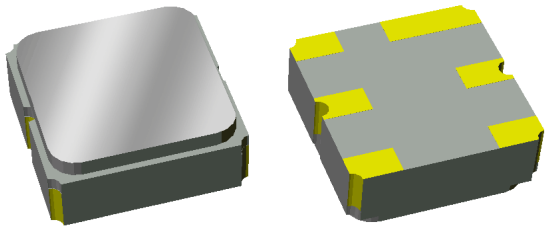
857193

725.5 MHz SAW Filter

Applications

- General purpose wireless
- Wireless infrastructure
- Base Station Applications

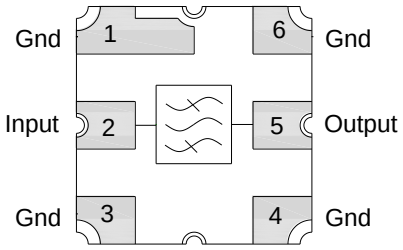


SMP – 12, 3.00 X 3.00 X 1.22 mm

Product Features

- Usable bandwidth of 45 MHz
- For wideband applications
- Low Loss
- Single-ended operation
- Matching required for operation at 50Ω
- Small Size: 3.00 x 3.00 x 1.22 mm
- Ceramic Surface Mount Package (SMP)
- Hermetically sealed
- **RoHS** compliant (2002/95/EC), **Pb**-free

Functional Block Diagram



General Description

857193 is a general purpose Uplink filter for Band 28. This filter was specifically designed in a 3x3mm hermetic package for base station applications and is part of our wide portfolio of RF filters in the same package.

Low insertion loss, coupled with high attenuation and excellent power handling, makes this filter a natural choice for our customers' Uplink RF filtering needs.

Pin Configuration – Single Ended

Pin No.	Label
2	Input
5	Output
1.3,4,6	Ground

Ordering Information

Part No.	Description
857193	Product description
857193-EVB	Evaluation board description

Standard T/R size = 5000 units/reel

Absolute Maximum Ratings (1)

Parameter	Rating
Storage Temperature	-40 to +85°C
Operable Temperature	-30 to +105 °C
RF Input Power (2)	+22 dBm

Notes
1. Operation of this device outside the parameter ranges given may cause permanent damage.
2. Input power with applied CW signal at =105° C in the 703 – 748MHz frequency band for 24 hrs.

Electrical Specifications (1)

Specified Temperature Range: (2) -30°C to +105°C

Parameter (3)	Conditions	Min	Typ(4)	Max	Units
Center Frequency		-	725.5	-	MHz
Maximum Insertion Loss	703 – 748 MHz	-	2.3	4.0	dB
Amplitude Variation (5)	703 – 748 MHz Any 5 MHz span within 703 -748 MHz	-	0.8 0.4	1.0 0.6	dB p-p dB p-p
Temperature Drift (6)	703 – 748 MHz	-	0.25	0.3	dB
Phase Ripple	703 – 748 MHz	-	21	35	deg. p-p
EVM (7)	703 – 748 MHz Any 3.84 MHz span within 703 – 748 MHz	-	1.6	2.0	%
IIP3 (8)	Tones 5 MHz separated, power >5 dBm per tone	44	50	-	dBm
Absolute Delay	703 – 748 MHz	-	17	30	ns
Group Delay Variation	703 – 748 MHz	-	20	30	ns p-p
Relative Attenuation (9)	10 – 100 MHz 430 – 480 MHz 480 – 648 MHz 773 – 830 MHz 936 – 971 MHz 1615 – 1660 MHz 1660 – 2690 MHz 3510 – 3800 MHz	30 30 20 20 20 45 20 20	60 36 25 28 30 60 55 50	- - - - - - - -	dB dB dB dB dB dB dB dB
Input/Output VSWR (10)	703 – 748 MHz	-	1.7	2.0:1	-
Load/Source Impedance (11)	single-ended	-	50	-	Ohms

Notes:
1. All specifications are based on the TriQuint schematic 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. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
4. Typical values are based on average measurements at room temperature
5. Amplitude Variation is defined as the difference between the lowest loss and the highest loss within defined frequency points
6. Temperature Drift specification is defined on Page 3 and is guaranteed by design and will not be measured in production.
7. Measured with a RRC filtered QPSK modulated signal
8. To be measured only during engineering development
9. Relative to the maximum insertion loss
10. 2% tolerance on the matching component values would be needed to achieve this specification
11. This is the optimum impedance in order to achieve the performance shown

Temp Drift Specification

Temperature Drift Equations:

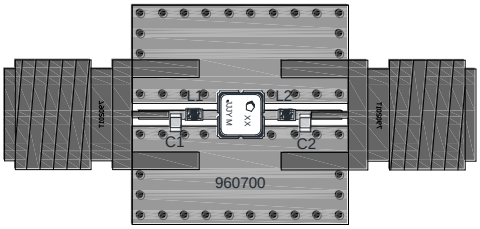
$$\text{Temp Drift}_{high} = \left| \frac{^{max}(T_{ambient} - T_{hot}) - ^{min}(T_{ambient} - T_{hot})}{2} \right|$$

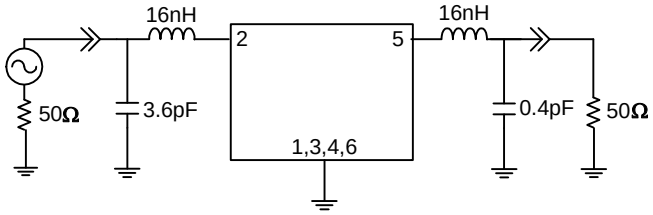
$$\text{Temp Drift}_{low} = \left| \frac{^{max}(T_{ambient} - T_{cold}) - ^{min}(T_{ambient} - T_{cold})}{2} \right|$$

Temperature Drift Terms Defined:

$T_{ambient}$ - Transmission power in dB measured at +25°C.
T_{hot} - Transmission power in dB measured at +100°C.
T_{cold} - Transmission power in dB measured at -30°C.
Temperature Drift - Greater of Temp Drift $_{high}$vs Temp Drift

857193-EVB Evaluation Board



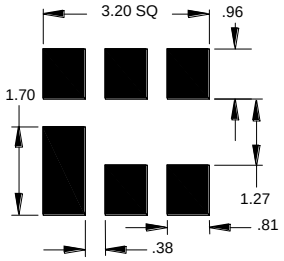


Notes:
1. Impedance matching required.
2. PCB: .500 x.500 x .063; Construction (5 layer stack-up):
   ½ oz *Cu* Top Layer; Dielectric: *Taconic TLY-5A* (.0075); ½ oz *Cu* Middle Layer, *FR4*; ½ oz *Cu* Bottom Layer; total thickness (0.063) (dimensions are in inches).
   Contact TriQuint for Gerber files.

Bill of Material – 857193-EVB

Reference Des.	Value	Description	Manuf.	Part Number
U1	N/A	725.5 MHz SAW filter	TriQuint	857193
L1, L2	16nH	0402 chip, series, wire wound, ±3%	Murata	LQW15AN16NH00
C1	3.6 pF	0402 chip, ceramic, GRM, ±2%	Murata	GRM1555C1H3R6GZ01
C2	0.4 pF	0402 chip, ceramic, GRM, ±10%	Murata	GRM1555C1HR40KZ01
SMA	N/A	SMA connector	Radiall USA	9602-1111-018
PCB	N/A	3-layer	Multiple	960700

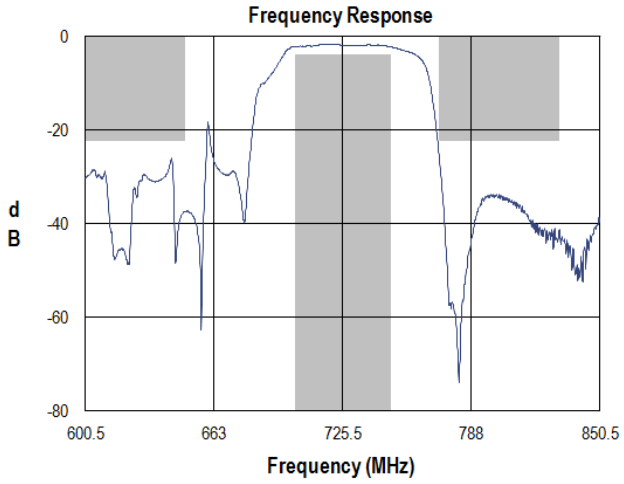
PCB Mounting Pattern

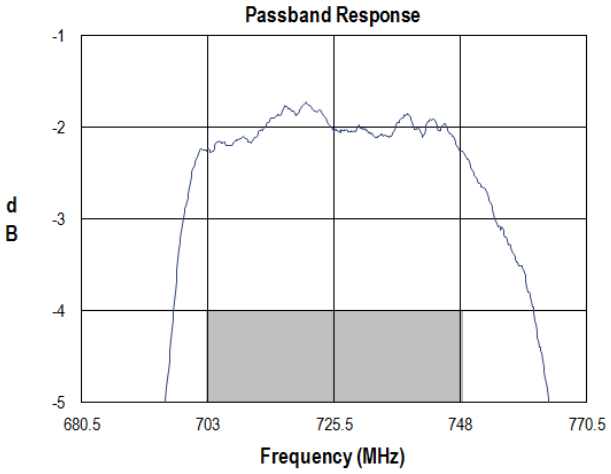


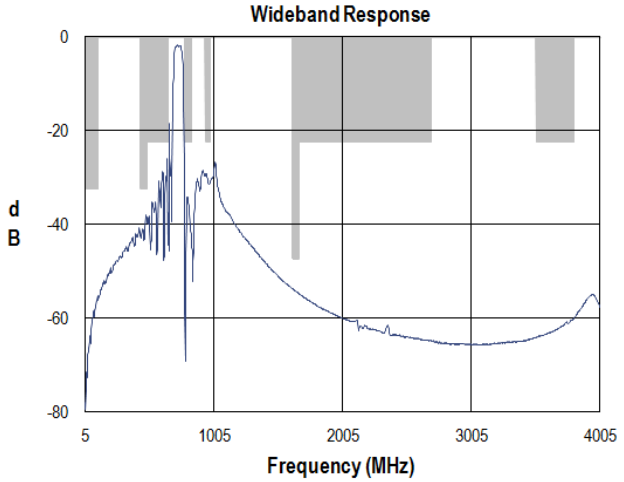
Notes:
1. All dimensions are in millimeters. Angles are in degrees.
2. This drawing specifies the mounting pattern used on the TriQuint evaluation board for this product. Some modification may be necessary to suit end user assembly materials and processes.

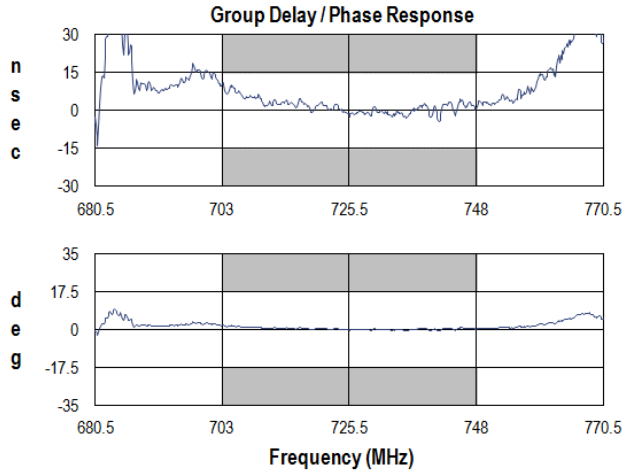
Performance Plots - 857193-EVB

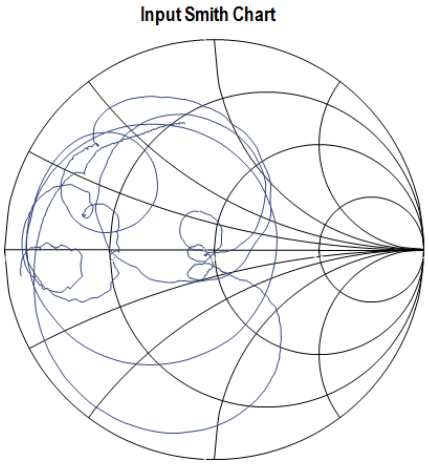
Test conditions unless otherwise noted: Temp= +25°C

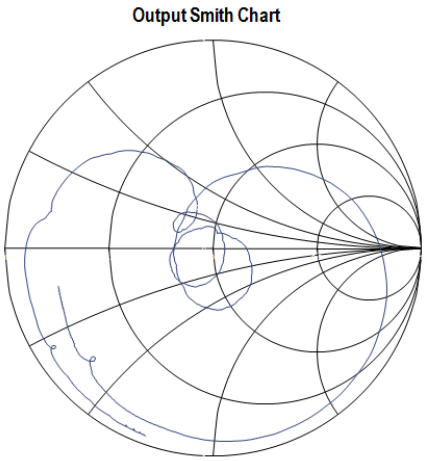




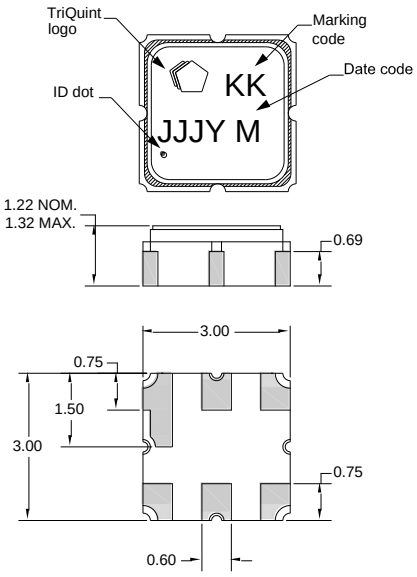








Package Information, Marking and Dimensions



Package Style: SMP-12A
Dimensions: 3.00 x 3.00 x 1.22 mm

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

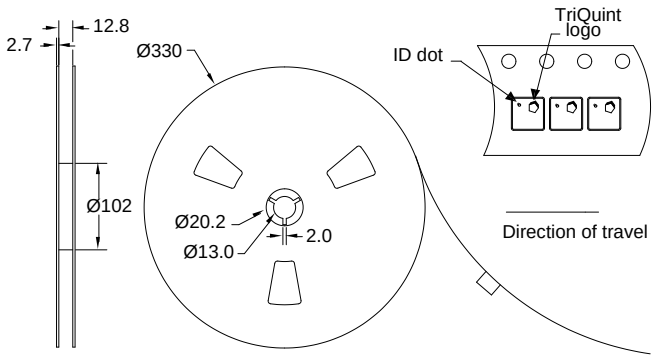
All dimensions shown are nominal in millimeters
All tolerances are ±0.15mm except overall length and width ±0.10mm

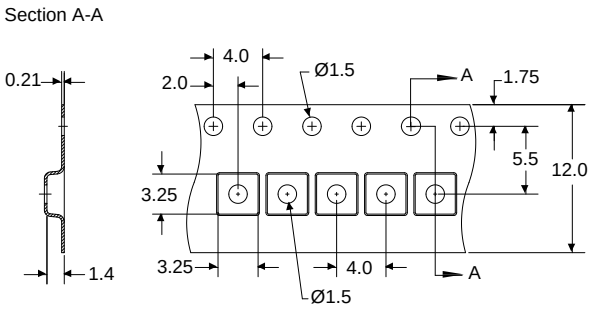
The date code consists of day of the current year (Julian, 3 digits), Y = last digit of the year, and M = manufacturing site code

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

Tape and Reel information

Standard T/R size = 5000 units/reel. All dimensions are in millimeters





Product Compliance Information

ESD Sensitivity Ratings

Caution! ESD-Sensitive Device

ESD Rating: Class 1B
Value: Passes ≥ 650 V to < 700 V
Test: Electrostatic Discharge Sensitivity Testing, Human Body Model (HBM) - component level
Standard: ESDA/JEDEC JS-001-2012

ESD Rating: Class B
Value: Passes ≥ 300 V to350 V
Test: Machine Model (MM)
Standard: JEDEC Standard JESD22-A115

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:

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