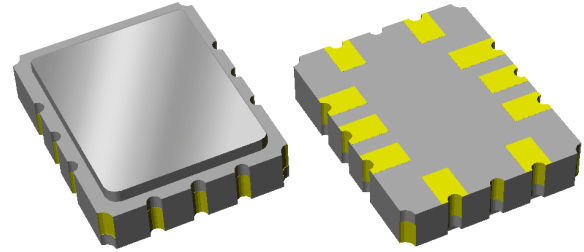


857072


242.5 MHz SAW Filter

Applications

- For WCDMA applications

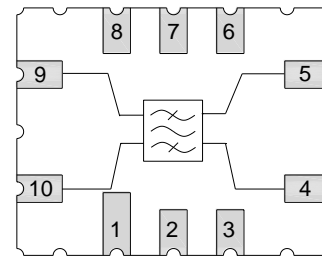


Product Features

- Usable bandwidth 25 MHz
- Low loss
- High attenuation
- Low EVM
- Balanced operation
- Ceramic Surface Mount Package (SMP-28C)
- Small Size: 7.00 x 5.50 x 1.24 mm
- Hermetically Sealed
- **RoHS** compliant (2002/95/EC), **Pb-free** 

Functional Block Diagram

Top view



General Description

9

The 857072 is a high-performance IF SAW filter with a center frequency of 242.5 and minimum 1.0 dB bandwidth of 25 MHz

It features low loss with excellent attenuation, and is designed to be used with a balanced input and output. The small size of this surface mounted filter makes it an economical choice for demanding applications such as WCDMA or other similar high data rate communications standards.

This device is RoHS compliant and Pb-free.

Pin Configuration

| Pin # | Bal/Bal | Description |
|-------|---------|-------------|
| 10 | | Input + |
| 9 | | Input - |
| 5 | | Output + |
| 4 | | Output - |
| 1,2,3 | | Case Ground |
| 6,7,8 | | Case Ground |

Ordering Information

| Part No. | Description |
|------------|------------------|
| 857072 | packaged part |
| 857072-EVB | evaluation board |

Standard T/R size = 3000 units/reel.

Specifications

Electrical Specifications ^(1, 2)

 Specified Temperature Range: ⁽³⁾ +10 to +75 °C

| Parameter ⁽⁴⁾ | Conditions | Min | Typical ⁽⁵⁾ | Max | Units |
|--|--|-----|------------------------|------|----------|
| Center Frequency | f_0 | - | 242.5 | - | MHz |
| Insertion Loss | at 242.5 MHz | - | 9 | 10.5 | dB |
| 1.0 dB Bandwidth ⁽¹⁰⁾ | | 25 | 27.6 | - | MHz |
| 2.0 dB Lower Band edge ⁽⁹⁾ | | - | 228.7 | 230 | MHz |
| 2.0 dB Upper Band edge ⁽⁹⁾ | | 255 | 256.8 | - | MHz |
| 35 dB Bandwidth ⁽¹⁰⁾ | | - | 32.2 | 35.5 | MHz |
| Pass Band Flatness ⁽⁷⁾ | 230 – 255 MHz | - | 0.4 | 1.0 | dB |
| Absolute Delay | over f_0 +/- 12.5 MHz | - | 0.67 | 0.70 | μ s |
| Group Delay Ripple ⁽⁶⁾ | over f_0 +/- 12.5 MHz | - | 30 | 60 | ns p-p |
| Group Delay Ripple ⁽⁶⁾ | Any 3.84 MHz channel over f_0 +/- 12.5 MHz | - | 29 | 50 | ns p-p |
| EVM ⁽⁸⁾ | Any 3.84 MHz channel over f_0 +/- 12.5 MHz | - | 1.2 | 2 | % |
| Temperature Coefficient | | - | -94 | - | ppm/ °C |
| Input Return Loss | over f_0 +/- 12.5 MHz | 8.5 | 12 | - | dB |
| Output Return Loss | over f_0 +/- 12.5 MHz | 8.5 | 19 | - | dB |
| Stopband Attenuation ⁽¹⁰⁾ | 5 – 25 MHz | 40 | 46 | - | dB |
| | 25 – 100 MHz | 45 | 50 | - | dB |
| | 100 – 225 MHz | 35 | 42 | - | dB |
| | 260 – 260.7 MHz | 26 | 36 | - | dB |
| | 260.7 – 310 MHz | 35 | 38 | - | dB |
| | 310 – 500 MHz | 40 | 53 | - | dB |
| Source/Load Impedance (balanced) ⁽¹¹⁾ | | - | 100 | - | Ω |

Notes:

- All specifications are based on the TriQuint schematic for the main reference design shown on page 3
- An external impedance matching network with $\pm 2\%$ tolerance will be necessary to achieve the proposed specifications
- In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
- Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
- Typical values are based on average measurements at room temperature
- This ripple is defined as the worst peak to adjacent valley within specified frequency range
- Passband Flatness is defined as the difference between maximum and minimum loss over the specified band
- The EVM specification is guaranteed by design and measured approximately in production
- 2.0 db Band edges are relative to Minimum Loss
- All Bandwidth and Attenuation measurements are relative to loss at 1dB Center Frequency
- This is the optimum impedance in order to achieve the performance shown

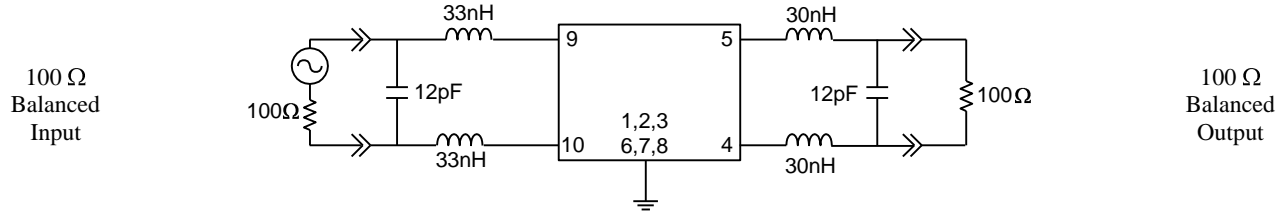
Absolute Maximum Ratings

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

| Parameter | Rating |
|-------------------------------|--|
| Operable /Storage Temperature | -40 to +85 °C |
| Input Power | +10dBm (Measured with continuous sine wave signal. Expected lifetime of greater than or equal to 10K Hrs at 55 °C) |

Reference Design – 100Ω Bal Input, 100Ω Bal Output

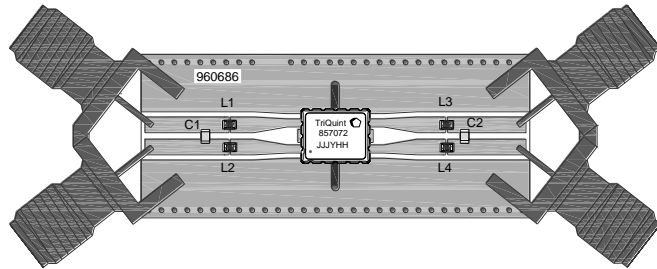
Schematic



Notes:

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

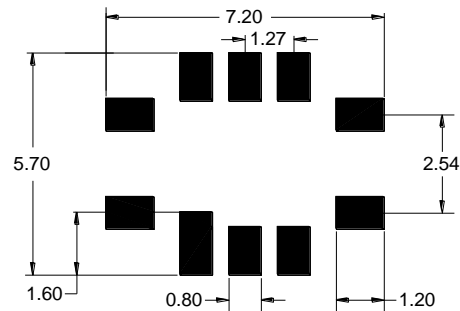
PC Board



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



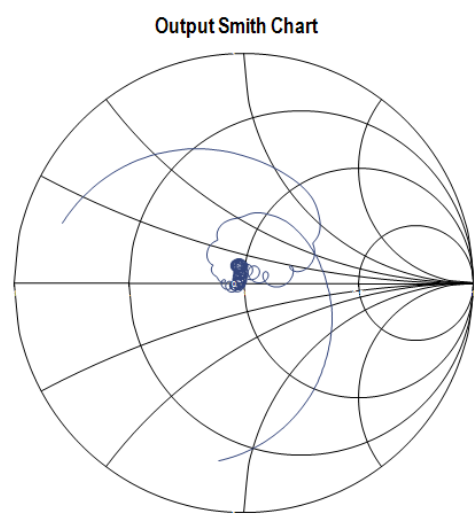
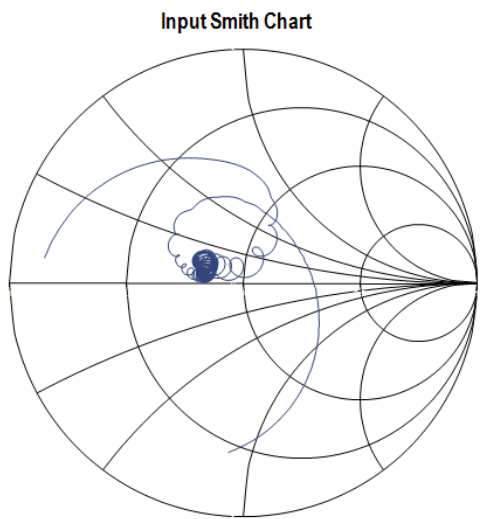
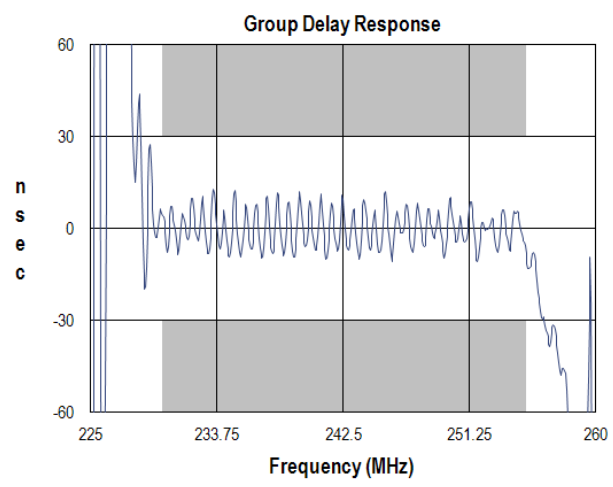
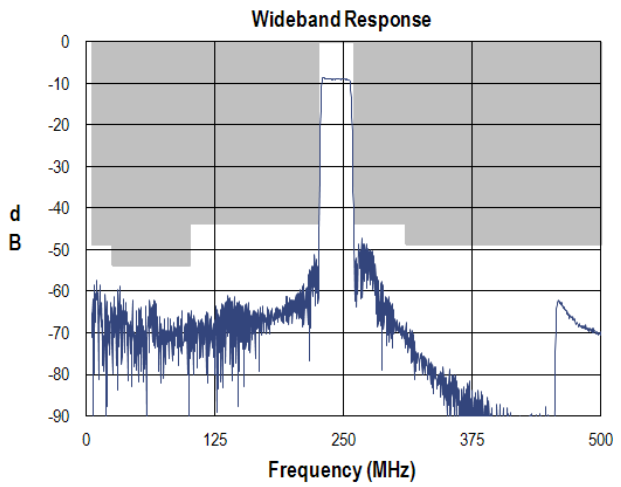
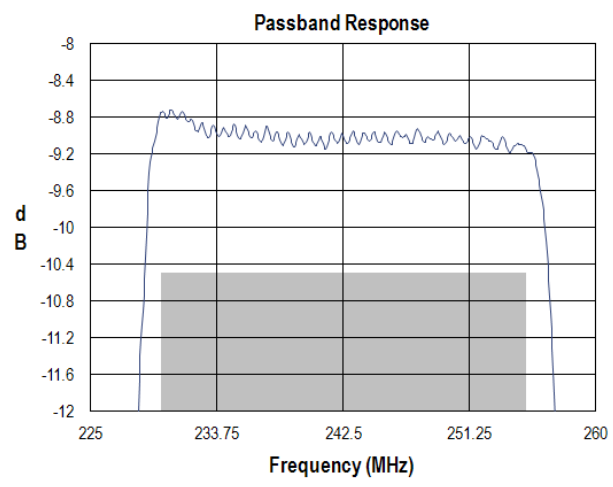
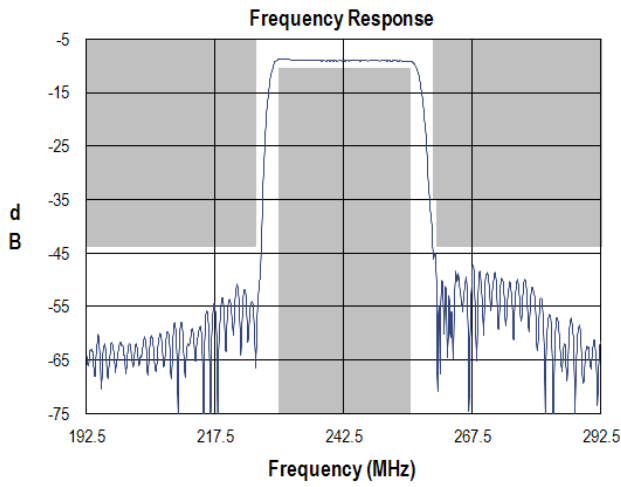
Notes:

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

Bill of Material

| Reference Desg. | Value | Description | Manufacturer | Part Number |
|-----------------|-------|---------------------------|--------------------|-------------------|
| L1 | 33nH | Coil Wire-wound, 0603 5% | MuRata | LQW18AN33NJ00 |
| L2 | 33nH | Coil Wire-wound, 0603, 5% | MuRata | LQW18AN33NJ00 |
| L3 | 30nH | Coil Wire-wound, 0603, 5% | MuRata | LQW18AN30NJ00 |
| L4 | 30nH | Coil Wire-wound, 0603, 5% | MuRata | LQW18AN30NJ00 |
| C1 | 12pF | Chip Ceramic, 0603, 5% | MuRata | GRM1885C1H120JA01 |
| C2 | 12pF | Chip Ceramic, 0603, 5% | MuRata | GRM1885C1H120JA01 |
| SMA | N/A | SMA connector | Johnson Components | 142-0701-801 |
| PCB | N/A | 3-layer | multiple | 960686 |

Typical Performance (at room temperature)

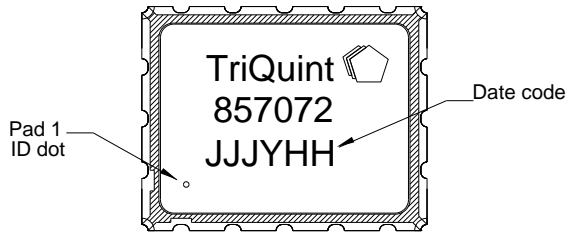


857072

242.5 MHz SAW Filter

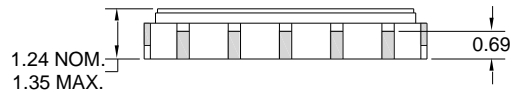
Mechanical Information

Package Information, Dimensions and Marking

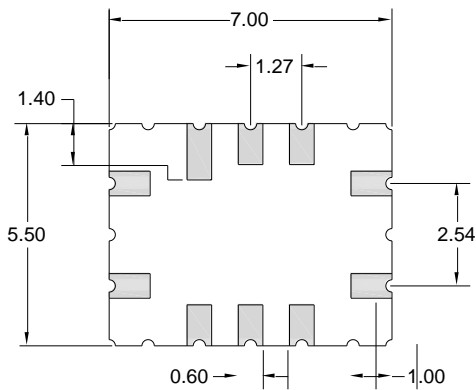


Package Style: SMP-28C
Dimensions: 7.00 x 5.50 x 1.24 mm

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



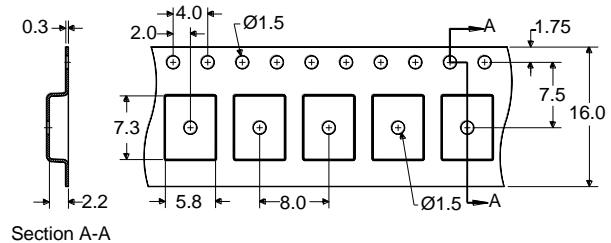
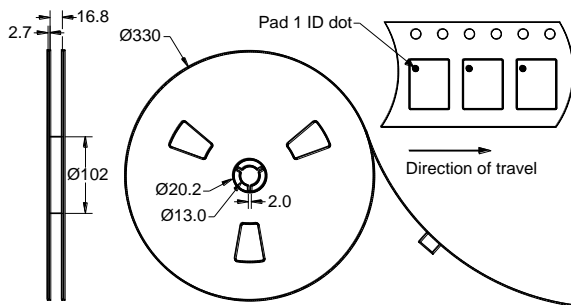
All dimensions shown are nominal in millimeters
All tolerances are ± 0.15 mm except overall length and width ± 0.10 mm



The date code consists of: day of the current year (Julian, 3 digits), Y = last digit of the year (1 digit), and HH = hour (2 digits)

Tape and Reel Information

Standard T/R size = 3000 units/reel. All dimensions are in millimeters



857072

242.5 MHz SAW Filter

Product Compliance Information

ESD Information



Caution! ESD-Sensitive Device

ESD Rating: 1A

Value: Passes $\geq 250V$ min.
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: B

Value: Passes $\geq 200V$ 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 (C₁₅H₁₂Br₄O₂) Free
- PFOS Free
- SVHC Free

Contact Information

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