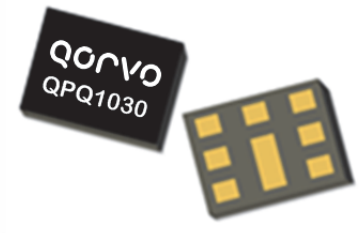
PRELIMINARY

QPQ1030

WCS-Extended BAW Duplexer



8 Pad 1.8 mm x 1.4 mm x 0.73 mm SMT Package

Product Overview

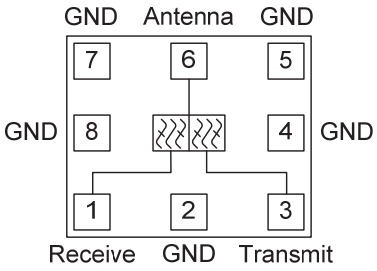
The QPQ1030 is a compact, high-performance duplexer module designed to provide the low insertion loss and high OOB attenuation required for true co-banding.

The QPQ1030 is manufactured using Qorvo's high performance NoDrift™ Bulk Acoustic Wave (BAW) technology yielding a duplexer that satisfies stringent OOB attenuation requirements over temperature extremes.

The QPQ1030 uses Qorvo's unique Wafer-Level-Packaging (WLP) techniques to achieve a compact 1.8 mm x 1.4 mm x 0.73 mm package that is lead free and RoHS complaint.

The QPQ1030 is part of Qorvo's extensive portfolio of RF BAW and SAW filters

Functional Block Diagram



Top View

Pin Configuration

Pin #	Label
1	Receive
3	Transmit
6	Antenna
2, 4, 5, 7, 8	GND
Backside Center Pad 2	GND

*See application section for details on optimal grounding.

Key Features

- Compact Form-Factor: 1.8 x 1.4 mm
- Insertion Loss – Enabling True Co-Banding
  - Tx Band, 2305 – 2318 MHz: 1.7dB Typ.
  - Rx Band, 2347 – 2360 MHz: 1.9dB Typ.
- Best In Class Close OOB Attenuation Over Temperature
- High ISM Band Rejection
- Single-Ended (SE) 50 Ohm Receive & Transmit Ports
- RoHS Compliant, Pb-Free

Applications

- UE Terminals
- Smart Grid
- IoT applications

Ordering Information

Part No.	Description
QPQ1030	2500 pieces on a 7" reel (standard)
QPQ1030-EVB	Evaluation Board

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Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	−40 to +85 °C
RF Input Power (CW, 50 Ω,Temp. = 25 °C)	TBD dBm
RF Input Power (Instantaneous)	TBD 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.

Recommended Operating Conditions

Parameter	Min	Typ.	Max	Units
T_{CASE}	−20		+90	°C

The duplexer will function over the recommended range without degradation in reliability or permanent change in performance.

Life Test

Conditions	Rating
+29 dBm, +50 °C, CW power applied to pin 1	TBD Hrs

Electrical Specifications – Antenna to Transmit

Parameter	Conditions [1,2]	Min	Typ [3]	Max	Units
Insertion Loss	2305 – 2318 MHz	-	1.7	3.6	dB
Amplitude Ripple	2305 – 2318 MHz	-	0.2	1.8	dB
Group Delay	2300 – 2318 MHz	-	31	40	ns
VSWR (in/out)	2305 – 2318 MHz	-	1.3:1	2:1	-
ANT Impedance		-	50||5.1nH[5]	-	Ohms
TX Impedance		-	50	-	Ohms
Attenuation [4]	1225 – 1250 MHz	40	44	-	dB
	1559 – 1563 MHz	40	44	-	
	1565.42 – 1573.374 MHz	40	44	-	
	1573.3 – 1577.466 MHz	40	44	-	
	1577.466 – 1585.42 MHz	40	44	-	
	1597.5515 – 1605.886 MHz	40	44	-	
	2200 – 2288 MHz	10[6]	18	-	
	2288 – 2292 MHz	7	13	-	
	2292 – 2296 MHz	3	8	-	
	2320 – 2324 MHz	2	3	-	
	2324 – 2328 MHz	3	7	-	
	2328 – 2332 MHz	6.5	10	-	
	2332 – 2350 MHz	10[6]	19	-	
	2347 – 2360 MHz	46	53	-	
	2400 – 2485 MHz	40	48	-	
	4610 – 4630 MHz	35	40	-	
	4900 – 5950 MHz	20	24	-	
	6915 – 6945 MHz	30	35	-	

Notes:
1. Temperature Range for specified performance: −20 °C to +90 °C.
2. All specifications are based on the Qorvo schematic for the main reference design.
3. Typical values are an average of 20 pieces measured at a temperature of 25 °C.
4. Attenuation is referenced to ZER0 dB.
5. Matching value based on simulation results
6. Relative rejection to max insertion loss.

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Electrical Specifications – Receive Port

Parameter	Conditions [1,2]	Min	Typ [3]	Max	Units
Insertion Loss	2347–2360 MHz	-	1.9	3.8	dB
Amplitude Ripple	2347–2360 MHz	-	0.2	1.9	
Group Delay	2350–2360 MHz	-	34	40	ns
VSWR (in/out)	2350–2360 MHz	-	1.3:1	2:1	-
ANT Impedance		-	50//5.1nH[5]	-	Ohms
RX Impedance		-	50	-	Ohms
Attenuation	699–716 MHz	40	45	-	dB
	824–849 MHz	40	45	-	
	1710–1755 MHz	35	40	-	
	1850–1910 MHz	35	41	-	
	2305–2318 MHz	49	57	-	
	2327–2337 MHz	10	18	-	
	2336.2–2341.3 MHz	3	7	-	
	2400–6000 MHz	32	40	-	
	2400–2500 MHz	40	45	-	
	4900 – 5950 MHz	30	35	-	

Notes:
1. Temperature Range for specified performance: −20 °C to +90 °C.
2. All specifications are based on the Qorvo schematic for the main reference design.
3. Typical values are an average of 20 pieces measured at a temperature of 25 °C.
4. Attenuation is referenced to ZER0 dB.
5. Matching value based on simulation results

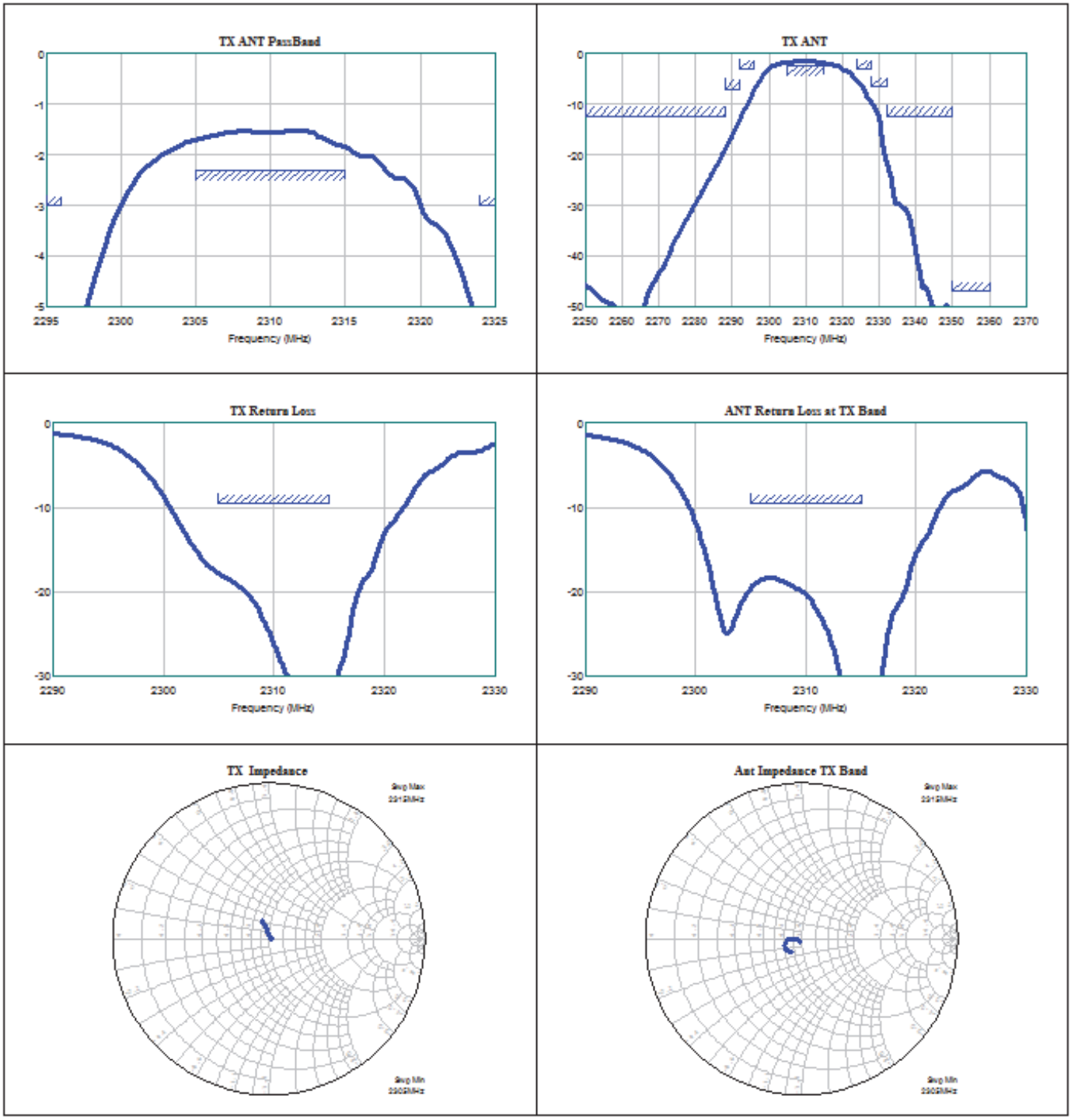
Electrical Specifications – Transmit to Receive

Parameter	Conditions [1,2]	Min	Typ [3]	Max	Units
Isolation	2305–2318 MHz	51	58	-	dB
	2347–2360 MHz	49	57	-	dB
	1574–1577 MHz	50	54	-	dB

Notes:
1. Temperature Range for specified performance: −20 °C to +90 °C.
2. All specifications are based on the Qorvo schematic for the main reference design.
3. Typical values are an average of 20 pieces measured at a temperature of 25 °C.

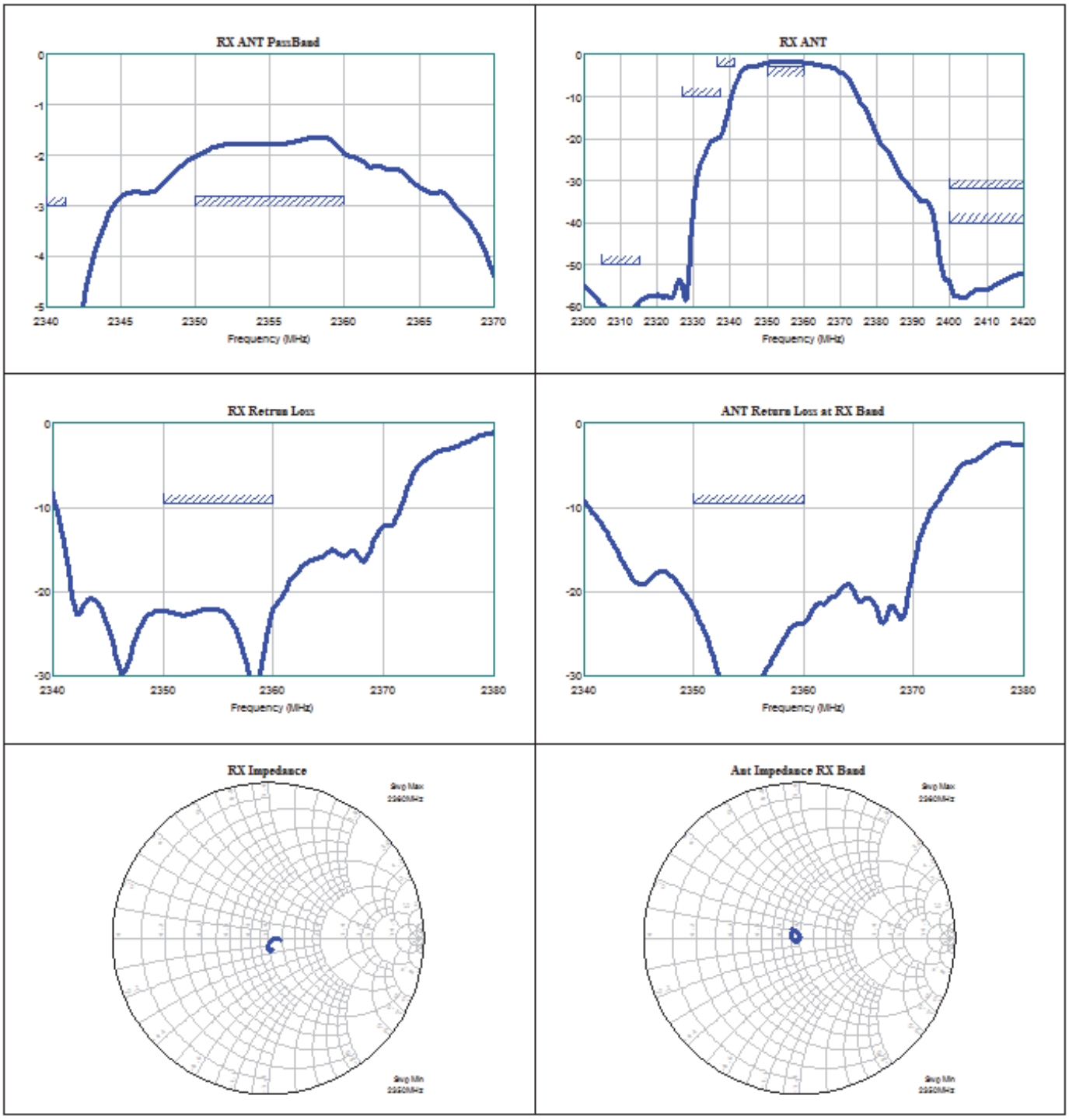
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Transmit Performance Plots – Temp.=+25 °C



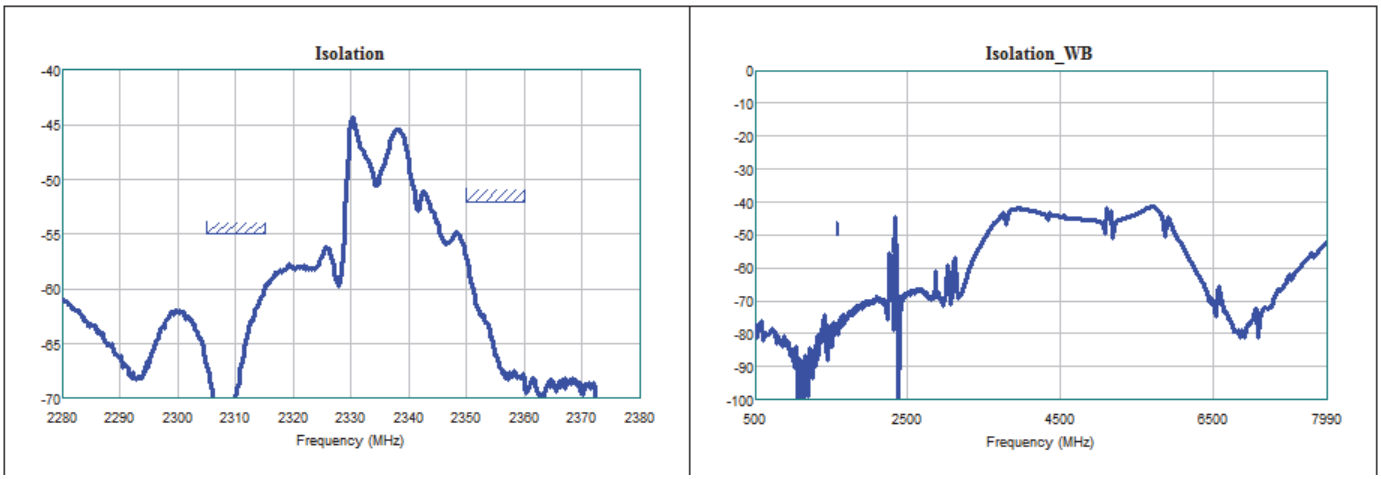
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Receive Performance Plots – Temp.=+25 °C



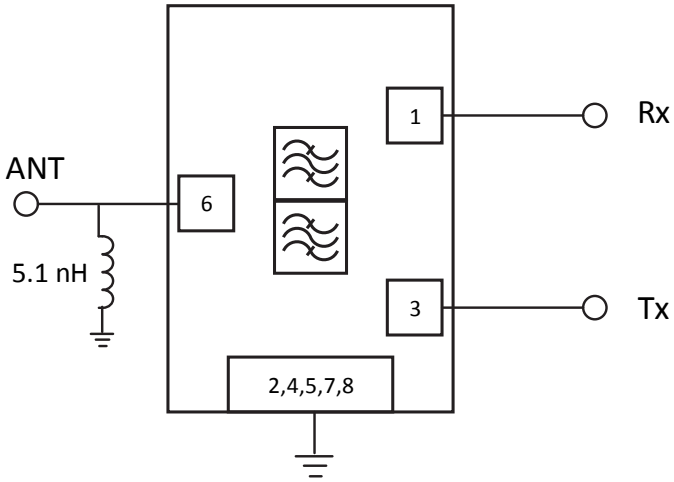
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Isolation Plots – Temp.=+25 °C



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Schematic



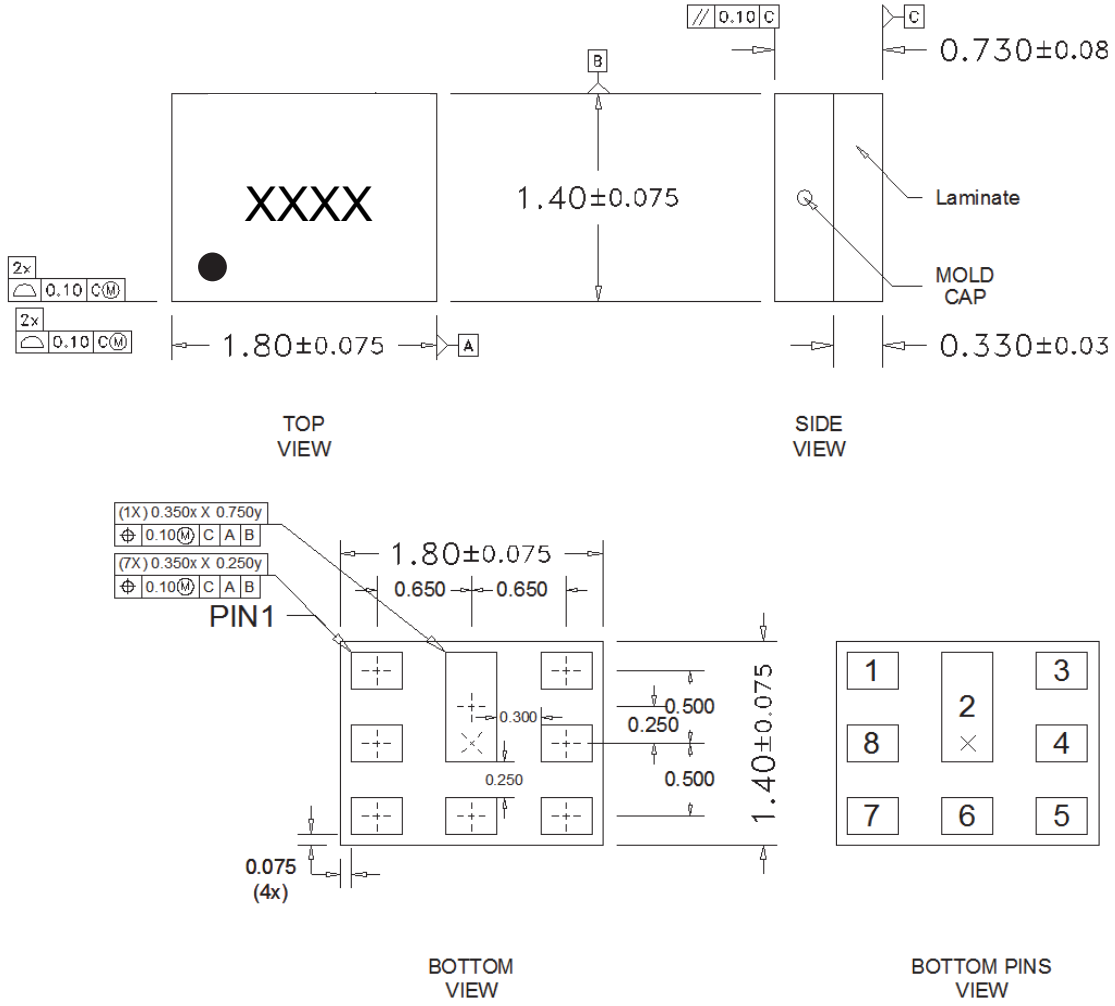
Bill of Materials − EVB

Reference Des.	Value	Description	Manuf.	Part Number
U1	N/A	WCS-Extended BAW Duplexer	Qorvo	QPQ1030
L1	5.1 nH	Shunt Inductor at ANT pin 6	Murata	LQP03TN5N1H02

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Package Marking and Dimensions

Marking: Trace Code – XXXX



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS

DECIMAL	ANGULAR
X.X ± 0.1	±1°
X.XX ± 0.05	
X.XXX ± 0.025	

NOTES:

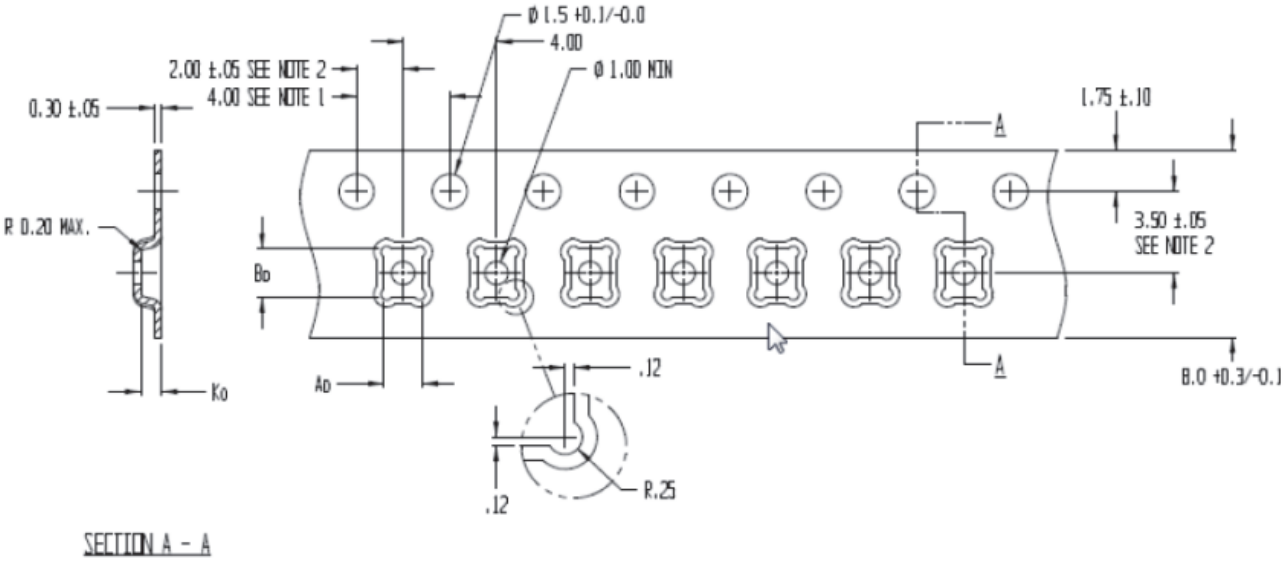
1. All dimensions are in millimeters. Angles are in degrees.
2. Except where noted, this part outline conforms to JEDEC standard MO-220, Issue E (Variation VGGC) for thermally enhanced plastic very thin fine pitch quad flat no lead package (QFN).
3. Dimension and tolerance formats conform to ASME Y14.4M-1994.

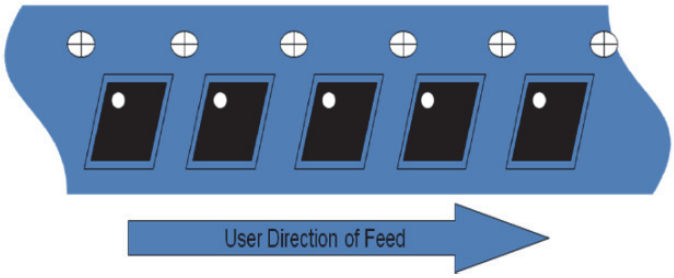
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Tape and Reel Information

Standard T/R size = 2,500 units/reel. All dimensions are in millimeters

CAVITY (mm)				DISTANCE BETWEEN CENTERLINE (mm)		CARRIER TAPE (mm)	COVER TAPE (mm)
Length (A0) ±0.05	**Width (B0) ±0.05**	**Depth (K0) ±0.05**	**Pitch (P1)**	**Length direction (P2)**	**Width Direction (F)**	**Width (W)**	**Width (W)**
1.60	2.0	0.95	4.0	2.00	3.50	8.0	5.4





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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

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: Electrolytic Ni/Au

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



Contact Information

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

Web: www.qorvo.com
Tel: 1-844-890-8163
Email: customer.support@qorvo.com

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