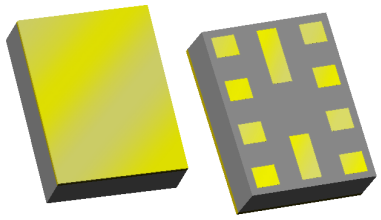
885216

2332.5 MHz Baw Filter

Applications

- Satellite Radio antenna modules
- Satellite Radio devices
- Suitable for Automotive applications - Compliant to the AEC-Q200 Grade 2 reliability standard

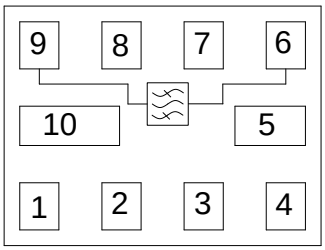


1.7 x 1.3 x 0.46 mm

Product Features

- Temperature-compensated bandpass filter
- Enables Coexistence of SDARS and WCS radios
- Low Loss in full SDARS Radio Channel 2320-2345 MHz band
- High Rejection in the 2305-2315 MHz band: WCS Lower
- High Rejection in 2350-2355 MHz band: WCS Upper
- Industry-leading small size: 1.7 x 1.3 x .46 mm
- + 24 dBm (CW) power handling (min)
- Performance across − 40 to + 105 ºC
- Operable to + 125 ºC
- Single-ended operation
- Ceramic chip-scale package (CSP)
- Hermetically sealed package
- RoHS compliant, Pb-free

Functional Block Diagram



Top View

General Description

885216 is a high-performance, high-power Bulk Acoustic Wave (BAW) filter with extremely steep skirts and a 25 MHz pass band.

885216 is specifically designed to enable coexistence of SDARS and WCS signals within the same device or in close proximity to one another. The part passes the entire SDARS band, covering 2320-2345 MHz.

The 885216 uses advanced and inexpensive packaging techniques to achieve an industry-leading 1.7 x 1.3 x .46 mm package. The filter exhibits excellent power handling capabilities.

Pin Configuration*

Pin No.	Label
9	Input
6	Output
7,8	Ground
1,2,3,4,5,10	Ground (1)

*Note: See page 3 for ground considerations

Ordering Information

Part No.	Description
885216	Packaged Part
885216-EVB-2	Evaluation board description pg3

Standard T/R size = 10,000 units/reel

Electrical Specifications [1,3]

Test conditions unless otherwise noted: Temp= −40 °C to +105 °C [2,3]

Parameter	Conditions	Min	Typ [2]	Max	Units
Center Frequency	Fc of RF Filter	-	2332.5	-	MHz
Maximum Insertion Loss	2320.000 – 2345.000 MHz	-	5.0	7.0	dB
Passband 3.0 dB Bandwidth	Fc = 2332.5 MHz	-	31	-	MHz
Amplitude Ripple					
PB1	2320.000 – 2324.500 MHz (TDM1)		1.1	1.7	
PB2	2324.200 – 2328.000 MHz (COFDM)		0.4	1.2	
PB3	2328.000 – 2332.500 MHz (TDM2)		0.4	1.2	
PB4	2332.500 – 2334.385 MHz (SAT1A)	-	0.4	1.2	dB p-p
PB5	2334.385 – 2336.250 MHz (SAT2A)		0.4	1.2	
PB6	2336.250 – 2337.750 MHz (TERRA)		0.2	1.2	
PB7	2337.750 – 2341.250 MHz (TERRB)		0.3	1.2	
PB8	2341.250 – 2343.125 MHz (SAT2B)		0.5	1.2	
PB9	2343.125 – 2345.000 MHz (SAT1B)		1.1	1.4	
Group Delay Ripple					
PB1	2320.000 – 2324.500 MHz (TDM1)		15	70	
PB2	2324.200 – 2328.000 MHz (COFDM)		10	70	
PB3	2328.000 – 2332.500 MHz (TDM2)		10	70	
PB4	2332.500 – 2334.385 MHz (SAT1A)	-	5	60	ns p-p
PB5	2334.385 – 2336.250 MHz (SAT2A)		5	60	
PB6	2336.250 – 2337.750 MHz (TERRA)		8	70	
PB7	2337.750 – 2341.250 MHz (TERRB)		10	70	
PB8	2341.250 – 2343.125 MHz (SAT2B)		5	60	
PB9	2343.125 – 2345.000 MHz (SAT1B)		5	60	
Input Return Loss	2320 – 2345 MHz	6	13.3	-	dB
Output Return Loss		6	10.8	-	
Relative Attenuation [4]					
(FM)	88 – 108 MHz	36	58		
-	880 – 960 MHz	20	39		
-	1710 – 1910 MHz	20	36		
-	2000 – 2100 MHz	20	36		
(WCS A-Lower)	2305 – 2310 MHz	16	21	-	dBc
(WCS B-Lower)	2310 – 2315 MHz (-40 to +85 °C)	4	6		
(WCS B-Lower) [6]	*2310 – 2315 MHz* (+85 to +105 °C)	3.5	4		
(WCS A-Upper)	2350 – 2355 MHz	4	11		
(WCS B-Upper)	2355 – 2360 MHz	16	28		
-	2400 – 2500 MHz	20	38		
Input and Output Impedance [5]		-	50	-	Ω

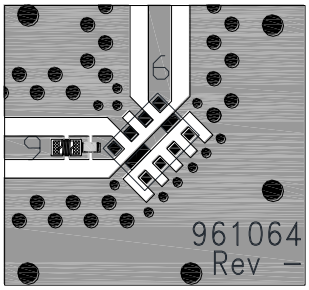
Notes:
1. All specifications are based on the TriQuint schematic for reference design shown on page 3.
2. Typical values are based on average measurements at +25 °C.
3. In production, devices will be tested at room temperature to a guard-banded specification; this limit is based on average performance over temperature.
4. Attenuation is defined from the insertion loss level measured at the center frequency Fc.
5. This is the optimum impedance in order to achieve the performance shown.
6. Extended temperature de-rated specification as noted.

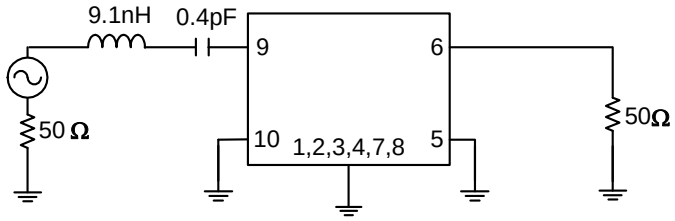
Absolute Maximum Ratings

Parameter	Rating
Storage Temperature (1)	−40 to +125 °C
Operable Temperature (2)	−40 to +125 °C
RF Input Power (3)	+ 24 dBm

1. Operation of this device outside the parameter ranges given may cause permanent damage.
2. Specifications are not guaranteed over all operable conditions.
3. Input Power with applied CW signal equivalent to + 55°C for 10k hours.

Evaluation Board



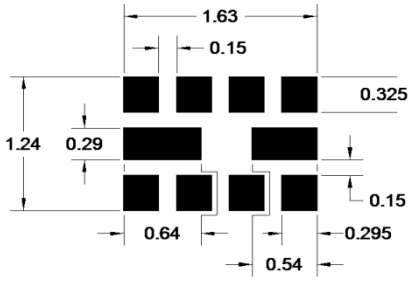


Notes:
1. Impedance matching required (series tank)
2. Trace width nominal 50 Ohms
3. PCB: .580 x.580 x .062; Construction (5 layer stack-up): ½ oz Cu Top Layer; Dielectric: Taconic TLY-5A (.0075); ½ oz Cu Middle Layer, FR4; ½ oz Cu Bottom Layer; total thickness (0.062) (dimensions are in inches). Contact TriQuint for Gerber files.

Bill of Material

Reference Des.	Value	Description	Manuf.	Part Number
U1	n/a	CSP 1713, 2332.5 MHz Baw Filter	Qorvo	885216
L1	9.1 nH	0201 chip Inductor, +/- 0.1 nH	Murata	LQP03TN9N1J02
C1	0.4 pF	0105 chip cap, +/- 0.04 pF	Murata	GRM0225C1CR40BD05D
SMA	N/A	SMA connector	Radiall	9602-1111-018
PCB	n/a	Printed Circuit Board	Multiple	961064

PCB Mounting Pattern



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

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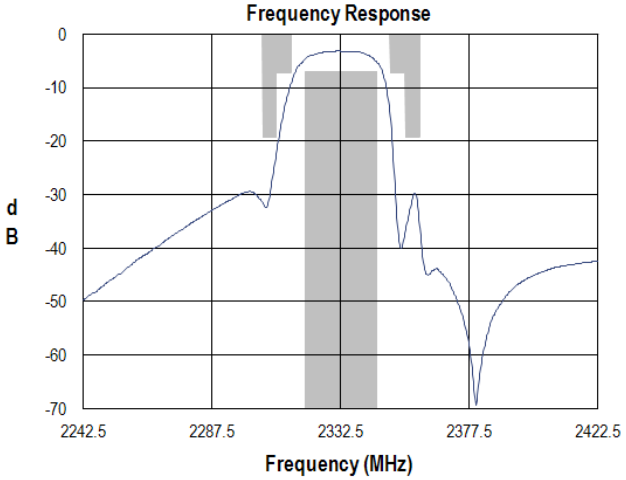
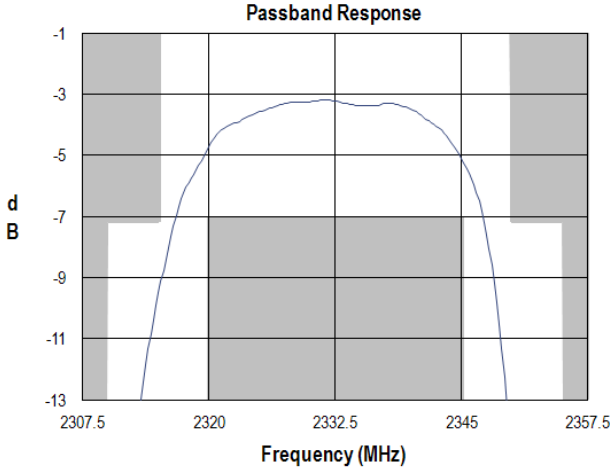
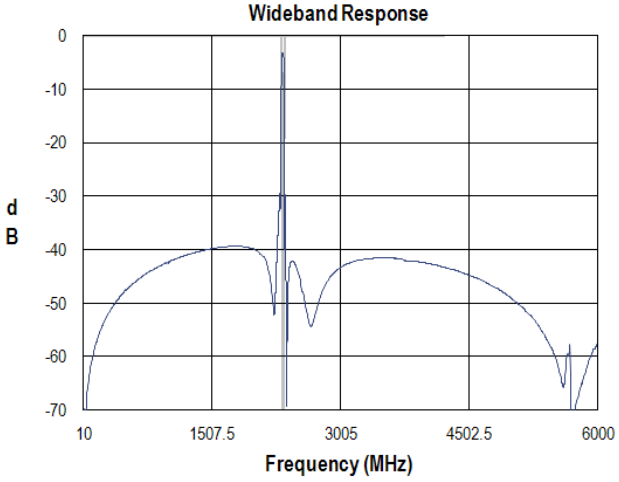
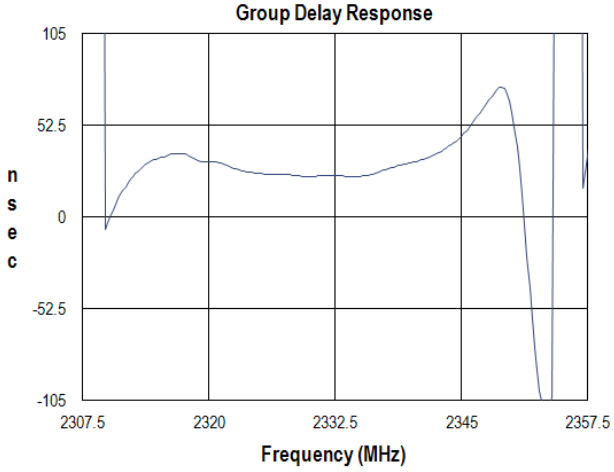
Performance Plots - Reference Design

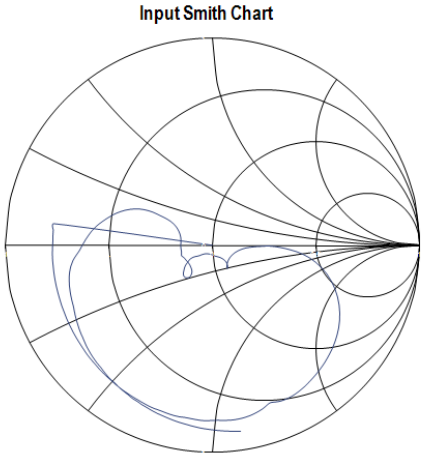
Test conditions unless otherwise noted: Temp= + 25 °C

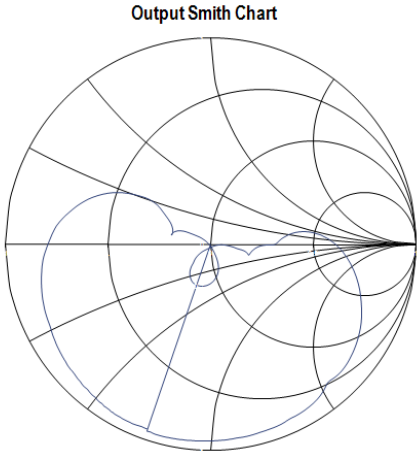




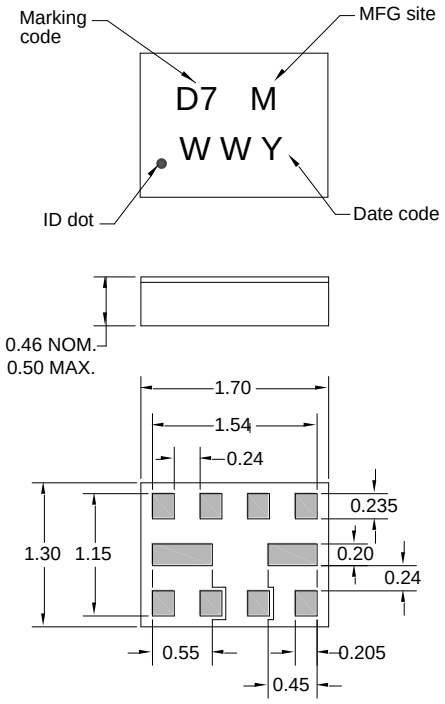








Package Information, Marking and Dimensions



Package Style: CSP-1713
Dimensions: 1.70 x 1.30 x 0.46 mm

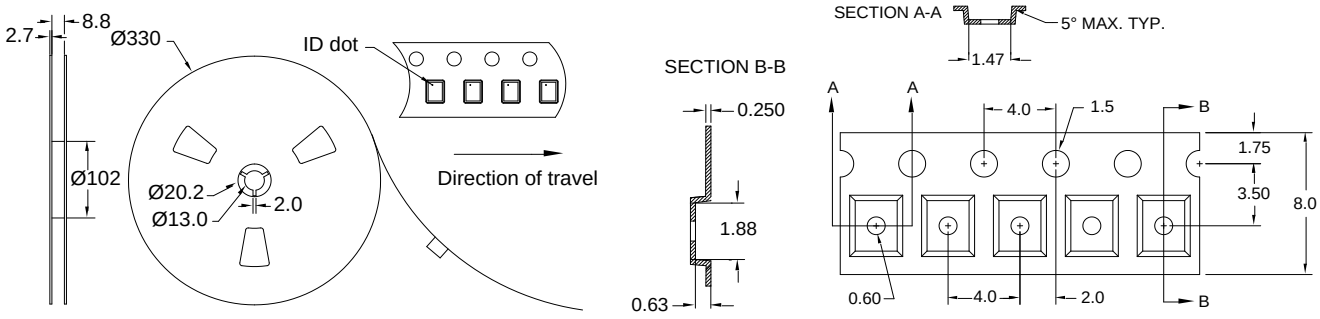
Body: Al_2O_3 ceramic
Lid: *Kovar* or *Alloy 42, Au* over *Ni* plated
Terminations: *Au* plating 0.5 - 1.0 µm, over a 2-6 µm *Ni* plating

All dimensions shown are nominal in millimeters
All tolerances are ± 0.15 mm except overall length and width ± 0.10 mm

Notes:
1. All dimensions shown are typical in millimeters
2. An asterisk (*) in front of the marking code indicates prototype.

Tape and Reel information

Standard T/R size = 10,000 units/reel



Product Compliance Information

ESD Sensitivity Ratings

Caution! ESD-Sensitive Device

ESD Rating: Class 1C
Test Human Body Model (HBM)
Standard ESDA/JEDEC JS-001

ESD Rating: Class C3
Test: Charge Device Model (CDM)
Standard: ESDA/JEDEC JES-002

MSL Rating

Not applicable. Hermetic package.

Solderability

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

Refer to **Soldering Profile** for recommended guidelines.

RoHs Compliance

This part is compliant with EU 2002/95/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

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, and information about TriQuint:

Web: www.triquint.com **Tel:** +1.407.886.8860
Email: info-sales@tqs.com **Fax:** +1.407.886.7061

For technical questions and application information: **Email:** flapplication.engineering@tqs.com

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