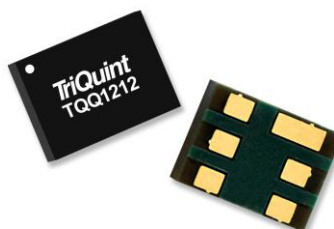


Product Overview

TQQ1212 is a general purpose Dual Band Uplink SAW filter Module for Band 34 and 39. This module was specifically designed in a 4 x 3 mm package for base station applications where two filter passbands share an optimally phased single input and a single output.

Low insertion loss, coupled with high attenuation and excellent power handling, makes this filter a natural choice for our customers RF filtering needs.

This filter module is part of Qorvo's wide portfolio of RF filters.

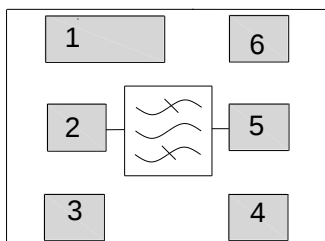


6 Pin 3 x 4 mm leadless SMT Package

Key Features

- Band 34 Usable Bandwidth 15 MHz
- Band 39 Usable Bandwidth 40 MHz
- Single-Input/Single-Output Dual Passband
- High Attenuation
- Low Loss
- Internally Match for Single Ended 50 Ohm Operation
- Small Size: 4.00 x 3.00 x 1.07 mm
- Surface Mount Device
- RoHS compliant, Pb-free

Functional Block Diagram



Top View

Pin Configuration

Pin No.	Label
2	Input
5	Output
1, 3, 4, 6	Case Ground

Applications

- General Purpose Wireless
- Uplink Band 34 and Band 39 Infrastructure

Ordering Information

Part No.	Description
TQQ1212TR13*	Dual Band Saw Filter Module
TQQ1212-PCB	Evaluation board

*Standard T/R size = 2500 pieces on a 13" reel

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	-55 to 150 °C
RF Input Power ⁽¹⁾	+19 dBm
RF Input Power ⁽²⁾	+20 dBm

Notes:

1. CW modulated RF signal at 55 °C for 10000 hours.
2. CW modulated RF signal at 55 °C for 5000 hours.
3. Operation of this device outside the parameter ranges given above may cause permanent damage.

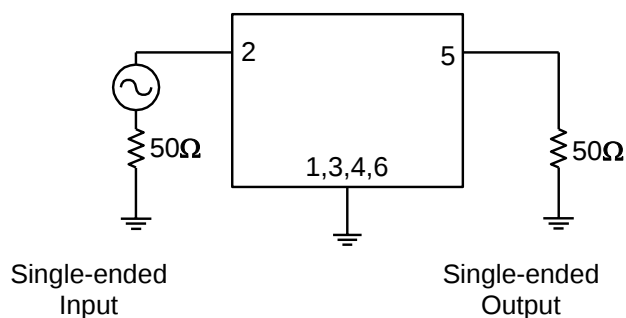
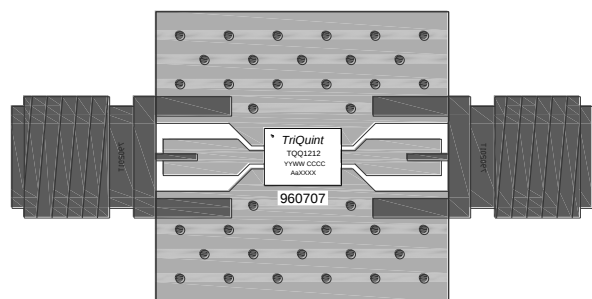
Electrical Specifications ^(1,2,3,4)

Parameter	Conditions	Min	Typ	Max	Units
Center Frequency	Band 39	-	1900	-	MHz
	Band 34	-	2017.5	-	MHz
Insertion Loss	1880 – 1920 MHz	-	2.3	3.8	dB
	2010 – 2025 MHz	-	2.7	3.8	dB
Amplitude Variation ⁽⁵⁾	1880 – 1920 MHz	-	0.7	2.0	dB
	2010 – 2025 MHz	-	0.4	1.4	dB
Group Delay	1880 – 1920 MHz	-	14	31	ns
	2010 – 2025 MHz	-	18	36	ns
Group Delay Variation ⁽⁶⁾	1880 – 1920 MHz	-	8.6	20	ns
	2010 – 2025 MHz	-	3.4	20	ns
Input Return Loss	1880 – 1920 MHz	9.5	13	-	dB
	2010 – 2025 MHz	11	17	-	
Output Return Loss	1880 – 1920 MHz	9.5	13	-	dB
	2010 – 2025 MHz	10.5	17	-	
Stopband Attenuation ⁽⁷⁾	10 – 1700 MHz	26	28	-	dB
	1700 – 1785 MHz	29	31	-	
	1785 – 1800 MHz	28	43	-	
	1840.48 – 1855.48 MHz	20	31	-	
	1950 – 1980 MHz	13	31	-	
	2070 – 2110 MHz	25	34	-	
	2110 – 2300 MHz	32	36	-	
	2300 – 2400 MHz	33	38	-	
	2400 – 4000 MHz	28	37	-	
Source/Load Impedance ⁽⁸⁾	Single ended	-	50	-	Ohms

Notes:

1. All specifications are based on the Qorvo schematic for the main reference design.
2. In production, devices will be tested at room temperature to a guard-banded specification to ensure electrical compliance over temperature
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
4. Typical values are based on average measurements at room temperature of 25°C
5. This is defined as the difference between the maximum and minimum insertion loss within the specified band
6. This is defined as the worst difference between a peak and adjacent valley within defined frequency points
7. Relative to zero dB
8. This is the optimum impedance in order to achieve the performance shown

TQQ1212-PCB Evaluation Board



Bill of Material – TQQ1212-PCB

Reference Des.	Value	Description	Manuf.	Part Number
U1	n/a	Dual Band Saw Filter	Qorvo	TQQ1212
n/a	n/a	Printed Circuit Board	Qorvo	960707
n/a	n/a	SMA Edge Connector	Radiall	9602-1111-018

Evaluation Board PCB Information

Top, middle & bottom layers: 1 oz copper

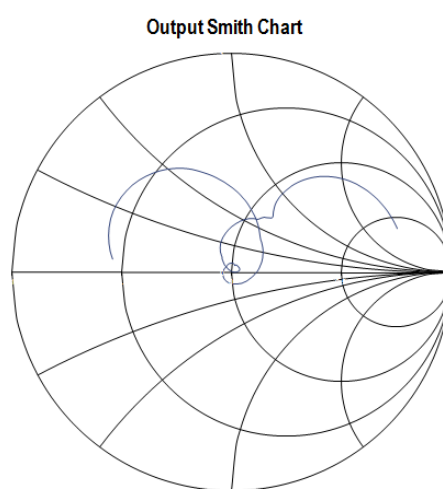
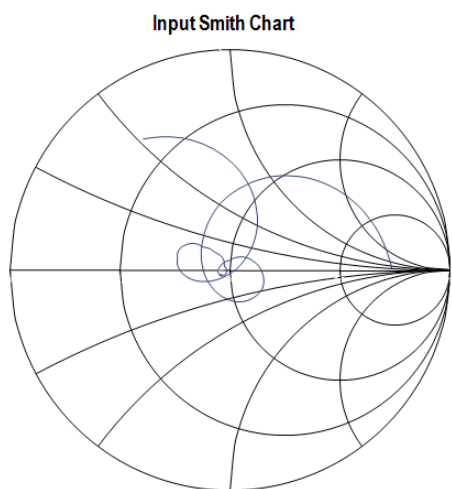
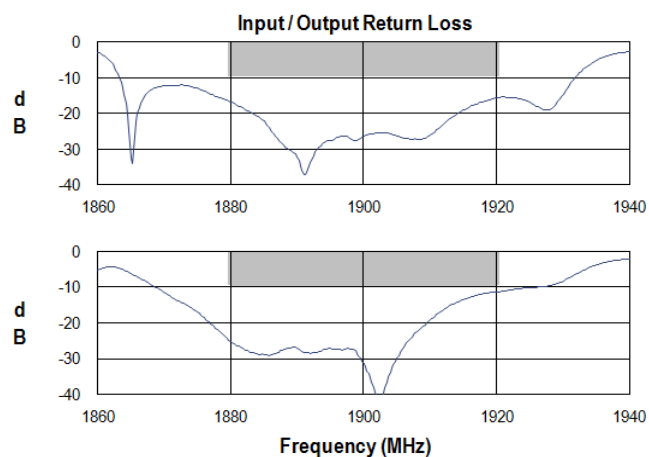
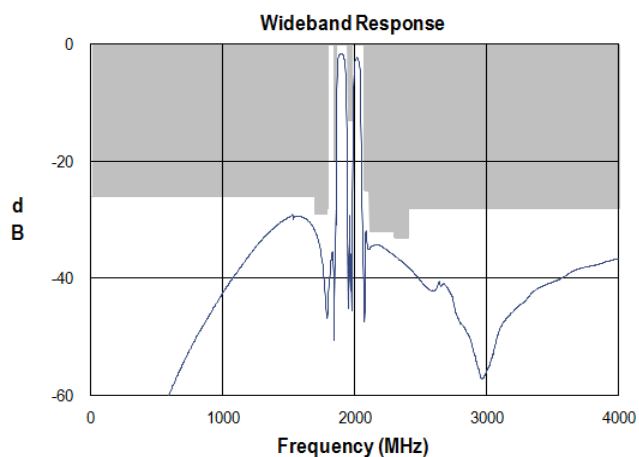
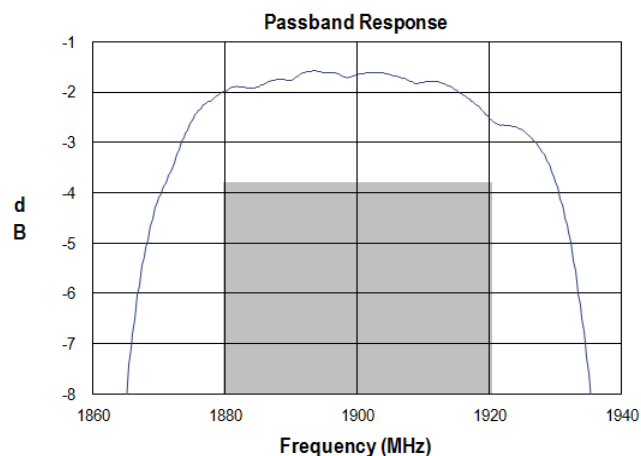
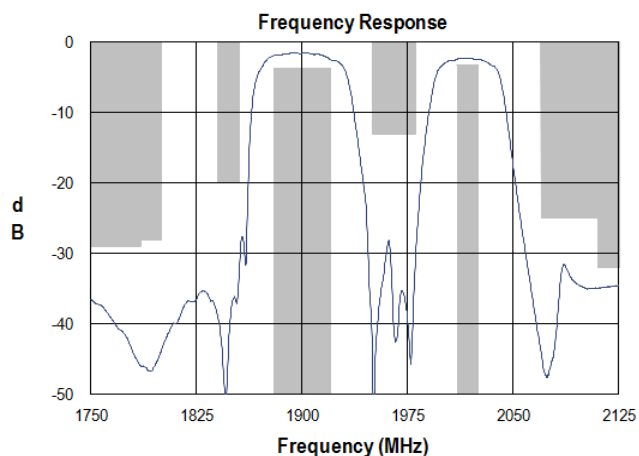
Substrates: FR4 dielectric, .031" thick

Finish plating: Nickel: 3-8μm thick, Gold: .03-.2μm thick

Hole plating: Copper min .0008μm thick

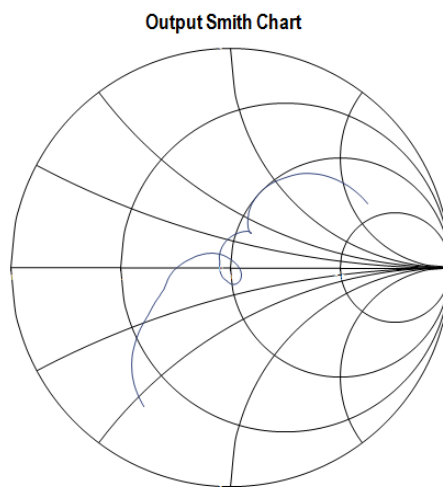
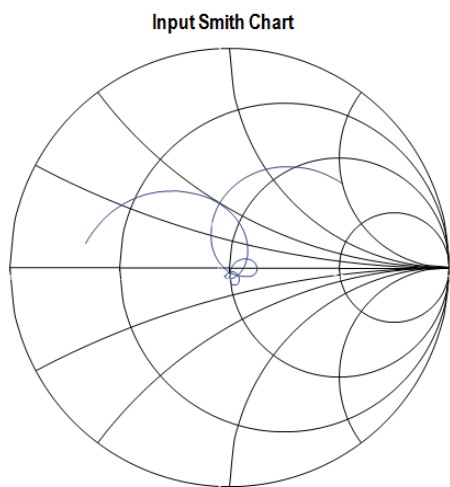
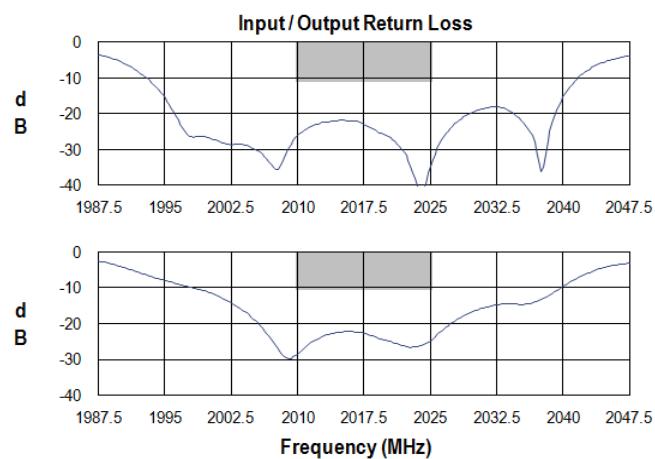
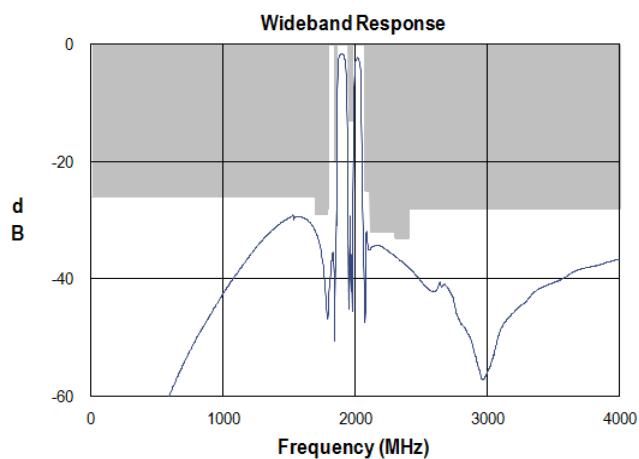
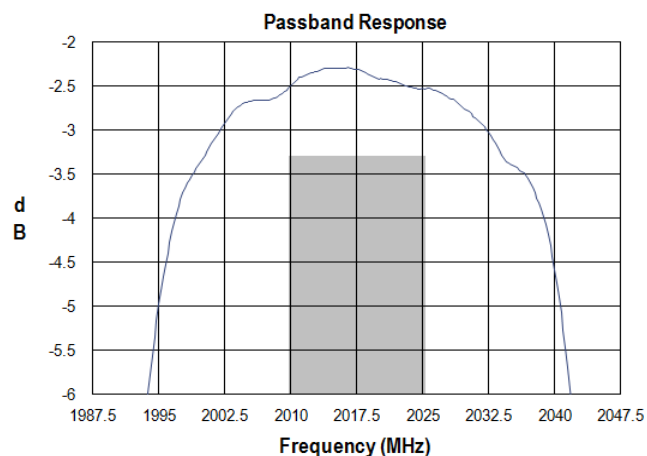
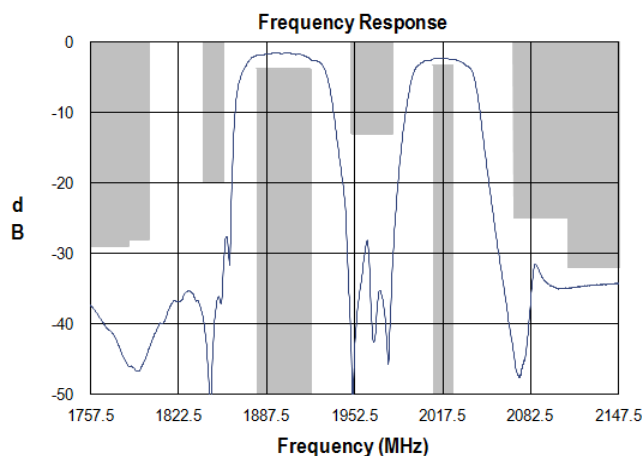
Performance Plots – Band 39

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

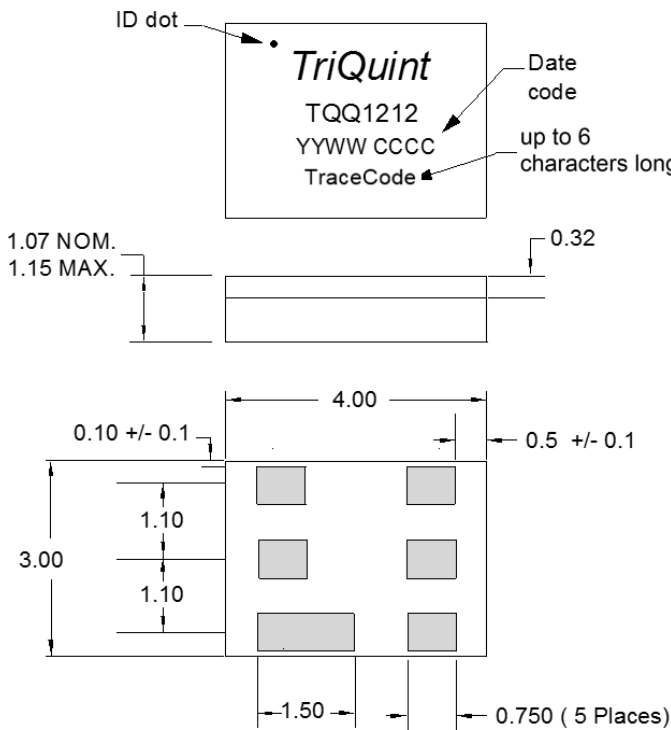


Performance Plots – Band 34

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



Package Material, Marking and Dimensions



Package Style: 6-pin 4x3 leadless SMT

Dimensions: 4.00 x 3.00 x 1.07 mm

4 layer laminate based over-molded module

Plating on leads: Electrolytic Ni/Au

All dimensions shown are nominal in millimeters

All tolerances are $\pm 0.15\text{mm}$ except overall length and width $\pm 0.10\text{mm}$

The marking code consists of:

YYWW = Year/Week

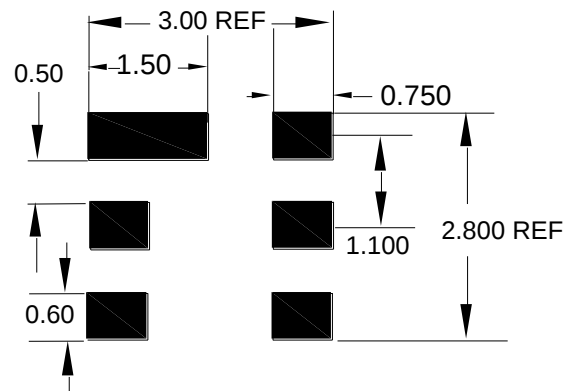
CCCC = Country

TraceCode = XXXXXX

PCB Mounting Pattern

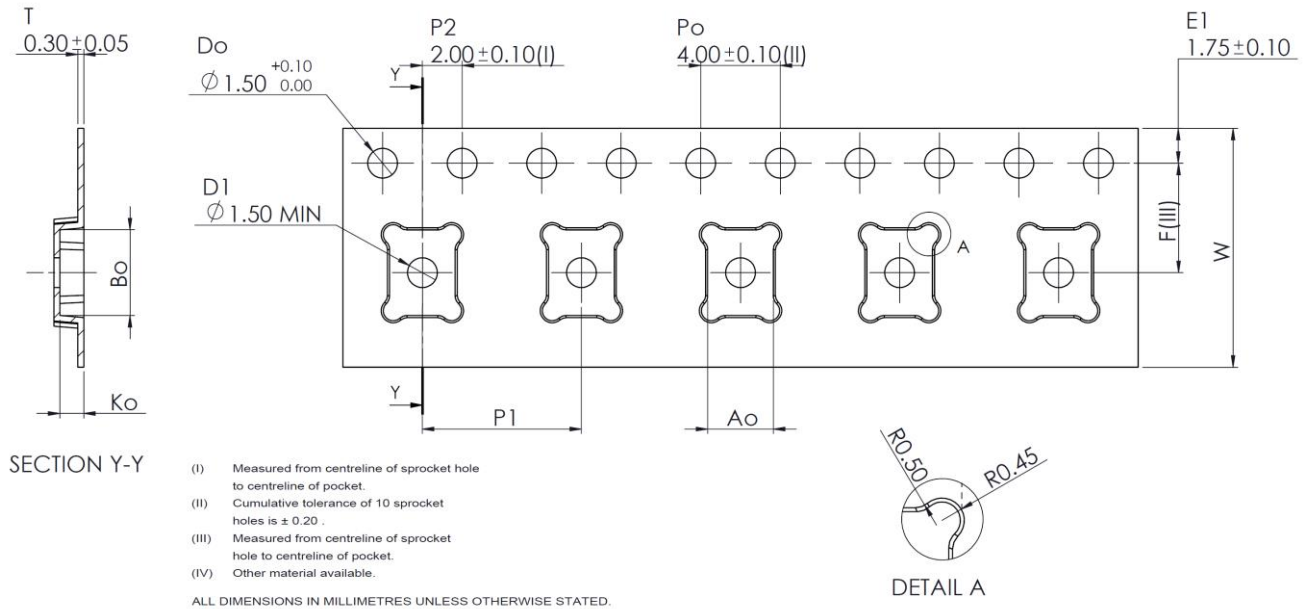
Notes:

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

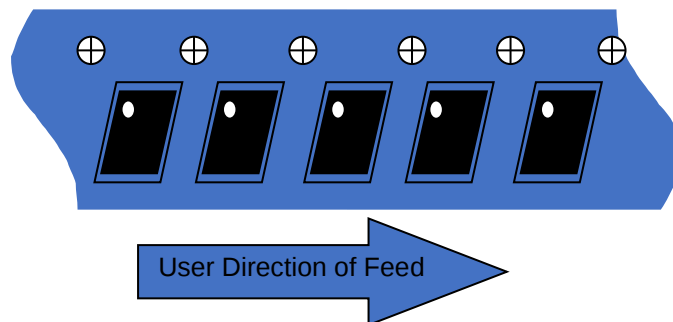


Tape and Reel Information – Carrier and Cover Tape

Tape and reel specifications for this part are also available on the Qorvo website.
Standard T/R size = 2500 pieces on a 13" reel.

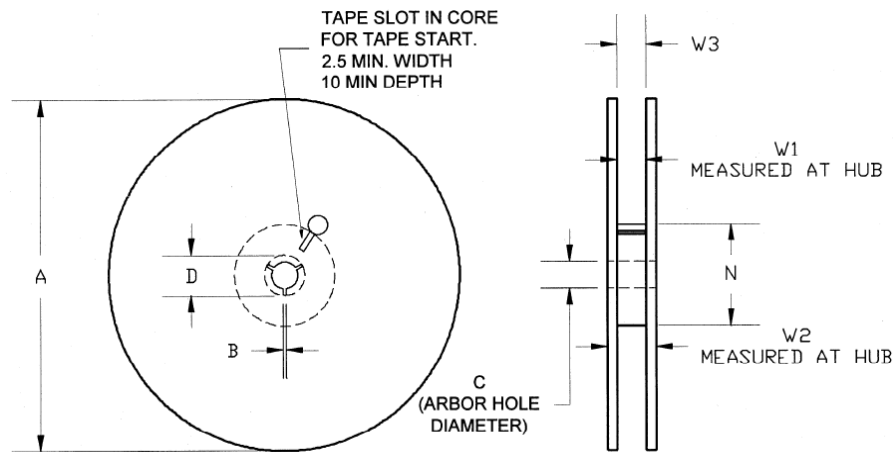


Feature	Measure	Symbol	Size (in)	Size (mm)
Cavity	Length	A0	0.130	3.30
	Width	B0	0.169	4.30
	Depth	K0	0.047	1.20
	Pitch	P1	0.314	8.00
Centerline Distance	Cavity to Perforation - Length Direction	P2	0.079	2.00
	Cavity to Perforation - Width Direction	F	0.217	5.50
Cover Tape	Width	C	0.362	9.20
Carrier Tape	Width	W	0.472	12.00



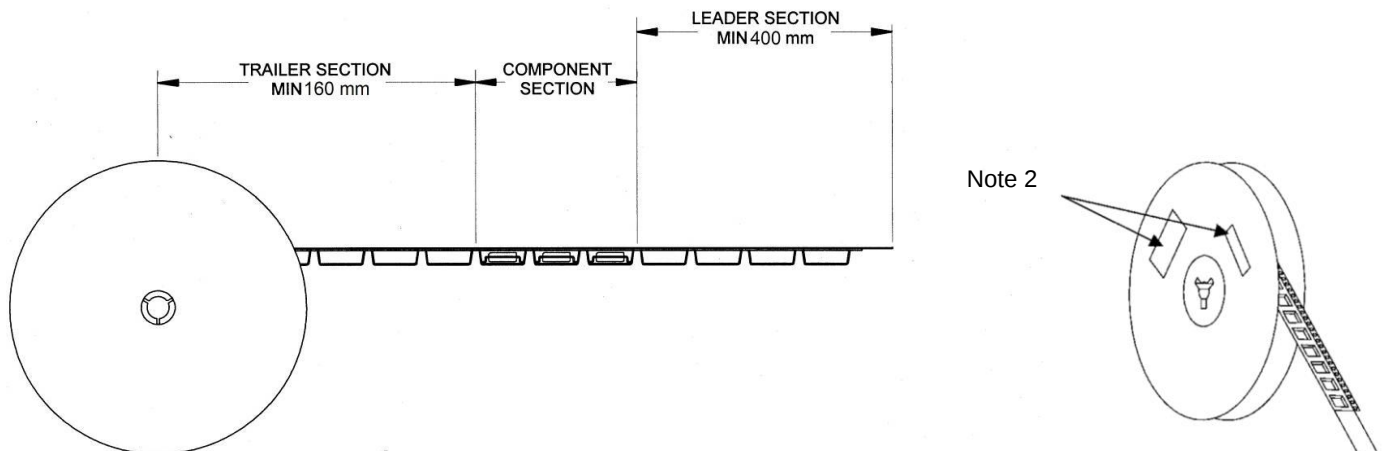
Tape and Reel Information - Reel

Packaging reels are used to prevent damage to devices during shipping and storage, loaded carrier tape is typically wound onto a plastic take-up reel. The reels are made from high-impact injection-molded polystyrene (HIPS), which offers mechanical and ESD protection to packaged devices.



Feature	Measure	Symbol	Size (in)	Size (mm)
Flange	Diameter	A	12.992	330.0
	Thickness	W2	0.717	18.2
	Space between Flange	W1	0.504	12.8
Hub	Outer Diameter	N	4.016	102.0
	Arbor Hole Diameter	C	0.512	13.0
	Key Slit Width	B	0.079	2.0
	Key Slit Diameter	D	0.795	20.2

Tape and Reel Information – Tape Length and Label Placement



Notes:

1. Empty part cavities at the trailing and leading ends are sealed with cover tape. See EIA 481.
2. Labels are placed on the flange opposite the sprockets in the carrier tape.

Handling Precautions

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



Caution!
ESD-Sensitive Device

Solderability

Compatible with lead-free (260°C max. reflow temp.) soldering process.

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 (C₁₅H₁₂Br₄O₂) Free
- PFOS Free
- SVHC Free



Contact Information

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

Web: www.qorvo.com

Tel: 1-844-890-8163

Email: customer.support@qorvo.com

For technical questions and application information: **Email:** appsupport@qorvo.com

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