



QPQ3501

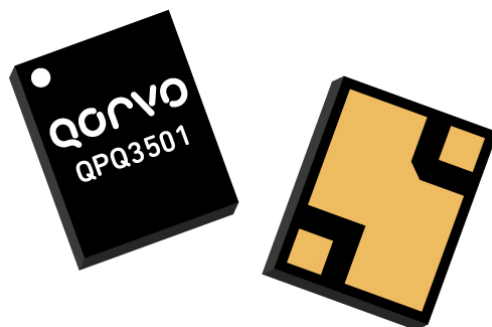
B52+B42 300 MHz BAW Filter Module

General Description

The QPQ3501 is an exceptionally high-performance BAW Filter for sub-Band n78. This filter is housed in a compact 2.0 x 1.6 mm package for base station applications.

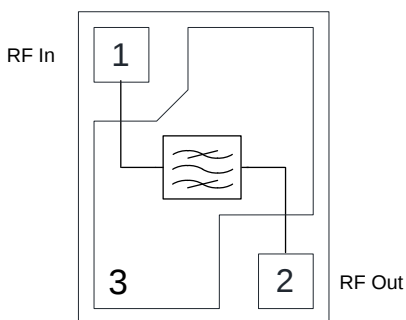
Low insertion loss coupled with high attenuation makes this filter an ideal choice for TDD Macro Cells and Small Cells.

The QPQ3501 is part of Qorvo's extensive portfolio of RF BAW and SAW filters.



3 Pin 2.0 x 1.6 mm leadless SMT Package

Functional Block Diagram



Top View

Product Features

- 300 MHz Bandwidth – Band 52 + 42
- High Attenuation
- Low Loss
- No External Matching Required
- Excellent Wi-Fi Rejection
- Single Input, Single Output Operation
- Small Size: 2.00 x 1.60 x 0.89 mm
- Surface Mount Device

Applications

- Band 52 + 42
- Base Station Infrastructure
- Small Cells
- Repeaters
- Routers
- LTE Dongles
- General Purpose Wireless

Pin Configuration

Pin No.	Label
1	RF In
2	RF Out
3	GND Back Side Paddle

Ordering Information

Part	Description
QPQ3501TR7	2500 pieces on a 7" Reel.
QPQ3501SB	Sample Bag with 5 pieces
QPQ3501EVB	Evaluation Board – QPQ3501

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	-40°C to +125°C
Operation Temperature	-40°C to +95°C
RF Input Power - Test conditions: PW = 500ms; DC = 50% @ +25 °C	35.5 dBm

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability.

Minimum Lifetime Ratings

Conditions	Rating
31 dBm at Pin 1, 3600 MHz, FD-LTE, 5 MHz, 16 QAM, PAR 8 dB, +95°C	>10 years

Electrical Specifications ⁽¹⁾ ⁽²⁾ ⁽³⁾

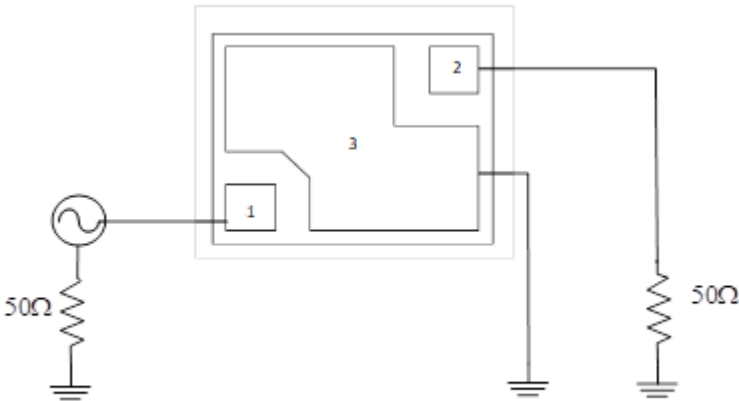
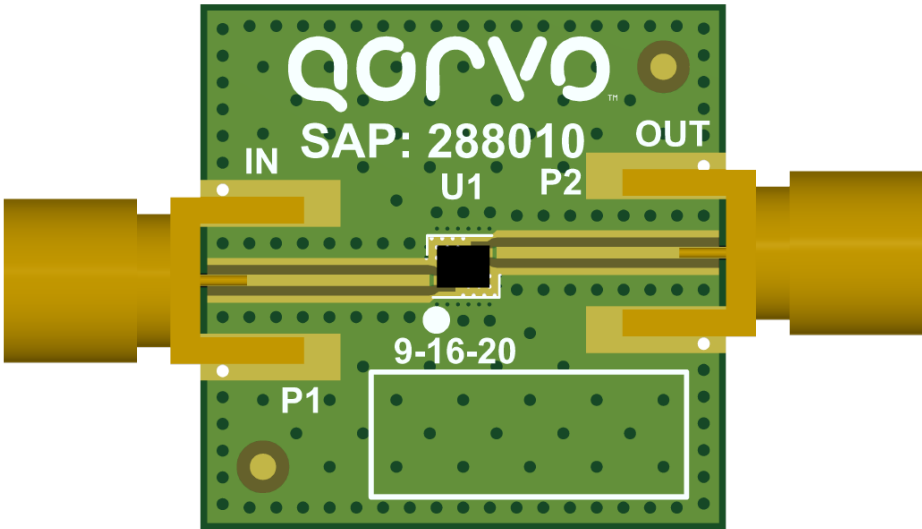
Test Conditions unless otherwise noted: Temp = -40°C to +95°C

Parameter	Conditions	Min	Typ. ⁽⁴⁾	Max	Unit
Frequency Range		3300		3600	MHz
Maximum Insertion Loss	3300 – 3600 MHz		2.6	3.5	dB
Integrated Insertion Loss ⁽⁹⁾	3300 – 3320 MHz		2.5	3.5	dB
	3320 – 3580 MHz		1.8	2.8	dB
	3580 – 3600 MHz		1.9	3.2	dB
Amplitude Variation ⁽⁵⁾	3300 – 3600 MHz		0.25	1.0	dB
Error Vector Magnitude ⁽⁶⁾	3300 – 3600 MHz		0.9	3	%
Group Delay Variation ⁽⁶⁾	3300 – 3600 MHz		1.3	10	ns
Input VSWR	3300 – 3600 MHz		1.4	2.0	-
Output VSWR	3300 – 3600 MHz		1.4	2.0	-
Integrated Rejection ⁽⁷⁾	3199 – 3300 MHz	7	11		dB
	3600 – 3701 MHz	6.7	9		dB
Attenuation ⁽⁸⁾	10 – 960 MHz	30	39		dB
	960 – 1415 MHz	30	37		dB
	1415 – 1515 MHz	17	33		dB
	1515 – 1880 MHz	30	35		dB
	1880 – 2170 MHz	30	35		dB
	2170 – 2473 MHz	30	35		dB
	2473 – 2483 MHz	30	35		dB
	3100 – 3200 MHz	28	42		dB
	3700 – 3800 MHz	30	44		dB
	3800 – 5925 MHz	30	36		dB
	6600 – 7200 MHz	25	41		dB
	7200 – 8000 MHz	10	33		dB

Notes:

1. All specifications are based on the Qorvo schematic shown on page 3.
2. In production, devices will be tested at room temperature to a guard banded specification to ensure compliance over temperature.
3. Electrical margin has been built into the design to account for variations due to temperature drift and manufacturing tolerances.
4. Typical values are based on average measurements at room temperature.
5. Maximum Insertion Loss Variation between specified frequencies over any 5 MHz bandwidth
6. Across the band between specified frequencies in 5 MHz sliding window
7. Integrated Rejection over 100 MHz BW within specified frequencies
8. Attenuation is referenced to ZERO dB.
9. Integrated Insertion Loss over any 5 MHz BW

QPQ3501EVB Evaluation Board

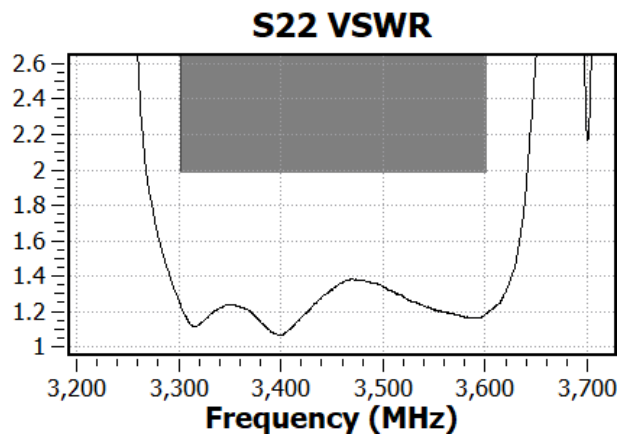
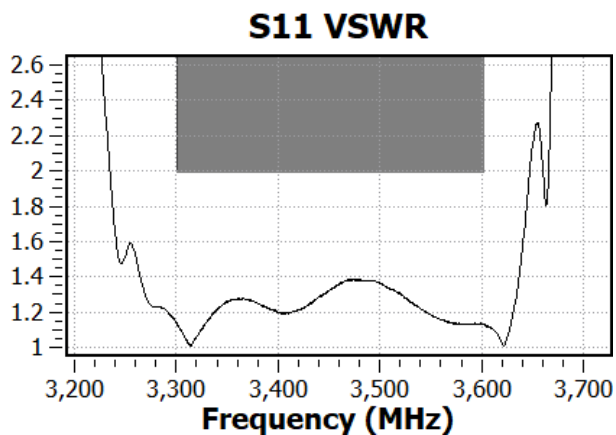
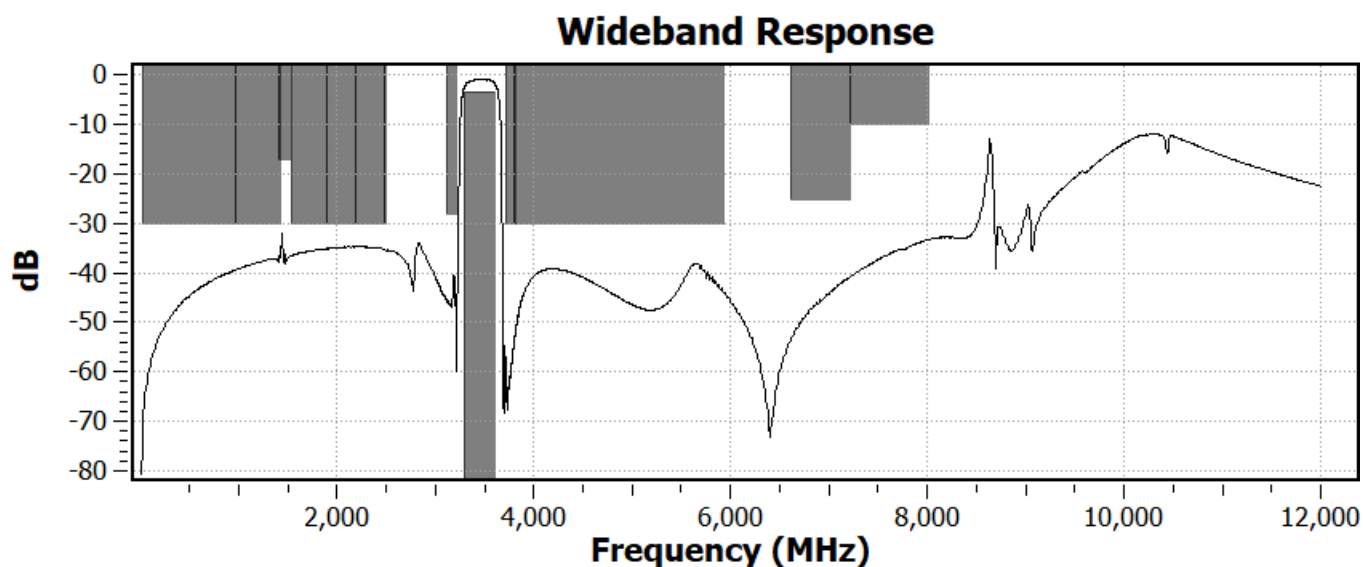
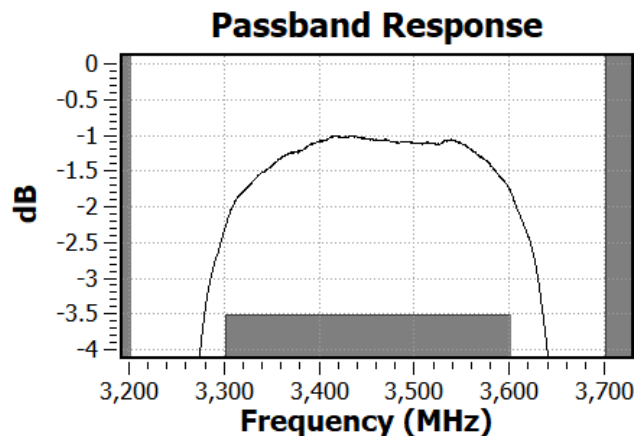
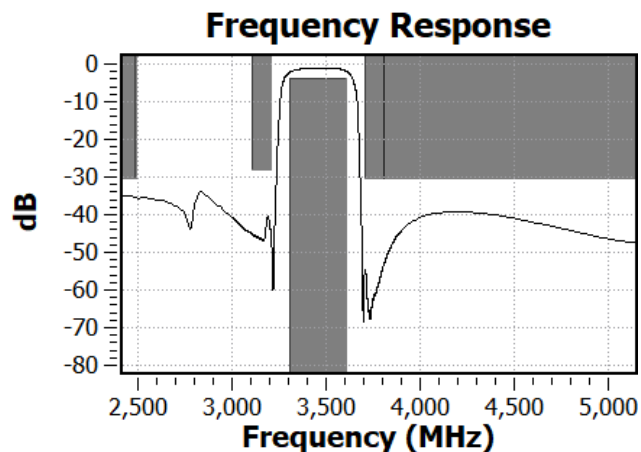


Bill of Material – QPQ3501EVB

Reference Des.	Value	Description	Manuf.	Part Number
U1	-	B52 + B42 300 MHz BAW Filter Module	Qorvo	QPQ3501
SMA	-	SMA Edge Connector	Various	-
PCB	-	Printed Circuit Board	Various	-

Performance Plots – Small Signal

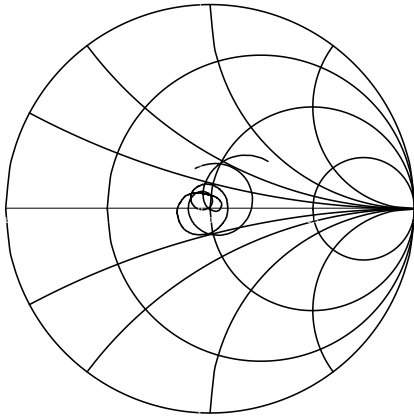
Test conditions unless otherwise noted: Temp = +25 °C, 50 Ω system



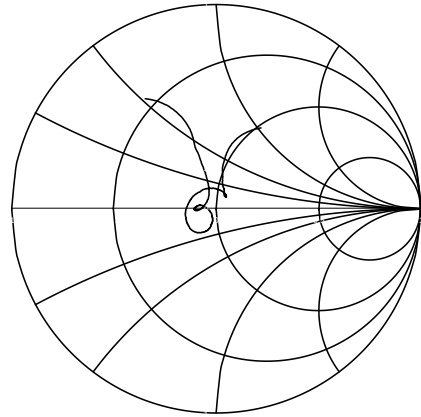
Performance Plots – Small Signal

Test conditions unless otherwise noted: Temp = +25 °C, 50 Ω system

Input Smith Chart



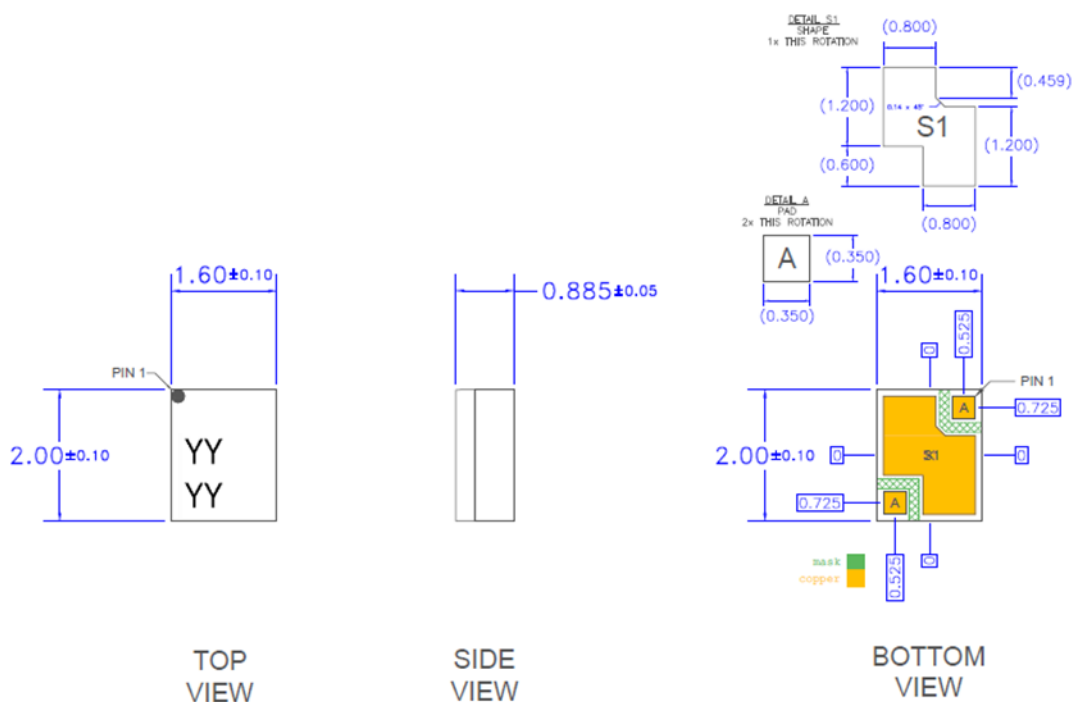
Output Smith Chart



Package Marking and Dimensions

Marking:

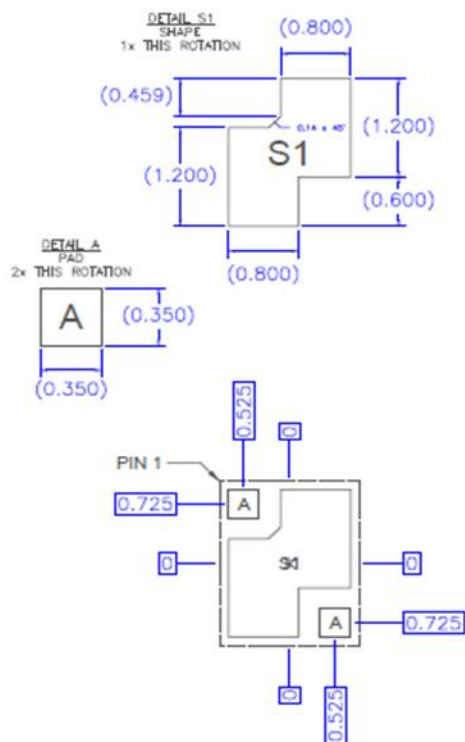
YYYY indicates the Trace Code



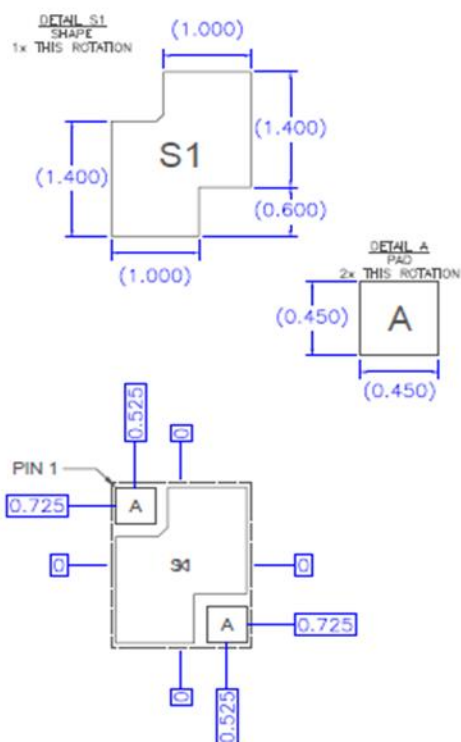
Notes:

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

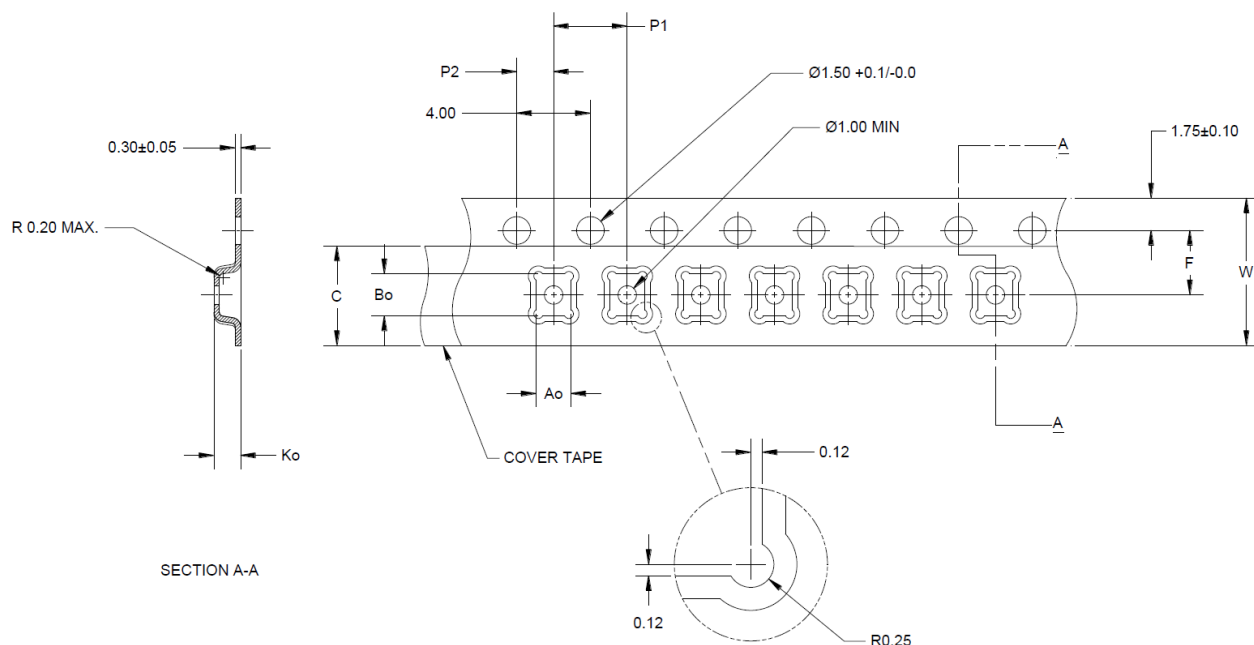
Notes:

1. All dimensions are in millimeters.
2. This drawing specifies the mounting pattern used on the Qorvo evaluation board for this product. Some modification may be necessary to suit end user assembly materials and processes.

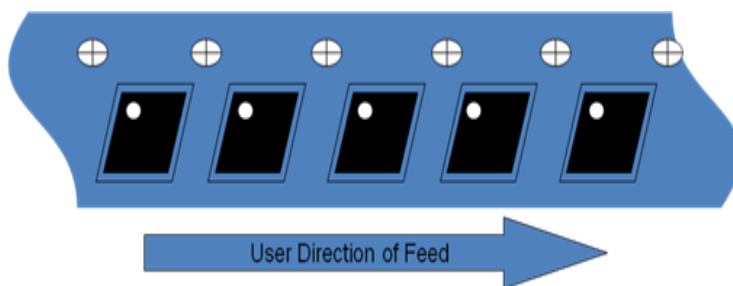
Tape and Reel Information – Carrier and Cover Tape Dimensions

Tape and reel specifications for this part are also available on the Qorvo website.

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

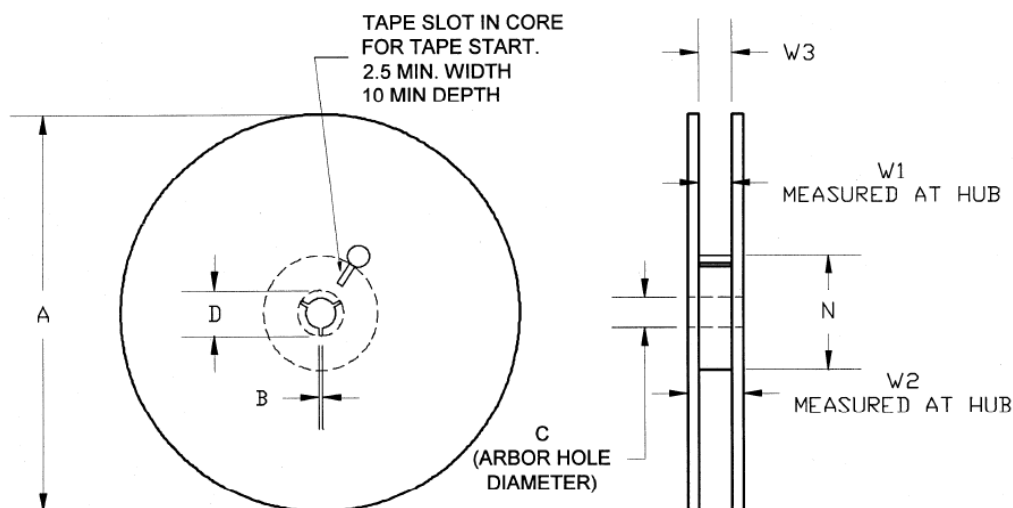


Feature	Measure	Symbol	Size (in)	Size (mm)
Cavity	Length	A0	0.077	1.95
	Width	B0	0.093	2.35
	Depth	K0	0.045	1.15
	Pitch	P1	0.157	4.00
Centerline Distance	Cavity to Perforation - Length Direction	P2	0.079	2.00
	Cavity to Perforation - Width Direction	F	0.138	3.50
Cover Tape	Width	C	0.213	5.40
Carrier 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.



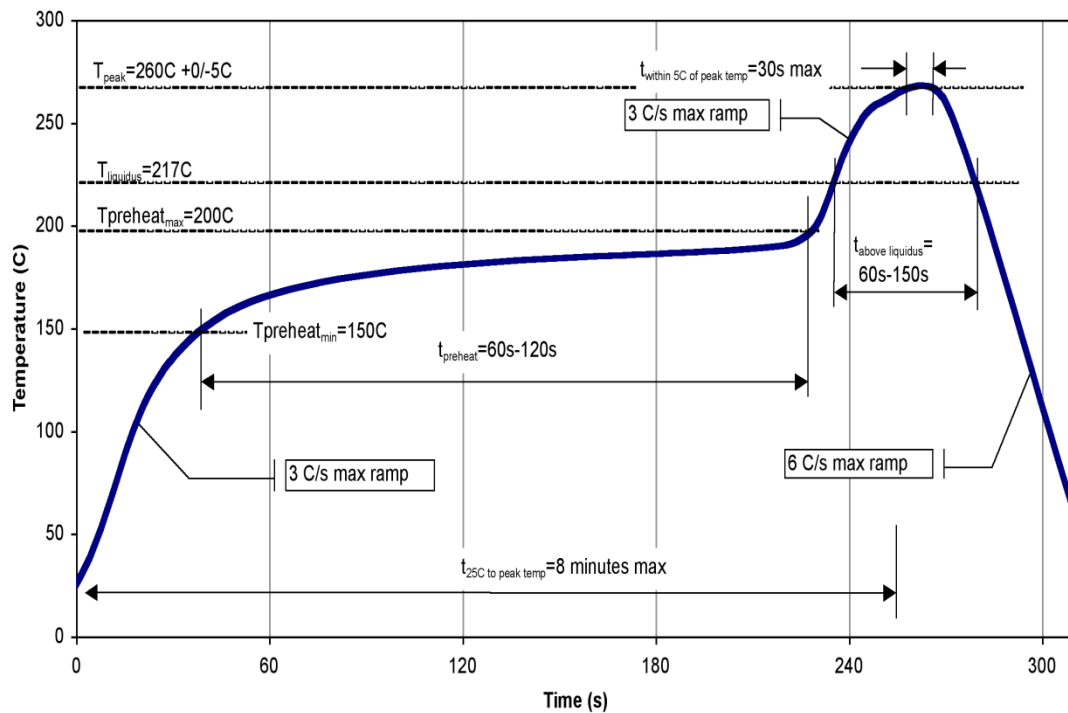
Feature	Measure	Symbol	Size (in)	Size (mm)
Flange	Diameter	A	6.969	177.0
	Thickness	W2	0.559	14.2
	Space Between Flange	W1	0.346	8.8
Hub	Outer Diameter	N	2.283	58.0
	Arbor Hole Diameter	C	0.512	13.0
	Key Slit Width	B	0.079	2.0
	Key Slit Diameter	D	0.787	20.0

Assembly Notes

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

Contact plating: ENEPIG

Recommended Soldering Profile



Handling Precautions

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	Class 1C	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

RoHS Compliance

This product is compliant with the 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

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