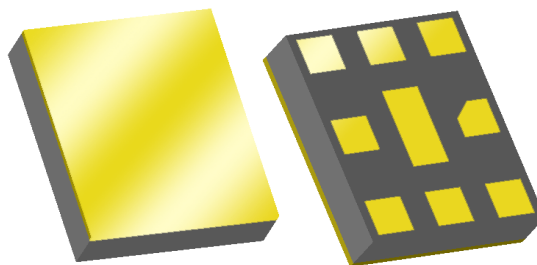


Applications

- For Band 17 LTE applications
- LTE B17, data cards, mobile routers, repeaters
- For Base Station applications

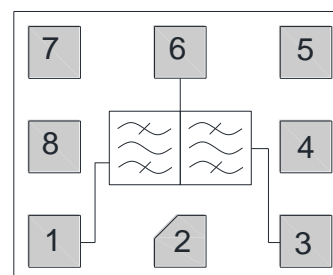


CSP-10KT, 2.5 x 2.00 x 0.56 mm

Product Features

- High Rejection in Band 17
- Usable bandwidth 12 MHz
- High Uplink-Downlink Isolation
- Low loss
- High attenuation
- Single-ended Downlink and Uplink operation
- Ceramic chip-scale Hermetic 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 857182 is a high-performance Surface Acoustic Wave (SAW) duplexer designed to meet the strict LTE requirements for use in Band 17.

857182 is specifically designed to meet the high performance expectations of insertion loss, isolation and rejection in LTE systems operating in B17 applications under all operating condition.

The 857182 uses common packaging techniques to achieve the industry standard 2.5 x 2.0 mm footprint. The duplexer exhibits excellent power handling capabilities.

Pin Configuration - Single Ended

Pin No.	Label
1	Downlink
3	Uplink
6	Ant/Phase Inductor
2,4,5,7,8,,9	Ground

Ordering Information

Part No.	Description
857182	Packaged Part
857182-EVB	Evaluation board description

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

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature ⁽¹⁾	-40 to +90°C
Operable Temperature ⁽²⁾	-20 to +90°C
RF Input Power	+29 dBm

1. Operation of this device outside the parameter ranges given may cause permanent damage.
2. Specifications are not guaranteed over all operable conditions.
3. Input Power at Downlink Pin 1 with applied CW signal at 55 °C for 10K hours in the 734-746 MHz frequency band

Uplink Electrical Specifications ⁽¹⁾

Specified Temperature Range ⁽²⁾ = -20 to +90°C

Parameter ⁽³⁾	Conditions	Min	Typ ⁽⁴⁾	Max	Units
Center Frequency		-	710	-	MHz
Maximum Insertion Loss	704 – 716 MHz	-	1.8	2.5	dB
Amplitude Variation ⁽⁵⁾	704 – 716 MHz over any 5 MHz	-	0.5	1.2	dB p-p
Absolute Attenuation ⁽⁶⁾	10 – 686 MHz	32	35.2	-	dB
	728 – 734 MHz	15	26.1	-	dB
	734 – 746 MHz	45	56.2	-	dB
	746 – 768 MHz	30	39.7	-	dB
	768 – 805 MHz	31	35.5	-	dB
	869 – 894 MHz	30	33.7	-	dB
	1408 – 1432 MHz	30	39.4	-	dB
	1565 – 1585 MHz	38	39.3	-	dB
	1597 – 1607 MHz	40	42.9	-	dB
	1805 – 1880 MHz	40	49.0	-	dB
	1930 – 1990 MHz	40	52.6	-	dB
	2110 – 2155 MHz	40	58.7	-	dB
	2155 – 2170 MHz	45	60.4	-	dB
	2400 – 2484 MHz	50	66.2	-	dB
	2816– 3000 MHz	50	60.6	-	dB
Uplink Return Loss	704 – 716 MHz	10	13.8	-	dB
Antenna Return Loss	704 – 716 MHz	10	16.6	-	dB
Uplink Impedance ⁽⁷⁾	Single ended	-	50	-	Ω
Antenna Impedance ⁽⁷⁾	Single ended	-	50	-	Ω

Notes:

1. All specifications are based on the TriQuint schematic for the main reference design shown on page 4
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. Relative to zero dB
6. This is the optimum impedance in order to achieve the performance shown

Downlink Electrical Specifications ⁽¹⁾

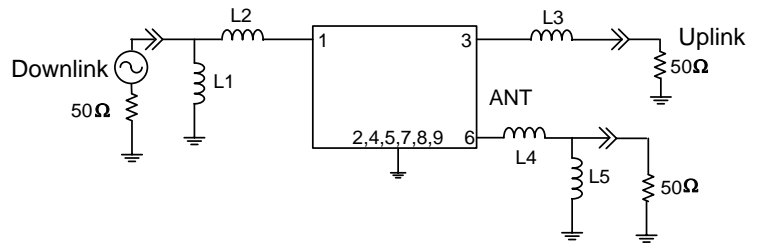
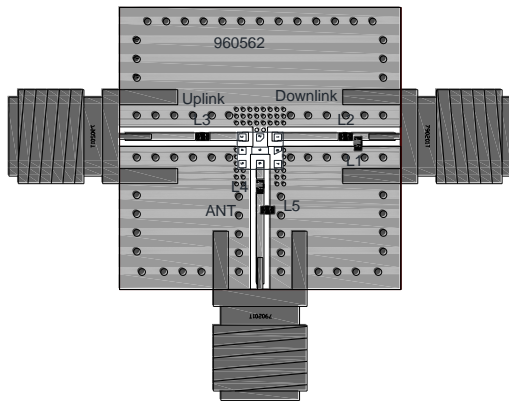
Specified Temperature Range ⁽²⁾ = -20 to +90°C

Parameter ⁽³⁾	Conditions	Min	Typ ⁽⁴⁾	Max	Units
Center Frequency		-	740	-	MHz
Maximum Insertion Loss	734 – 746 MHz	-	2.0	2.5	dB
Amplitude Variation	734 – 746 MHz over any 5 MHz in-band	-	0.5	1.2	dB p-p
Absolute Attenuation ⁽⁶⁾	10 – 674 MHz	27	32.4	-	dB
	674 – 686 MHz	32	37.6	-	dB
	686 – 704 MHz	35	41.5	-	dB
	704 – 716 MHz	50	57.5	-	dB
	716 – 722 MHz	22	46.1	-	dB
	776 – 793 MHz	32	36.4	-	dB
	793 – 805 MHz	32	35.0	-	dB
	805 – 2300 MHz	32	33.7	-	dB
	2300 – 3000 MHz	40	56.1	-	dB
Downlink Return Loss	734 – 746 MHz	10	17.5	-	dB
Antenna Return Loss	734 – 746 MHz	10	14.1	-	dB
Downlink Impedance (single-ended) ⁽⁸⁾		-	50	-	Ω
Antenna Impedance (single-ended) ⁽⁸⁾		-	50	-	Ω
Uplink-Downlink Specification					
Uplink to Downlink Isolation	704 – 716 MHz	54	58.7	-	dB
	734 – 746 MHz	50	57.7	-	dB
	1408 – 1432 MHz	30	69.6	-	dB
	2112 – 2148 MHz	30	69.6	-	dB
	2816 – 3000 MHz	30	70.1	-	dB

Notes:

1. All specifications are based on the TriQuint schematic for the main reference design shown on page 4
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. Relative to zero dB
6. All power levels are referenced to the Downlink to Antenna port.
7. This is the optimum impedance in order to achieve the performance shown

Evaluation Board



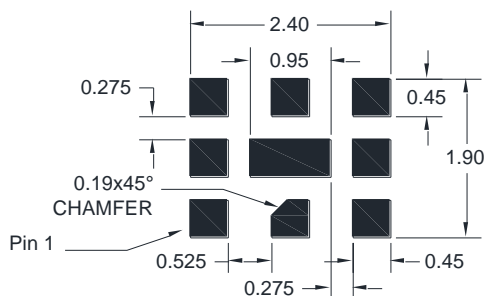
Notes:

1. This is the optimum impedance in order to achieve the performance shown
2. PCB: 0.75 x 0.75 x 0.063; Construction: 1 OZ Cu Top, Middle and Bottom Layers; Material in between middle and top layer: *TL Y-5A* (.0075); Material in between mid-bottom layers: *FR4*. (dimensions are in inches)

Bill of Material

Reference Des.	Value	Description	Manuf.	Part Number
U1	n/a	Duplexer 751/782 MHz	TriQuint	857182
L1	13nH	0402, $\pm 2\%$, wire wound chip	Murata	LQW15AN13NG00
L2	2.7nH	0402, ± 0.1 nH wire wound chip ind	Murata	LQW15AN2N7B00
L3	9.1nH	0402, $\pm 2\%$, wire wound chip ind	Murata	LQW15AN9N1G00
L4	4.7nH	0402, ± 0.1 nH wire wound chip ind	Murata	LQW15AN4N7B00
L5	24nH	0402, $\pm 2\%$ wire wound chip ind	Murata	LQW15AN24N1G00
SMA	N/A	SMA connector	Radiall	9602-1111-018
PCB	n/a	Printed Circuit Board	TriQuint	960562

PCB Mounting Pattern (Top View)

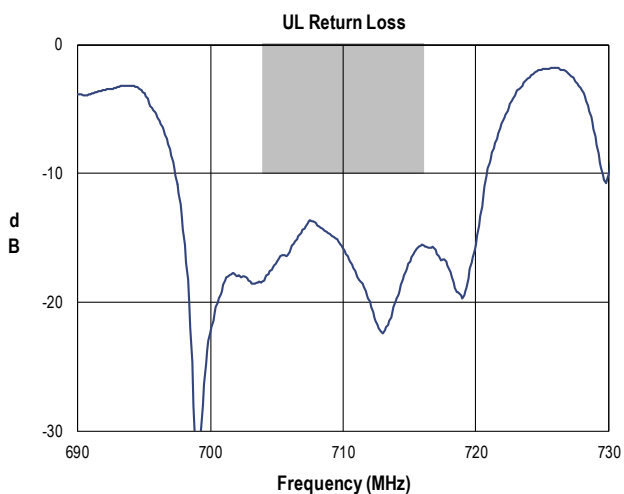
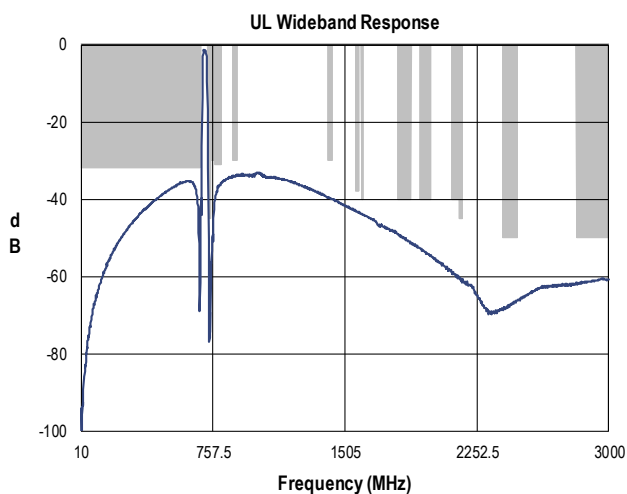
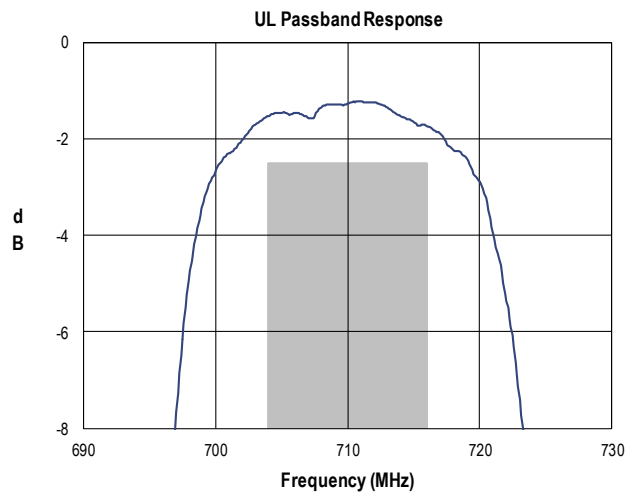
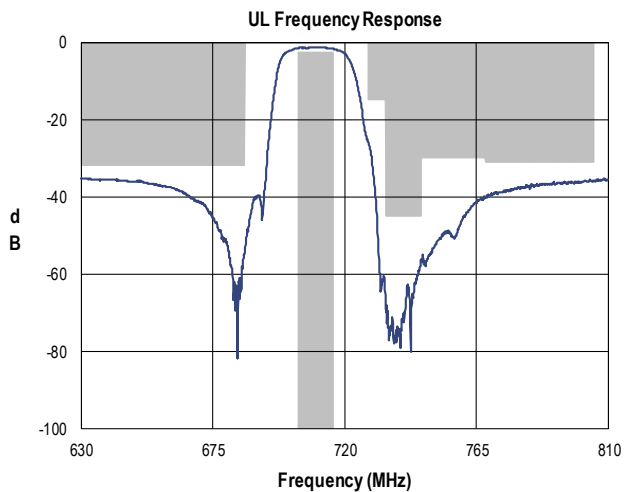


Notes:

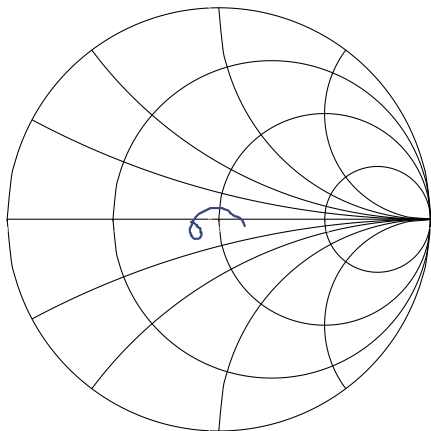
1. All dimensions are in millimeters. Angles are in degrees.
2. This drawing specifies the mounting pattern used on the TriQuint evaluation board for this product. Some modification may be necessary to suit end user assembly materials and processes.

Performance Plots

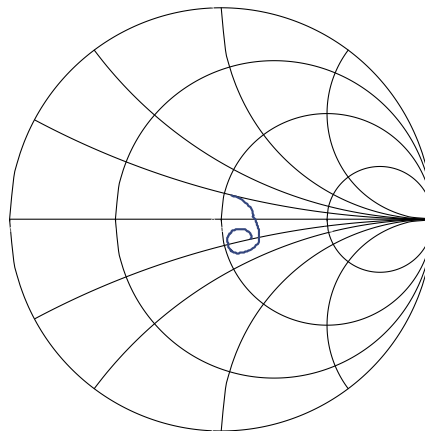
Test conditions unless otherwise noted: Temp= +25°C

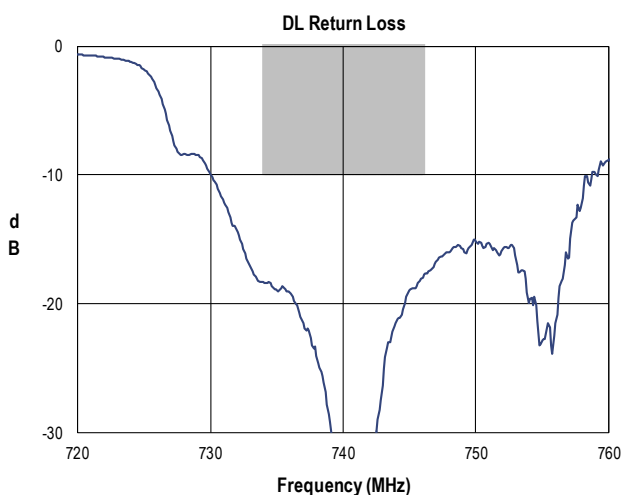
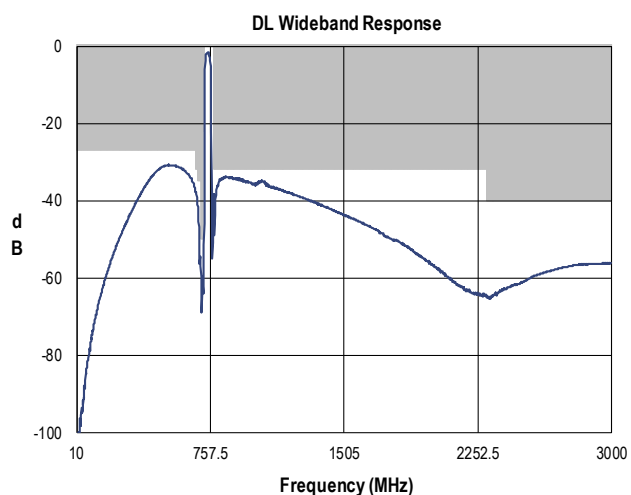
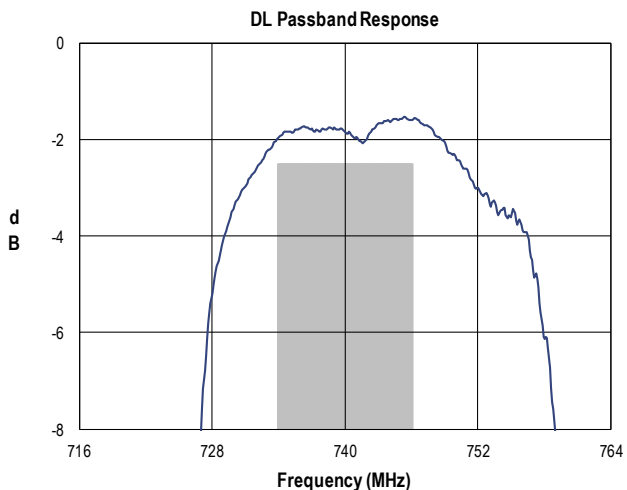
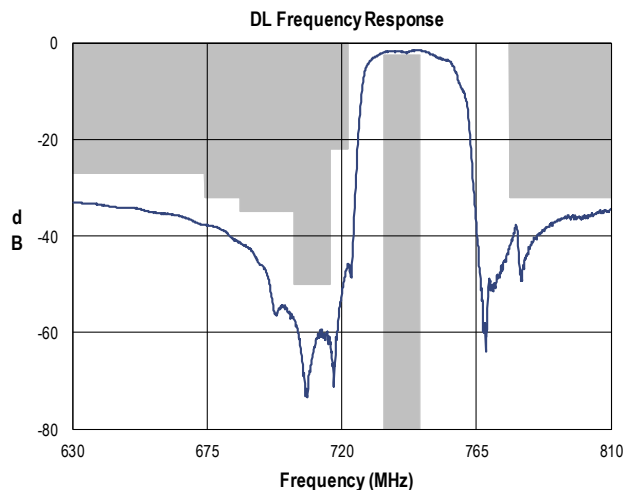


UL Path - Ant Port Impedance

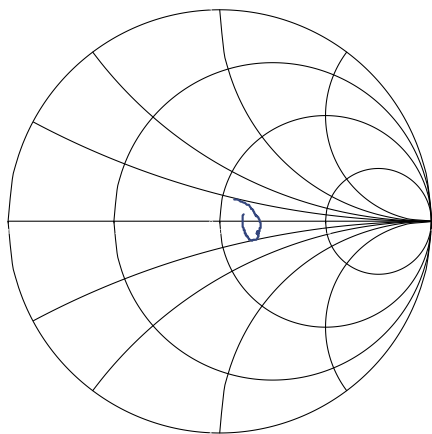


UL Port Impedance

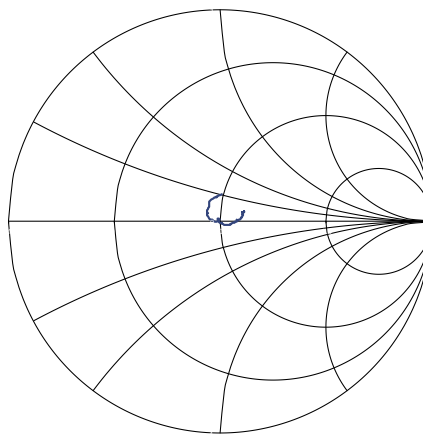


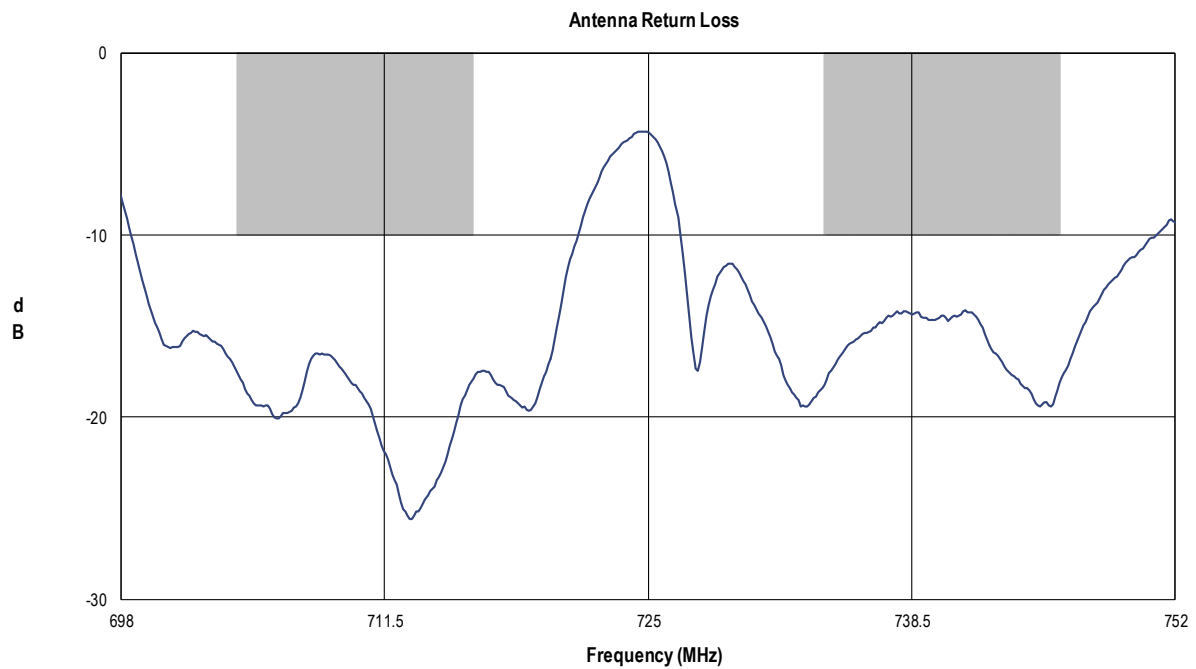
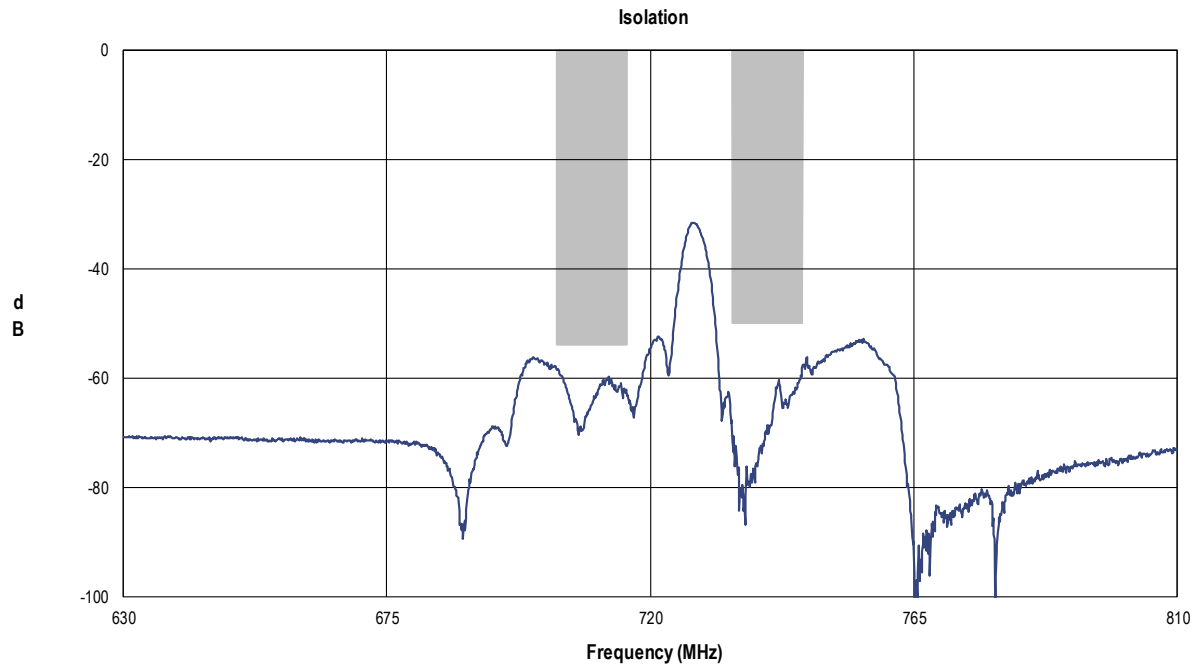


DL Path - Ant Port Impedance

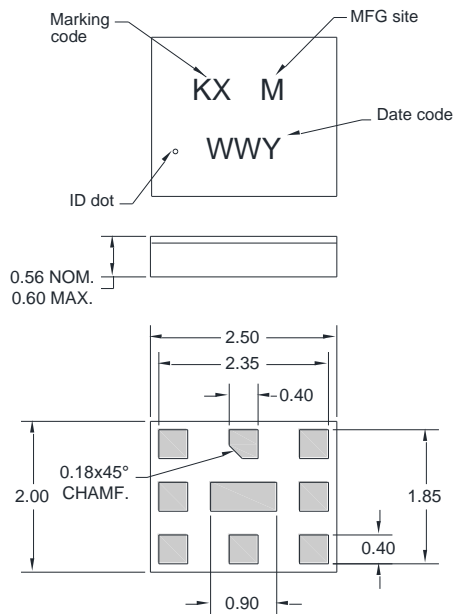


DL Port Impedance





Package Information, Marking and Dimensions



Package Style: CSP-10KT

Dimensions: 2.5 x 2.00 x 0.56 mm

Body: Al_2O_3 ceramic

Lid: Kovar or Alloy42, Au over Ni plated

Terminations: Au plating 0.5 - 1.0 μ m, over a 2-6 μ m Ni plating

All dimensions shown are nominal in millimeters

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

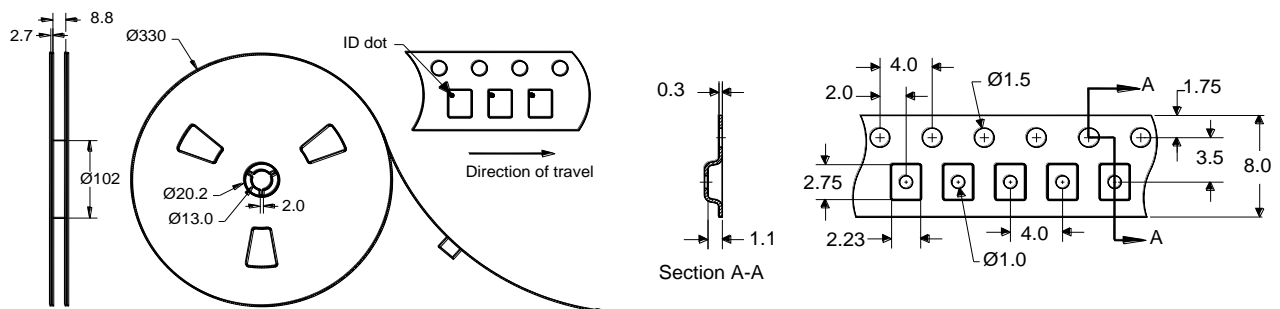
The date code consists of: WW = 2 digit week,
Y = last digit of year, M = manufacturing site code

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 = 10,000 units/reel



Product Compliance Information

ESD Sensitivity Ratings



Caution! ESD-Sensitive Device

ESD Rating: Class 1B
Value: Passes ≥ 500 V
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

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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Fax: +1.407.886.7061

For technical questions and application information: Email: flapplication.engineering@tqs.com

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