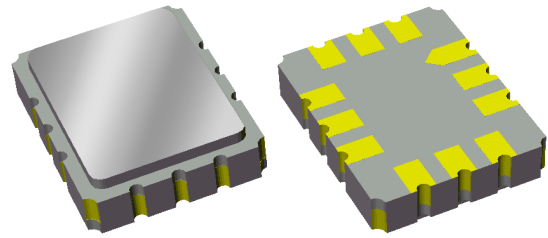


Applications

- For WCDMA/LTE applications



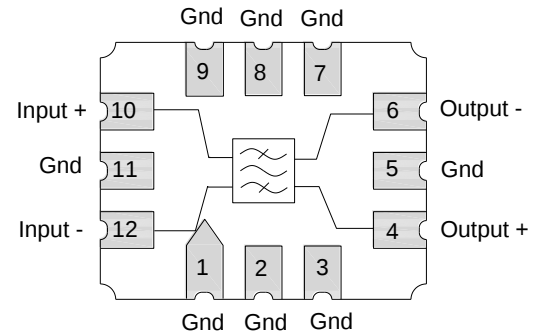
SMP-28, 7.01 x 5.51 x 1.70 mm

Product Features

- Usable bandwidth of 39.6 MHz
- Low loss
- High attenuation
- Low EVM
- Balanced operation
- Ceramic Surface Mount Package (SMP)
- Small Size: 7.01 x 5.51 x 1.70 mm
- Hermetically Sealed
- RoHS compliant, Pb-free



Functional Block Diagram



Top View

General Description

The 857271 is a high-performance IF SAW filter with a center frequency of 456 MHz and a 1.4 dB bandwidth of 39.6 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/LTE or other similar high data rate communications standards.

This device is RoHS compliant and Pb-free.

Pin Configuration - Single Ended

Pin No.	Label
10	Input +
12	Input -
4	Output +
6	Output -
1, 2, 3, 5, 7, 8, 9, 11	Ground

Ordering Information

Part No.	Description
857271	Packaged Part
857271-EVB	Evaluation board

Standard T/R size = 3,000 units/reel

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	-40 to +85 °C
Input power, in band, CW, 64.5 hours at 50 °C ⁽¹⁾	+19 dBm
Input power, out of band, CW, 64 hours at 50 °C ⁽¹⁾	+25 dBm

Notes:
1. Operation of this device outside the parameter range: given may cause permanent damage

Electrical Specifications ^{(1) (3)}

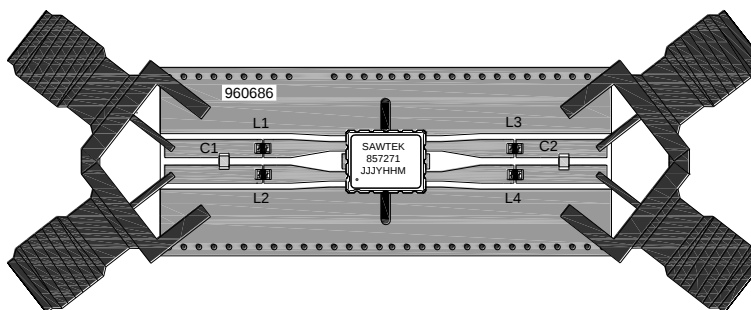
Test conditions unless otherwise noted: ⁽²⁾ Temperature Range -33 to +105 °C

Parameter	Conditions	Min	Typ at 25°C	Max	Units
Center Frequency		–	456	–	MHz
Insertion Loss	456 MHz	–	8.5	11	dB
Amplitude Variation ⁽⁴⁾	436.2 – 475.8 MHz 441.0 – 471.0 MHz	–	1.0 0.7	1.4 1.0	dB p-p
Absolute Group Delay ⁽⁴⁾	456 MHz	–	365	500	nsec
Group Delay Variation	436.2 – 475.8 MHz	–	30	100	nsec
EVM ⁽⁵⁾	Over any 3.84 MHz span within 436.2 – 475.8 MHz	–	1.9	3.0	%
IIP3 ⁽⁶⁾	Tone spacing 0.8 to 5 MHz Tone spacing 5 to 30 MHz	37 45	39 48	– –	dBm
Attenuation ⁽⁷⁾	10 – 351 MHz 351 – 392 MHz 392 – 410 MHz 410 – 422 MHz 422 – 423 MHz 423 – 424 MHz 424 – 425.5 MHz 486.5 – 488 MHz 488 – 489 MHz 489 – 490 MHz 490 – 491 MHz 491 – 520 MHz 520 – 561 MHz 561 – 597 MHz 597 – 638 MHz 638 – 1000 MHz	45 45 30 23 15 10 5 5 10 15 23 30 45 55 55 55	52 58 60 50 49 47 46 31 47 55 53 53 52 58 62 63	– – – – – – – – – – – – – – – –	dB
Time Sidelobe Response Attenuation	1 – 500 µs	35	38	–	dB
Input / Output Return Loss	436.2 – 475.8 MHz	10	14	–	dB
Source Impedance Balanced		–	200	–	Ω
Load Impedance Balanced		–	50	–	Ω

Notes:

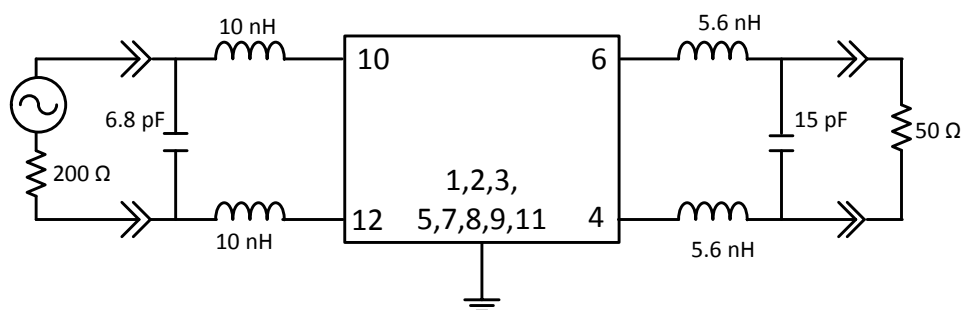
1. All specifications are based on the test circuit shown on page 3.
2. In production, devices will be tested at room temperature to a guard-banded specification to ensure electrical compliance over temperature.
3. Electrical margin has been built into the design to account for the variations due to manufacturing tolerances.
4. Variation is defined as the total peak to peak variation over the defined frequency range.
5. Measurement made with a RRC filtered QPSK modulated signal.
6. Measurement made only during engineering development.
7. Measurement made relative to insertion loss at Center Frequency, F₀.

960686 Evaluation Board



Notes:

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

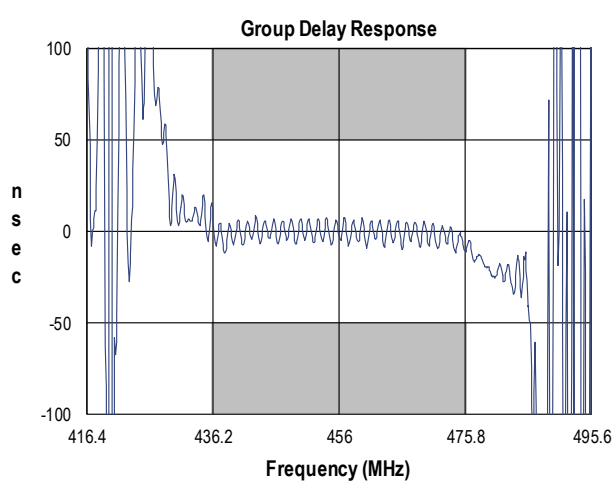
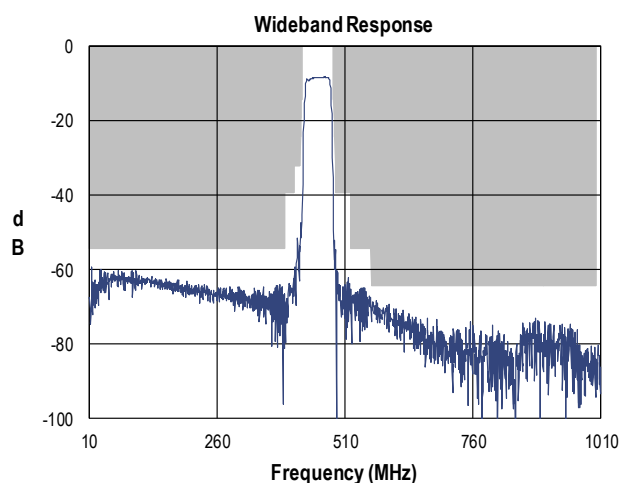
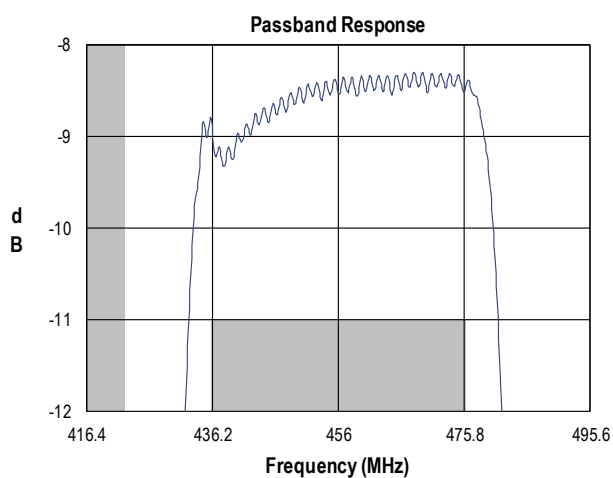
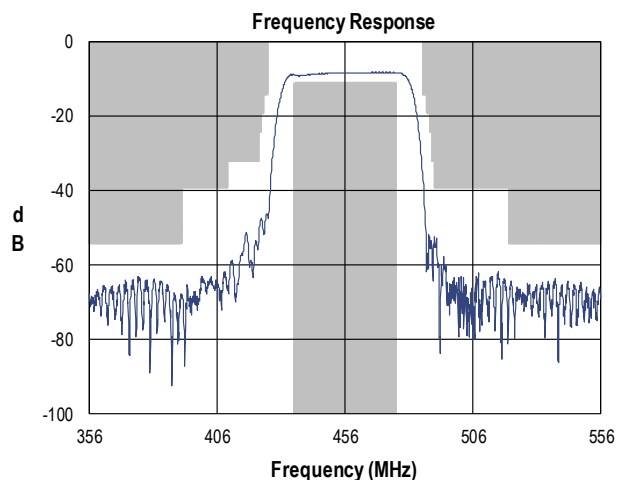


Bill of Material – 960686

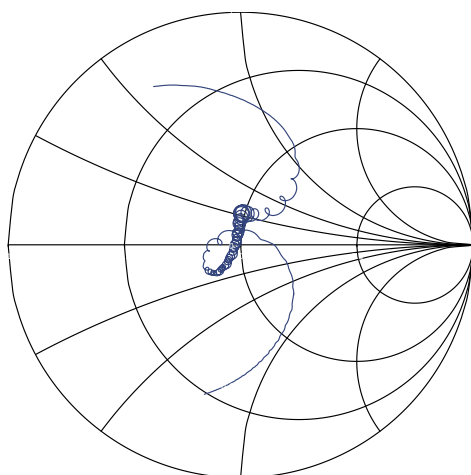
Reference Des.	Value	Description	Manuf.	Part Number
L1	10 nH	Coil Wire-wound, 0603, $\pm 5\%$	Murata	LQW18AN10NJ00
L2	10 nH	Coil Wire-wound, 0603, $\pm 5\%$	Murata	LQW18AN10NJ00
L3	5.6 nH	Coil Wire-wound, 0603, $\pm 5\%$	Murata	LQW18AN5n6NJ00
L4	5.6 nH	Coil Wire-wound, 0603, $\pm 5\%$	Murata	LQW18AN5n6NJ00
C1	6.8 pF	Chip Ceramic, 0603	Murata	GRM1885C1H6R8DZ01
C2	15 pF	Chip Ceramic, 0603	Murata	GRM1885C1H150JA01
SMA	N/A	SMA connector	Johnson Components	142-0701-801
PCB	N/A	3-layer	Multiple	960686

Performance Plots – PCB 960686

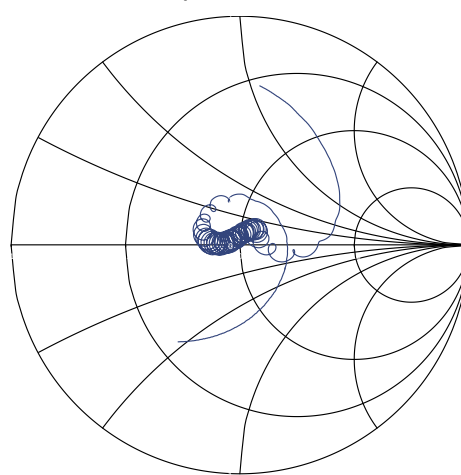
Test conditions unless otherwise noted: Temp.= +25 °C



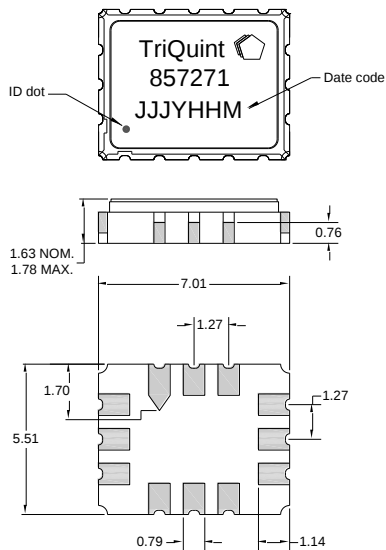
Input Smith Chart



Output Smith Chart



Package Information, Marking and Dimensions



Package Style: SMP- 28

Dimensions: 7.01 x 5.51 x 1.70 mm

Body: Al_2O_3 ceramic

Lid: Kovar, Ni plated

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

All dimensions shown are typical in millimeters

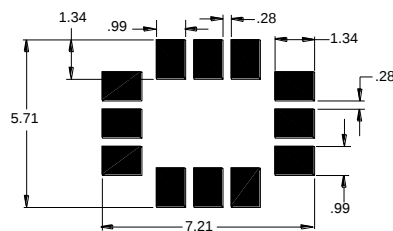
All tolerances are ± 0.15 mm except overall length and width ± 0.10 mm

The date code consists of day of the current year (Julian, 3 digits), Y = last digit of the year, and M = manufacturing site code

Notes:

1. All dimensions shown are typical in millimeters
2. An asterisk (*) in front of the marking code indicates prototype.

PCB Mounting Pattern

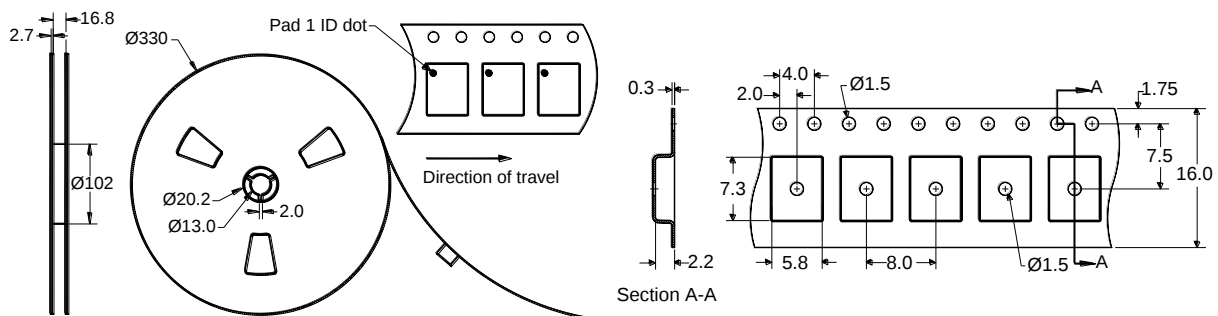


Notes:

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.

Tape and Reel information

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



Product Compliance Information

ESD Sensitivity Ratings



Caution! ESD-Sensitive Device

ESD Rating: Class 0B
Value: Passes ≥ 125 V
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: Class TBD
Value: Passes $\geq$ TBDV
Test: Charged Device Model (CDM)
Standard: JEDEC Standard JESD22-C101

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:

Web: www.triquint.com
Email: info-sales@tqs.com

Tel: +1.407.886.8860
Fax: +1.407.886.7061

For technical questions and application information:

Email: flapplication.engineering@tqs.com

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