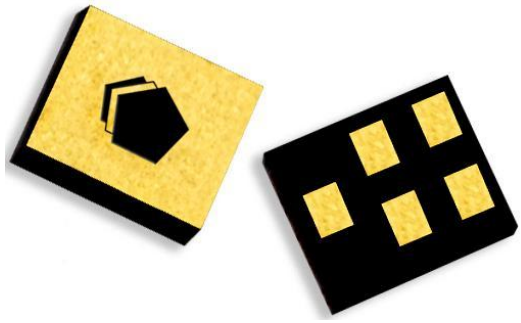
857139

1575.42 MHz SAW Filter

Applications

- For GPS applications

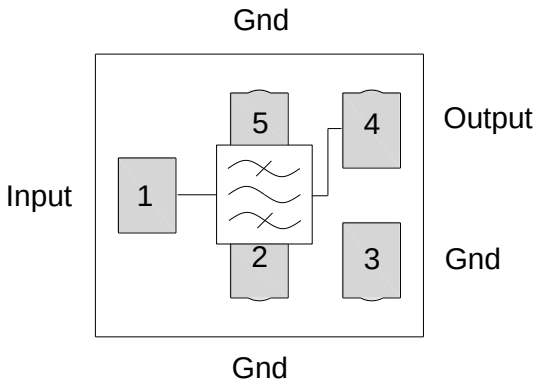


Product Features

- Ultra-Low Loss
- Usable bandwidth 20.46 MHz
- Single-ended operation
- Ceramic chip-scale Package (CSP)
- Small Size: 1.40 x 1.20 x 0.46 mm
- Hermetically Sealed
- **RoHS** compliant, **Pb**-free

Functional Block Diagram

Top view



General Description

857139 is specifically designed for GPS applications.

857139 uses advanced and inexpensive packaging techniques to achieve an extremely small 1.40 x 1.20 x 0.46 mm hermetically sealed package.

Pin Configuration

Pin # Balanced	Description
1	Input
4	Output
2,3,5	Ground

Ordering Information

Part No.	Description
857139	packaged part
857139-EVB	evaluation board

Standard T/R size = 10000 units/reel.

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Specifications

Electrical Specifications [1]

Specified Temperature Range: [2] -55 to +85 ºC

Parameter [3]	Conditions	Min	Typical [4]	Max	Units
Center Frequency		-	1575.42	-	MHz
Maximum Insertion Loss	1574.22 – 1576.62 MHz	-	0.6	0.9	dB
Lower 2.0dB Bandedge		-	1554.25	1565.19	MHZ
Upper 2.0dB Bandedge		1585.65	1600.91	-	MHZ
Lower 21dB Bandedge		1525.42	1532.69	-	MHZ
Upper 21dB Bandedge		-	1617.78	1625.42	MHZ
Amplitude Variation	1574.22 – 1576.62 MHz	-	0.02	0.2	dB p-p
Relative Attenuation [5]	824 – 960 MHz	20	22.5	-	dB
	1500 – 1525.42 MHz	21	29.6	-	dB
	1625.42 – 1650 MHz	21	32.6	-	dB
	1710 – 2170 MHz	20	21.8	-	dB
Input Return Loss	1574.22 – 1576.62 MHz	15	28.6	-	dB
Output Return Loss	1574.22 – 1576.62 MHz	15	29.2	-	dB
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 zero dB.
6. This is the optimum impedance in order to achieve the performance shown

Absolute Maximum Ratings

Parameter	Rating
Operating Temperature[7]	-55 to +85 ºC
Storage Temperature	-55to +85 ºC
Input Power[8]	+20 dBm

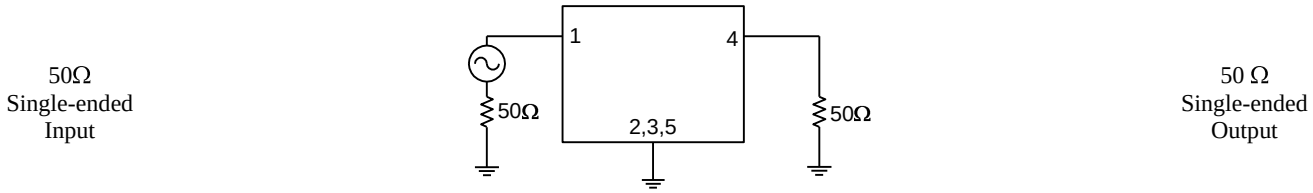
7. Device may operate over this range with degraded Electrical Specifications
8. Device is measured for equivalent 10K hours @ +85 ºC [CW Signal]

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

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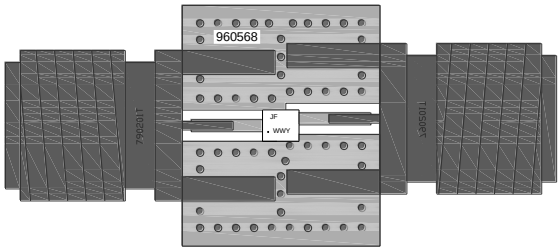
Reference Design

Schematic



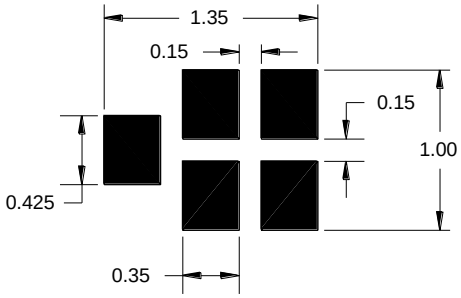
Notes:
1. Actual matching values may vary due to PCB layout and parasitic

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.

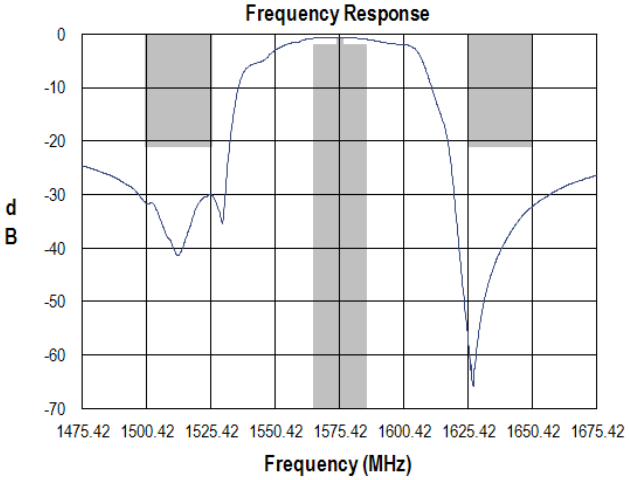
Bill of Material

Reference Desg.	Value	Description	Manufacturer	Part Number
SMA	N/A	SMA connector	Radiall USA Inc.	9602-1111-018
PCB	N/A	3-layer	multiple	960568

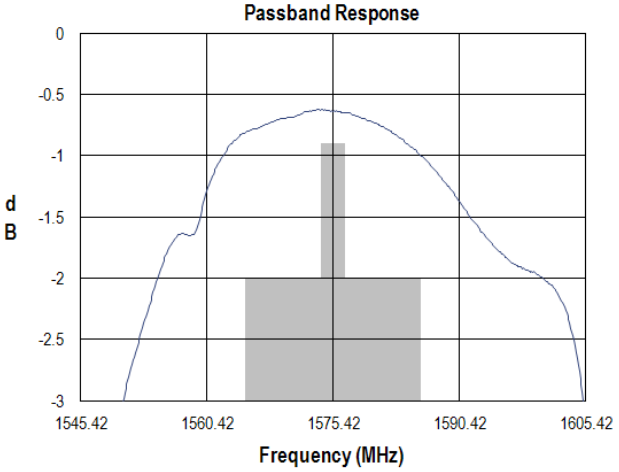
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Typical Performance (at room temperature)

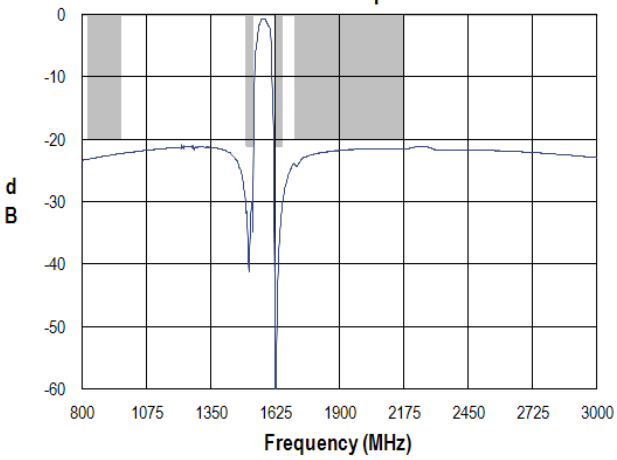
Frequency Response



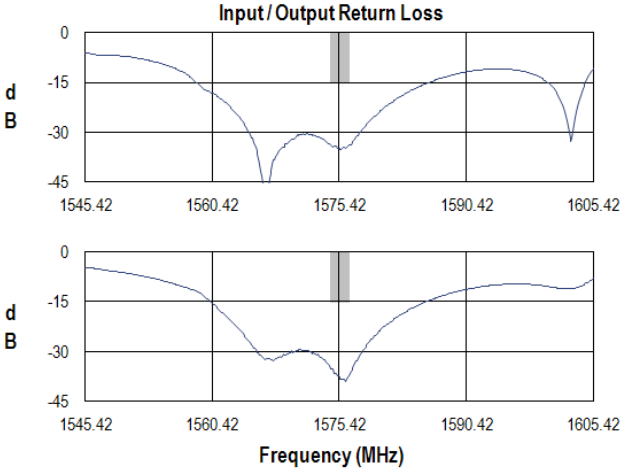
Passband Response



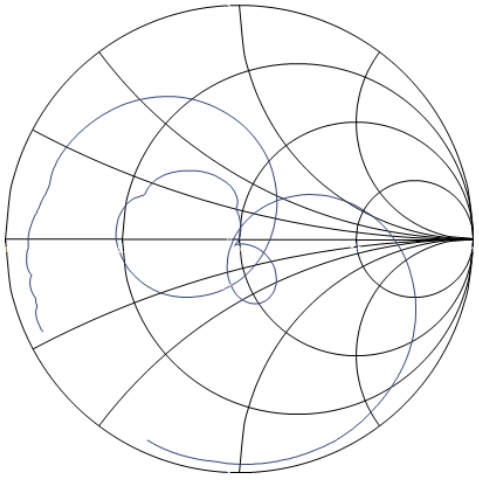
Wideband Response



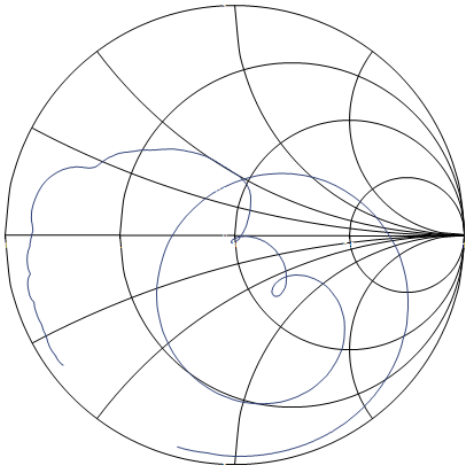
Input / Output Return Loss



Input Smith Chart



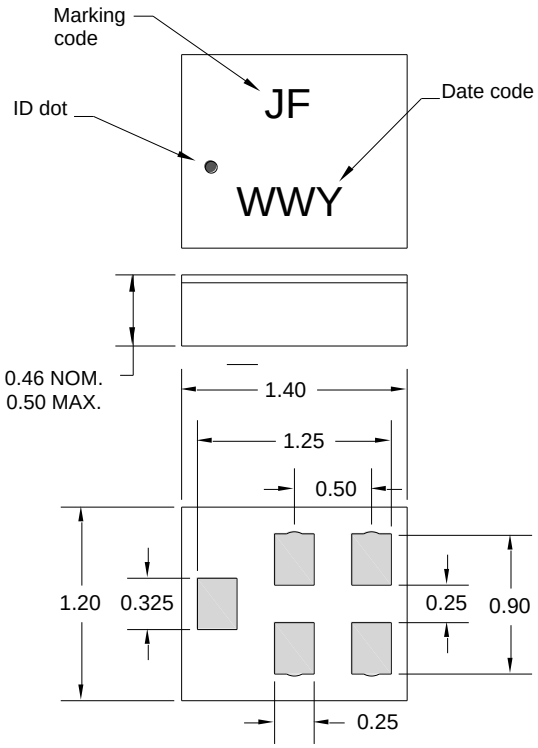
Output Smith Chart



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Mechanical Information

Package Information, Dimensions and Marking



Package Style: CSP-5BT
Dimensions: 1.40 x 1.20 x 0.46 mm

Body: Al_2O_3 ceramic
Lid: *Kovar* or *Alloy 42*, *Au* over *Ni* plated

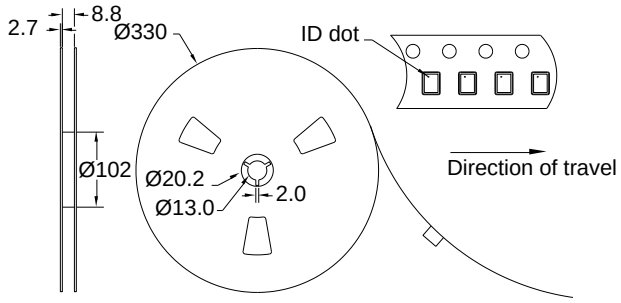
Terminations: *Au* plating 0.5 - 1.0µm, over a 2-6µm *Ni* plating

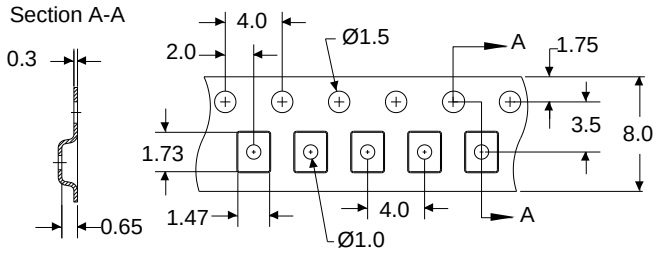
All dimensions shown are nominal in millimeters
All tolerances are ±0.15mm except overall length and width ±0.10mm

The date code consists of: WW = 2 digit week and Y = last digit of year

Tape and Reel Information

Standard T/R size = 10000 units/reel. All dimensions are in millimeters





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Product Compliance Information

ESD Information



Caution! ESD-Sensitive Device

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

ESD Rating: TBD
Value: Passes ≥ TBD 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

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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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