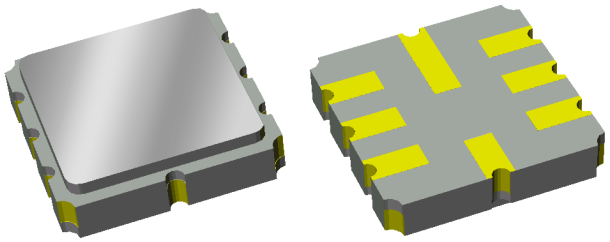
856140

310.7 MHz SAW Filter

Applications

- General Purpose
- For IF applications

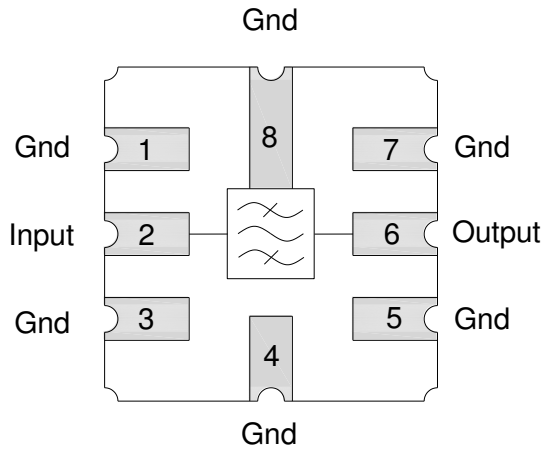


Product Features

- Usable bandwidth 3 MHz
- Low loss
- High attenuation
- Single-ended operation
- Ceramic Surface Mount Package (SMP)
- Dimensions: 5.0 x 5.0 x 1.3mm
- Hermetic **RoHS** compliant, **Pb**-free

Functional Block Diagram

Top view



General Description

The 856140 is a high-performance IF SAW filter with a center frequency of 310.7 MHz and a usable bandwidth of 3 MHz.

It features low loss with excellent attenuation, and is designed to be used with a single ended input and output.

The device is RoHS compliant and Pb-free.

Pin Configuration

Pin # Single-end	Description
2	Input
6	Output
1,3,4,5,7,8	Case Ground

Ordering Information

Part No.	Description
856140	packaged part
856140-EVB	evaluation board

Standard T/R size = 4000 units/reel.

Specifications

Electrical Specifications [1]

Specified Temperature Range: [2] -30 to +95 ºC

Parameter [3]	Conditions	Min	Typical [4]	Max	Units
Center Frequency		-	310.7	-	MHz
Insertion Loss	at 310.7 MHz	-	3.0	6.5	dB
Lower 25dB Band Edge [5]		295	304.9	-	MHz
Upper 25dB Band Edge [5]		-	317.1	325	MHz
Rejection [5]					
	100 – 295 MHz	25	59.0	-	dB
	289.9 – 301.5 MHz	20	48.5	-	dB
	319.9 – 325 MHz	20	46.0	-	dB
	325 – 500 MHz	25	67.0	-	dB
Attenuation [5]					
	289.3 MHz	42	62.0	-	dB
	305.35 MHz	4	18.8	-	dB
Gaussian Ripple	309.2 – 312.2 MHz	-	0.1	0.3	dB p-p
Source Impedance (single-ended) [6]		-	50	-	Ω
Load Impedance (single-ended) [6]		-	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. Relative to insertion loss at center frequency
6. This is the optimum impedance in order to achieve the performance shown

Absolute Maximum Ratings

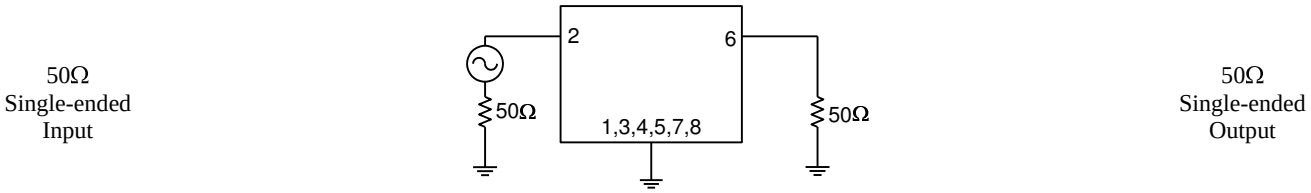
Parameter	Rating
Operating Temperature	-30 to +95 °C
Storage Temperature	-40 to +85 °C
Input Power[7]	+9dBm

7. Device is measured for equivalent 10K hours @ +55 ºC [CW Signal]

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

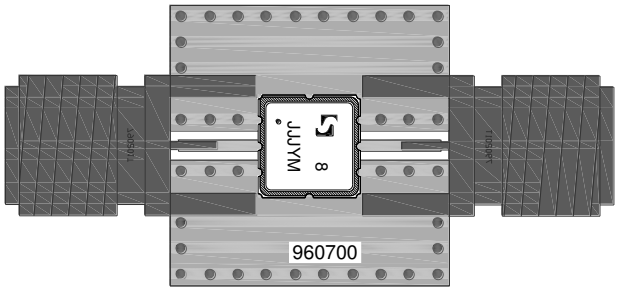
Reference Design

Schematic



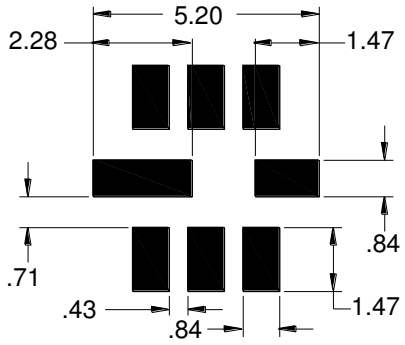
Notes:
1. Actual matching values may vary due to PCB layout and parasitic

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



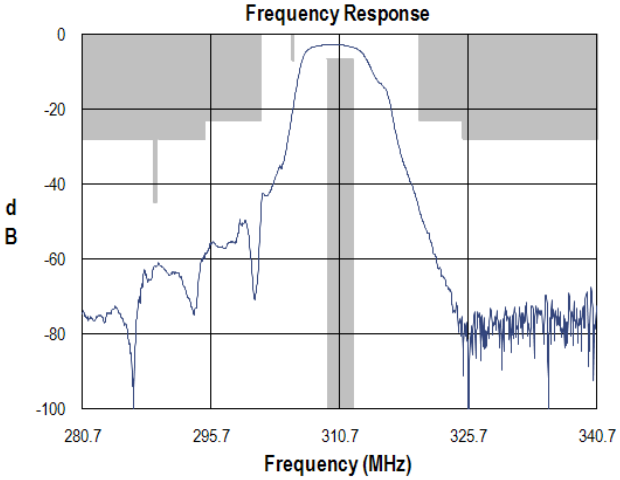
Notes:
1. All dimensions are in millimeters.
2. This footprint represents a recommendation only.

Bill of Material

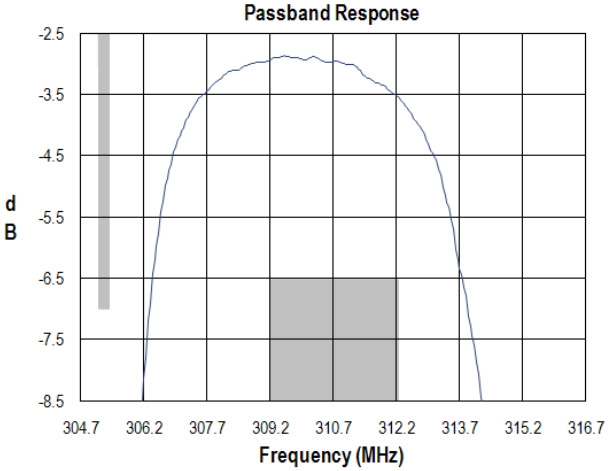
Reference Desg.	Value	Description	Manufacturer	Part Number
SMA	N/A	SMA connector	Radiall USA Inc.	9602-1111-018
PCB	N/A	3-layer	multiple	960700

Typical Performance (at room temperature)

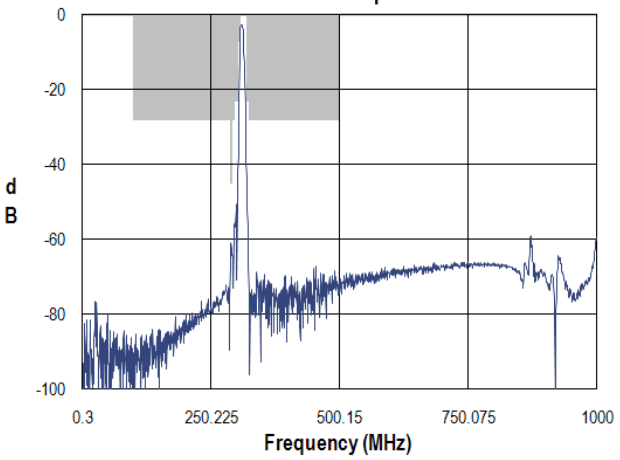
Frequency Response



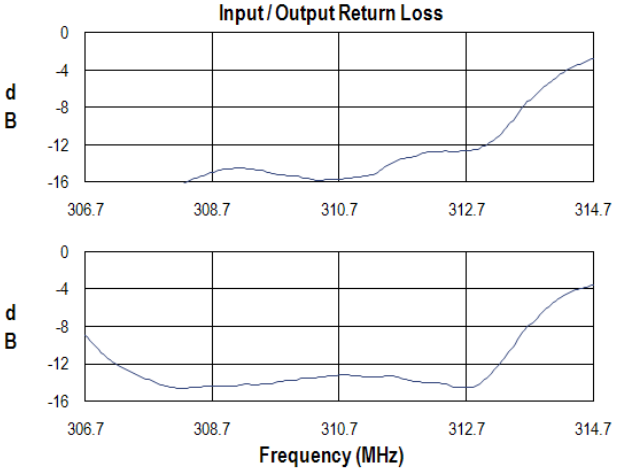
Passband Response



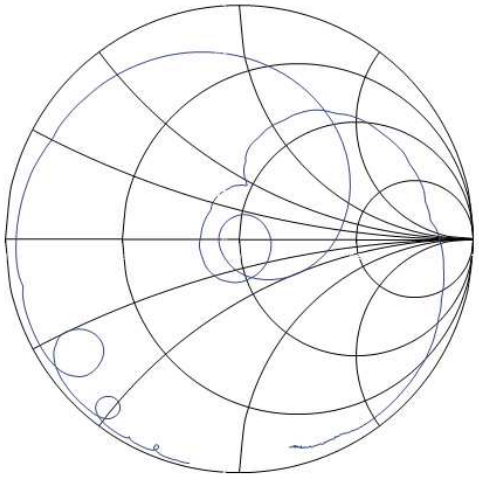
Wideband Response



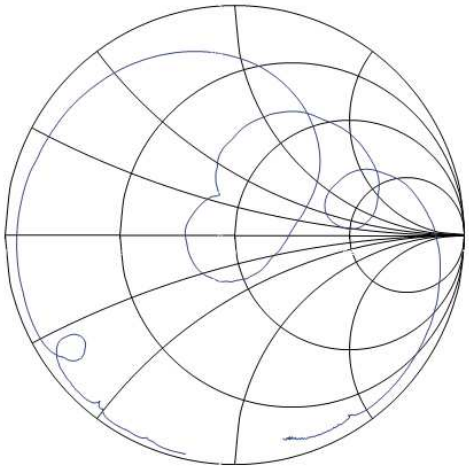
Input / Output Return Loss



Input Smith Chart

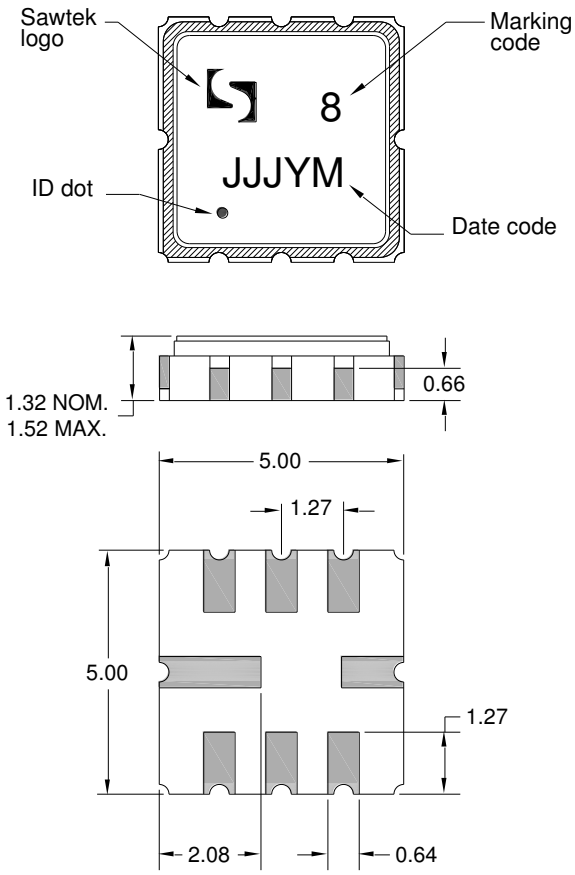


Output Smith Chart



Mechanical Information

Package Information, Dimensions and Marking



Package Style: SMP-20A
Dimensions: 5.00 x 5.00 x 1.32 mm

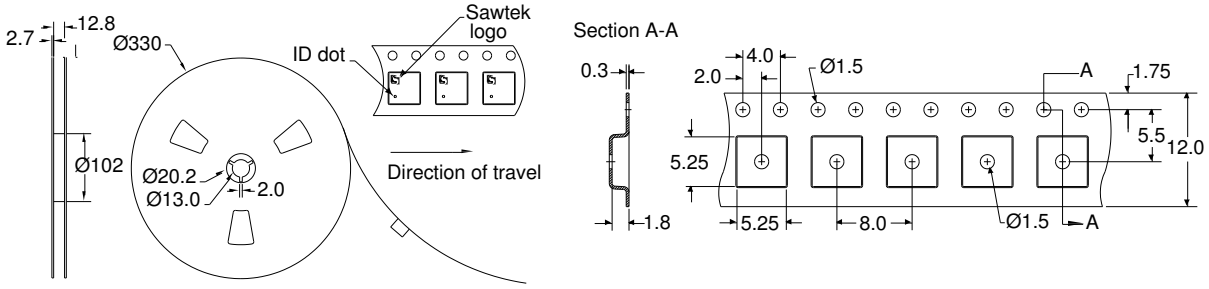
Body: Al_2O_3 ceramic
Lid: Kovar, Ni plated
Terminations: Au plating 0.5 - 1.0µm, over a 2-6µm Ni plating

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 = 4000 units/reel. All dimensions are in millimeters



Product Compliance Information

ESD Information

Caution! ESD-Sensitive Device

ESD Rating: 1B
Value: Passes ≥ 700 V min.
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: B
Value: Passes ≥ 200V 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

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