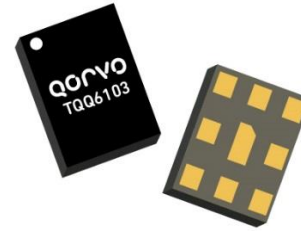


Applications

- Band 3 Uplink / Downlink Duplexer Infrastructure
- Base Station
- General Purpose Wireless



9 Pin 2.0 x 2.5 mm leadless SMT Package

Product Features

- 75 MHz Bandwidth – Band 3
- High Attenuation
- Low Loss
- No External Matching Required
- Single Input, Dual Output Operation
- Small Size: 2.0 x 2.5 x 0.98 mm
- Surface Mount Device
- RoHS Compliant, Pb-Free

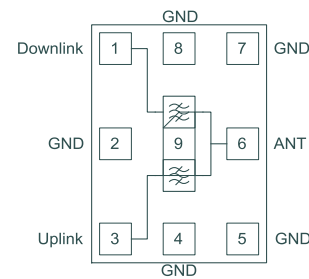
General Description

The TQQ6103 is an exceptionally high performance BAW Duplexer for Band 3 uplink / downlink. This filter is housed in a compact 2.0 mm x 2.5 mm package for base station applications.

Low insertion loss, coupled with high attenuation makes this filter an ideal choice for uplink RF filtering needs.

The TQQ6103 is part of Qorvo's extensive portfolio of RF BAW and SAW filters.

Functional Block Diagram



Top View

Pin Configuration

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

Ordering Information

Part No.	Description
TQQ6103	Band 3 Duplexer
TQQ6103-EVB	Evaluation Board

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

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	-40 to +125 °C
Operation Temperature	-40 to +95 °C
Max DC Voltage	+5 V

Operation of this device outside the parameter ranges may cause permanent damage.

Recommended Operating Conditions

Parameter	Min	Typ	Max	Units
T _{CASE}	-20		+85	°C

Electrical specifications are measured at specified test conditions.

Life Test

Conditions	Rating
+23 dBm UL, +85 °C CW	>300 K Hrs
+23 dBm UL, +95 °C CW	>100 K Hrs
+24 dBm DL, +95 °C LTE, 5MHz, PAR=8dB	>1.1 M Hrs
+29 dBm DL, +85 °C LTE, 5MHz, PAR=8dB	>270 K Hrs
+29 dBm DL, +95 °C LTE, 5MHz, PAR=8dB	>94 K Hrs

Power is applied in specified conditions, DL=Pin1, UL=Pin6.

Electrical Specifications – Band 3 Uplink

Operating Temperature Range: -20 to +85 °C

Parameter	Conditions	Min	Typ	Max	Units
Insertion Loss ⁽¹⁾	1710 – 1785 MHz	-	2.9	4.1	dB
Amplitude Variation	1710 – 1785 MHz	-	1.6	2.8	dB
Return Loss ⁽¹⁾	Ant Port	10	13		dB
	Uplink Port	9	12		dB
Attenuation	0.009 – 700 MHz	30.0	33.0	-	dB
	700 – 1000 MHz	30.0	33.0	-	
	1000 – 1400 MHz	35.0	41.0	-	
	1400 – 1600 MHz	35.0	41.0	-	
	1600 – 1690 MHz	27.0	31.0	-	
	1805 – 1880 MHz	45.0	49.0	-	
	1880 – 1920 MHz	45.0	49.0	-	
	1920 – 1980 MHz	43.0	49.0	-	
	1980 – 2110 MHz	33.0	38.0	-	
	2110 – 2170 MHz	32.0	36.0	-	
	2170 – 2690 MHz	27.0	30.0	-	
	2690 – 3600 MHz	15.0	25.0	-	
3800 – 5150 MHz	20.0	26.0	-		
5150 – 5850 MHz	20.0	24.0	-		

Notes::

- 1. Average value over the indicated band
- 1. Average value over the indicated band

Electrical Specifications – Band 3 Downlink

Operating Temperature Range: -20 to +85 °C

Parameter	Conditions	Min	Typ	Max	Units
Insertion Loss ⁽¹⁾	1805 - 1880 MHz	-	3.0	4.1	dB
Amplitude Variation	1805 - 1880 MHz	-	1.7	2.8	dB
Return Loss ⁽¹⁾	Ant Port	9.5	12		dB
	Downlink Port	7.2	10.0		dB
Attenuation	0.009 – 700 MHz	24.0	27.0	-	dB
	700 – 1000 MHz	24.0	27.0	-	
	1000 – 1400 MHz	25.0	29.0	-	
	1400 – 1600 MHz	30.0	34.0	-	
	1600 – 1710 MHz	41.0	46.0	-	
	1710 – 1785 MHz	44.0	50.0	-	
	1920 – 1980 MHz	38.0	45.0	-	
	1980 – 2300 MHz	36.0	46.0	-	
	2300 – 2370 MHz	42.0	47.0	-	
	2370 – 2484 MHz	42.0	47.0	-	
	2484 – 2690 MHz	43.0	47.0	-	
	2690 – 3400 MHz	22.0	35.0	-	
	3400 – 3800 MHz	38.0	43.0	-	
	3800 – 5150 MHz	44.0	48.0	-	
5150 – 5850 MHz	35.0	40.0	-		
2 nd Harmonic Distortion ⁽²⁾	Pout = +29dBm	41	50	-	dBc

Notes:

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

Electrical Specifications – Band 3 Uplink to Downlink Isolation

Operating Temperature Range: -20 to +85 °C

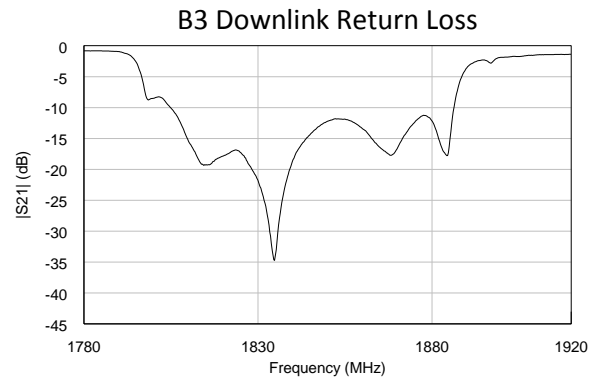
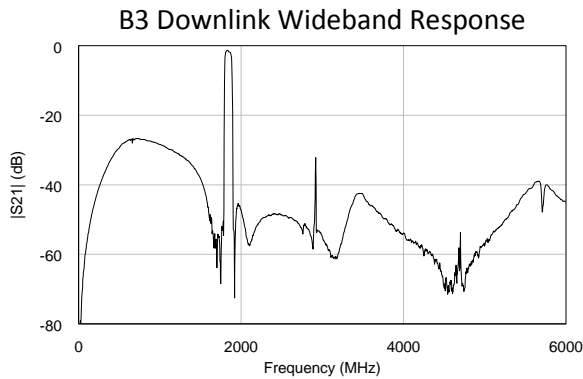
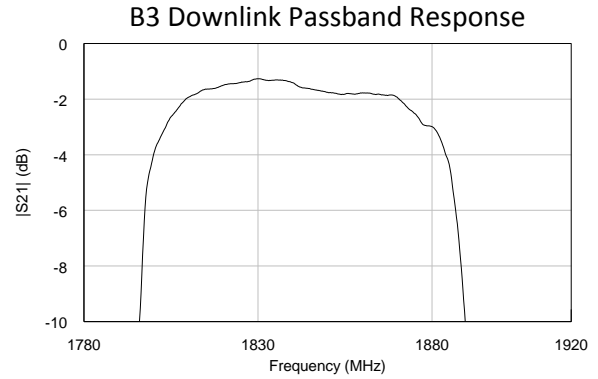
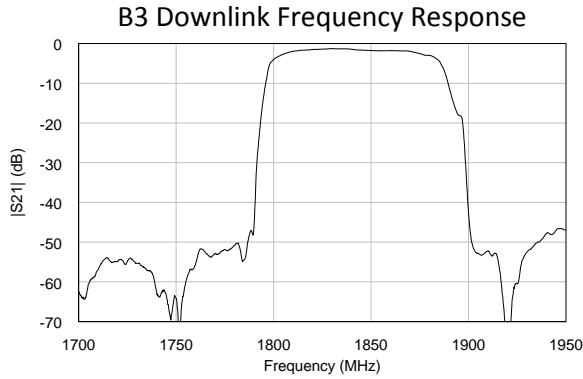
Parameter	Conditions	Min	Typ ⁽¹⁾	Max	Units
Isolation in Uplink	1710 - 1785 MHz	45.0	50.0		dB
Isolation in Downlink	1805 - 1880 MHz	45.0	51.0		dB

Notes:

- Average value over the indicated band

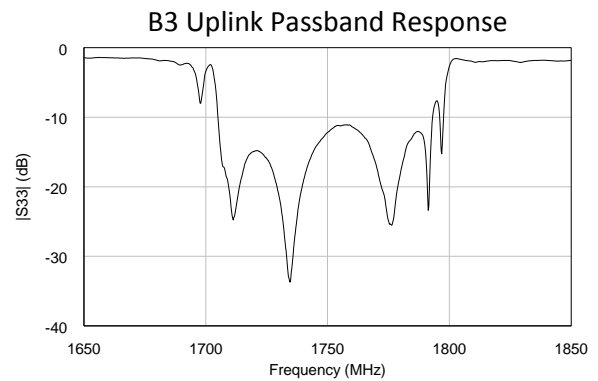
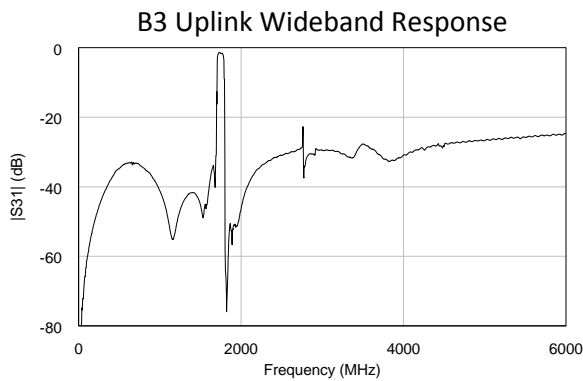
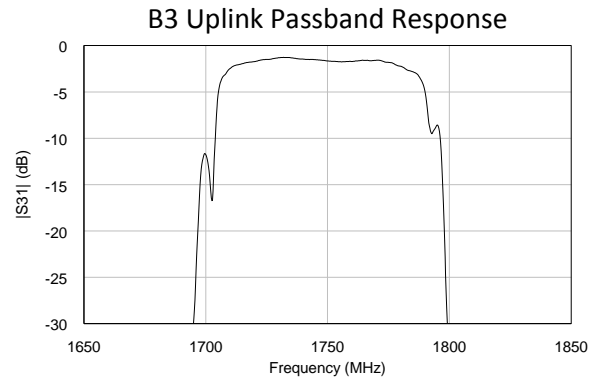
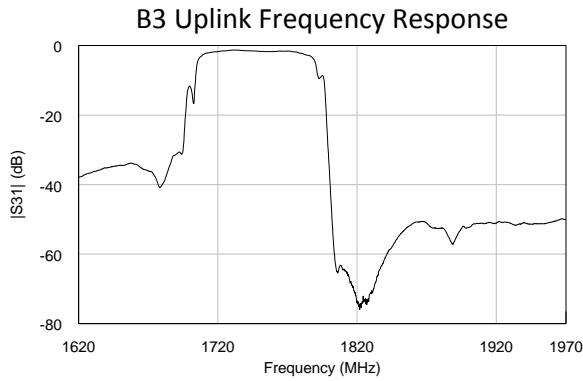
Performance Plots: Band 3 Downlink Antenna

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



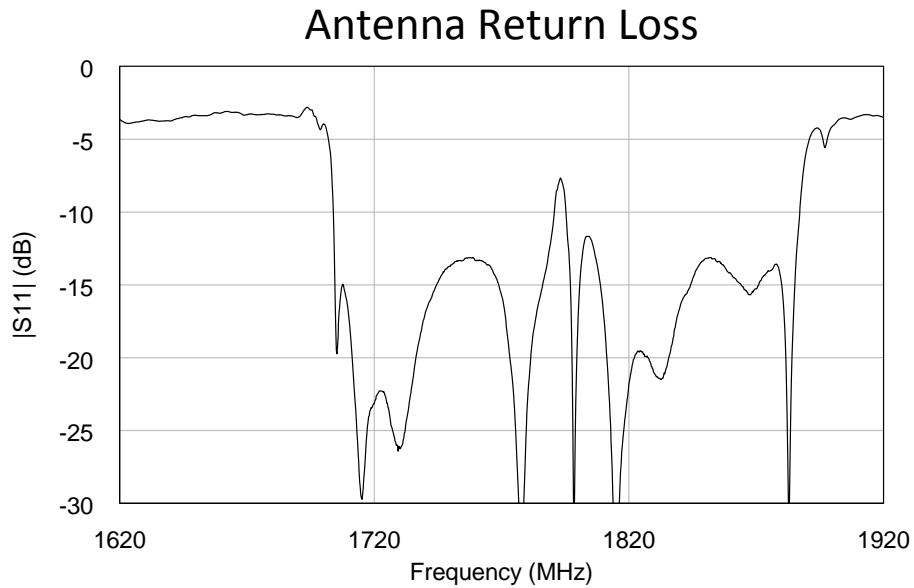
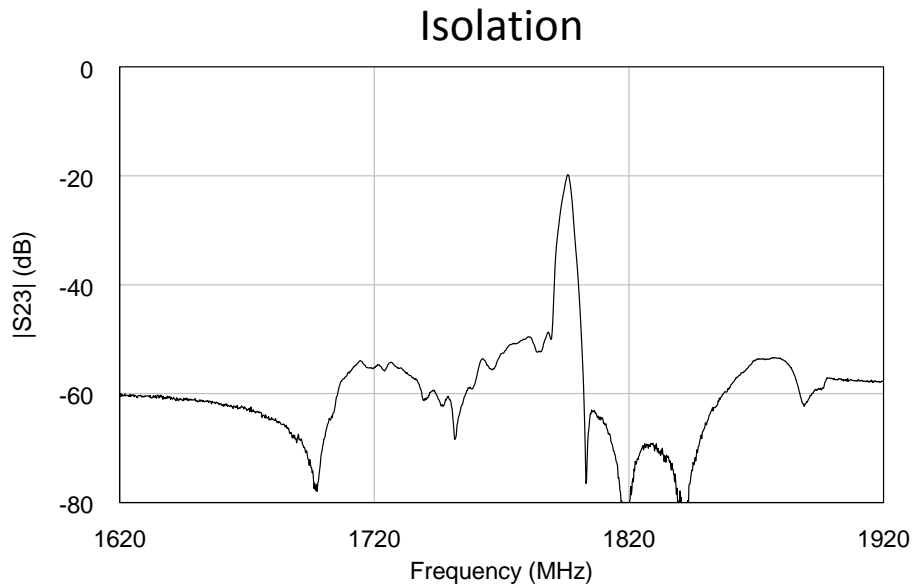
Performance Plots: Band 3 Uplink Antenna

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



Performance Plots: Band 3

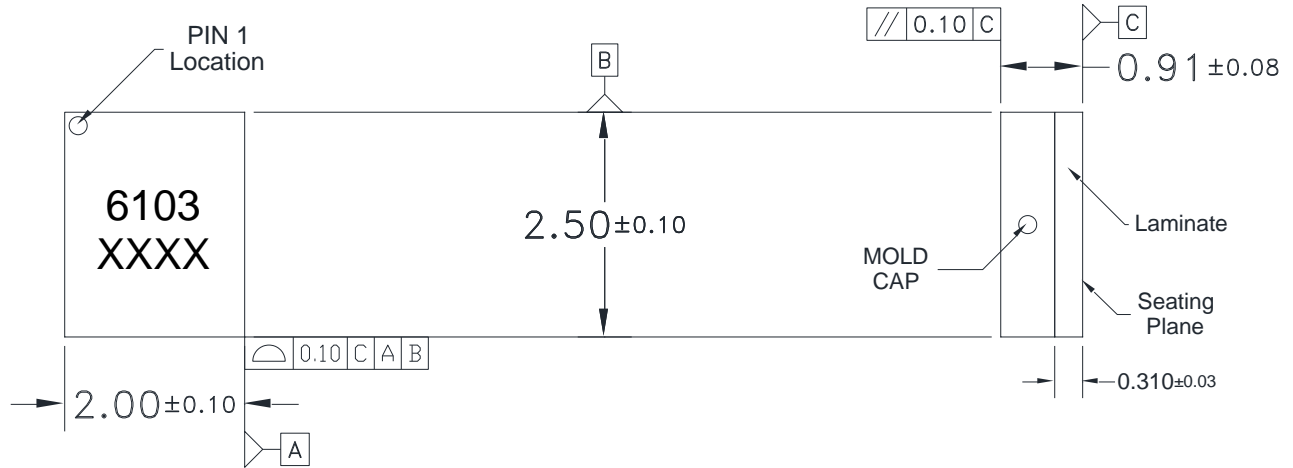
Test conditions unless otherwise noted: Temp= +25 °C



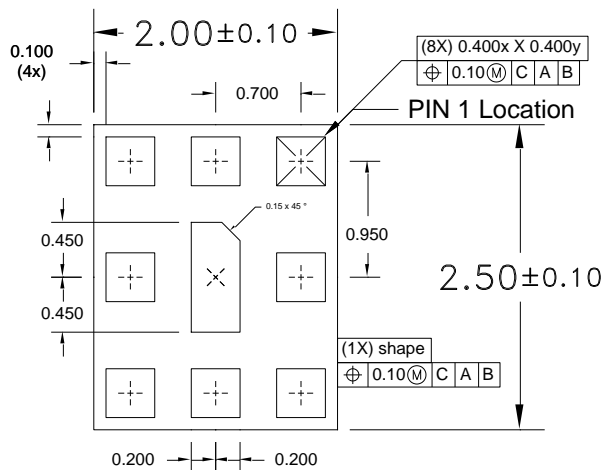
Package Marking and Dimensions

Package Marking

Product Identifier: 6103
Assembly Code: XXXX

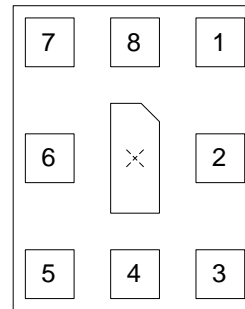


TOP VIEW



BOTTOM VIEW

SIDE VIEW

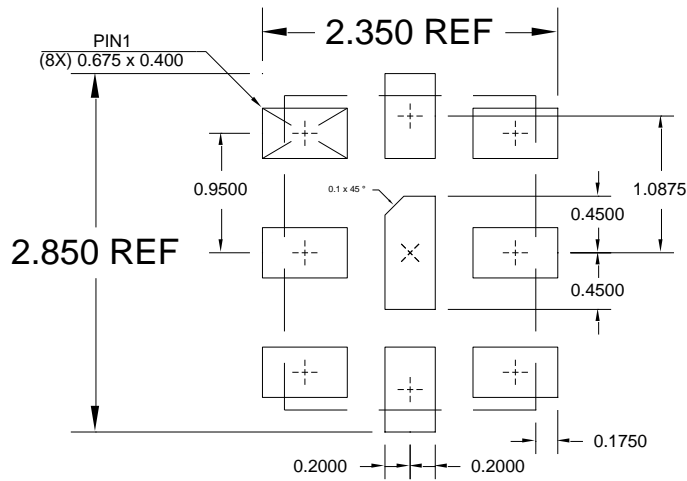


BOTTOM PINS VIEW

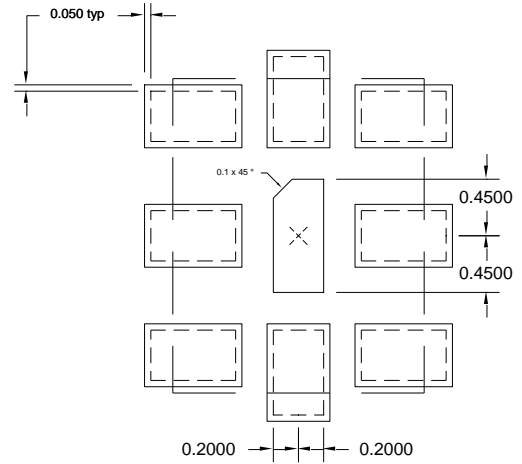
Notes:

1. All dimensions are in millimeters. Angles are in degrees.
2. Dimension and tolerance formats conform to ASME Y14.4M-1994.
3. The terminal #1 identifier and terminal numbering conform to JESD 95-1 SPP-012.

PCB Mounting Pattern



RECOMMENDED
LAND PATTERN



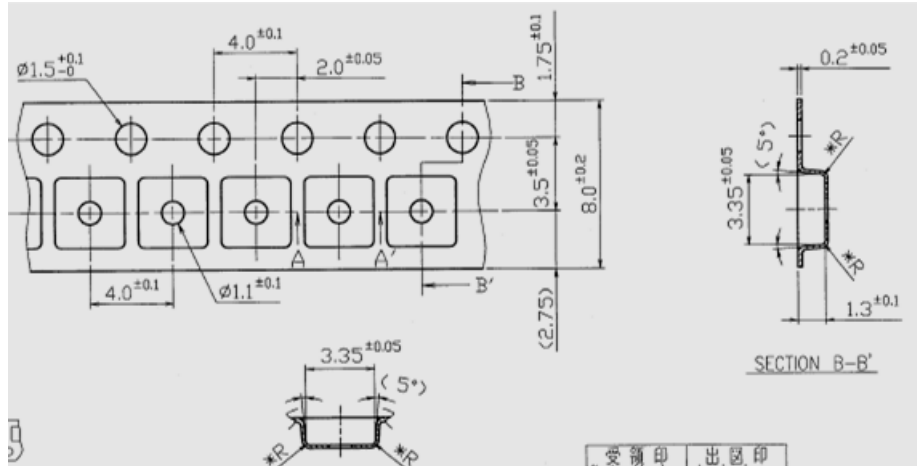
RECOMMENDED
LAND PATTERN MASK

Notes:

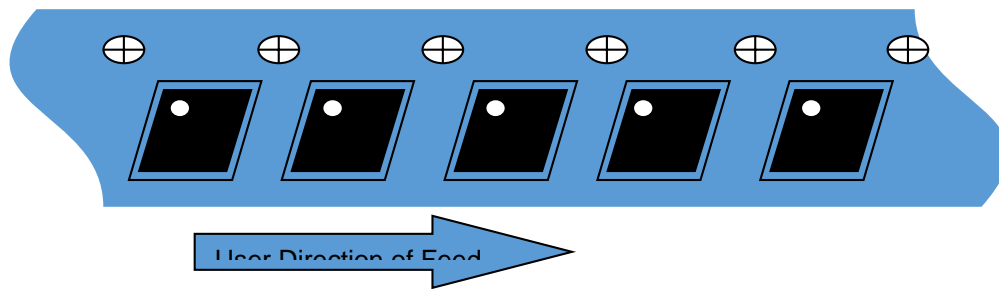
1. All dimensions are in millimeters. Angles are in degrees.
2. Use 1 oz. copper minimum for top and bottom layer metal.

Tape and Reel Information – Carrier and Cover Tape Dimensions

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

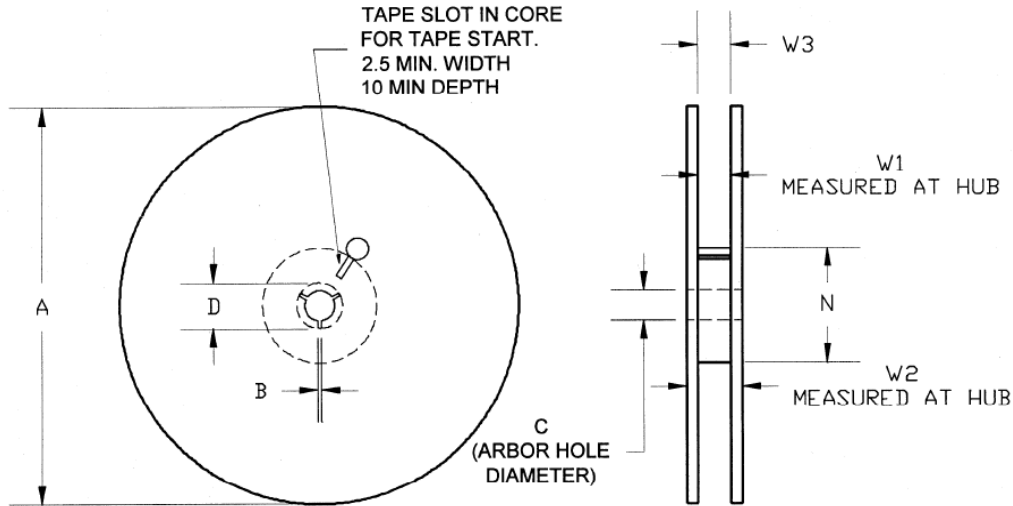


Feature	Measure	Symbol	Size (in)	Size (mm)
Cavity	Length	A0	0.132	3.35
	Width	B0	0.132	3.35
	Depth	K0	0.055	1.40
	Pitch	P1	0.157	4.00
Centerline Distance	Cavity to Perforation - Length Direction	P2	0.079	2.00
	Cavity to Perforation - Width Direction	F	0.138	3.50
Cover Tape	Width	C	0.213	5.40
Carrier 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 TriQuint website.
Standard T/R size = 2,500 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

Product Compliance Information

ESD Sensitivity Ratings



Caution! ESD-Sensitive Device

ESD Rating: Class 0B
Value: ≥ 125 V to < 250 V
Test: Human Body Model (HBM)
Standard: ESDA / JEDEC Standard JS-001-2012

ESD Rating: Class B
Value: > 200 V to < 400 V
Test: Machine Model (MM)
Standard: JEDEC Standard JESD22-A115

MSL Rating

MSL Rating: Level 3
Test: 260°C convection reflow
Standard: JEDEC Standard IPC/JEDEC J-STD-020

Solderability

Compatible with both lead-free (260°C maximum reflow temperature) and tin/lead (245°C maximum reflow temperature) soldering processes.

Contact plating: ENIG (Electroless Nickel Immersion Gold)

RoHS Compliance

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)
- Antimony Free
- TBBP-A ($C_{15}H_{12}Br_4O_2$) Free
- PFOS Free
- SVHC Free

Contact Information

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

Web: www.triquint.com
Email: customer.support@qorvo.com

Tel: 877-800-8584

For information about the merger of RFMD and TriQuint as Qorvo:

Web: www.qorvo.com

For technical questions and application information:

Email: sjcapplications.engineering@qorvo.com

Important Notice

The information contained herein is believed to be reliable. TriQuint makes no warranties regarding the information contained herein. TriQuint assumes no responsibility or liability whatsoever for any of the information contained herein. TriQuint assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for TriQuint products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information.

TriQuint products are not warranted or authorized for use as critical components in medical, life-saving, or life-sustaining applications, or other applications where a failure would reasonably be expected to cause severe personal injury or death.