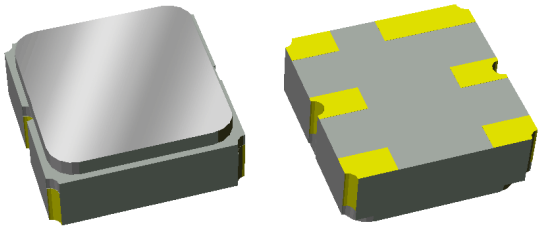
856704

836.5 MHz SAW Filter

Applications

- General purpose wireless
- Wireless infrastructure
- 3G, 4G, Multistandard
- Repeaters

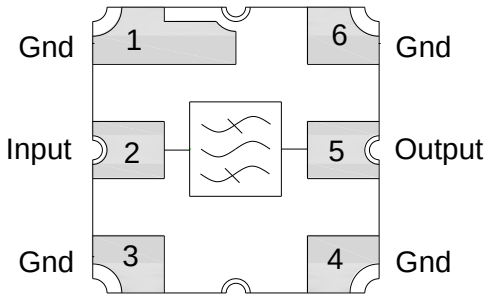


Product Features

- Usable bandwidth 25 MHz
- High attenuation
- Low Loss
- Excellent power handling
- Single-ended operation
- No matching required for operation at 50Ω
- Small Size: 3.00 x 3.00 x 1.22 mm
- Ceramic Surface Mount Package (SMP)
- Hermetically Sealed
- **RoHS** compliant, **Pb**-free

Functional Block Diagram

Top view



General Description

856704 is a general purpose Uplink filter for Band 5. This filter was specifically designed in a 3x3mm hermetic package for base station applications and is part of our wide portfolio of RF filters in the same package.

Low insertion loss, coupled with high attenuation and excellent power handling, makes this filter a natural choice for our customers Uplink RF filtering needs.

Pin Configuration

Pin # SE	Description
2	Input
5	Output
1,3,4,6	Case Ground

Ordering Information

Part No.	Description
856704	packaged part
856704-EVB	evaluation board

Standard T/R size = 5000 units/reel.

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Specifications

Electrical Specifications [1]

Specified Temperature Range: [2] -30 to +85 ºC

Parameter [3]	Conditions	Min	Typical [4]	Max	Units
Center Frequency		-	836.5	-	MHz
Maximum Insertion Loss	824 – 849 MHz	-	1.2	2.0	dB
Amplitude Variation [5]	824 – 849 MHz	-	0.3	1.5	dB p-p
Amplitude Ripple [6]	824 – 849 MHz	-	0.18	0.8	dB p-p
Phase Ripple	824 – 849 MHz	-	9.7	30	deg p-p
Group Delay Ripple	824 – 849 MHz	-	13	30	ns p-p
Absolute Group Delay	824 – 849 MHz	-	21	75	ns
Stopband Attenuation [7]	180 – 220 MHz	30	46	-	dB
	409 – 635 MHz	30	40	-	dB
	869 – 894 MHz	14	20	-	dB
	928 – 953 MHz	25	31	-	dB
	1136 – 1161 MHz	20	31	-	dB
	1240 – 1265 MHz	45	55	-	dB
	1440 – 1540 MHz	30	52	-	dB
	1540 – 1570 MHz	33	52	-	dB
	1570 – 1692 MHz	30	52	-	dB
	1853 – 2110 MHz	35	41	-	dB
	2111 – 2325 MHz	30	41	-	dB
	2885 – 3382 MHz	13	20	-	dB
	3917 – 4439 MHz	10	19	-	dB
	4949 – 5496 MHz	5	11	-	dB
Input/output VSWR	824 – 849 MHz	-	1.68	2.0	-
Source Impedance [8]	Single-ended	-	50	-	Ω
Load Impedance [8]	Single-ended	-	50	-	Ω

Notes:
1. All specifications are based on the TriQuint schematic for the main reference design shown on page 3
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
4. Typical values are based on average measurements at room temperature
5. Describes the total variation over the defined frequency range
6. This is defined as the worst difference between a peak and adjacent valley
7. Relative to Passband Loss (not absolute value)
8. This is the optimum impedance in order to achieve the performance shown

Absolute Maximum Ratings

Parameter	Rating
Operable Temperature	-40 to +85 °C
Storage Temperature	-40 to +85 °C
DC Voltage on any port (instantaneous only)	+5 V
Input Power [9]	+22 dBm

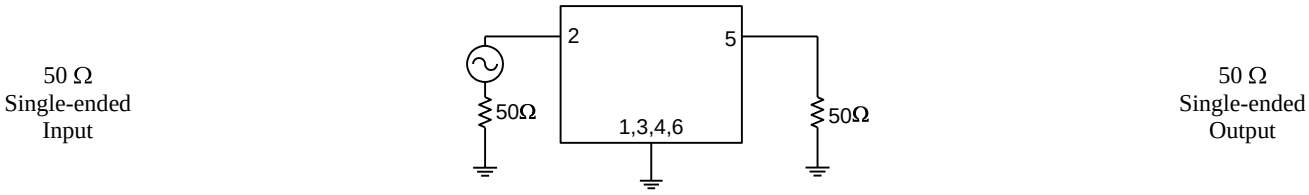
9. Input Power is targeted for an applied CW modulated RF in the 824-849 MHz band at 55 °C for a minimum of 125 hrs

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

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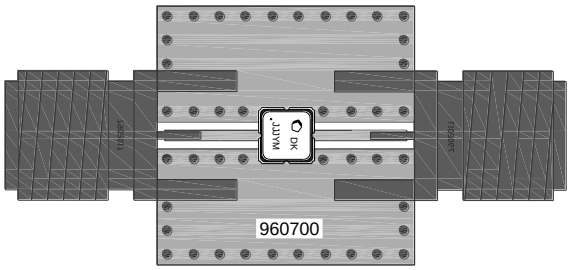
Reference Design

Schematic



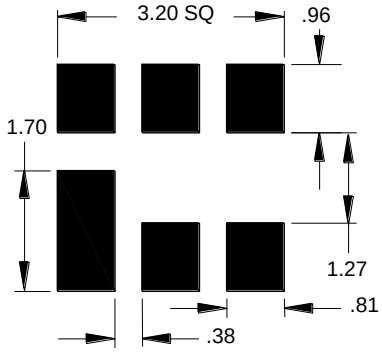
Notes:
1. Actual matching values may vary due to PCB layout and parasitic

PC Board



Notes:
Top, middle & bottom layers: 1 oz copper
Substrates: FR4 dielectric, .031" thick
Finish plating: Nickel: 3-8µm thick, Gold: .03-.2µm thick
Hole plating: Copper min .0008µm thick

Mounting Configuration



Notes:
1. All dimensions are in millimeters.
2. This footprint represents a recommendation only.

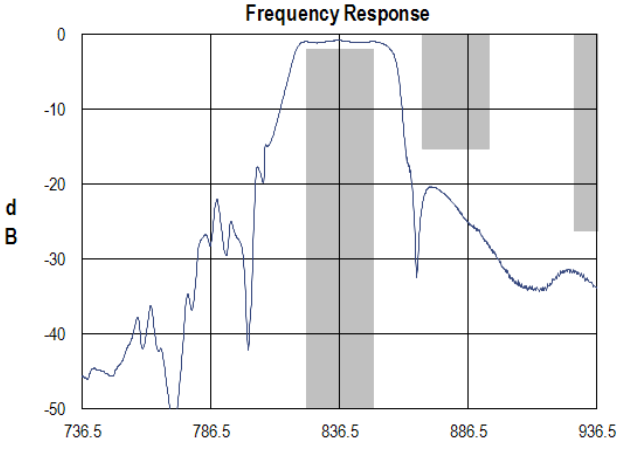
Bill of Material

Reference Desg.	Value	Description	Manufacturer	Part Number
SMA	N/A	SMA connector	Radiall USA Inc.	9602-1111-018
PCB	N/A	3-layer	multiple	960700

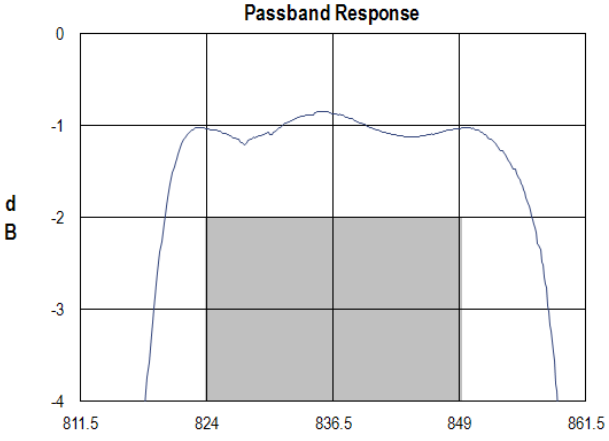
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Typical Performance (at room temperature)

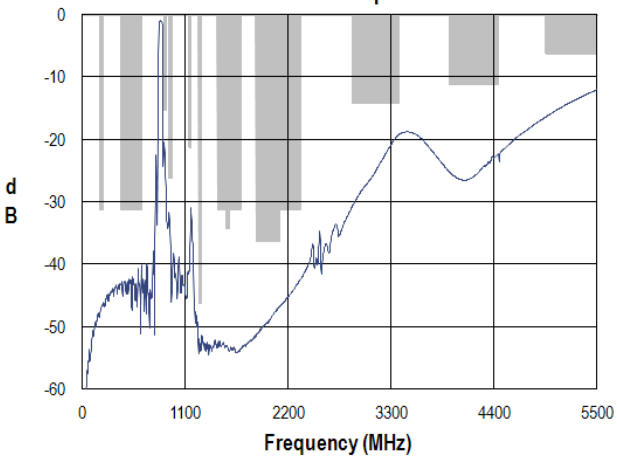
Frequency Response



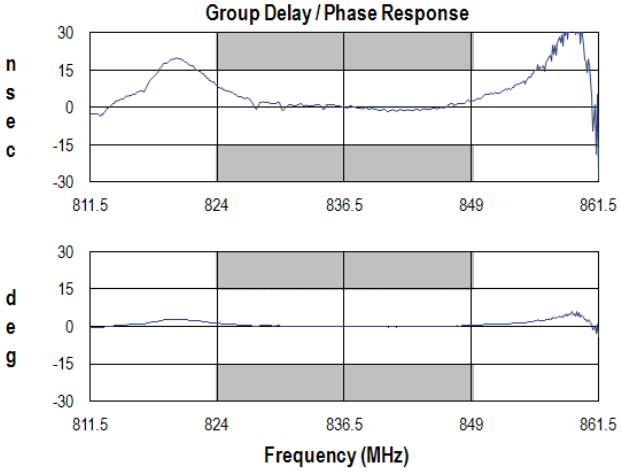
Passband Response



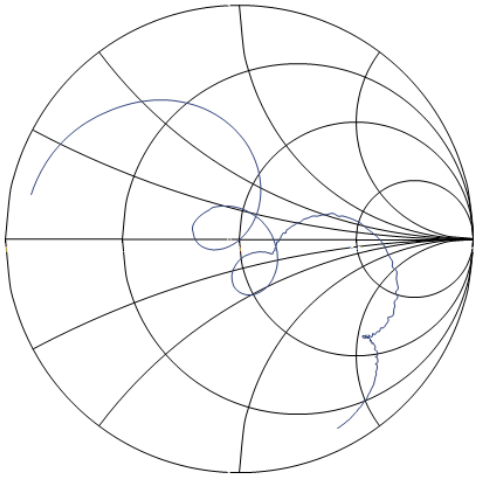
Wideband Response



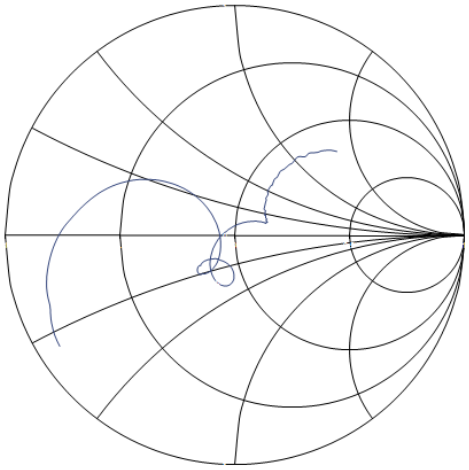
Group Delay / Phase Response



Input Smith Chart



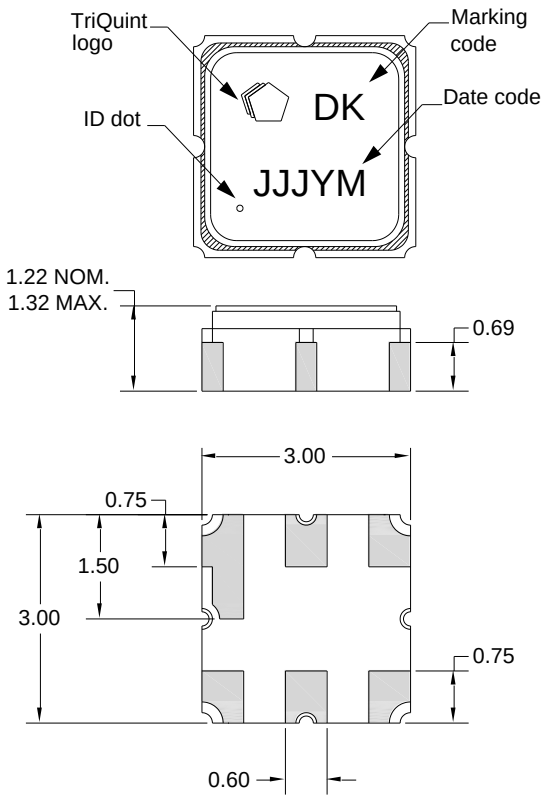
Output Smith Chart



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Mechanical Information

Package Information, Dimensions and Marking



Package Style: SMP-12A
Dimensions: 3.00 x 3.00 x 1.22 mm

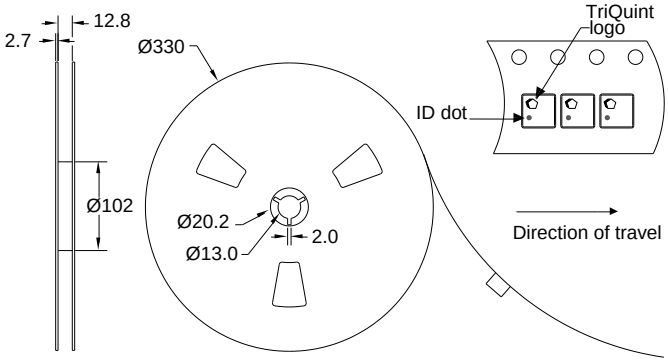
Body: Al_2O_3 ceramic
Lid: *Kovar, Ni* plated
Terminations: *Au* plating 0.5 - 1.0µm, over a 2-6µm *Ni* plating

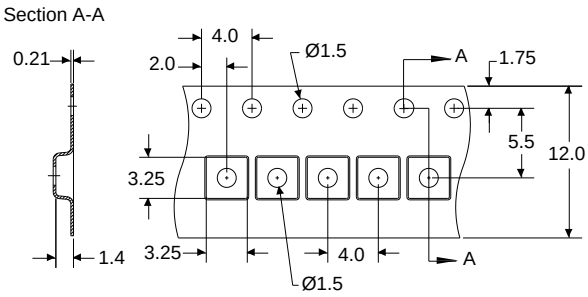
All dimensions shown are nominal in millimeters
All tolerances are ±0.15mm except overall length and width ±0.10mm

The date code consists of: day of the current year (Julian, 3 digits), Y = last digit of the year, and M = manufacturing site code

Tape and Reel Information

Standard T/R size = 5000 units/reel. All dimensions are in millimeters





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Product Compliance Information

ESD Information



Caution! ESD-Sensitive Device

ESD Rating: 1A
Value: Passes ≥ 400 V min.
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: B
Value: Passes ≥ 250 V min.
Test: Machine Model (MM)
Standard: JEDEC Standard JESD22-A115

MSL Rating

Devices are Hermetic, therefore MSL is not applicable

Solderability

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

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

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:

- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A ($C_{15}H_{12}Br_40_2$) Free
- PFOS Free
- SVHC Free

Contact Information

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

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Email: info-sales@tqs.com **Fax:** +1.407.886.7061

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Email: flapplication.engineering@tqs.com

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