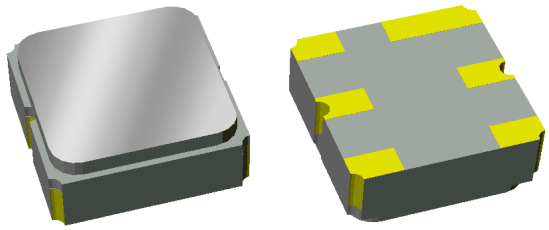
856678

1950 MHz SAW Filter

Applications

- Wireless Infrastructure
- AMPS, CDMA and TDMA
- General Purpose RF Filter
- 4G, Multi-Standard
- Band 1 Uplink
- Repeaters



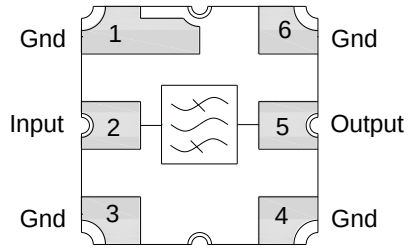
SMP-12, 3.00 x 3.00 x 1.22 mm

Product Features

- 60 MHz Bandwidth
- High Attenuation
- Single-ended Operation
- 50 Ohm Impedance
- 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

The 856678 is a Surface Acoustic Wave (SAW) based filter suitable for LTE Band 1 Uplink.

856678 is specifically designed to meet the high performance expectations of insertion loss and rejection for LTE downlink systems under all operating conditions.

This filter is housed in a compact, industry standard 3 x 3 mm footprint.

Low insertion loss, coupled with high attenuation makes this filter an ideal choice for Base Station Applications.

This filter is part of TriQuint's wide portfolio of RF filters.

Pin Configuration - Single Ended

Pin No.	Label
2	Input
5	Output
1.3,4,6	Ground

Ordering Information

Part No.	Description
856678	1950 MHz SAW Filter
856678-EVB	Evaluation board

Standard T/R size = 5000 units/reel

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Absolute Maximum Ratings

Parameter	Rating
Storage Temperature [1]	−40 to +85 °C
Operable Temperature [2]	−30 to +85 °C
DC Voltage (instantaneous only on any port)	+5 V

Notes:
1. Operation of this device outside the parameter ranges given may cause permanent damage.
2. Specifications are not guaranteed over all operable conditions.

Electrical Specifications [1,2,3]

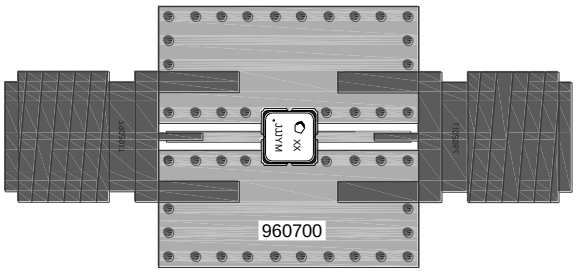
Test conditions unless otherwise noted: [2] Temp= −30 °C to +85 °C

Parameter [3]	Conditions	Min	Typ [4]	Max	Units
Center Frequency		-	1950	-	MHz
Insertion Loss	1920 – 1980 MHz	-	1.8	3.0	dB
Amplitude Variation	1920 – 1980 MHz		0.45	1.6	dB p-p
	1920 – 1980 MHz (over any 5 MHz band)		0.25	0.8	
Phase Ripple	1920 – 1980 MHz		16	30	Deg.
Absolute Delay	1920 – 1980 MHz		11	50	ns
Group Delay Variation	1920 – 1980 MHz		6	30	ns p-p
Stopband Attenuation (relative to zero dB)	180 – 220 MHz	20	49	-	dB
	1470 – 1500 MHz	35	44.5	-	
	1500 – 1540 MHz	35	40.5	-	
	1540 – 1570 MHz	35	42	-	
	1570 – 1601 MHz	35	45.5	-	
	1601 – 1670 MHz	17	42	-	
	1814 – 1840 MHz	20	33	-	
	1840 – 1878 MHz	15	35.5	-	
	2025 – 2050 MHz	3	11.5	-	
	2100 – 2170 MHz	20	28	-	
	2490 – 3000 MHz	25	44	-	
	3213 – 3755 MHz	25	51.5	-	
	4925 – 5527 MHz	25	41.5	-	
Input/Output VSWR	1920 – 1980 MHz	1.5:1	2.2:1		-
Source Impedance [5]	single-ended	-	50	-	Ohms
Load Impedance [5]	single-ended	-	50	-	Ohms

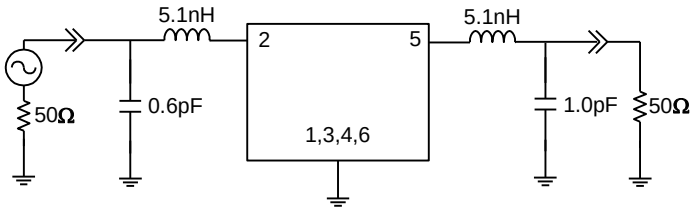
Notes:
1. All specifications are based on the test circuit shown below.
2. Production test is performed at room temp. to a guard-banded specification to ensure electrical compliance over temperature.
3. Electrical margin has been built into the design to account for variation due to temperature drift and manufacturing tolerances.
4. Typical values are based on average measurements at room temperature
5. This is the optimum impedance in order to achieve the performance shown.

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Evaluation Board



Matching Schematics

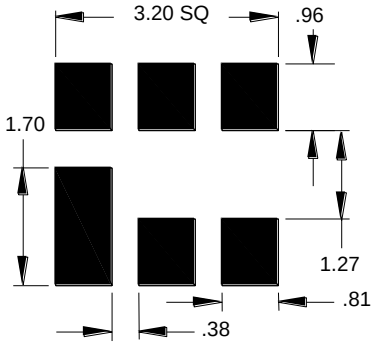


Notes:
1. No impedance matching required.
2. PCB: Top, middle & bottom layers: 1 oz copper, Substrates:FR4 dielectric, 031" thick Finish plating: Nickel: 3-8µm thick, Gold: .03-.2µm thick Hole plating: Copper min .0008µm thick

Bill of Material – 856678-EVB

Reference Des.	Value	Description	Manuf.	Part Number
DUT	-	1950 MHz SAW filter	TriQuint	856678
SMA	-	SMA connector	Radiall USA Inc.	9602-1111-018
PCB	-	3-Layer	Multiple	960700

PCB Mounting Pattern



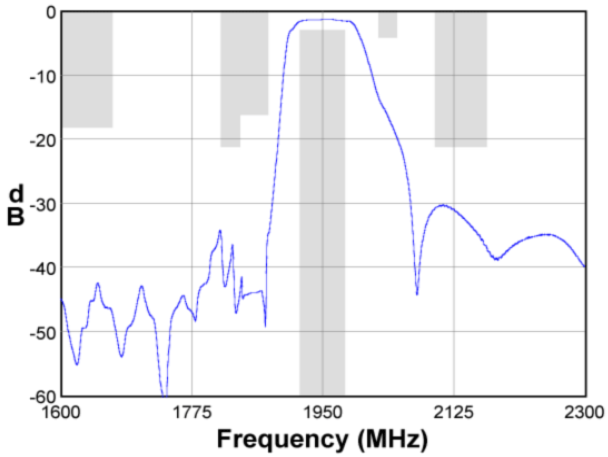
Notes:
1. All dimensions are in millimeters. Angles are in degrees.
2. This drawing specifies the mounting pattern used on the TriQuint evaluation board for this product. Some modification may be necessary to suit end user assembly materials and processes.

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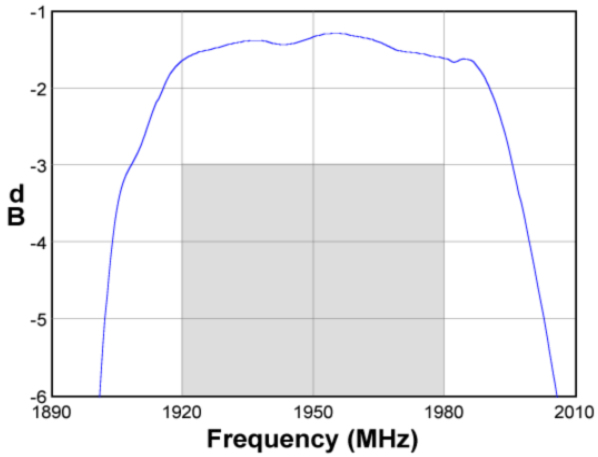
Performance Plots

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

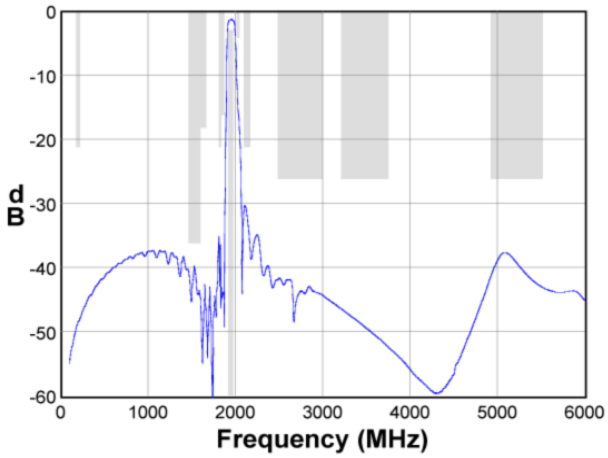
Frequency Response



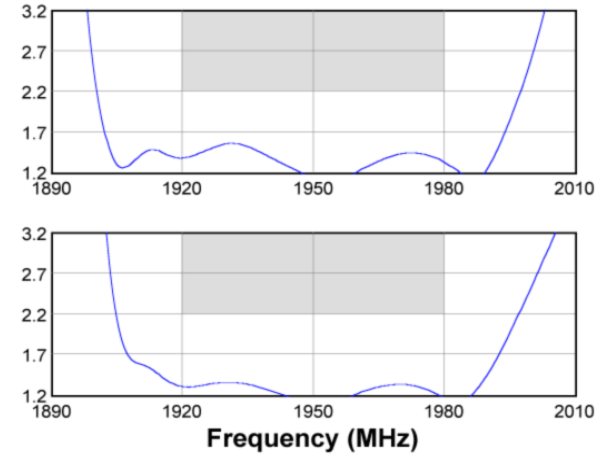
Passband Response



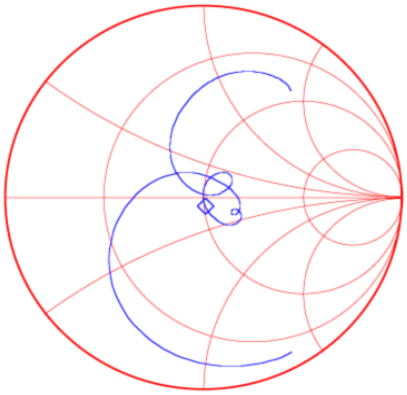
Wideband Response



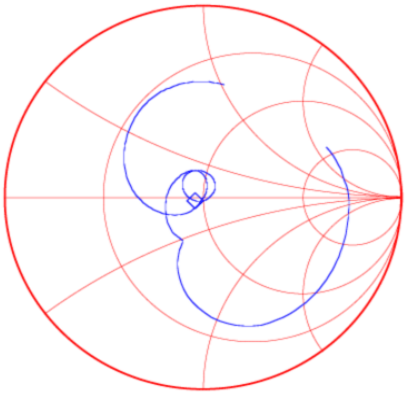
Input/Output VSWR



Input Smith Chart

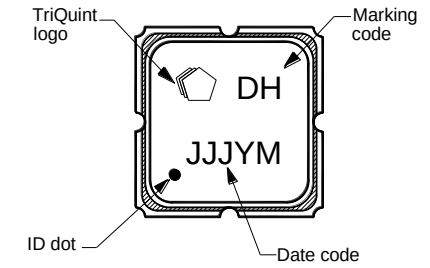


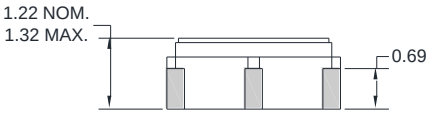
Output Smith Chart

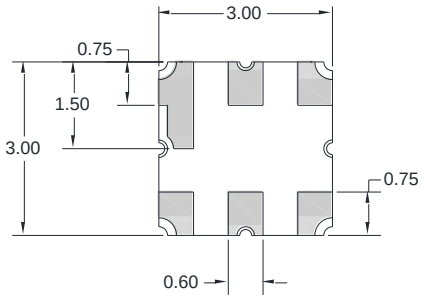


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Package Information, Marking and Dimensions







Package Style: SMP-12A

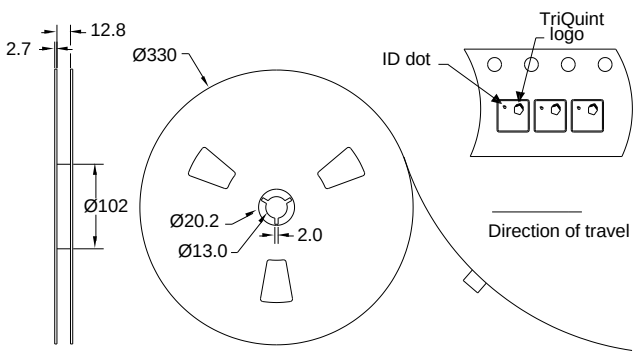
Body: Al_2O_3 ceramic
Lid: *Kovar*, *Ni* plated
Terminations: *Au* plating 0.5 - 1.0µm, over a 2-6µm *Ni* plating

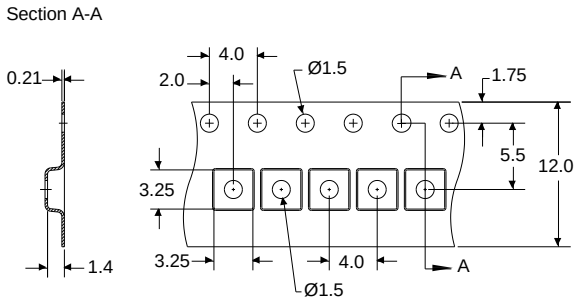
The date code consists of JJJ =Julian day, Y = last digit of the year, and M = manufacturing site code

Notes:
1. All dimensions shown are typical in millimeters
2. All tolerances are ±0.15mm except overall length and width ±0.10mm
3. An asterisk (*) in front of the marking code indicates prototype.

Tape and Reel information

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





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Product Compliance Information

ESD Sensitivity Ratings



Caution! ESD-Sensitive Device

ESD Rating:	Class 0A
Value:	Passes ≤ 100 V
Test:	Electrostatic Discharge Sensitivity Testing, Human Body Model (HBM) - component level
Standard:	ESDA/JEDEC JS-001-2012

ESD Rating:	Class A
Value:	Passes ≤ 50 V
Test:	Machine Model (MM)
Standard:	JEDEC Standard JESD22-A115

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:

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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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