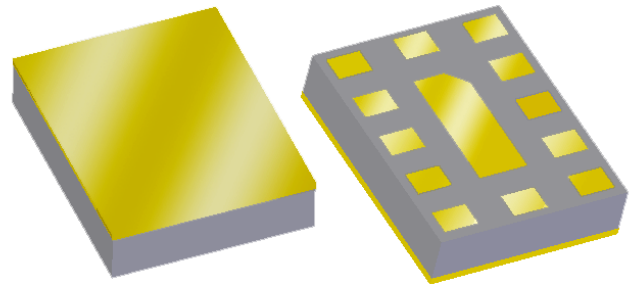


# 857031

## 826 MHz Notch Filter

### Applications

- BC0 notch filter for SVLTE applications
- Applicable passbands: 751 MHz B13 LTE, 782 MHz B13 LTE
- Handsets

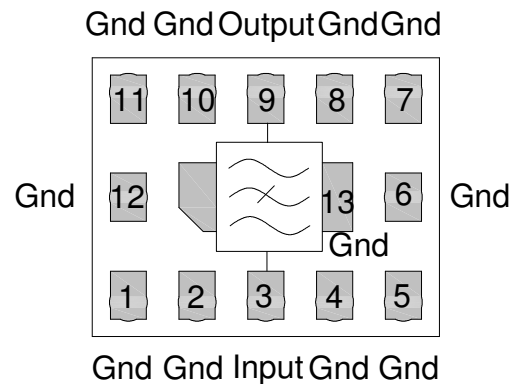


### Product Features

- High linear notch filter
- Usable reject band 4 MHz
- Low loss in 746-756 MHz/777-787 MHz
- High BC0 attenuation
- Ceramic chip-scale Package (CSP)
- Small Size: 2.5 x 2.00 x 0.56 mm
- Hermetic **RoHS** compliant, **Pb**-free

### Functional Block Diagram

Top view



### General Description

The 857031 is a high performance Surface Acoustic Wave (SAW) Notch Filter designed to reject emissions in the BC0 band while passing Band 13 LTE band.

857031 is specifically designed to enable simultaneous voice and LTE for Band 13 application. It is specified to support Band 13 requirements in the entire 746 - 787 MHz band.

The 857031 uses advanced packaging techniques to achieve an industry-leading 2.5 x 2.0 x 0.56 mm package. The filter exhibits excellent power handling capabilities.

### Pin Configuration

| Pin #             | SE-Balanced | Description |
|-------------------|-------------|-------------|
| 3                 |             | Input       |
| 9                 |             | Output      |
| 1,2,4,5,7,8,10,11 |             | Ground      |
| 6,12,13           |             | Case Ground |

### Ordering Information

| Part No.   | Description      |
|------------|------------------|
| 857031     | packaged part    |
| 857031-EVB | evaluation board |

Standard T/R size = 10,000 units/reel.

## Specifications

### Electrical Specifications <sup>(1)</sup>

Specified Temperature Range: <sup>(2)</sup> -30 to +85 °C

| Parameter <sup>(3)</sup>                       | Conditions      | Min | Typical <sup>(4)</sup> | Max  | Units  |
|--|-----------------|-----|------------------------|------|--------|
| Center Frequency                               |                 | -   | 826                    | -    | MHz    |
| Maximum Insertion Loss                         | 746 – 756 MHz   | -   | 0.5                    | 0.75 | dB     |
|  | 777– 787 MHz    | -   | 0.65                   | 0.9  | dB     |
| Amplitude Variation                            | 746 – 756 MHz   | -   | 0.05                   | 0.1  | dB p-p |
|  | 777– 787 MHz    | -   | 0.15                   | 0.25 | dB p-p |
| Absolute Attenuation                           | 824 – 828 MHz   | 28  | 32                     | -    | dB     |
|  | 1564 – 1574 MHz | 2   | 4                      | -    | dB     |
|  | 1574 – 1577 MHz | 2   | 4                      | -    | dB     |
|  | 2331 – 2361 MHz | 5   | 8                      | -    | dB     |
|  | 2400 – 2484 MHz | 5   | 8                      | -    | dB     |
| Input /Output Return Loss                      | 746 – 756 MHz   | 15  | 20                     | -    | dB     |
|  | 777– 787 MHz    | 15  | 20                     | -    | dB     |
| IMD3 product <sup>(5)</sup>                    |                 | -   | -105                   |      | dBm    |
| Source Impedance (single-ended) <sup>(5)</sup> |                 | -   | 50                     | -    | Ω      |
| Load Impedance (single-ended) <sup>(5)</sup>   |                 | -   | 50                     | -    | Ω      |

Notes:

- All specifications are based on the TriQuint schematic for the main reference design shown on page 3
- 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
- All power levels are referenced to the antenna port. Two CW tones are applied at frequencies f1 and f2, and the resultant intermodulation product in the 746-756 MHz band is measured. The first tone (f1 = 785 to 787 MHz, 24 dBm referenced to the antenna port) is applied at the input port. The second tone (f2 = 824 to 828 MHz, 13 dBm referenced to the antenna port) is applied at the output port. The intermodulation product is measured at 746 to 750 MHz

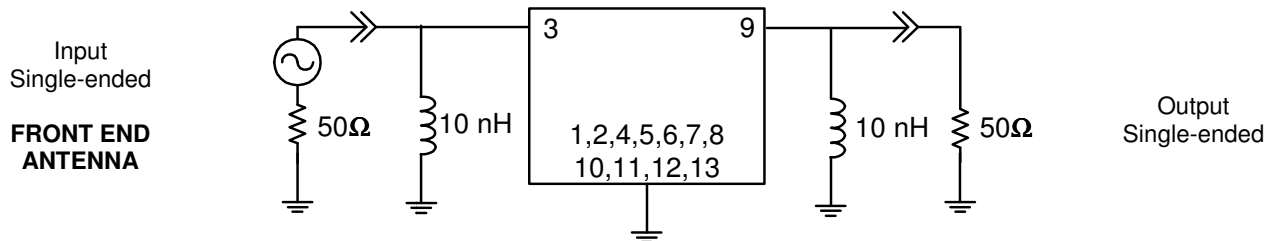
### Absolute Maximum Ratings <sup>(6)</sup>

| Parameter                  | Rating        |
|----------------------------|---------------|
| Operating Temperature      | -30 to +85 °C |
| Storage Temperature        | -40 to +85 °C |
| Input Power <sup>(7)</sup> | +29 dBm       |

- Operation of this device outside the parameter ranges given above may cause permanent damage.
- All ports matched to 50 Ohms. (55°C, equivalent 5000 hours).

### Reference Design 50Ω SE In, 50Ω SE Out

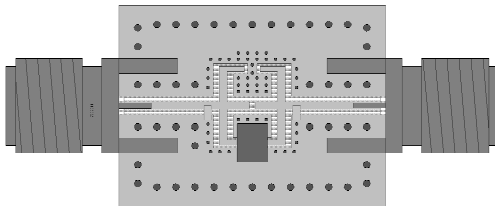
### Schematic



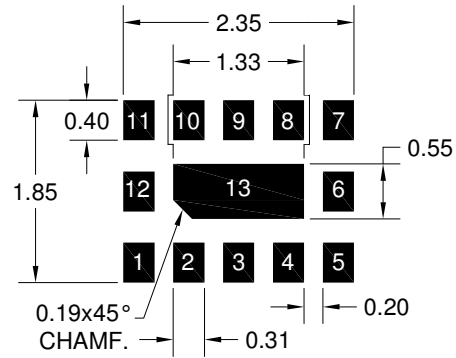
**Notes:**

Actual matching values may vary due to PCB layout and parasitic

### PC Board



### Mounting Configuration



**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

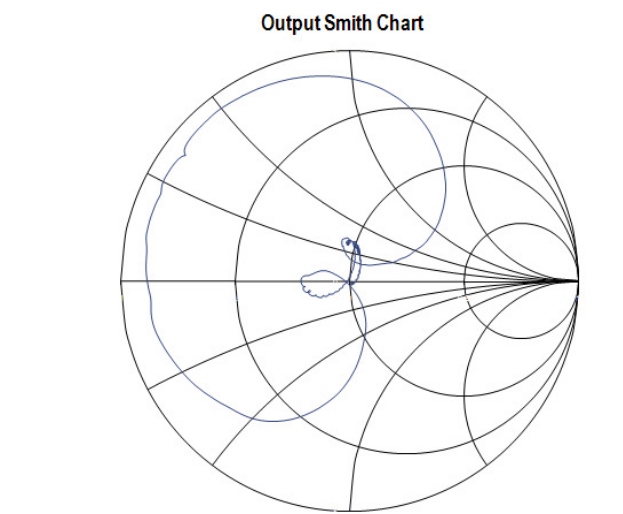
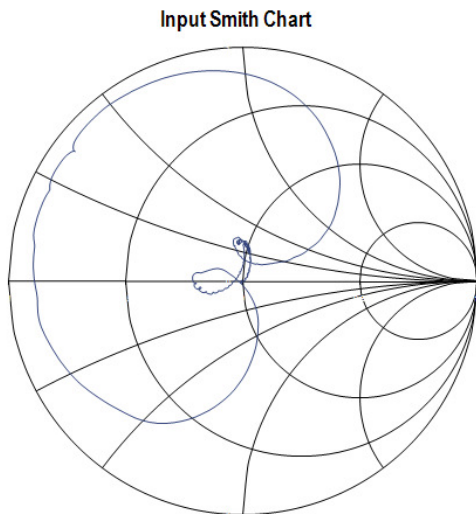
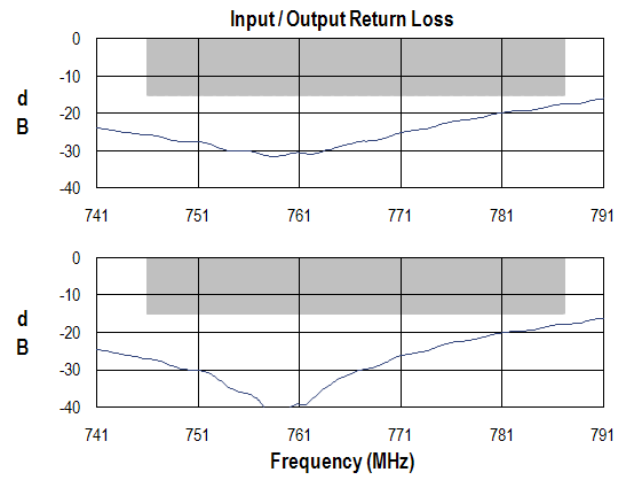
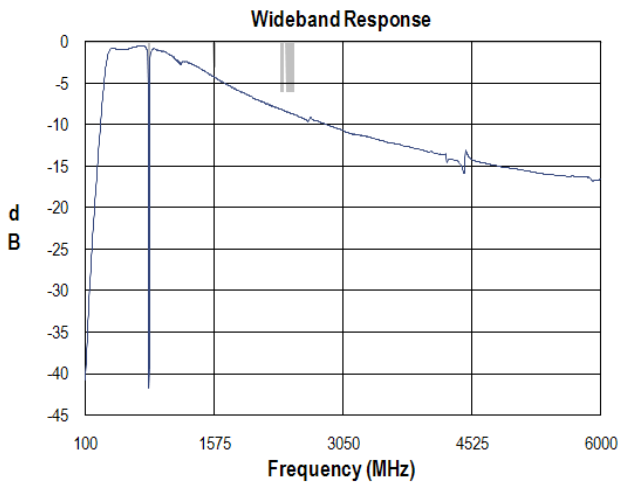
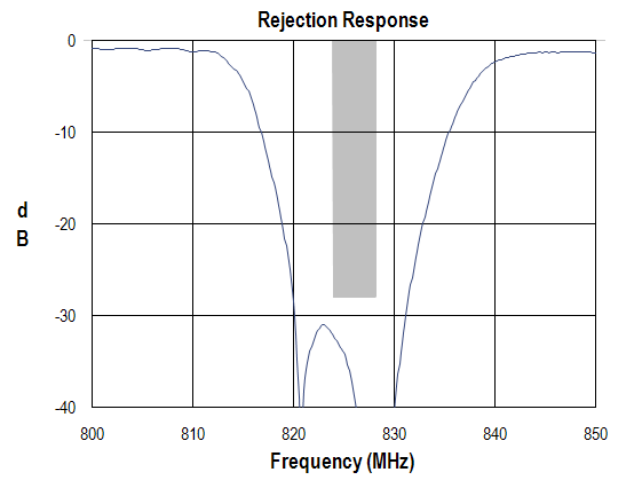
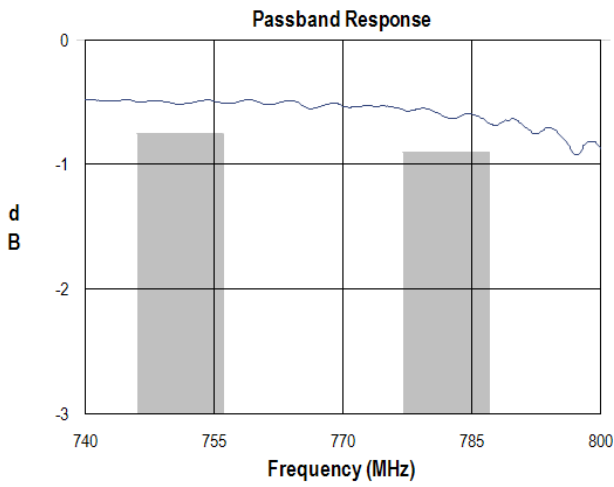
**Notes:**

1. Top view of the product.
2. All dimensions are in millimeters.
3. This footprint represents a recommendation only.

### Bill of Material

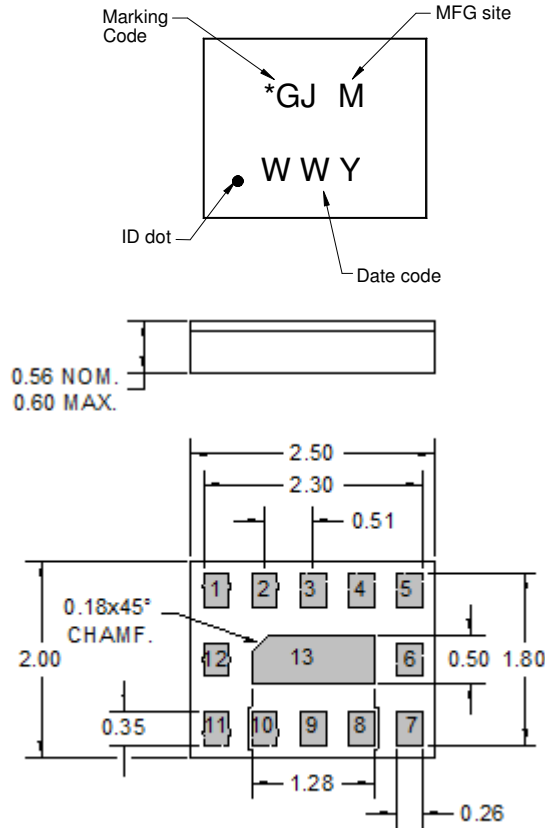
| Reference Desg. | Value | Description               | Manufacturer     | Part Number   |
|-----------------|-------|---------------------------|------------------|---------------|
| L1              | 10 nH | Coil Wire-wound, 0402, y% | MuRata           | LQW15AN10NH00 |
| L2              | 10 nH | Coil Wire-wound, 0402, y% | MuRata           | LQW15AN10NH00 |
| SMA             | N/A   | SMA connector             | Radiall USA Inc. | 9602-1111-018 |
| PCB             | N/A   | 3-layer                   | Multiple         | 960930        |

### Typical Performance (at room temperature)



**Mechanical Information**

**Package Information, Dimensions and Marking**



Package Style: CSP-10GT  
 Dimensions: 2.5 x 2.00 x 0.56 mm

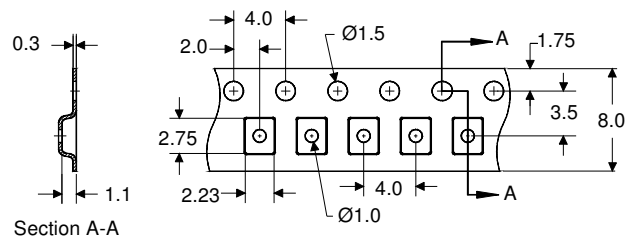
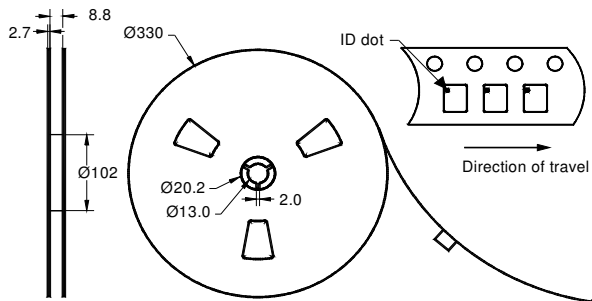
Body:  $Al_2O_3$  ceramic  
 Lid: Kovar or Alloy 42, Au over Ni plated  
 Terminations: Au plating 0.5 - 1.0 $\mu$ m, over a 2-6 $\mu$ m Ni plating

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

The date code consists of: WW = 2 digit week,  
 Y = last digit of year, M = manufacturing site code

**Tape and Reel Information**

Standard T/R size = 10,000 units/reel. All dimensions are in millimeters



## Product Compliance Information

### ESD Information



#### Caution! ESD-Sensitive Device

ESD Rating: 0

Value: Passes  $\leq 150$  V min.  
Test: Human Body Model (HBM)  
Standard: JEDEC Standard JESD22-A114

ESD Rating: M1

Value: Passes  $\leq 100$  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<sub>15</sub>H<sub>12</sub>Br<sub>4</sub>O<sub>2</sub>) 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](mailto:info-sales@tqs.com)      **Fax:** +1.407.886.7061

For technical questions and application information:

**Email:** [fl.product.engineering@tqs.com](mailto:fl.product.engineering@tqs.com)

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# 857031

## 826 MHz Notch Filter

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