(1)</sup>	2500 – 2570 MHz	-	2.3	3.4	dB
Insertion Loss <sup>(2)</sup>	2500 – 2505 MHz	-	2.0	2.5	dB
	2505 – 2565 MHz (over any 5 MHz band)	-	2.0	2.6	dB
	2565 – 2570 MHz	-	2.3	3.1	dB
Amplitude Variation	2500 – 2570 MHz	-	1.2	2.0	dB
Return Loss <sup>(3)</sup>	Antenna port	10	12	-	dB
Return Loss <sup>(3)</sup>	Uplink port	10	16	-	dB
Attenuation	600 – 1805 MHz	32	35	-	dB
	1805 – 1880 MHz	32	35	-	
	1880 – 2110 MHz	32	35	-	
	2110 – 2170 MHz	34	43	-	
	2170 – 2300 MHz	36	41	-	
	2300 – 2472 MHz	20	29	-	
	2590 – 2620 MHz	4	9.0	-	
	2620 – 2690 MHz	48	52	-	
	2690 – 2900 MHz	39	44	-	
	2900 – 3800 MHz	20	23	-	
3800 – 5150 MHz	17	20	-		
5150 – 5850 MHz	20	23	-		
Group Delay		-	20	40	ns
Group Delay Ripple		-	10	20	ns
Input / Output Impedance		-	50	-	Ohms

Notes:

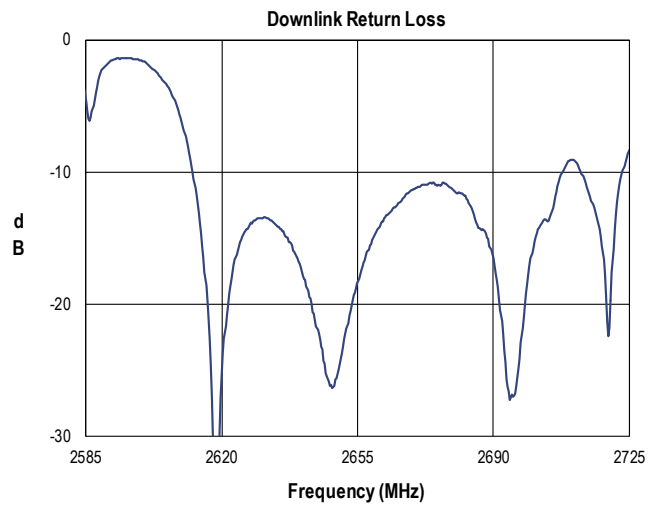
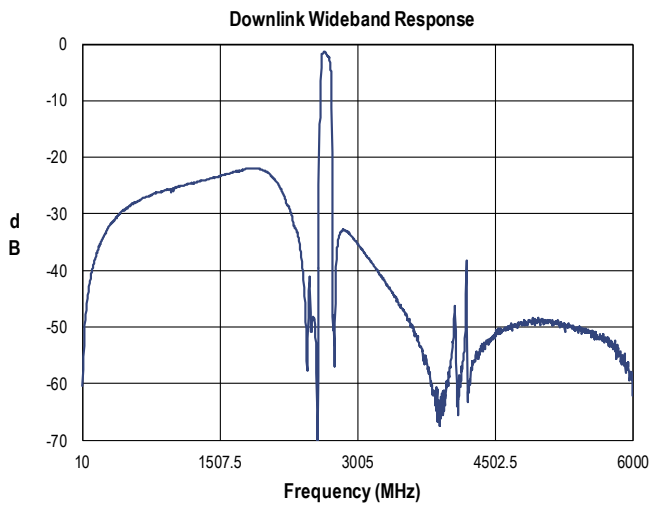
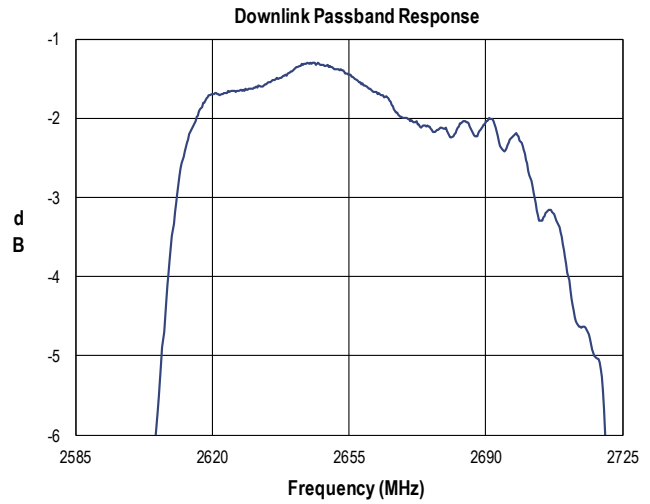
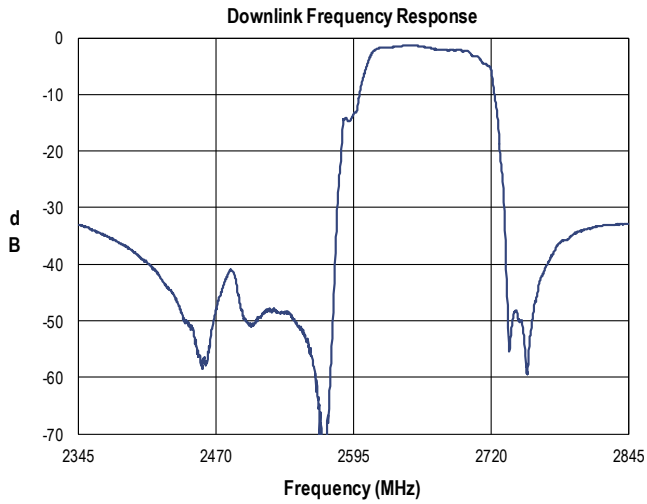
1. Maximum value over the indicated band
2. Average value over the indicated band
3. Minimum value over the indicated band

## Electrical Specifications – Isolation Uplink to Downlink

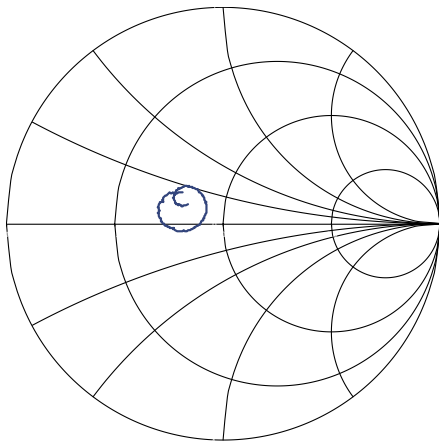
Operating Temperature Range: -20 to +85 °C

Parameter	Conditions	Min	Typ	Max	Units
Uplink	2500 – 2570 MHz	50	57	-	dB
	2500 – 2570 MHz (Average over any 5MHz band)	53	58	-	dB
Downlink	2620 – 2690 MHz	50	54	-	dB

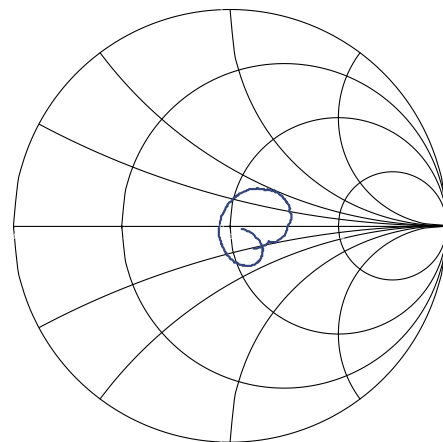
**Performance Plots – Downlink**



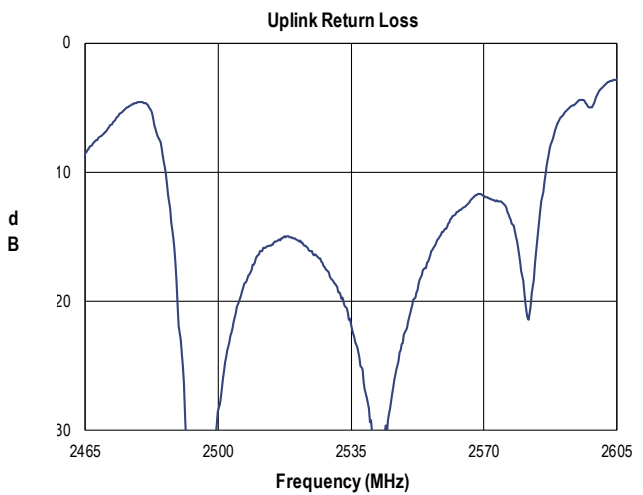
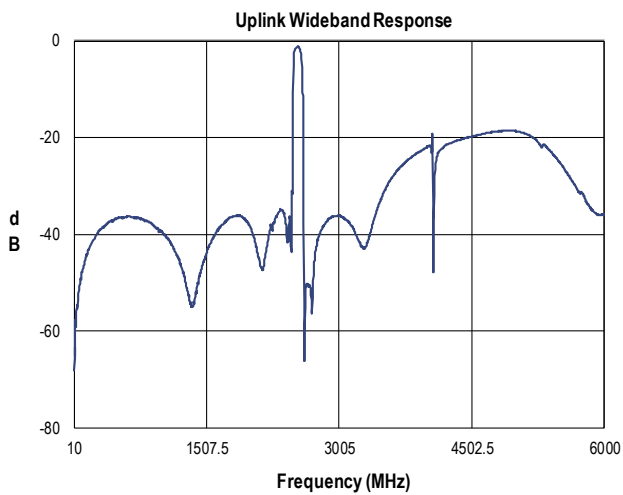
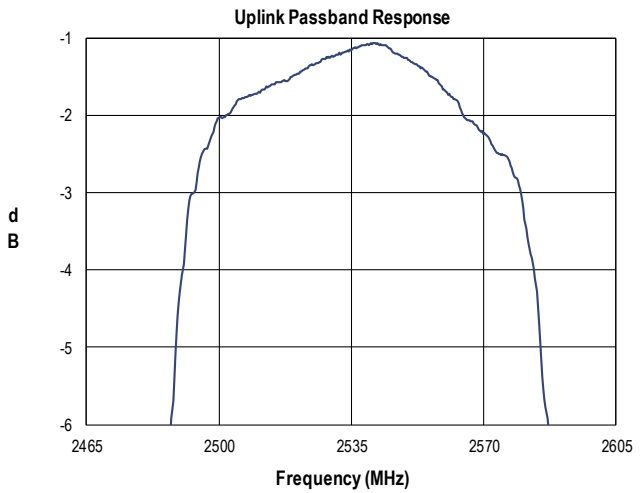
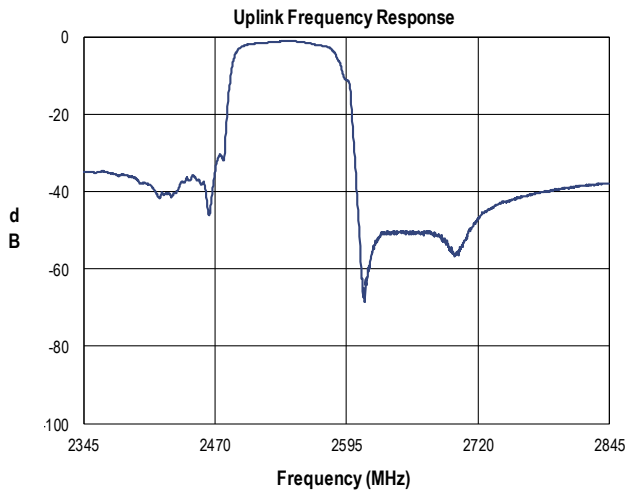
**Downlink Path - Ant Port Impedance**



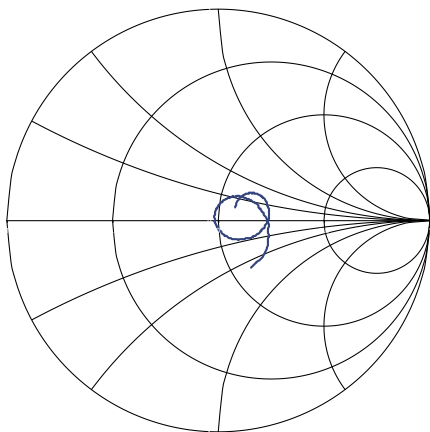
**Downlink Port Impedance**



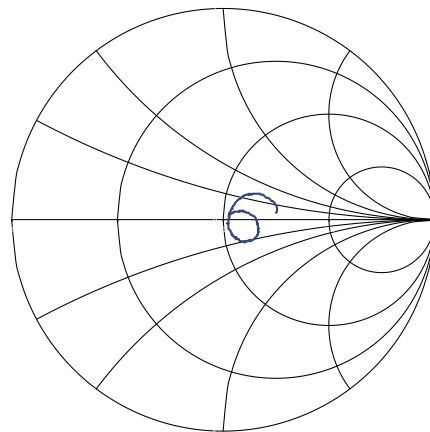
**Performance Plots – Uplink**



**Uplink Path - Ant Port Impedance**

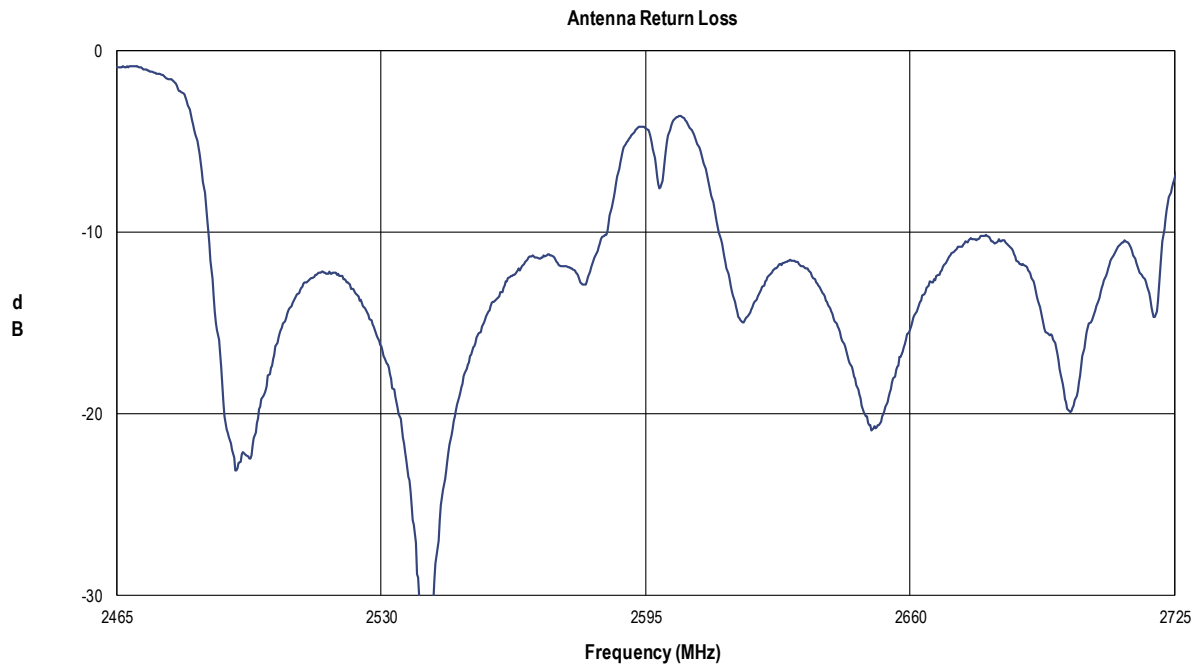
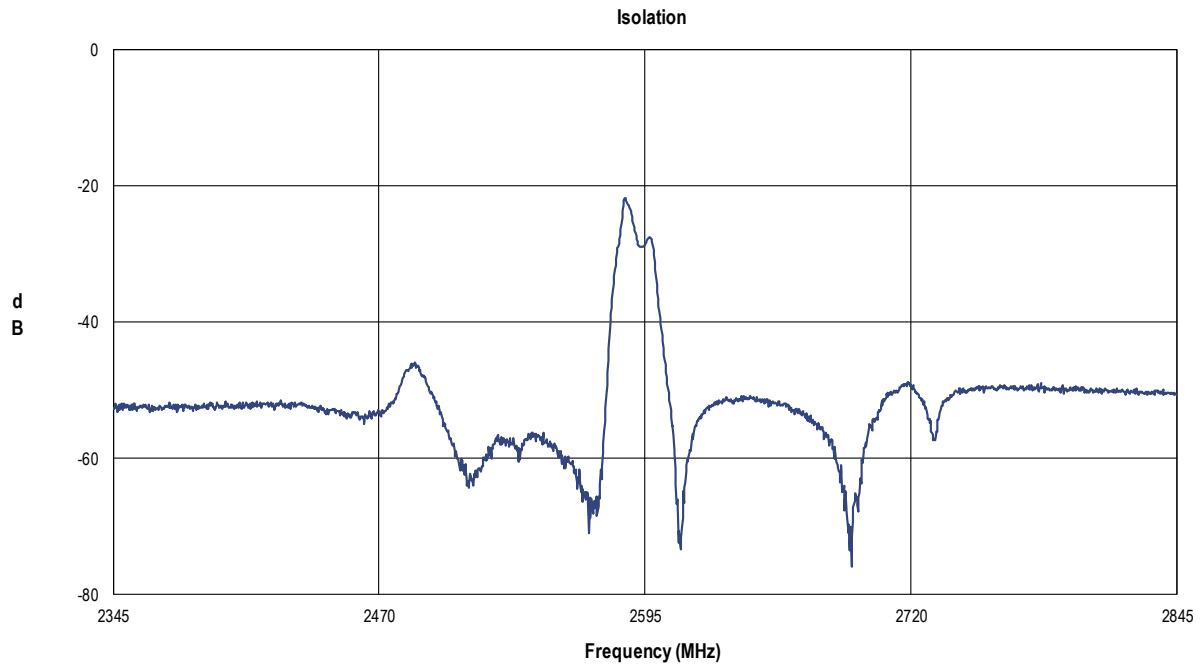


**Uplink Port Impedance**

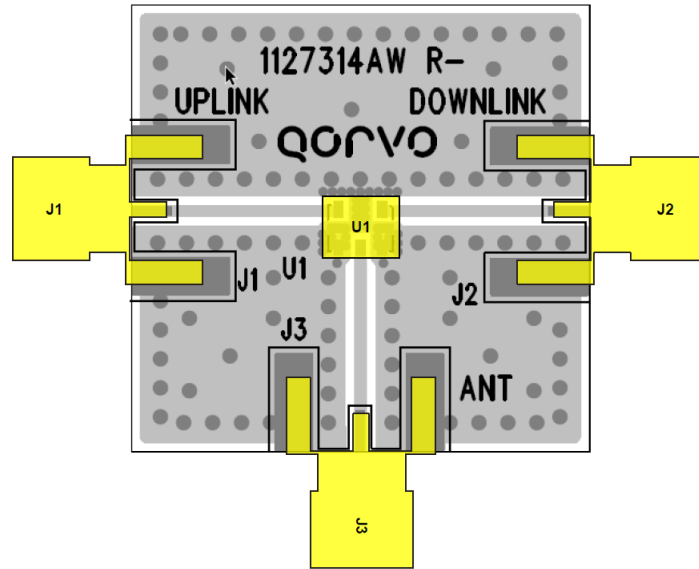


## Performance Plots (cont'd.)

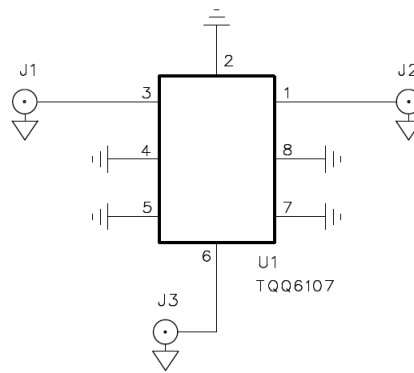
Test conditions unless otherwise noted: Temp= +25 °C



**TQQ6107 Evaluation Board**



**EVB Top View**



**EVB Circuit**

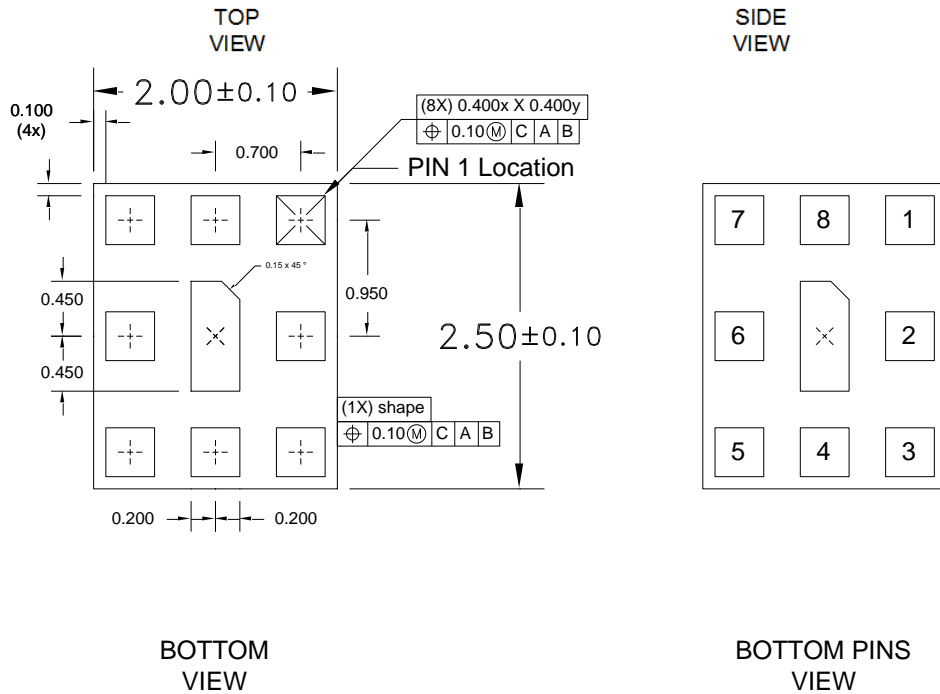
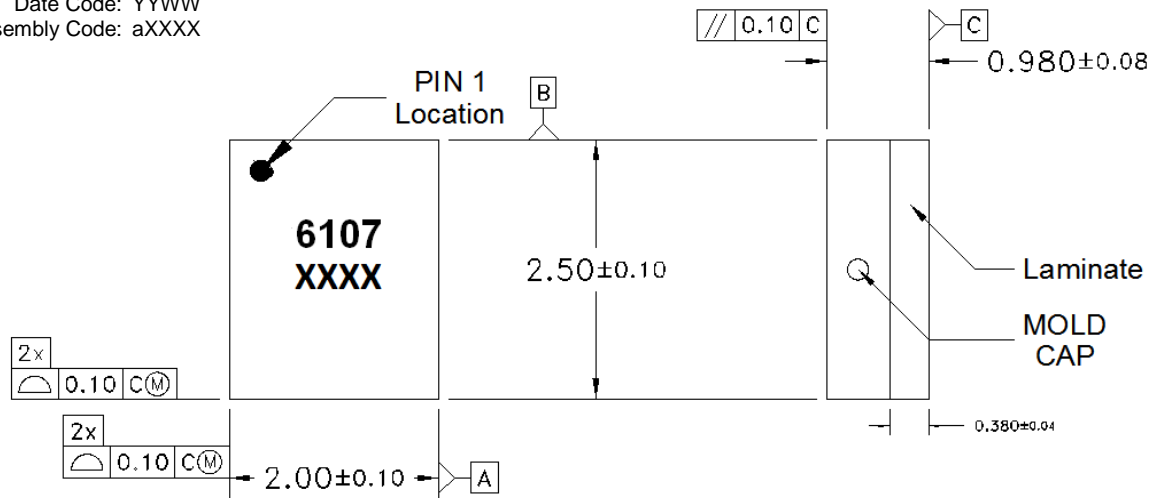
**Bill of Material - TQQ6107 Evaluation Board**

Reference	Destination	Description	Manufacture	Part Number
U1		Duplexer, Band 7 BAW	Qorvo	TQQ6107
J1, J2, J3		Connector, SMA RF	Amphenol	901-100-4406RFX
PCB		PCB, 3-Layer FR-4, 0.064"	Multiple	1127314AW

## Package Marking and Dimensions

### Package Marking

Product Identifier: Q6107  
Date Code: YYWW  
Assembly Code: aXXXX

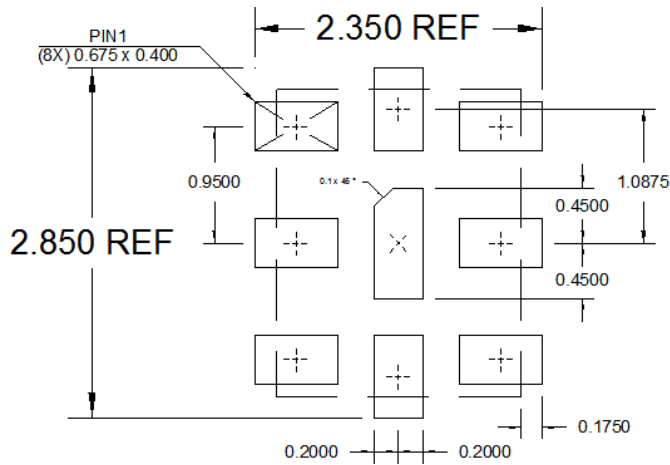


### Notes:

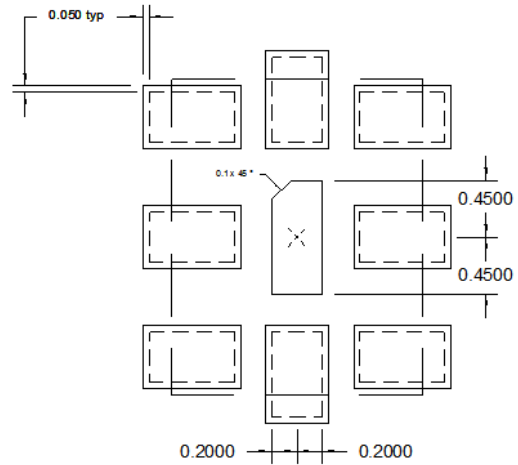
1. All dimensions are in millimeters. Angles are in degrees.
2. Except where noted, this part outline conforms to JEDEC standard MO-229.
3. Dimension and tolerance formats conform to ASME Y14.4M-1994.
4. The terminal #1 identifier and terminal numbering conform to JESD 95-1 SPP-012.



PCB Mounting Pattern



Top view recommended land pattern metallization.



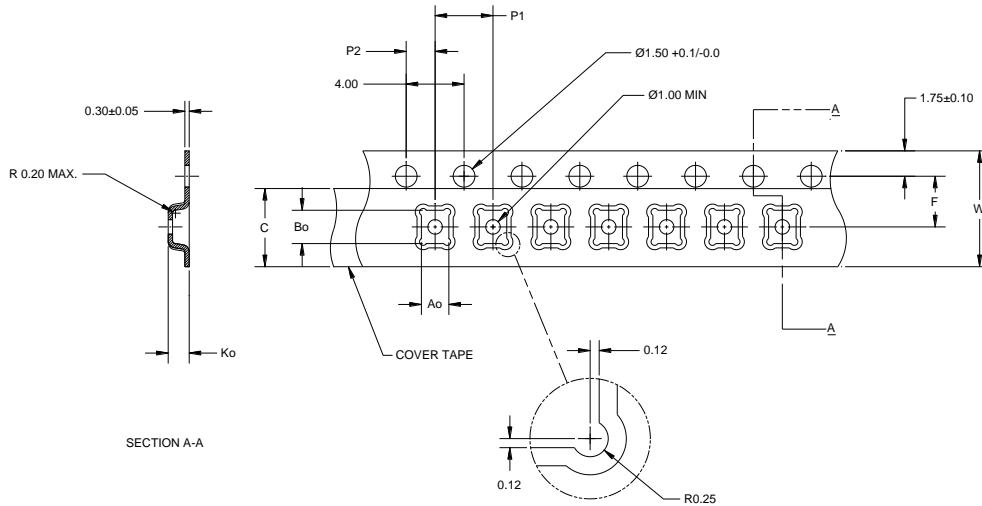
Top view recommended land pattern stencil aperture.

Notes:

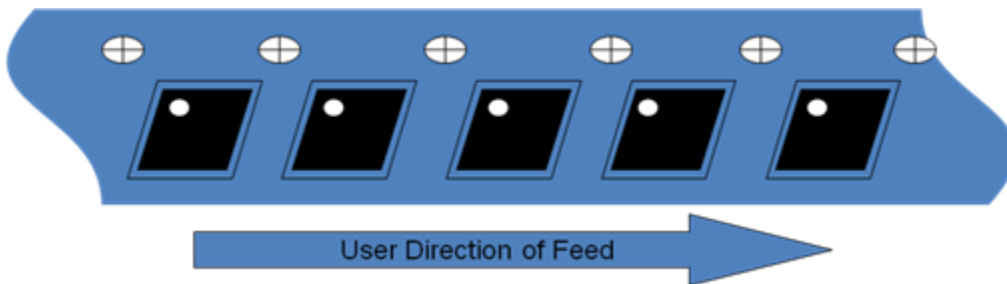
1. All dimensions are in millimeters. Angles are in degrees.
2. Use 1 oz. copper minimum for top and bottom layer metal.

**Tape and Reel Information – Carrier and Cover Tape Dimensions**

Tape and reel specifications for this part are also available on the Qorvo website.  
 Standard T/R size = 2500 pieces on a 7" reel.

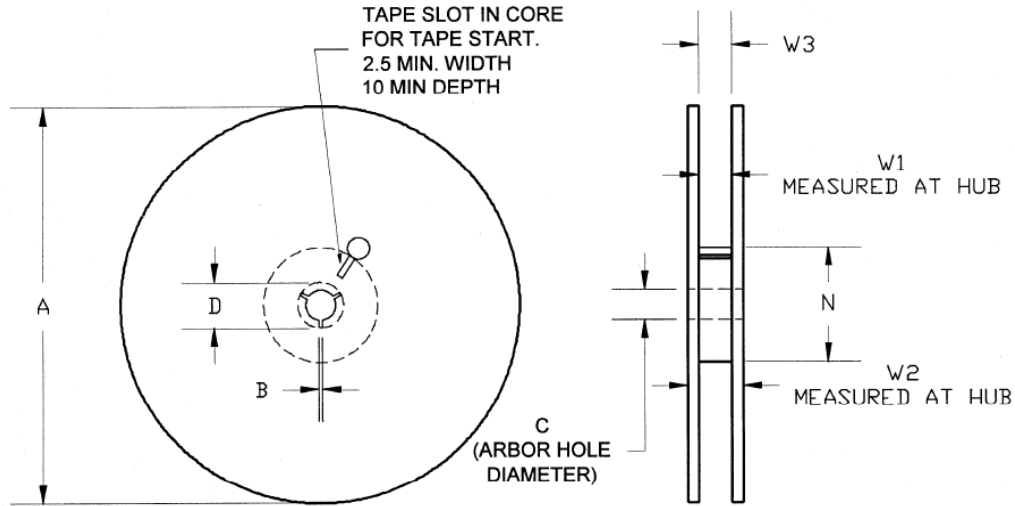


Feature	Measure	Symbol	Size (in)	Size (mm)
Cavity	Length	A0	0.092	2.34
	Width	B0	0.112	2.85
	Depth	K0	0.043	1.10
	Pitch	P1	0.157	4.00
Centerline Distance	Cavity to Perforation - Length Direction	P2	0.079	2.00
	Cavity to Perforation - Width Direction	F	0.138	3.50
Cover Tape	Width	C	0.213	5.40
Carrier Tape	Width	W	0.315	8.00



**Tape and Reel Information – Reel Dimensions**

Tape and reel specifications for this part are also available on the Qorvo website.  
 Standard T/R size = 2500 pieces on a 7" reel.



Feature	Measure	Symbol	Size (in)	Size (mm)
Flange	Diameter	A	6.969	177.0
	Thickness	W2	0.559	14.2
	Space Between Flange	W1	0.346	8.8
Hub	Outer Diameter	N	2.283	58.0
	Arbor Hole Diameter	C	0.512	13.0
	Key Slit Width	B	0.079	2.0
	Key Slit Diameter	D	0.787	20.0

## Handling Precautions

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	Class 1B	ESDA / JEDEC JS-001-2012
ESD – Charged Device Model (CDM)	Class C3	ESDA / JEDEC JS-002-2014
MSL – Moisture Sensitivity Level	Level 3	IPC/JEDEC J-STD-020



Caution!  
ESD-Sensitive Device

## Solderability

Compatible with both lead-free (260°C max. reflow temp.) and tin/lead (245°C max. reflow temp.) soldering processes. Solder profiles available upon request.

Contact Plating: ENIG (Electroless Nickel Immersion Gold)

## RoHS Compliance

This part is compliant with 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) as amended by Directive 2015/863/EU.

This product also has the following attributes:

- Lead Free
- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A (C<sub>15</sub>H<sub>12</sub>Br<sub>4</sub>O<sub>2</sub>) Free
- PFOS Free
- SVHC Free



## Contact Information

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

Web: [www.qorvo.com](http://www.qorvo.com)

Tel: 1-844-890-8163

Email: [customer.support@qorvo.com](mailto:customer.support@qorvo.com)

For technical questions and application information: Email: [appsupport@qorvo.com](mailto:appsupport@qorvo.com)

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