QPQ1286

TDD B40 BAW Band Pass Filter (50MHz)

General Description

The QPQ1286 is a high-performance Bulk Acoustic Wave (BAW) filter designed to meet the strict LTE rejection requirements for use in B40, Sub-Band 2320-2370 MHz

QPQ1286 is specifically designed to meet the high-performance expectations of insertion loss and rejection for LTE TDD systems under all operating conditions.

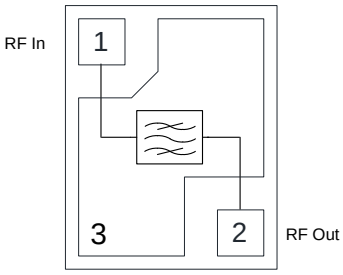
The QPQ1286 uses common module packaging techniques to achieve the industry standard 2.0 x 1.6 x 0.73 mm footprint.

3 Pin 2 x 1.6 mm leadless SMT Package

Product Features

- Highly selective BAW filter achieving low insertion loss over full bandwidth and operating conditions
- Performance -40 °C to +90 °C
- Excellent Wi-Fi rejection
- Single-ended operation
- No Matching required for operation at 50 Ω
- High Power Handling Compatible for Small Cells
- Small Size
- **RoHS** compliant (2011/65/EU), **Pb**-free

Functional Block Diagram



Top View

Applications

- For Band 40 TD-LTE applications
- 2320 – 2370 MHz Sub-Band
- For Small Cells Base Stations

Pin Configuration

Pin No.	Label
1	RF in
2	RF out
3	Ground

Ordering Information

Part No.	Description
QPQ1286TR7	2,500 pieces on a 7” reel (standard)
QPQ1286EVB	Evaluation Board

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature [1]	−40 °C to +125 °C
Operating Temperature [2]	−40 °C to +105 °C

[1] Operation of this device outside the parameter ranges given may cause permanent damage.
[2] Device will function but it is not guaranteed to meet electrical specifications.

Life Test

Conditions	Rating
+29 dBm, LTE SIGNAL PAR = 8dB, 5MHz, 16 QAM + 90 °C	>175,300 hrs.

Power rating is valid when Power is injected into Pin 1

Electrical Specifications [1]

Test conditions unless otherwise specified. Temperature Range: -40 °C to +90 °C

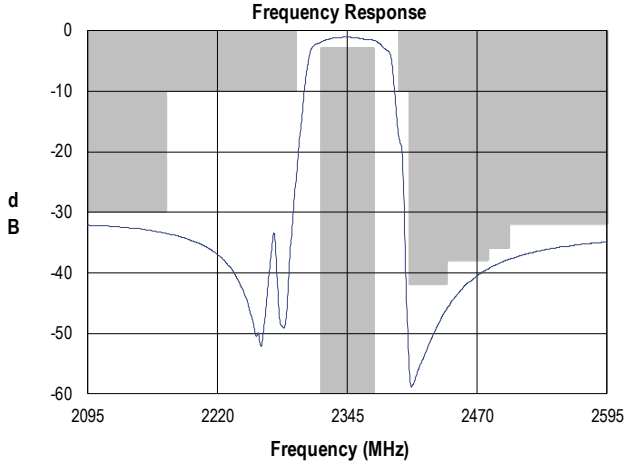
Parameter	Conditions	Min	Typ	Max	Units
Maximum Insertion Loss	2320 – 2370 MHz	-	1.9	2.8	dB
Input / Output VSWR	2320 – 2370 MHz	-	1.6:1	2.1:1	-
Input / Output Return Loss	2320 – 2370 MHz	9.0	14	-	dB
Amplitude Variation [2]	2320 – 2370 MHz	-	0.9	1.6	dB
Group Delay Ripple [3]	2320 – 2370 MHz	-	7	25	ns p-p
Phase Ripple [4]	2320 – 2370 MHz	-	11	35	° p-p
Attenuation in WIFI Band [5]	2405 – 2440 MHz (Channel 1 - 7) 2440 – 2480 MHz (Channel 8 - 14)	42 38	47 40	- -	dB
Attenuation[6]	10–960 MHz 961–1709 MHz 1710–1880 MHz 1920–2170 MHz 2171–2295 MHz 2395–2405 MHz 2480–2500 MHz 2500–3660 MHz 3750–4600 MHz 4600–4800 MHz 4901–6000 MHz 6001–8000 MHz	41 31 30 30 10 10 36 32 34 43 25 30	45 33 32 32 23 17 38 34 37 49 29 34	- - - - - - - - - - - -	dB
2nd Harmonic	Pin = +29 dBm (2320 - 2370 MHz)	-	- 86	- 65	dBc
Source/Load Impedance [7]	Single-ended	-	50	-	Ω

Notes:
1. All specifications are based on the QORVO schematic for the main reference design shown on page 4
2. Amplitude Variation is defined as the difference between the lowest loss and the highest loss within defined frequency points
3. This is defined as the worst difference between a peak and adjacent valley within defined frequency points
4. Typical values are and average of 20 pieces measured at a temperature of +25 °C
5. Attenuation is referenced to ZERO dB
6. Attenuation is referenced to ZERO dB
7. This is the optimum impedance in order to achieve the performance shown

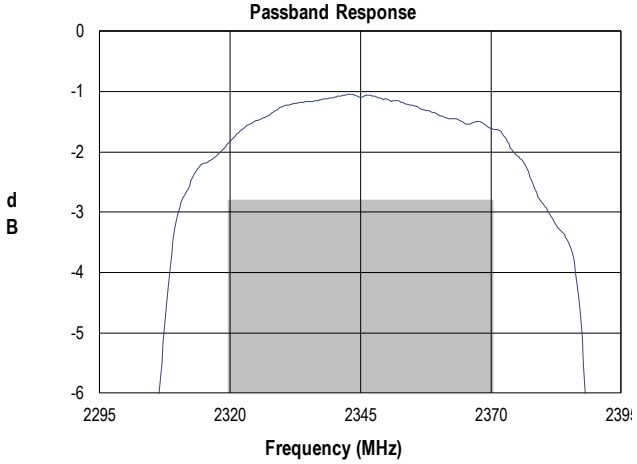
Performance Plots

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

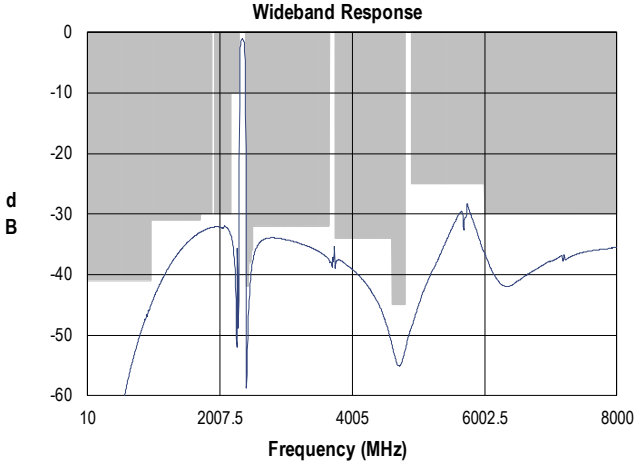
Frequency Response



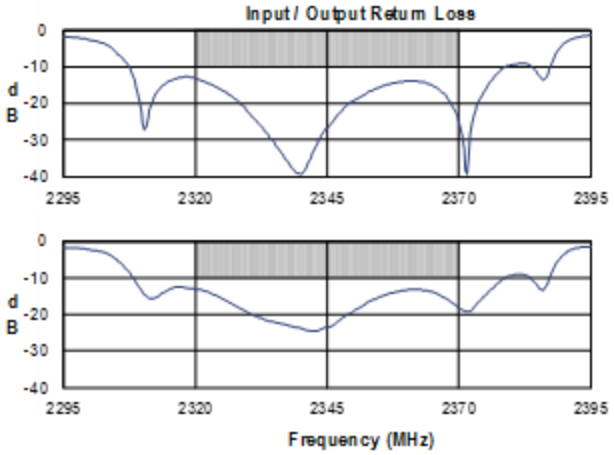
Passband Response



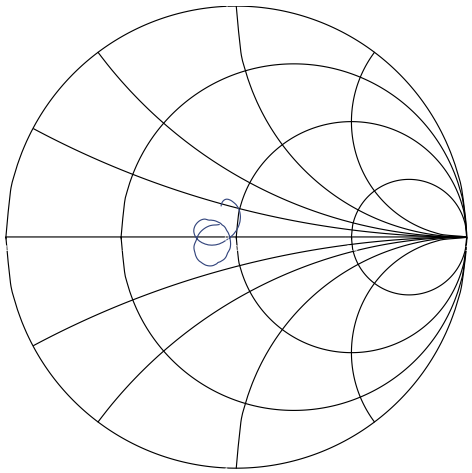
Wideband Response



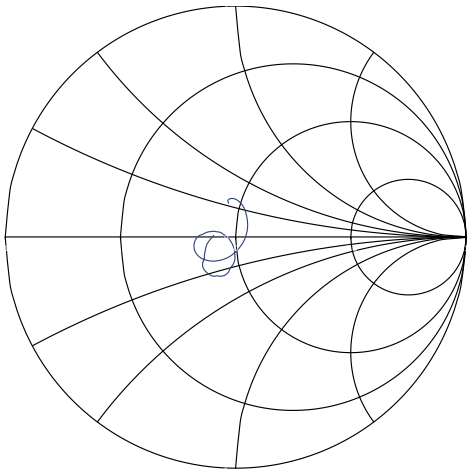
Input / Output Return Loss



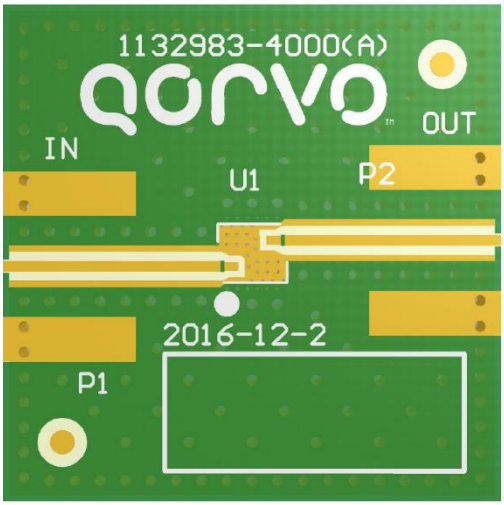
Input Smith Chart



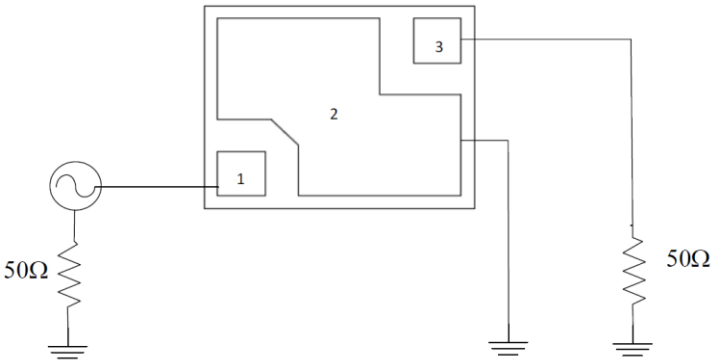
Output Smith Chart



Evaluation Board



EVB Top View



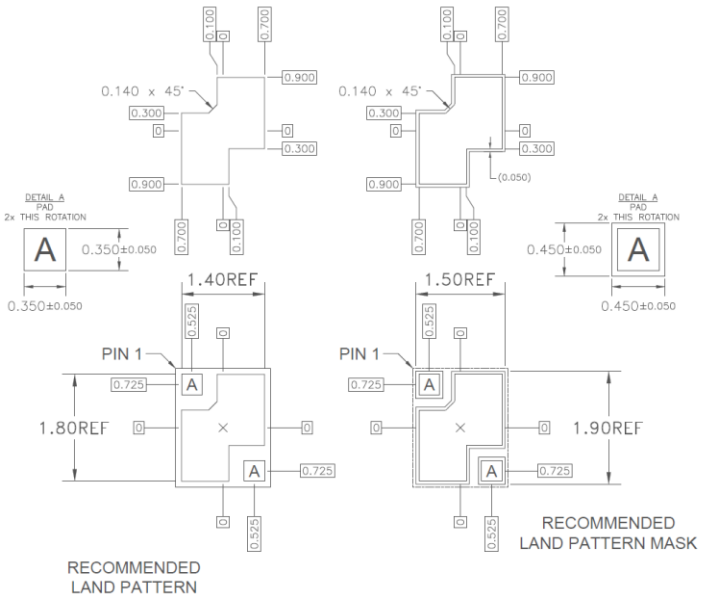
EVB Circuit

Bill of Material

Reference Des.	Value	Description	Manuf.	Part Number
U1	N/A	Band 40 BAW Filter	Qorvo	QPQ1286
PCB	N/A	4-layer EVB PCB	Multiple	1132983
SMA	N/A	SMA connector	Radiall	9602-1111-018

PCB Mounting Pattern

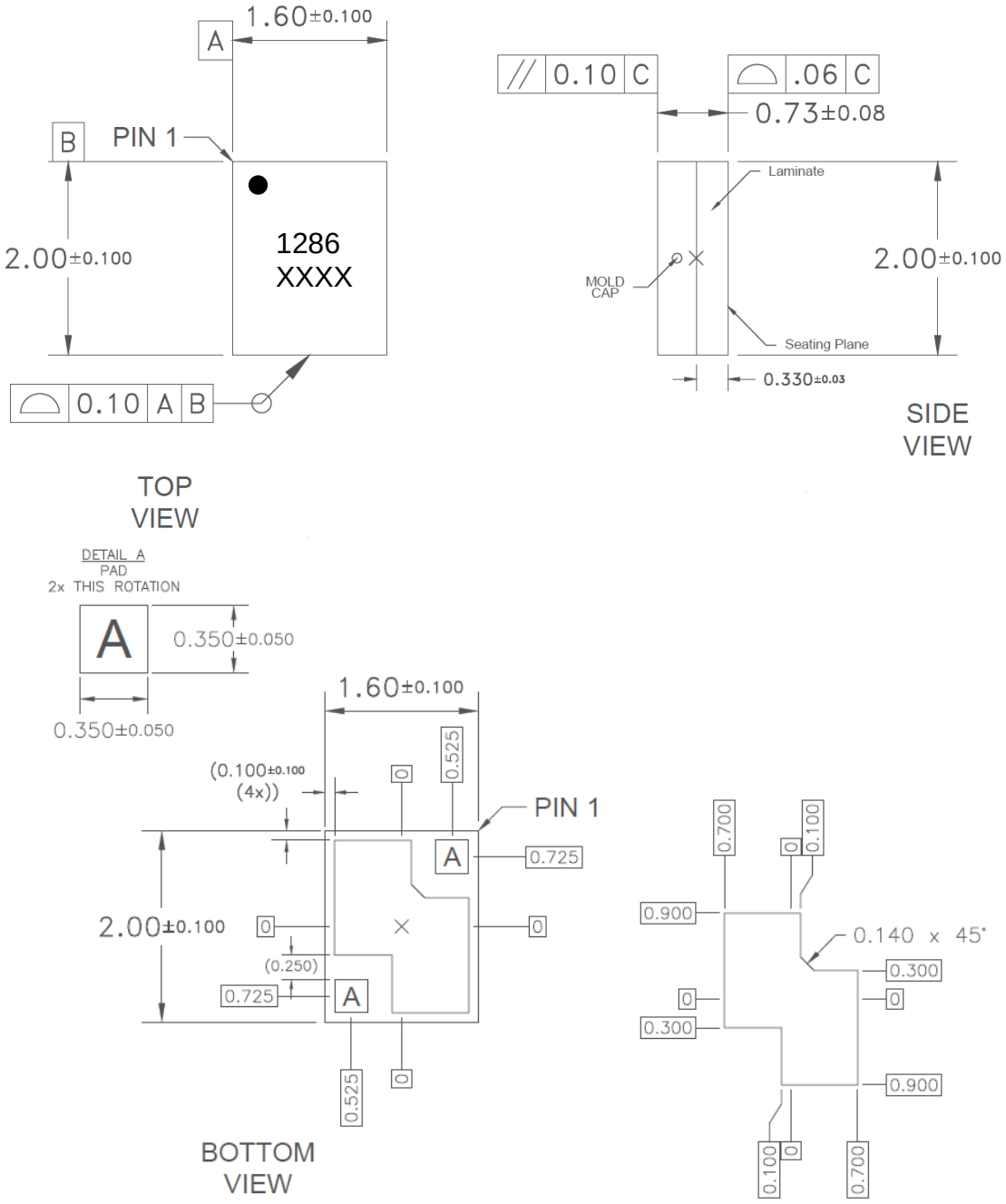
All dimensions are in millimeters



Package Marking and Dimensions

Marking
4-digit Part Number: 1286
4-digit Trace Code: XXXX

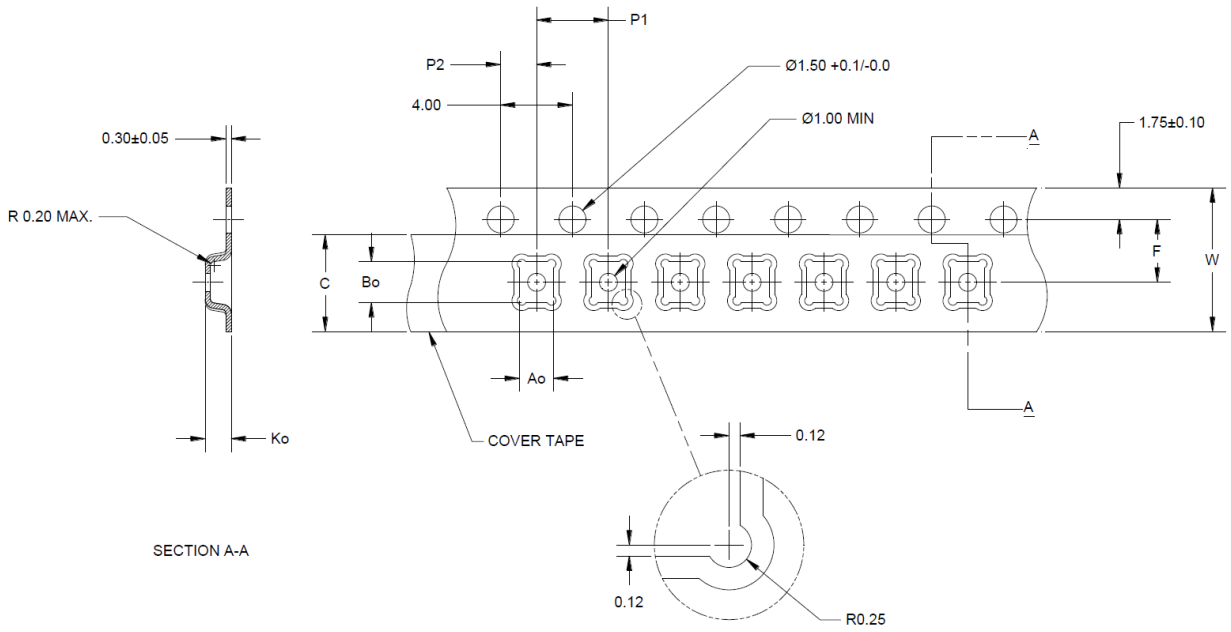
Body: Al_2O_3 Ceramic
Lid: Kovar, Au over Ni plating



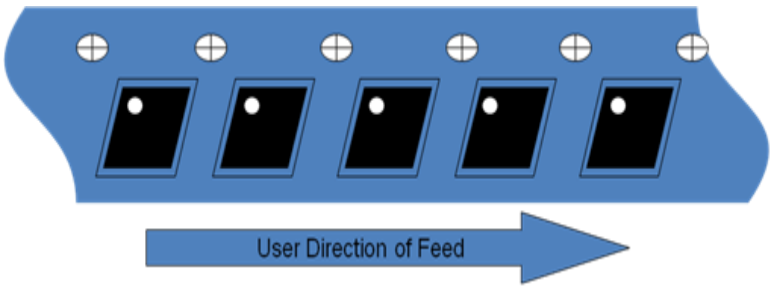
Notes:
1. All dimensions are in millimeters. Angles are in degrees.
2. Dimension and tolerance formats conform to ASME Y14.4M-1994.
3. The terminal #1 identifier and terminal numbering conform to JESD 95-1 SPP-012.

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.

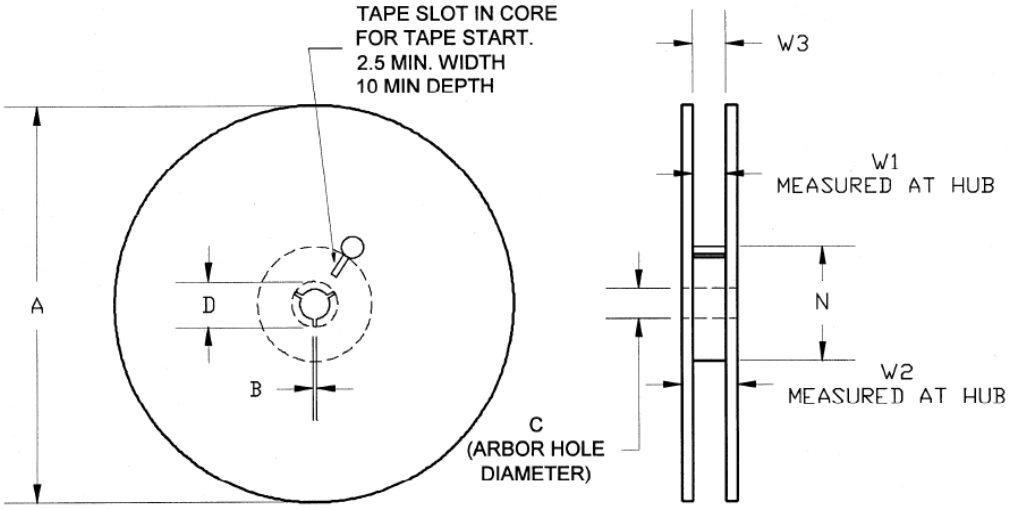


Feature	Measure	Symbol	Size (in)	Size (mm)
Cavity	Length	A0	0.077	1.95
	Width	B0	0.093	2.35
	Depth	K0	0.045	1.15
	Pitch	P1	0.157	4.00
Centerline Distance	Cavity to Perforation - Length Direction	P2	0.079	2.00
	Cavity to Perforation - Width Direction	F	0.138	3.50
Cover Tape	Width	C	0.213	5.40
Carrier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

Handling Precautions

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	Class 3B	ESDA / JEDEC JS-001
ESD – Charged Device Model (CDM)	Class C3	ESDA / JEDEC JS-002
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: Au over Ni *(Plating thickness: Au 0.5 - 1.0 µm; Ni 2.0 – 6.0 µm)*

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
- Qorvo Green

Contact Information

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

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