



QPQ1040Q

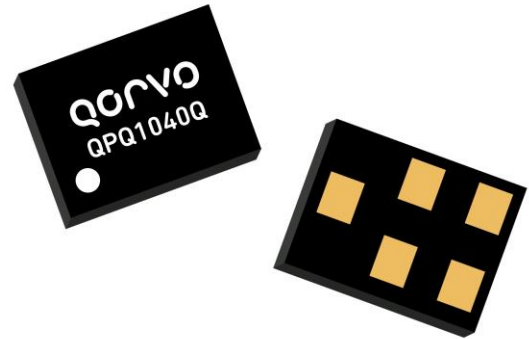
2300-2400 MHz TX/RX Filter

Product Overview

The QPQ1040Q is a high-performance, high power Bulk Acoustic Wave (BAW) TX filter designed to meet the strict LTE/NR rejection requirements for use in B40/n40.

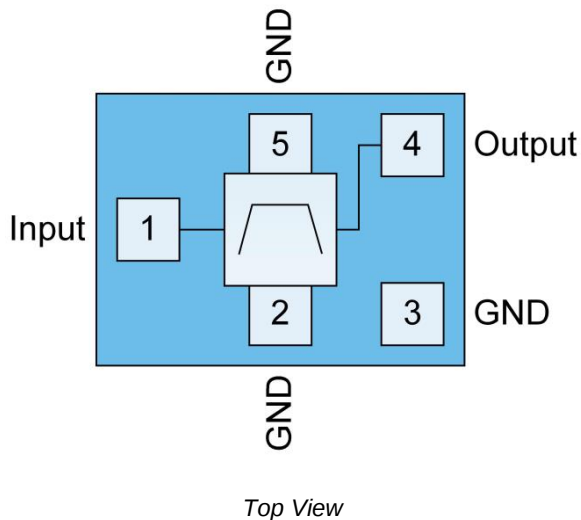
The QPQ1040Q is specifically designed to meet the high performance expectations of insertion loss and rejection for LTE/NR transmit systems under all operating conditions.

The QPQ1040Q uses common module packaging techniques to achieve the industry standard 1.1 x 0.9 x 0.55 mm footprint. The filter exhibits excellent power handling capabilities.



1.1 x 0.9 x 0.55 mm

Functional Block Diagram



Key Features

- Qualified to AEC-Q 200 Grade 3
- Highly selective BAW filter achieving low insertion loss over full bandwidth and operating conditions
- Excellent WiFi Rejection
- RoHS Compliant, Pb-free Module Package

Applications

- LTE Telematics Modules
- For Band 40 TD-LTE applications

Ordering Information

Part Number	Description
QPQ1040QEVB	Evaluation Board
QPQ1040QSB	5pc sample bag
QPQ1040QSR	100pcs on 7" reel
QPQ1040QTR13	15,000pcs on 13" reel

QPQ1040Q

2300-2400 MHz TX/RX Filter

Absolute Maximum Ratings

Parameter	Conditions	Rating
Storage Temperature		-40 to +150°C
Peak RF Input Power (Pin 1)	CW, +25 °C, Max duration of 0.2 sec.	+37dBm

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

Recommended Operating Conditions

Parameter	Min	Typ.	Max	Units
Operating Ambient Temperature	-40	+25	+85	°C

Electrical specifications are measured at specified test conditions. Specifications are not guaranteed over all recommended operating conditions.

Minimum Lifetime Ratings

Conditions	Rating
RF Input Signal (Pin 1) 2300-2400 MHz, 40% duty cycle/LTE, QPSK, 5MHz, 25RB, +55 °C, +32.5dBm	5K Hrs

QPQ1040Q

2300-2400 MHz TX/RX Filter

Electrical Specifications ⁽¹⁾

Unless otherwise noted: Operating Temp = -40 to 85°C

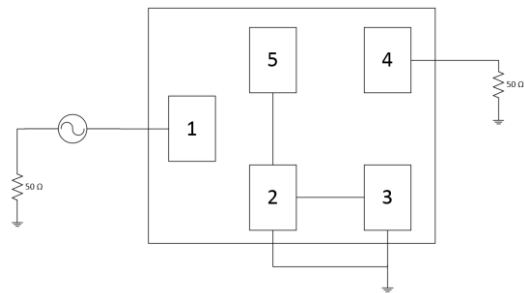
Parameter	Conditions	Min.	Typ. ⁽²⁾	Max.	Units
Insertion Loss ⁽³⁾	2300 – 2395 MHz		1.0	2.0	dB
	2395 – 2400 MHz		1.4	2.5	
VSWR (ANT)	2300 – 2400 MHz		1.7	2.1	Ratio
VSWR (TX)	2300 – 2400 MHz		1.6	2.1	
Passband Ripple Over 5MHz Channel	2300 – 2400 MHz		0.2	0.8	dB
Attenuation	10 – 1574 MHz	30	35		dB
	1574 – 1577 MHz	30	36		
	1577 – 1680 MHz	30	36		
	1710 – 1785 MHz	30	36		
	1805 – 2170 MHz	31	37		
	2110 – 2170 MHz	37	46		
	2423 – 2441 MHz ⁽⁴⁾	13	35		
	2428 – 2446 MHz ⁽⁴⁾	24	44		
	2433 – 2481 MHz ⁽⁴⁾	40	48		
	2460 – 2500 MHz	41	50		
	4600 – 4800 MHz	34	41		
	6900 – 7200 MHz	26	33		

Notes:

1. All specifications are based on the applications circuit and Min/max is specified over -40 °C to +85 °C unless otherwise noted.
2. Typical values are based on average measurement at 25°C
3. Data is averaged over the specified frequency
4. Integrated over each 18MHz channel

QPQ1040Q
2300-2400 MHz TX/RX Filter

QPQ1040Q Application Circuit

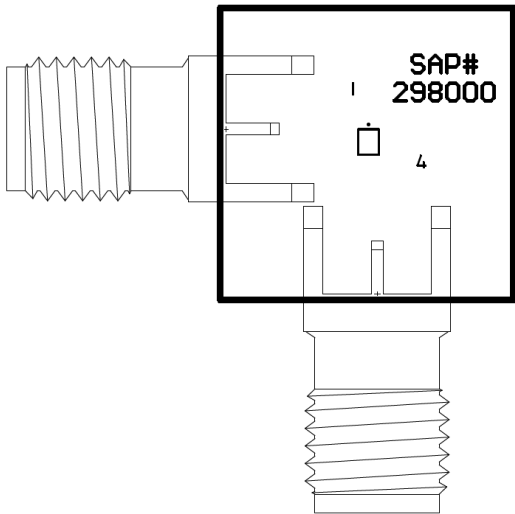


RF ports are internally matched to 50Ω

QPQ1040Q EVB PCB Information

Layer	Name	Material	Thickness	Constant	Board Layer Stack
	Top Overlay				
	Top Solder	Solder Resist	0.40mil	3.5	
1	Top Layer	Copper	0.70mil		
	Dielectric1	Taconic TLY-5A	7.50mil	2.4	
2	Signal Layer 1	Copper	0.70mil		
	Dielectric 3	FR-4	52.00mil	4.2	
3	Bottom Layer	Copper	0.70mil		
	Bottom Solder	Solder Resist	0.40mil	3.5	
	Bottom Overlay				

Total Thickness: 62mil

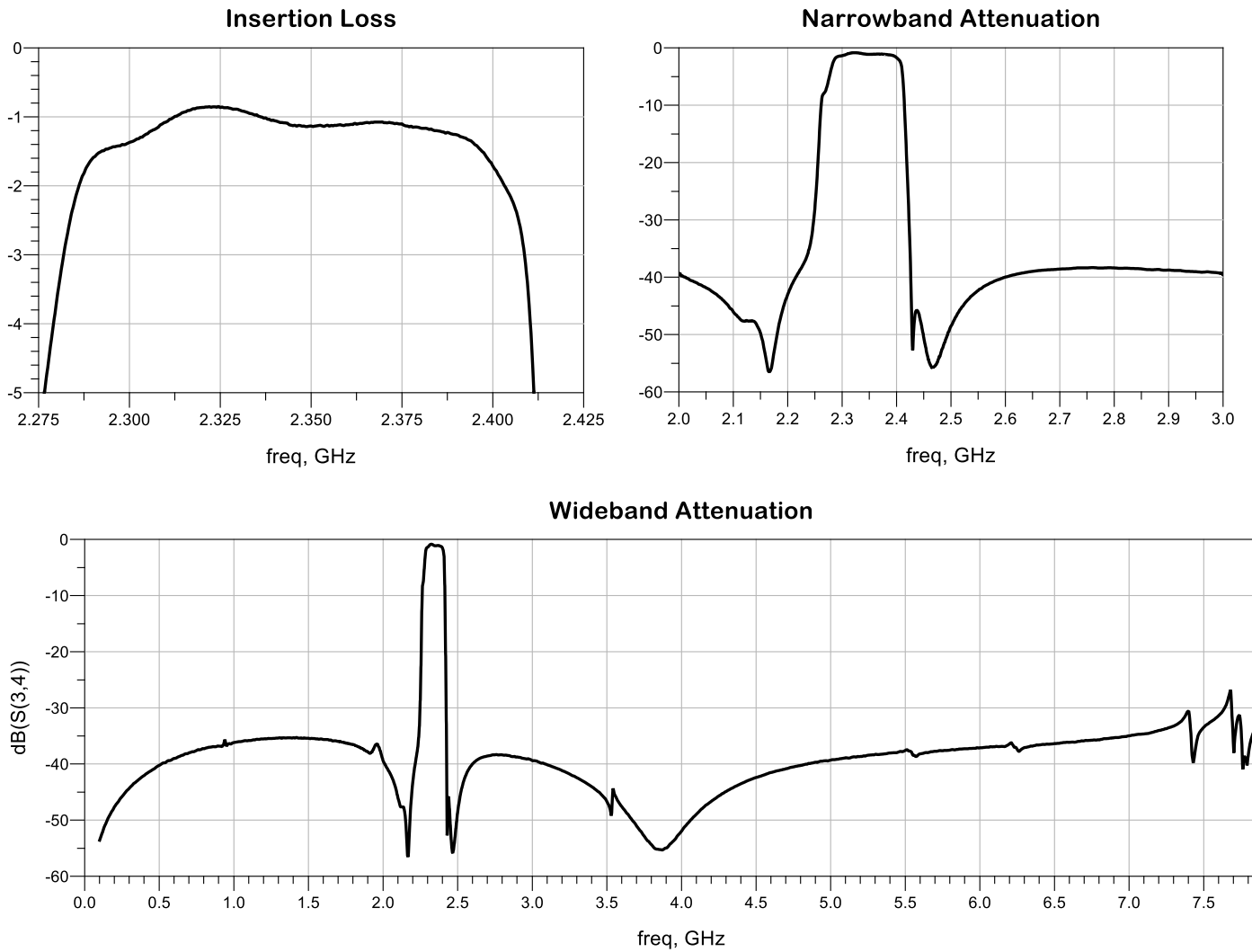


QPQ1040Q Bill of Material

Ref. Des.	Value	Description	Manuf.	Part number
PCB	N/A	3 layer	Multiple	
U1	N/A	2300-2400 MHz TX/RX Filter	Qorvo	QPQ1040Q
SMA	N/A	SMA connector	Radiall USA Inc.	9602-1111-018

Performance Plots

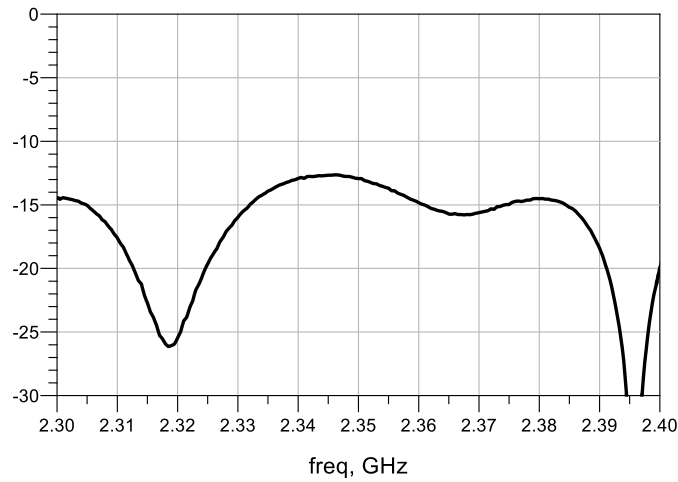
Test conditions unless otherwise noted: Temp. = +25°C



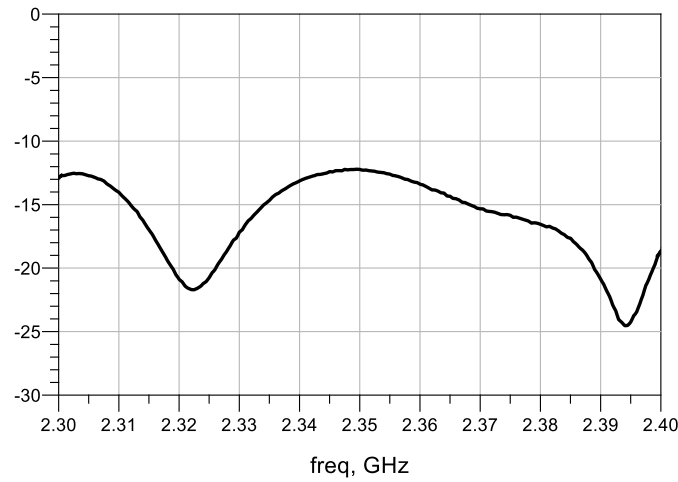
Performance Plots (cont'd)

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

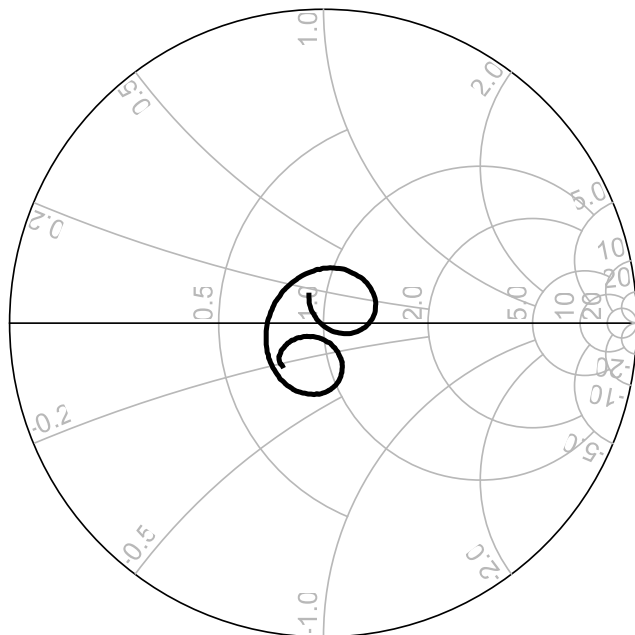
ANT Return Loss



Input Return Loss

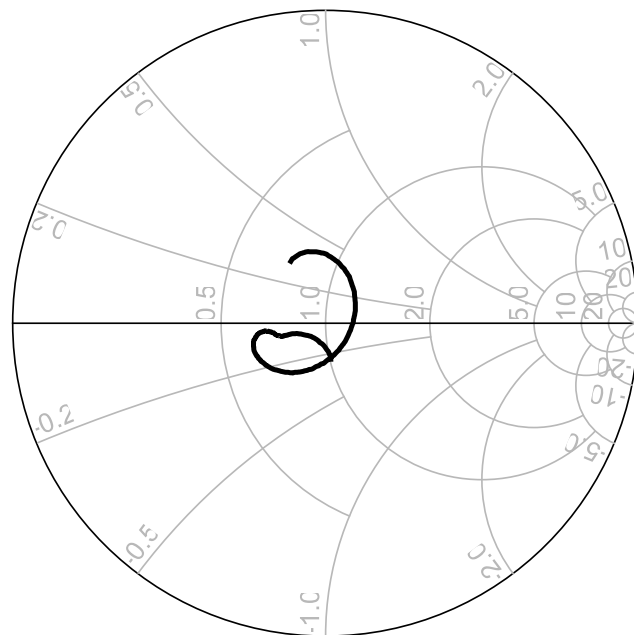


ANT Impedance



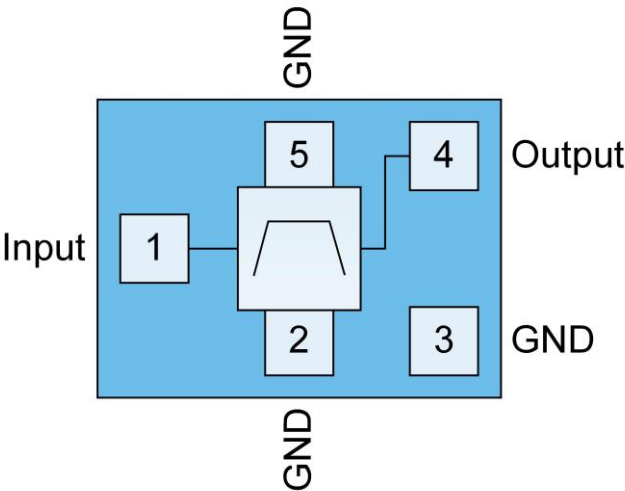
freq (2.300GHz to 2.400GHz)

Input Impedance



freq (2.300GHz to 2.400GHz)

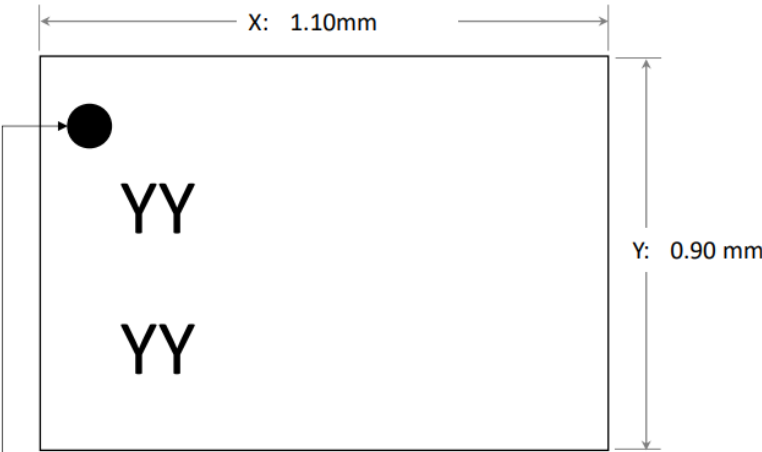
Pin Configuration and Description



Top View

Pin Number	Label	Description
1	Input	B40 TX Input
4	Output	B40 Ant
2,3,5	Ground	Ground

Marking Diagram



Pin 1 Indicator
Trace Code to be assigned by SubCon
Logo: Use : No Logo
(Where YYYY Indicates Trace Code)

QPQ1040Q

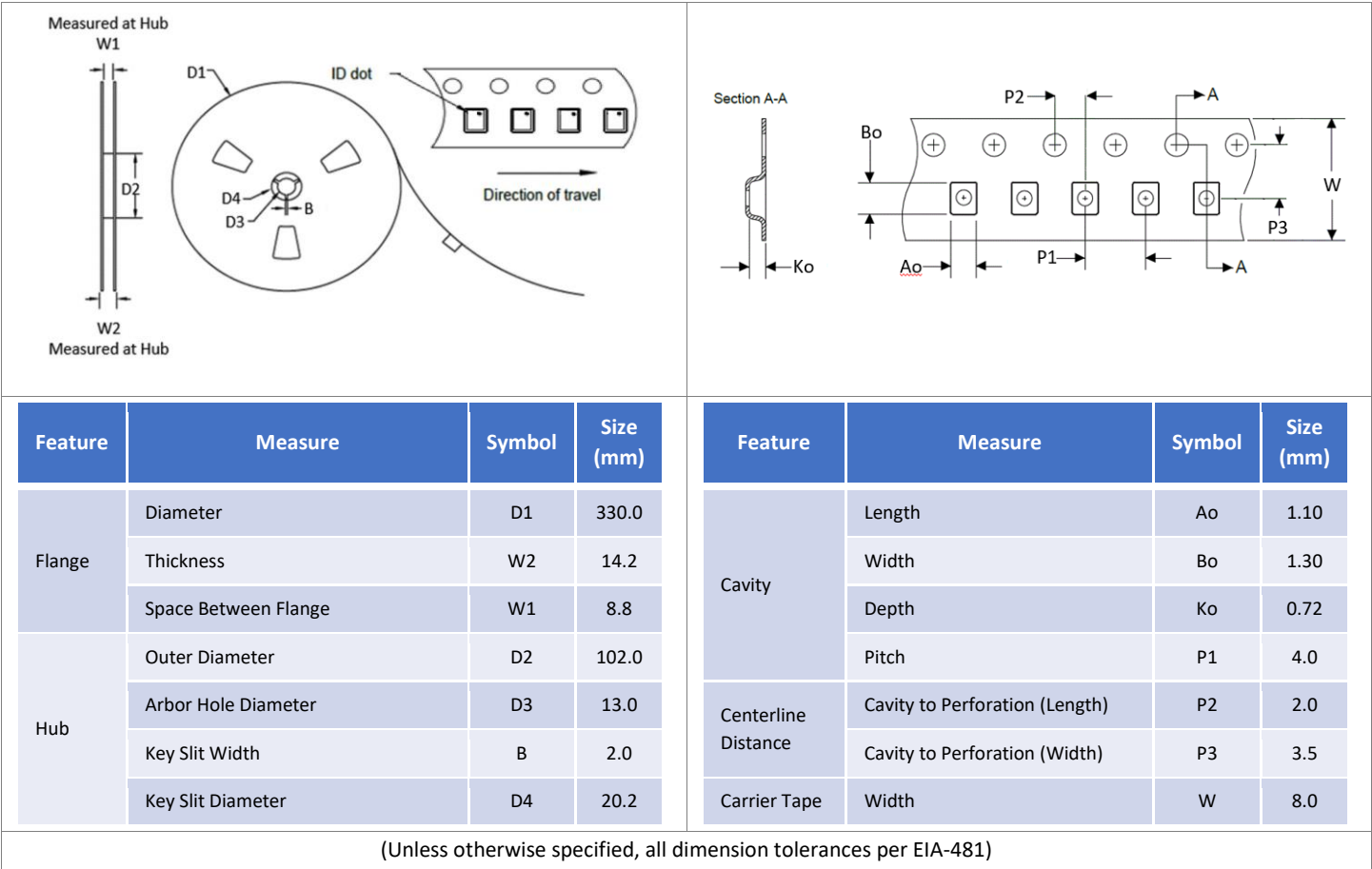
2300-2400 MHz TX/RX Filter

Package Marking and Dimensions

Package Outline Dimension Drawing	
TOP View SIDE VIEW BOT View MASK Ni/Au DETAIL A PAD 5x THIS ROTATION	
Recommended Land Pattern	Recommended Land Pattern Mask
Recommended Land Pattern	Recommended Land Pattern Mask
Notes: 1. All dimensions are in millimeters. Angles are in degrees. 2. Dimension and tolerance formats conform to ASME Y14.4M-1994. The terminal #1 identifier and terminal numbering conform to JESD 95-1 SPP-012	

QPQ1040Q
2300-2400 MHz TX/RX Filter

Tape and Reel Information



Handling Precautions

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	Class 1C	ESDA/JEDEC JS-001
ESD – Charged Device Model (CDM)	Class C3	ESDA/JEDEC JS-002
MSL – Moisture Sensitivity Level	MSL3	IPC/JEDEC J-STD-020



Caution!

ESD sensitive device

Solderability

Compatible with the latest version of J-STD-020, lead free solder, 260°C.

RoHS 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
- TBBP-A (C₁₅H₁₂Br₄O₂) Free
- PFOS-Free
- SVHC Free

REVISION HISTORY

Revision	Description	Date
A	Initial preliminary datasheet Updated spec table, plots and EVB information	
B	Updated Min/Max Spec Updated Minimum Lifetime and ESD Rating Updated Marking diagram and outline drawings	Feb 12 th , 2021
C	Updated Min/Max, EVB Information and Marking diagram	Apr 30 th , 2021

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

Important Notice

The information contained herein is believed to be reliable; however, Qorvo makes no warranties regarding the information contained herein and assumes no responsibility or liability whatsoever for the use of the information contained herein. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for Qorvo 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. **THIS INFORMATION DOES NOT CONSTITUTE A WARRANTY WITH RESPECT TO THE PRODUCTS DESCRIBED HEREIN, AND QORVO HEREBY DISCLAIMS ANY AND ALL WARRANTIES WITH RESPECT TO SUCH PRODUCTS WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

Without limiting the generality of the foregoing, Qorvo 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.

Copyright 2016 © Qorvo, Inc. | Qorvo is a registered trademark of Qorvo, Inc.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Qorvo:](#)

[QPQ1040QEVB](#) [QPQ1040QSR](#) [QPQ1040QTR13](#)