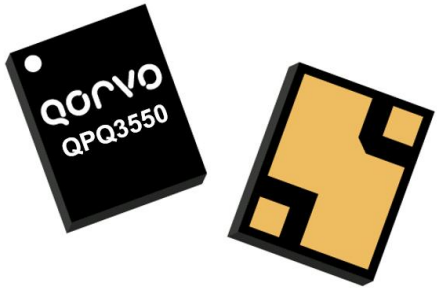
QPQ3550

3550-3700MHz BAW Filter

1. Product Overview and Benefits

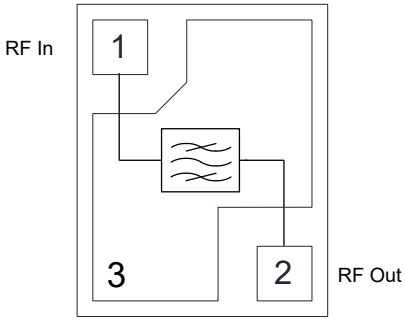
The Qorvo® QPQ3550 is an exceptionally high-performance BAW bandpass filter over the 3GPP band 48. For North America, this filter covers the CBRS as well. With +27dBm lifetime average power handling and small footprint, coupled with low insertion loss and high out-of-band rejection, this filter is very well suited for small cell or fixed wireless access type radios.

The QPQ3550 filter is housed in a compact 2.0 x 1.6mm LGA package and is part of Qorvo's extensive portfolio of RF BAW and SAW filters.



3 Pin 2.0 x 1.6 mm leadless SMT Package

2. Functional Block Diagram



Top View

3. Key Features

- 150MHz Bandwidth – B48 Band & CBRS
- High Input Power, +27dBm
- Low Insertion Loss, 2.7dB max.
- No External Matching Required
- Excellent Out-of-Band Rejections
- Single Input, Single Output Operation
- Small Size: 2.00 x 1.60 x 0.721 mm
- Surface Mount Device
- RoHS Compliant, Pb-Free

4. Applications

- CBRS Radio
- Fixed Wireless Access
- Small Cell

5. Ordering Information

Part Number	Description
QPQ3550TR7	2500 pieces on 7" Tape & Reel
QPQ3550SR	100 pieces on 7" Tape & Reel
QPQ3550EVB	Evaluation board

6. Absolute Maximum Ratings

Parameter	Conditions	Rating
Storage Temperature		-40°C to +125°C
RF Input Power	on Pin 1, at +25°C, 200ms LTE 5MHz 16QAM PAR 10dB 25RB	+33dBm

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.

7. Recommended Operation Conditions

Parameter	Min.	Typ.	Max.	Units
Operation Temperature	-40		+85	°C
RF Input Power on Pin 1 >10-year Lifetime (1)			+27	dBm

Note:
1. Upper edge of passband, FD-LTE, 5 MHz, 16 QAM, PAR 10 dB 25RB, +85°C

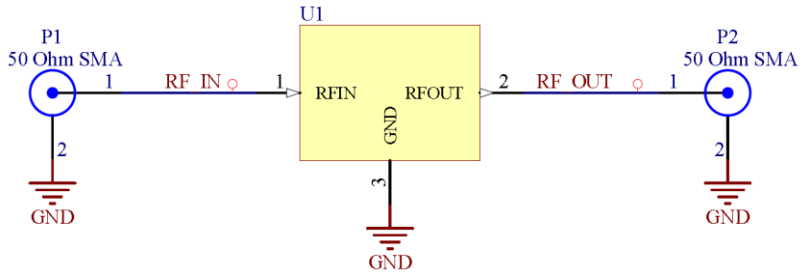
8. Electrical Characteristics

Parameter	Conditions (1)(2)	Min.	Typ. (3)	Max.	Units
Operational Frequency Range		3550		3700	MHz
Integrated Insertion Loss	3550 – 3700 MHz, integration over 10MHz		1.8	2.7	dB
Amplitude Variation (4)	3550 – 3700 MHz, over 5MHz		0.5	2.0	dB
Integrated Attenuation (Near Passband Edges)	3450 – 3530 MHz, over 5MHz	10	17		dB
	3720 – 3800 MHz, over 5MHz	9	20		dB
Input Return Loss	3550 – 3700 MHz	10	16		dB
Output Return Loss	3550 – 3700 MHz	10	15		dB
Group Delay Variation (5)	3550 – 3700 MHz, over 5MHz		14.4	35	ns
Attenuation (Reference on ZERO dB)	10 – 1000 MHz	30	32		dB
	1700 – 2690 MHz	22	26		dB
	2690 – 3450 MHz	22	26		dB
	3800 – 6000 MHz	14	25		dB
	6000 – 8000 MHz	15	21		dB
Second Harmonic	Input Power +27dBm		-41		dBm
Third Harmonic			-65		dBm

Notes:
1. Test condition unless otherwise noted: 50 Ω system on Qorvo evaluation circuit, Temp. -40°C to +85°C, production test at room temperature
2. Electrical margin has been built into the design to account for variations due to temperature drift and manufacturing tolerances
3. Typical values are based on average measurements at room temperature
4. Maximum Insertion Loss Variation between specified frequencies over any 5MHz bandwidth
5. Group Delay variation across the band between specified frequencies over any 5MHz bandwidth

9. Application Information

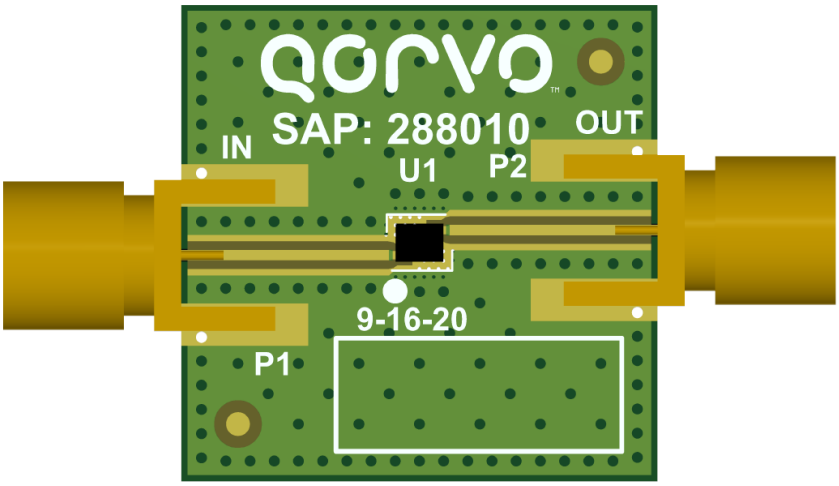
9.1. Application Circuit Schematic



9.2. Bill of Material

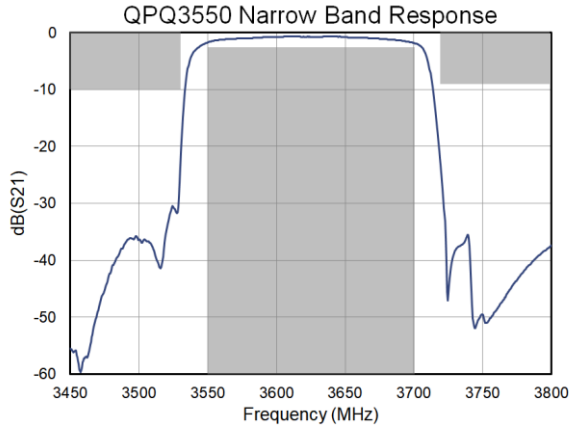
Ref. Des.	Value	Description	Manuf.	Part Number
PCB	-	Printed Circuit Board, 4-Layer	Qorvo	288010
U1	-	Filter, B48 band 150MHz BAW	Qorvo	QPQ3550
P1, P2	SMA	CONN, SMA Edge	Radial	9602-1111-018

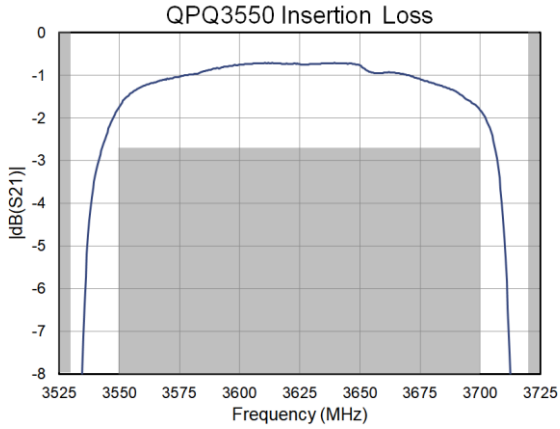
9.3. Application PCB Layout

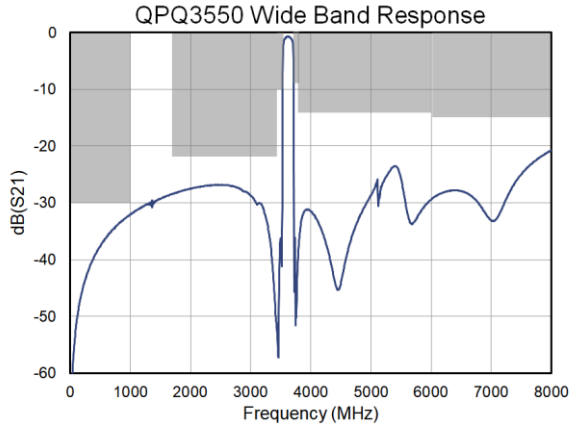


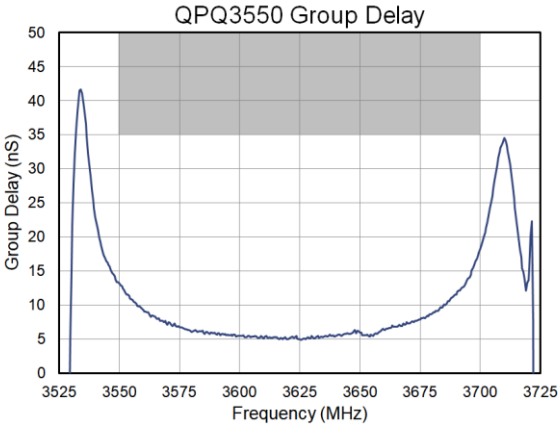
10. Performance Plots

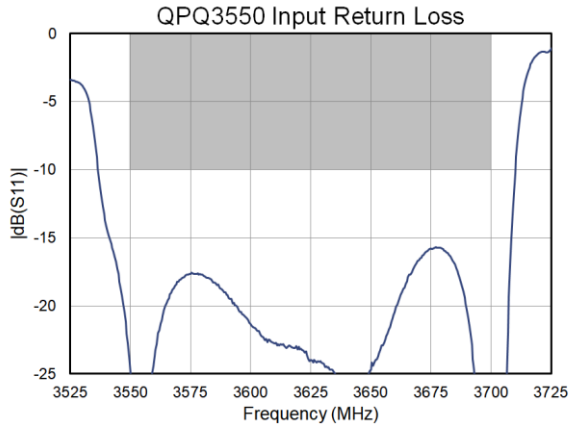
Test conditions unless otherwise noted: Temp=+25C, 50 Ω system on Qorvo EVB

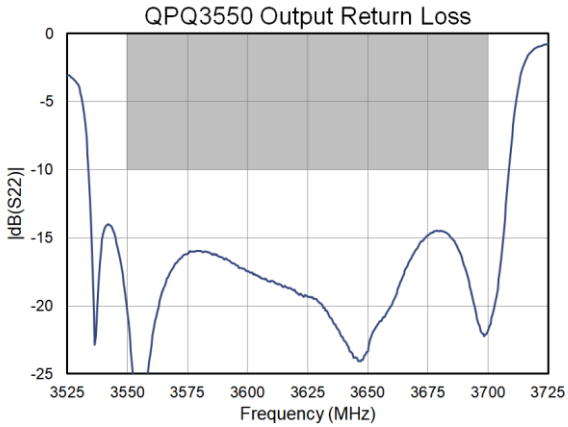












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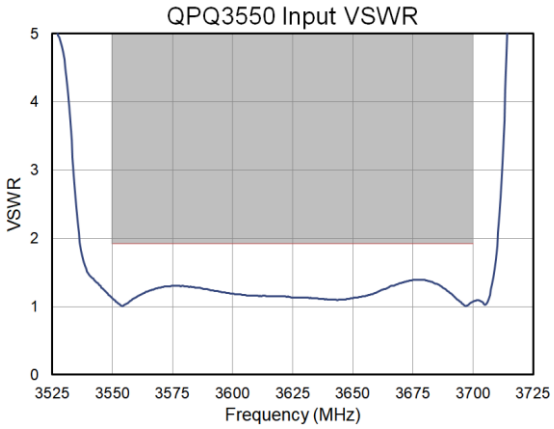
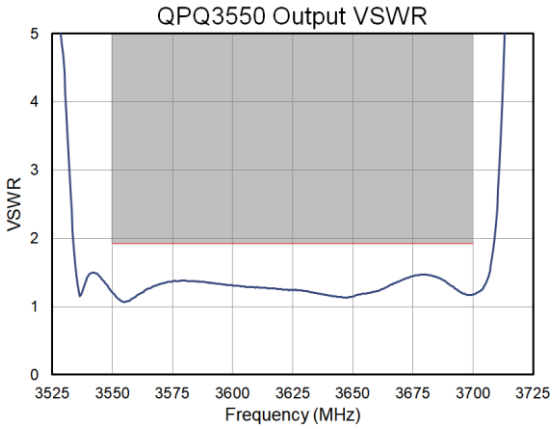
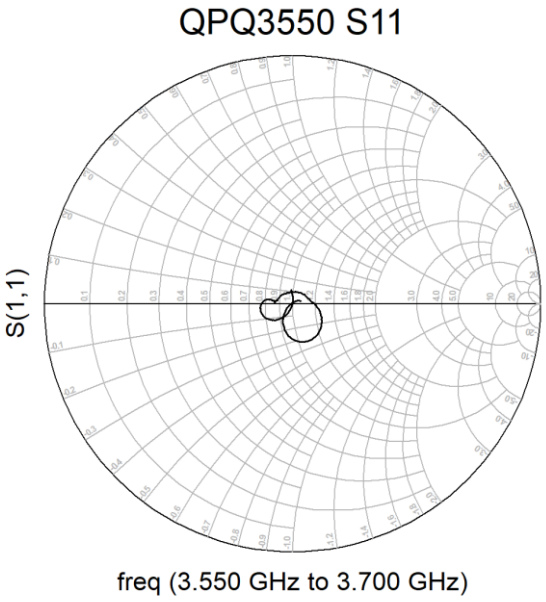
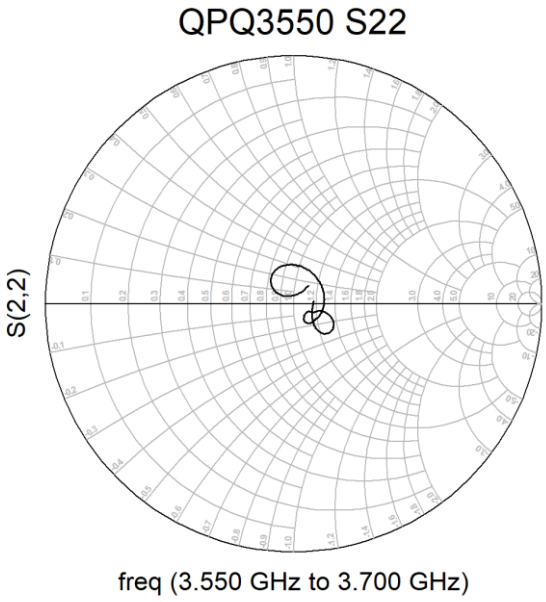
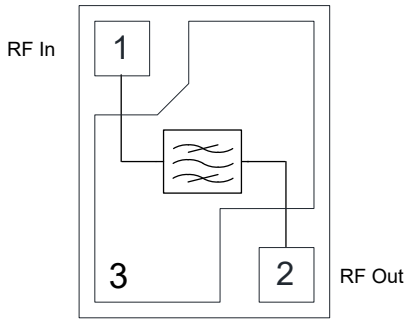








11. Pin Configuration and Description



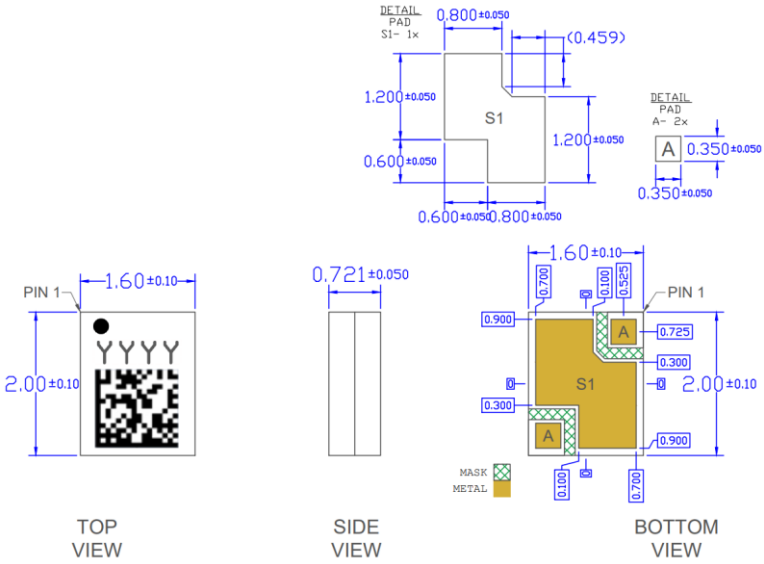
Top View

Pin Number	Label	Description
1	RF In	RF Input Port
2	RF Out	RF Output Port
3	-	GND, Backside Paddle

12. Device Packaging Information

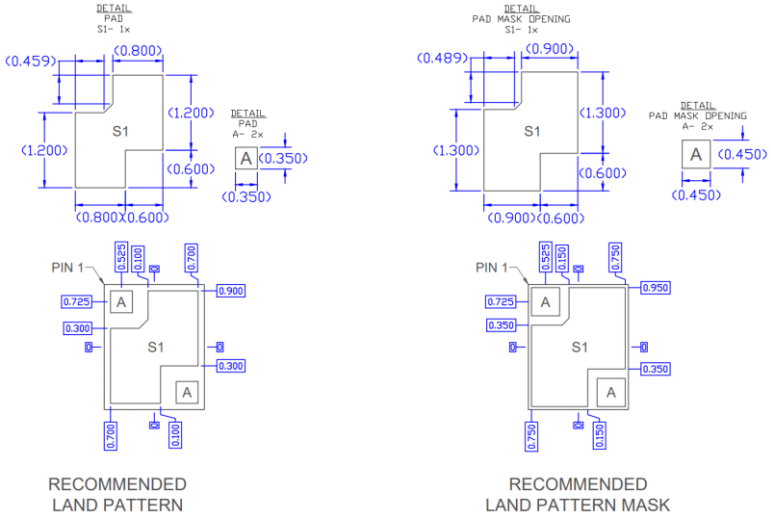
12.1. Device Marking and Package Dimensions

Marking: ● – Pin 1 Indicator
YYYY – Trace Code, Assigned by SubCon
2DID –Trace Information



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.

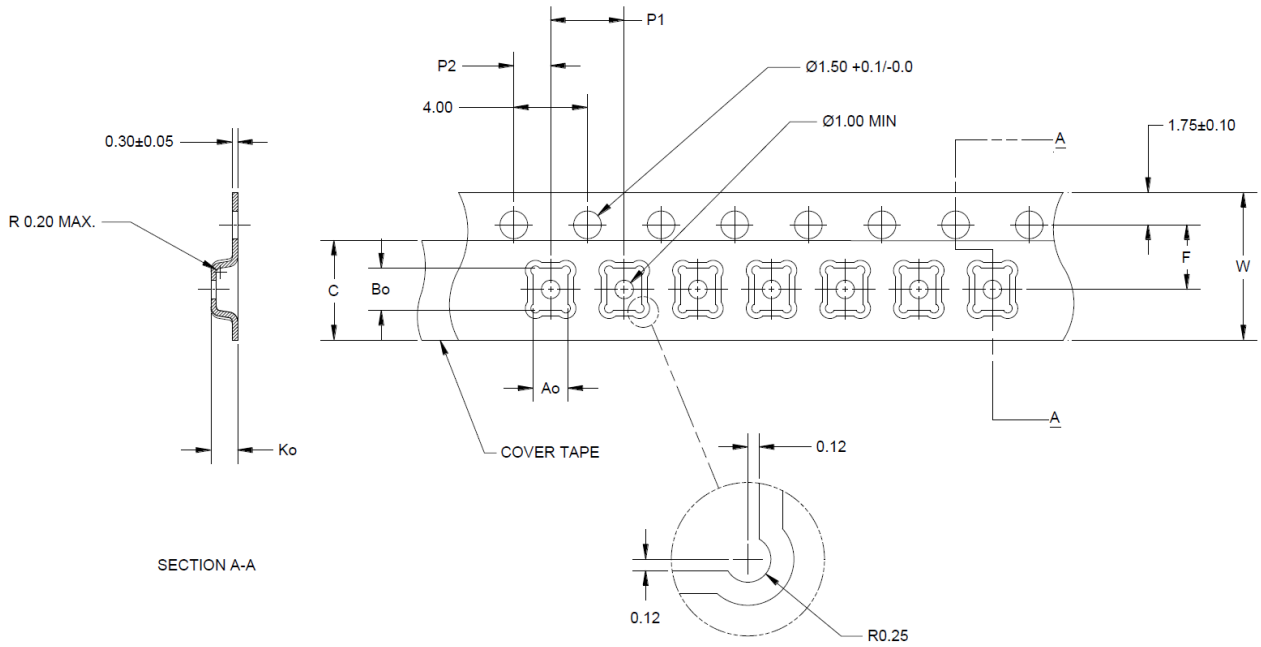
12.2. PCB Footprint Recommendations



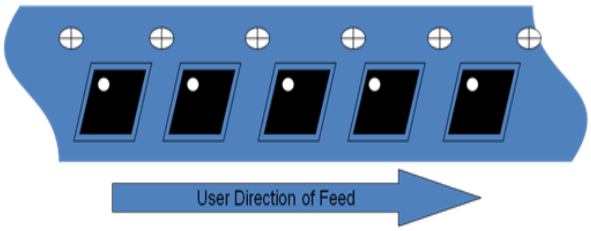
Notes:
1. All dimensions are in millimeters.
2. This drawing specifies the mounting pattern used on the Qorvo evaluation board for this product. Some modification may be necessary to suit end user assembly materials and processes

12.3. Tape and Reel Information

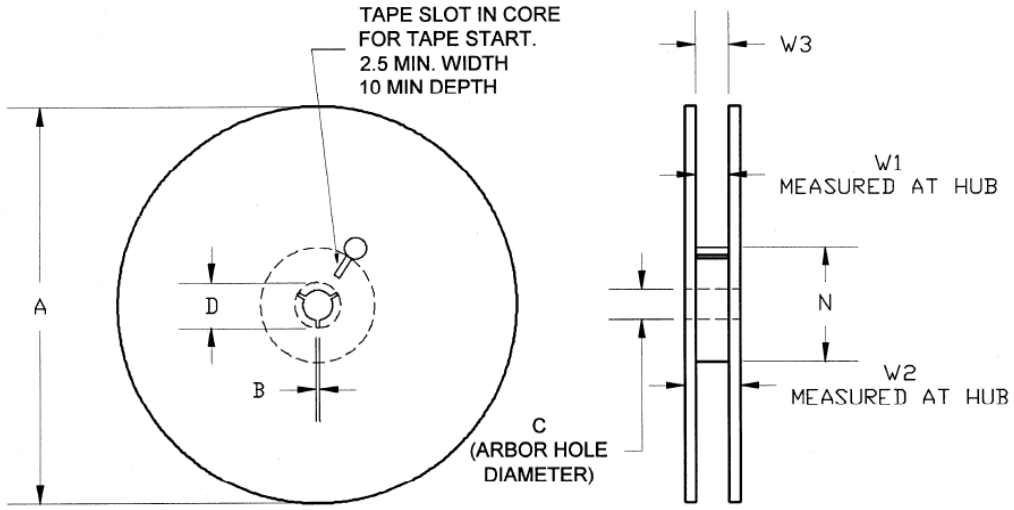
Tape and reel specifications for this part are also available on Qorvo® website.
Standard T/R size 2500 pieces on a 7" reel.



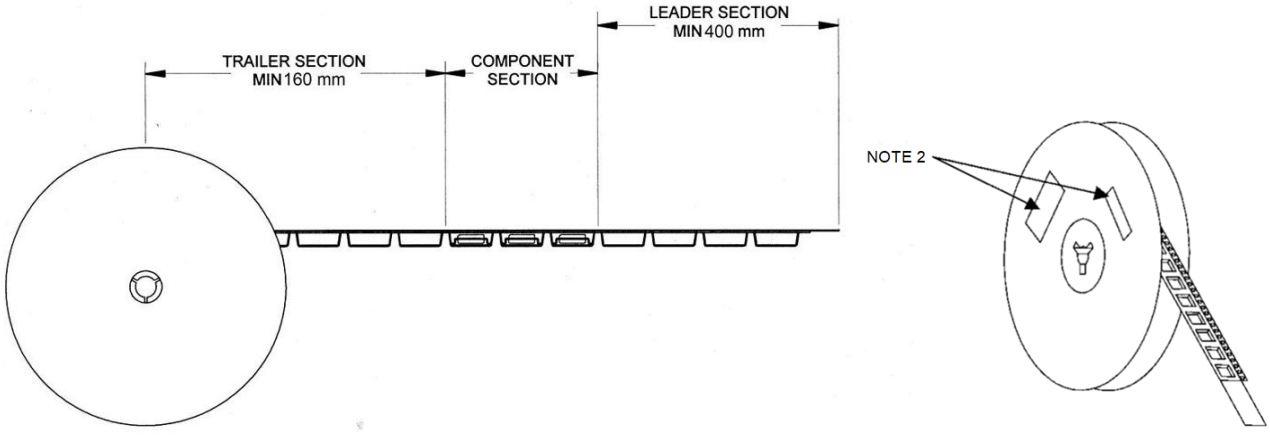
Feature	Measure	Symbol	Size (in)	Size (mm)
Cavity	Length	A0	0.077	1.95
	Width	B0	0.093	2.35
	Depth	K0	0.045	1.15
	Pitch	P1	0.157	4.00
Centerline Distance	Cavity to Perforation - Length Direction	P2	0.079	2.00
	Cavity to Perforation - Width Direction	F	0.138	3.50
Cover Tape	Reference Only	C	0.213	5.40
Carrier Tape	Width	W	0.315	8.00



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



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

13. Handling Precautions

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	Class 1B	ESDA/JEDEC JS-001-2012
ESD – Charged Device Model (CDM)	Class C3	JEDEC JESD22-C101F
MSL – Moisture Sensitivity Level	Level 3	IPC/JEDEC J-STD-020

Caution!

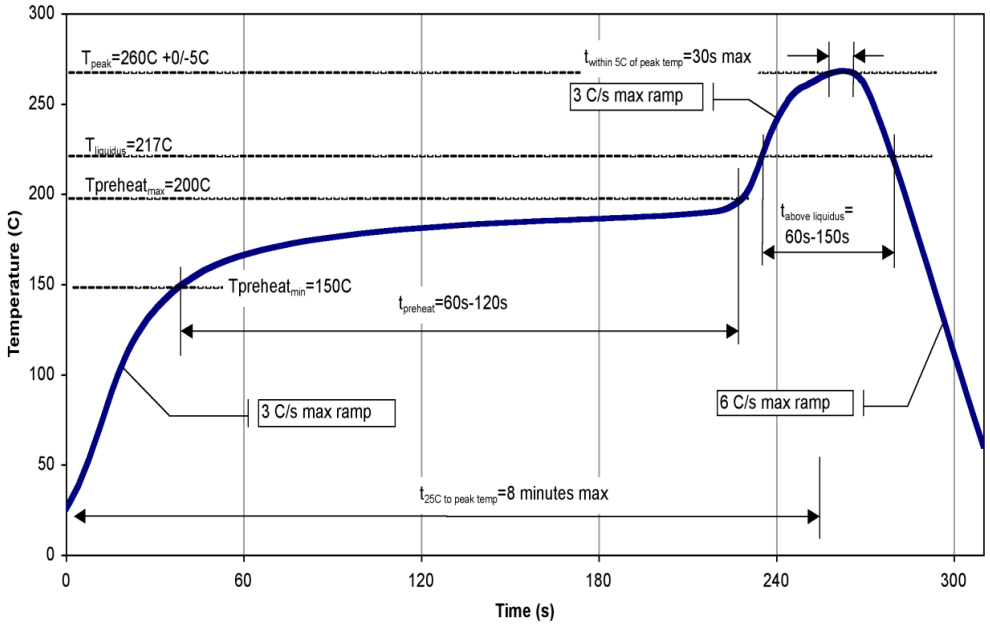
ESD sensitive device

14. Solderability

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

Package lead plating: Thin Ni ENEPIG *(Plating thickness: Ni 0.40±0.10µm, Pd 0.145±0.035µm, Au 0.095±0.025µm)*

Recommended Soldering Profile



15. Environmental Compliance

This part 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
- SVHC Free
- PFOS Free

Contact Information

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

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Email: customer.support@qorvo.com

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