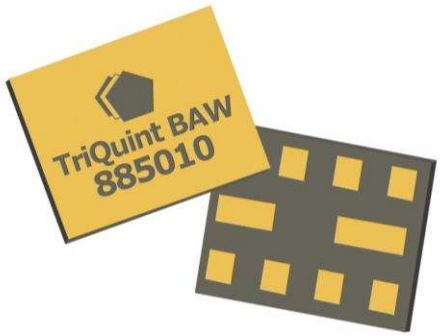
# 885010

## *2442 MHz BAW Filter*

## Applications

- WiFi/Bluetooth/ISM notch filter to enable coexistence between WiMAX/LTE/TD-LTE & WiFi/BT/ISM radios
- Applicable passbands: 2.6 GHz WiMAX/LTE, 2.3 GHz WiMAX/LTE, LTE Bands 7 & 38, TD-LTE Band 40, WCS, WiBro, Indian 2.3GHz 4G band
- Handsets
- Portable Hotspots
- Mobile Routers
- Smart Meters



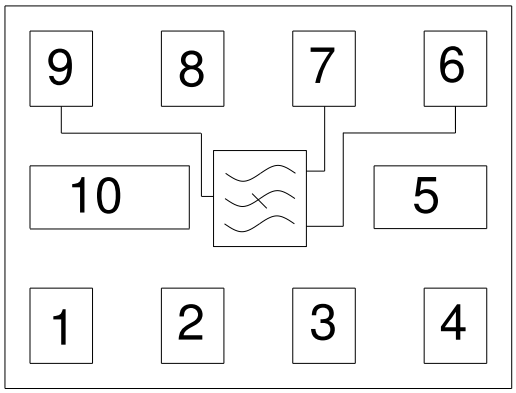

1.7 x 1.3 x 0.46 mm

## Product Features

- Rejects entire 2.4 GHz WiFi/BT/ISM bands
- Low Loss in 2502-2690 MHz bands: WiMAX/LTE/TD-LTE/Bands 7 & 38
- Low Loss in 2300-2360 MHz bands: WiMAX/WCS/WiBro/Band 40/Indian 4G band
- Industry-leading small size: 1.7 x 1.3 x .46 mm
- Power Handling: +28 dBm (ave), +37.5 dBm (peak)
- Performance -30 to +85 ºC
- Ceramic chip-scale Package (CSP)
- Hermetic **RoHS** compliant, **Pb**-free

## Functional Block Diagram

Top view




## General Description

885010 is a high-performance Bulk Acoustic Wave (BAW) notch filter designed to reject emissions in the WiFi, Bluetooth, and ISM bands, while passing both the 2.3GHz & 2.6GHz WiMAX/LTE/TD-LTE bands.

885010 is specifically designed to enable coexistence of WiFi/BT/ISM and 4G signals within the same device or in close proximity to one another. It is specified to support WiMAX requirements in the entire 2496-2690 MHz band & LTE Bands 7 & 38. The filter also passes the 2.3GHz band: WiBro, WCS, Band 40 & the Indian 4G band.

The 885010 uses advanced and inexpensive packaging techniques to achieve an industry-leading 1.7 x 1.3 x .46 mm package. The filter exhibits excellent power handling capabilities.

885010 is referenced on multiple designs with the leading WiMAX chipset makers.

## Pin Configuration

| Pin # | Description |
|---|---|
| 9 | Input |
| 6 | Output |
| 7 | AUX1 |
| 8 | N/C |
| 1,2,3,4,5,10 | Ground* |

*Note, see application section for details on optimal grounding

## Ordering Information

| Part No. | Description |
|---|---|
| 885010 | packaged part |
| 885010-EVB | evaluation board |

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

# Specifications

## Electrical Specifications [1]

Specified Temperature Range: [2] +25 ºC

| Parameter | Conditions | Min | Typical [3] | Max | Units |
|---|---|---|---|---|---|
| Center Frequency | | - | 2442 | - | MHz |
| Maximum Insertion Loss | 2305 - 2360 MHz | - | 2.8 | 3.5 | dB |
| | 2360 - 2380 MHz | - | 5.0 | - | dB |
| | 2496 - 2502 MHz | - | 3.5 | - | dB |
| | 2502 - 2520 MHz | - | 1.8 | 3.0 | dB |
| | 2520 - 2690 MHz | - | 1.5 | 2.5 | dB |
| Absolute Attenuation [4] | 2401 - 2403 MHz | 14 | 20 | - | dB |
| | 2403 - 2481 MHz | 17 | 20 | - | dB |
| | 2481 - 2483 MHz | 14 | 20 | - | dB |
| Amplitude Variation | 2496 - 2506 MHz | - | 2.5 | 4.0 | dB p-p |

Specified Temperature Range: [2] -30 to +85 ºC

| Parameter | Conditions | Min | Typical [3] | Max | Units |
|---|---|---|---|---|---|
| Maximum Insertion Loss | 2305 - 2360 MHz | - | 3.8 (@+85 °C) | 4.5 | dB |
| | 2360 - 2380 MHz | - | 7.0 (@+85 °C) | - | dB |
| | 2496 - 2502 MHz | - | 5.0 (@-30 °C) | - | dB |
| | 2502 - 2520 MHz | - | 2.3 (@-30 °C) | 4.0 | dB |
| | 2520 - 2690 MHz | - | 1.8 | 3.5 | dB |
| Absolute Attenuation [4] | 2401 - 2403 MHz | 10 | 12 (@-30 °C) | - | dB |
| | 2403 - 2481 MHz | 11 | 20 | - | dB |
| | 2481 - 2483 MHz | 10 | 12 (@+85 °C) | - | dB |
| Amplitude Variation | 2401 - 2403 MHz | - | 0.4 | 1.5 | dB p-p |
| | 2403 - 2481 MHz | - | 0.6 | 1.5 | dB p-p |
| | 2481 - 2483 MHz | - | 1.0 | 1.5 | dB p-p |
| Input/output Return Loss | 2510 - 2520 MHz | 6 | 12 | - | dB |
| Source Impedance (single-ended) [5] | | - | 50 | - | Ω |
| Load Impedance (single-ended) [5] | | - | 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. Typical values are based on average measurements at room temperature, unless otherwise noted
4. Relative to zero dB
5. This is the optimum impedance in order to achieve the performance shown

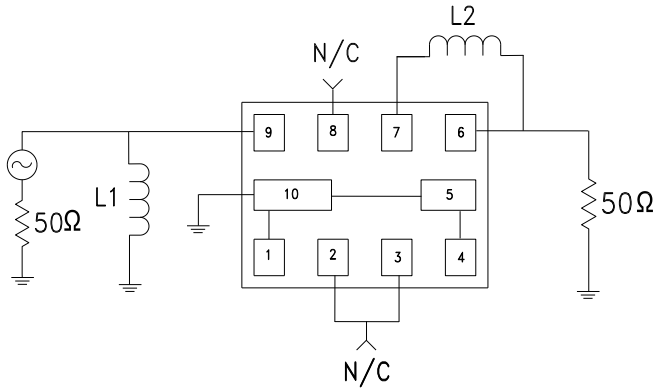
## Absolute Maximum Ratings

| Parameter [6] | Rating |
|---|---|
| Operating Temperature | -30 to +85 °C |
| Storage Temperature | -40 to +85 °C |
| Input Power, operating [7] (In band, CW signal) (equivalent to OFDM $P_{av}$) | +28 dBm |
| Input Power, instantaneous peak [7] (In band, CW signal) (OFDM $P_{max}$) | +37.5 dBm |

6. Operation of this device outside the parameter ranges given above may cause permanent damage.
7. Power handling capability supports WiMAX/OFDM applications

## Reference Design – 50Ω SE Input, 50Ω SE Output

### Schematic (top view)

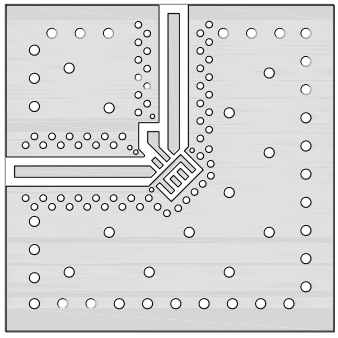



### Pin Functions

| | |
|---|---|
| 1 | Input Ret Gnd – connect to 10 |
| 2,3 | Ground – N/C |
| 4 | Output Ret Gnd – connect to 5 |
| 5 | Ground – connect to 10 |
| 6 | Output |
| 7 | Output 2 (AUX) |
| 8 | N/C |
| 9 | Input |
| 10 | Ground |

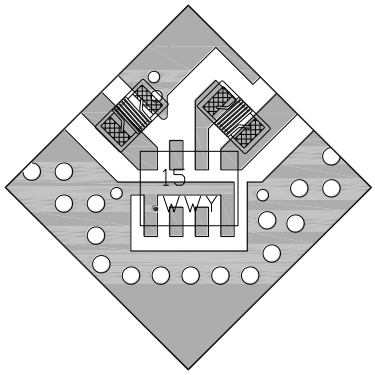
Notes:
1. Actual matching values may vary due to PCB layout and parasitics
2. Ground paths are optimized for max attn in WLAN band

### PC Board



Notes:
1. Top, middle & bottom layers: 1 oz copper
2. Substrates: FR4 dielectric, .031" thick
3. Finish plating: Nickel: 3-8µm thick, Gold: .03-.2µm thick
4. Hole plating: Copper min .0008µm thick

### PCB routing detail



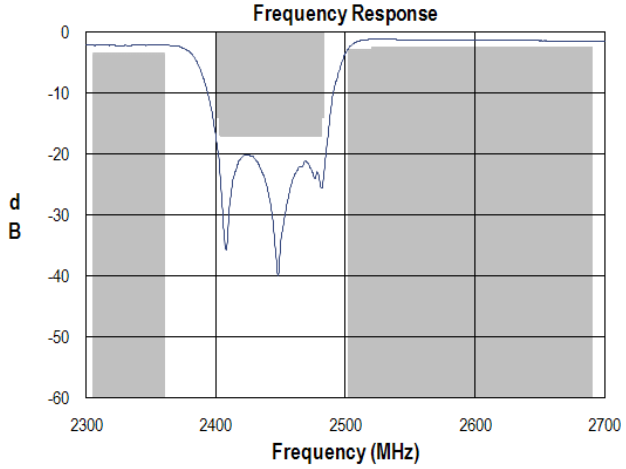

Notes:
1. Grey indicates metalized area
2. This footprint represents a recommendation only
3. For solder pad recommendation see mechanical information

### Bill of Material

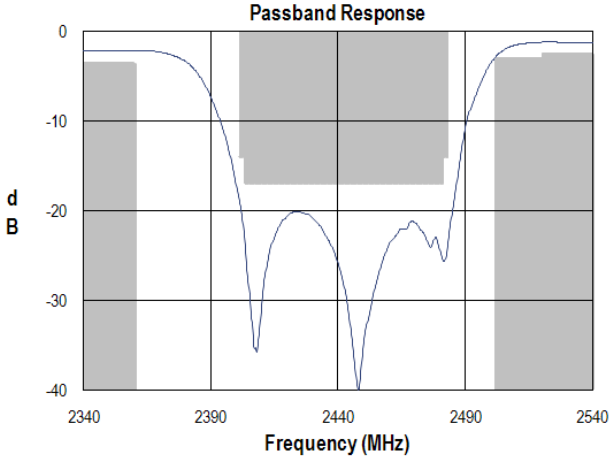
| Reference Desg. | Value | Description | Manufacturer | Part Number |
|---|---|---|---|---|
| L1 | 4.3 nH | Coil Wire-wound, 0402, +/- 0.2nH | MuRata | LQW15AN4N3C00 |
| L2 | 3.9 nH | Coil Wire-wound, 0402, +/- 0.2nH | MuRata | LQW15AN3N9C00 |
| PCB | N/A | 3-layer | multiple | 960858a |

## Typical Performance (at room temperature)

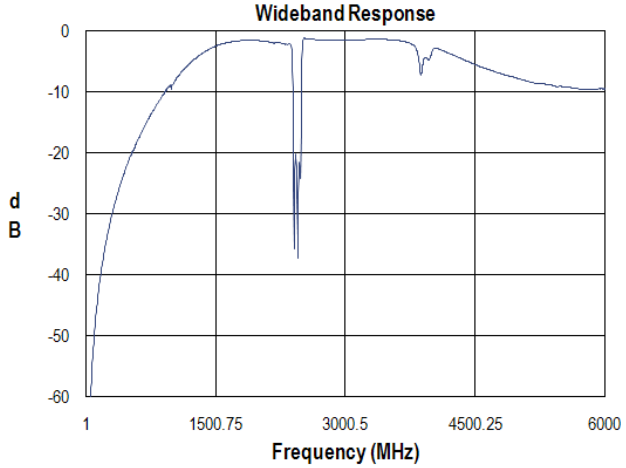
Frequency Response



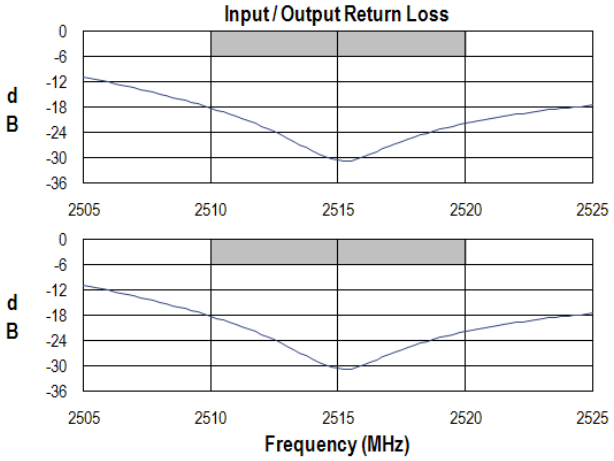

Passband Response



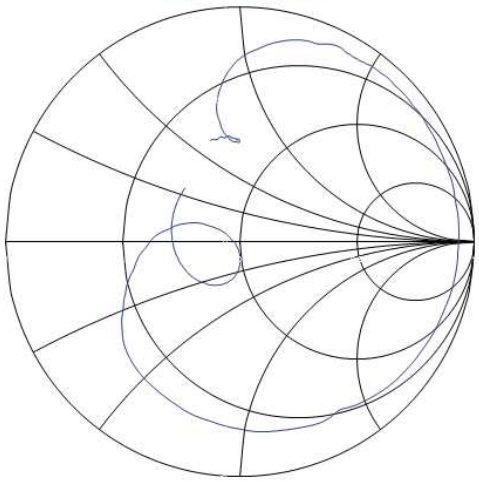

Wideband Response



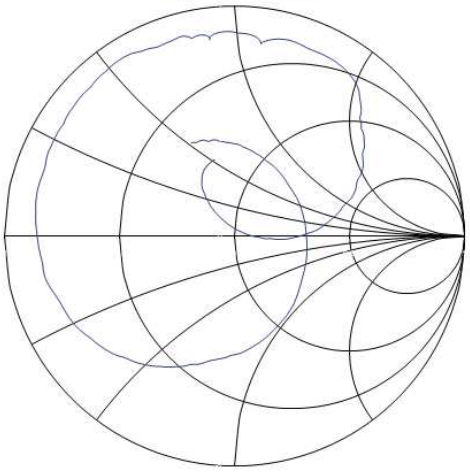

Input / Output Return Loss




Input Smith Chart

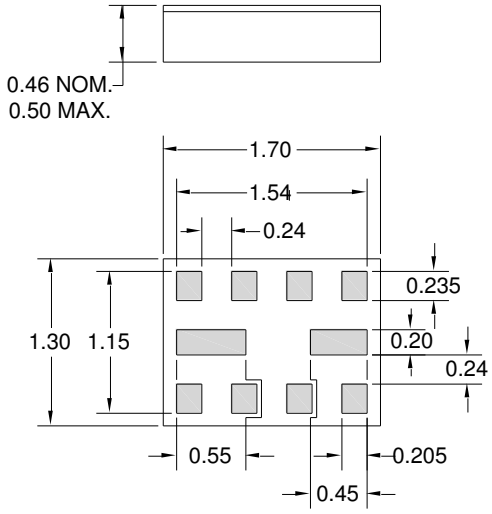


Output Smith Chart



## Mechanical Information

### Package Information, Dimensions and Marking

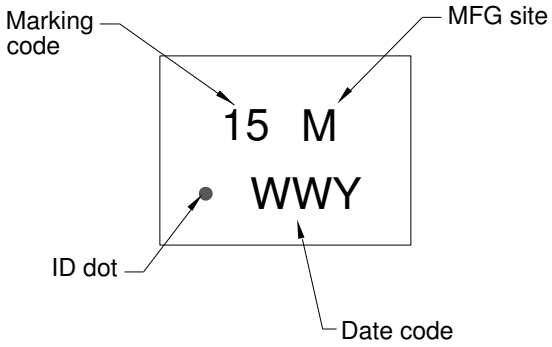



Package Style: CSP-1713
Dimensions: 1.70 x 1.30 x 0.46 mm

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

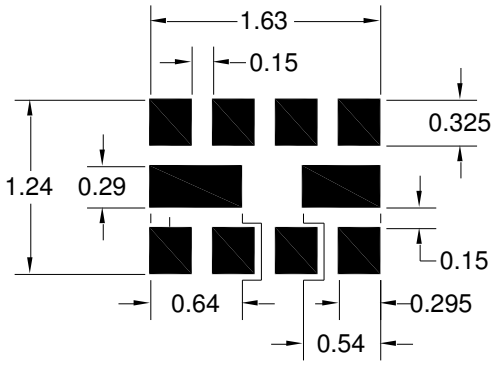
All dimensions shown are nominal in millimeters
All tolerances are ±0.15mm except overall length and width ±0.10mm

## Marking



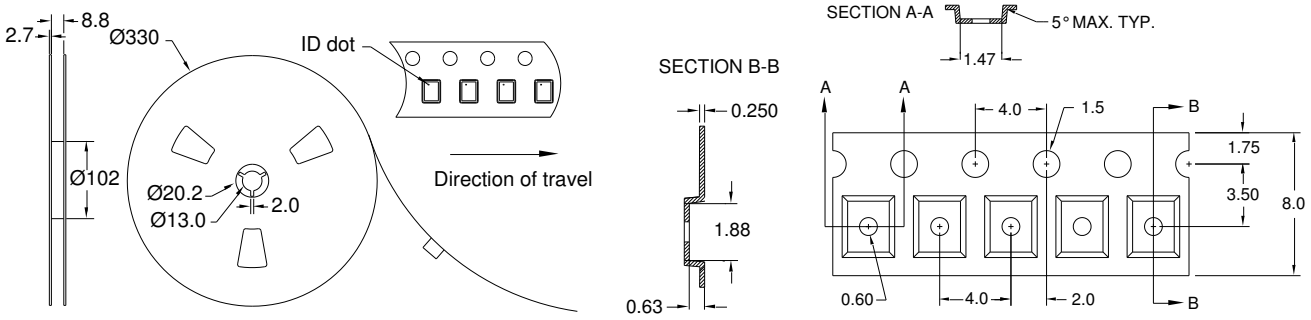

The date code consists of: WW = 2 digit week,
Y = last digit of year, M = manufacturing site code

## PCB Footprint




## 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: 3A
Value: Passes ≥ 6000 V min.
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: C
Value: Passes ≥ 400 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 ($C_{15}H_{12}Br_4O_2$) Free
- PFOS Free
- SVHC Free

# Contact Information

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