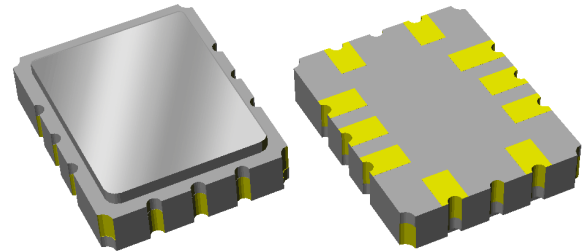


857074

447.5 MHz SAW Filter

Applications

- General purpose wireless
- Wireless infrastructure
- 3G, 4G, Multistandard
- Distributed Antenna Systems (DAS)



Product Features

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

General Description

9

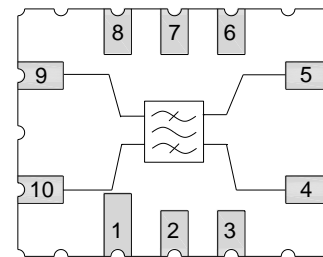
The 857074 is a high-performance IF SAW filter with a center frequency of 447.8 MHz and 1.0 dB bandwidth of 27.7 MHz

It features excellent attenuation and pass band ripple, leading to outstanding EVM performance. 857074 is designed to be used in a balanced configuration, thereby eliminating the need for baluns on the input and output. The high performance coupled with the small size of this surface mount filter makes it a natural choice for our customers filtering needs in demanding high data rate communications standards.

This device is RoHS compliant and Pb-free.

Functional Block Diagram

Top view



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
857074	packaged part
857074-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_o ⁽⁶⁾		-	447.8	-	MHz
Insertion Loss	at f_o	-	14.1	17	dB
1.0dB Bandwidth ⁽¹¹⁾		27.7	28.16	-	MHz
1.0 dB Lower Bandedge ⁽⁷⁾		-	433.6	434.5	MHz
1.0 dB Upper Bandedge		460.5	461.8	-	MHz
35 dB Bandwidth ⁽¹¹⁾		-	34.2	34.5	MHz
Passband Flatness ⁽⁸⁾	over $f_o \pm 12.5$ MHz	-	0.5	1.00	dB p-p
Absolute Delay	over $f_o \pm 12.5$ MHz	-	0.68	0.72	μ s
Group Delay Ripple ⁽⁹⁾	over $f_o \pm 12.5$ MHz	-	31	80	ns p-p
Group Delay Ripple ⁽⁹⁾	any 3.84 MHz channel over $f_o \pm 12.5$ MHz	-	30	80	ns p-p
EVM ⁽¹⁰⁾	over $f_o \pm 12.5$ MHz	-	1.4	3.0	%
Temperature Coefficient		-	-20	-	ppm/°C
Input Return Loss	over $f_o \pm 12.5$ MHz	11	17.3	-	dB
Output Return Loss	over $f_o \pm 12.5$ MHz	8.5	22	-	dB
Stopband Attenuation ⁽¹¹⁾	5 – 100 MHz	50	73	-	dB
	150 – 310 MHz	52	63	-	dB
	310 – 429.5 MHz	37	44	-	dB
	469.5 – 500 MHz	39	45	-	dB
	500 – 920 MHz	40	53	-	dB
Source Impedance (balanced) ⁽¹²⁾		-	100	-	Ω
Load Impedance (balanced) ⁽¹²⁾		-	100	-	Ω

Notes:

1. All specifications are based on the TriQuint schematic for the main reference design shown on page 3
2. An external impedance matching network will be necessary to achieve the proposed specifications
3. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
4. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
5. Typical values are based on average measurements of 20 devices at room temperature
6. Center Frequency is defined as the midpoint between 1dB, relative to minimum loss, bandedges.
7. 1.0 dB Bandedges are relative to loss at Center Frequency, f_o
8. Passband Flatness is defined as the difference between maximum and minimum loss over the specified band
9. This ripple is defined as the worst peak to adjacent valley within specified frequency range
10. The EVM specification is guaranteed by design and measured approximately in production
11. All bandwidths and attenuations are relative to loss at Center Frequency, f_o
12. This is the optimum impedance in order to achieve the performance shown

Absolute Maximum Ratings

Parameter	Rating
Operable Temperature	-40 to +85 °C
Storage Temperature	-40 to +85 °C
Input Power	+10dBm (measured with continuous sine wave signal. Expected lifetime of greater than or equal to 10,000 Hrs at 55 °C)

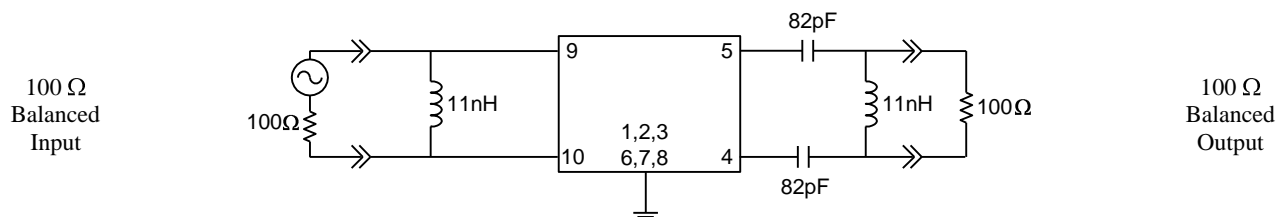
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Operation of this device outside the parameter ranges given above may cause permanent damage.

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

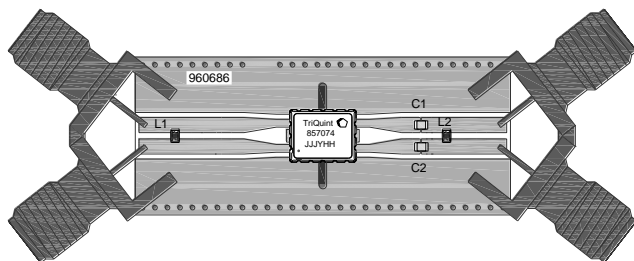
Schematic



Notes:

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

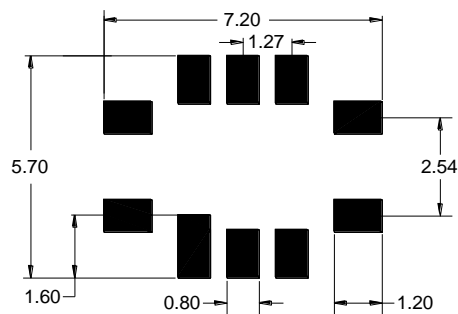
PC Board



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.

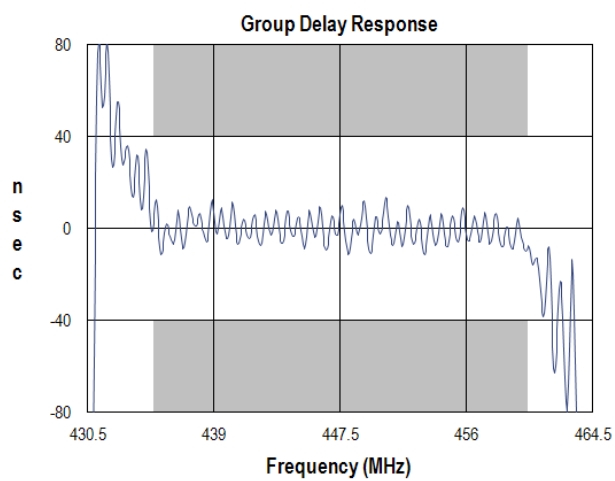
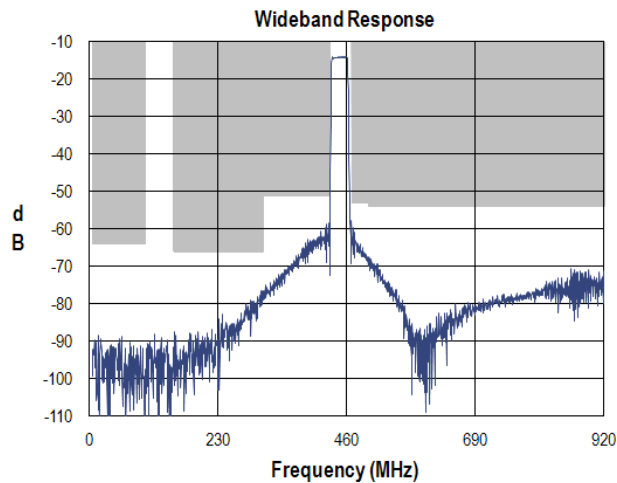
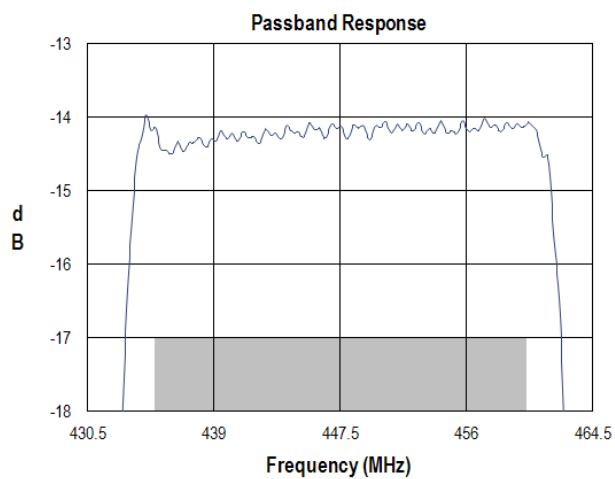
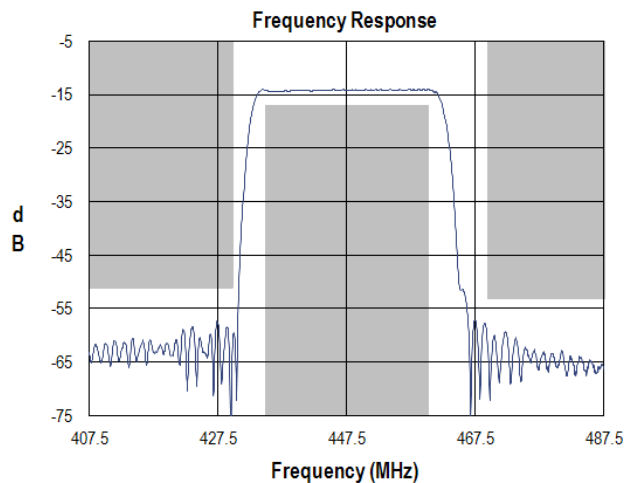
Bill of Material

Reference Desg.	Value	Description	Manufacturer	Part Number
L1	11nH	Coil Wire-wound, 0603 5%	MuRata	LQW18AN11NJ00
L2	11nH	Coil Wire-wound, 0603, 5%	MuRata	LQW18AN11NJ00
C1	82pF	Chip Ceramic, 0603, 5%	MuRata	GRM1885C1H820JA01
C2	82pF	Chip Ceramic, 0603, 5%	MuRata	GRM1885C1H820JA01
SMA	N/A	SMA connector	Johnson Components	142-0701-801
PCB	N/A	3-layer	multiple	960686

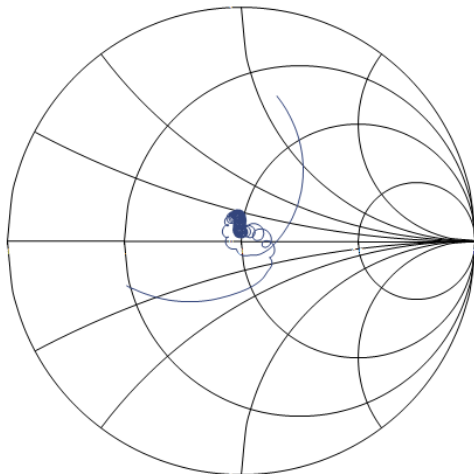
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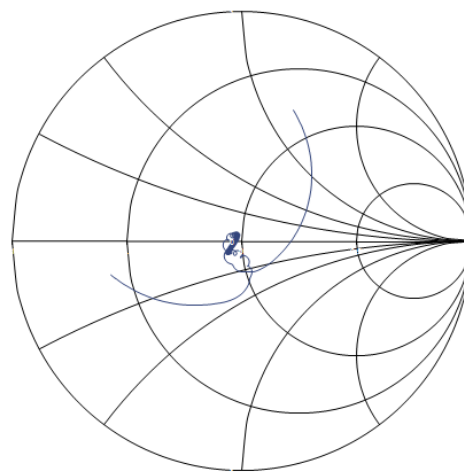
Typical Performance (at room temperature)



Input Smith Chart



Output Smith Chart



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Product Compliance Information

ESD Information



Caution! ESD-Sensitive Device

ESD Rating: 1B

Value: Passes ≥ 700 V min.

Test: Human Body Model (HBM)

Standard: JEDEC Standard JESD22-A114

ESD Rating: B

Value: Passes ≥ 350 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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