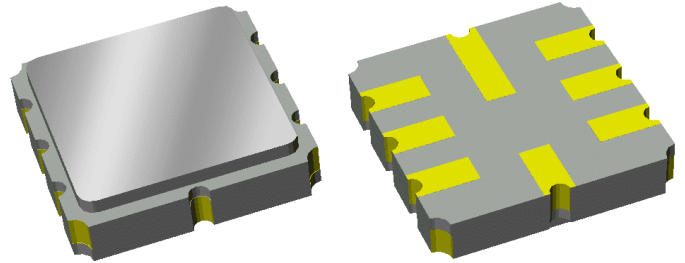


# Data Sheet

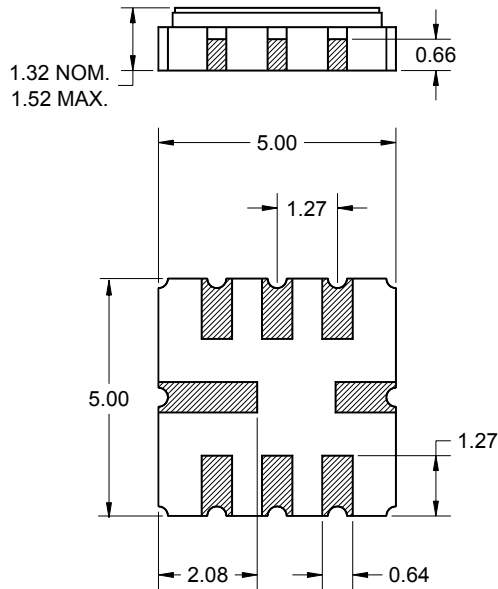
## Features

- For WCDMA applications
- Usable bandwidth of 5 MHz
- Low loss
- Single-ended operation
- Ceramic Surface Mount Package (SMP)
- Small size

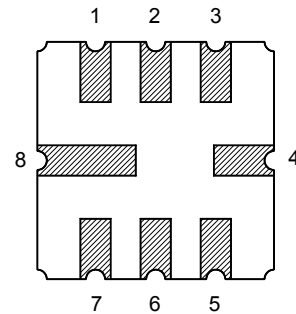


## Package Pin Configuration

Surface Mount 5.00 x 5.00 x 1.32 mm



Bottom View



Pin No.	Description
2	Input
3	Input return
6	Output
7	Output return
1,4,5,8	Case ground

Dimensions shown are nominal in millimeters  
 All tolerances are  $\pm 0.15\text{mm}$  except overall  
 length and width  $\pm 0.15/\pm 0.10\text{mm}$

Body:  $\text{Al}_2\text{O}_3$  ceramic  
 Lid: Kovar, Ni plated  
 Terminations: Au plating 0.5 - 1.0  $\mu\text{m}$ ,  
 over a 2 - 6  $\mu\text{m}$  Ni plating

# Data Sheet

## Electrical Specifications <sup>(1)</sup>

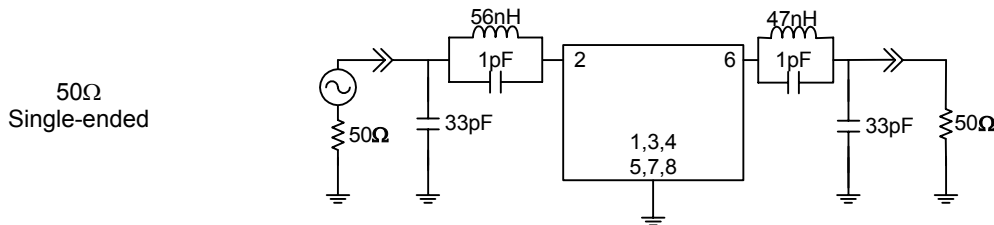
Operating Temperature Range: <sup>(2)</sup> -30 to +70 °C

Parameter <sup>(3)</sup>	Minimum	Typical	Maximum	Unit
Center Frequency, $f_0$	-	190	-	MHz
Insertion Loss at 190 MHz	-	8	10	dB
Lower 5 dB Bandedge <sup>(4)</sup>	-	187.23	187.6	MHz
Upper 5 dB Bandedge	192.4	193.01	-	MHz
Phase Ripple 188 - 192 MHz	-	1.90	4.15	deg RMS
Attenuation <sup>(4)</sup>				
160 - 170 MHz	33	39.9	-	dB
170 - 180 MHz	27	35.4	-	dB
180 - 185.5 MHz	25	30.3	-	dB
194.5 - 200 MHz	25	29.5	-	dB
200 - 210 MHz	27	34.9	-	dB
210 - 220 MHz	33	42.7	-	dB
Source Impedance <sup>(5)</sup>	-	50	-	$\Omega$
Load Impedance <sup>(5)</sup>	-	50	-	$\Omega$
Substrate Material	-	LiTaO <sub>3</sub>		

### Notes:

1. All specifications are based on the test circuit shown below
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. Relative to insertion loss at 190 MHz
5. This is the optimum impedance in order to achieve the performance shown

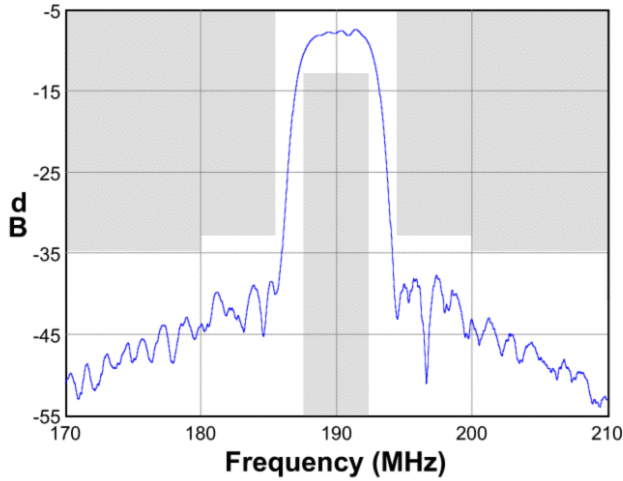
### Test Circuit:



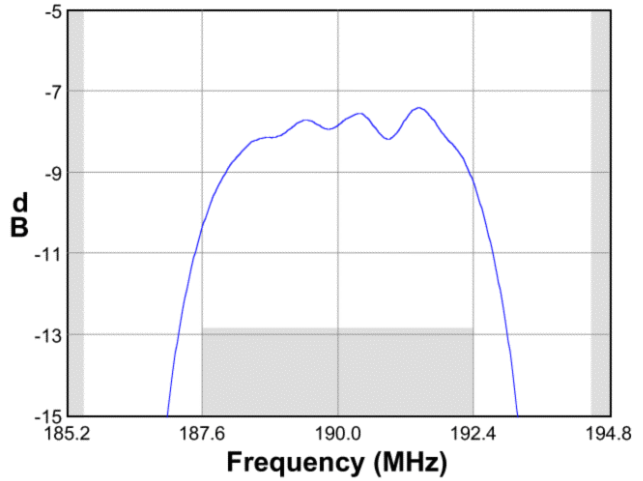
**Data Sheet**

**Typical Performance (at +25°C)**

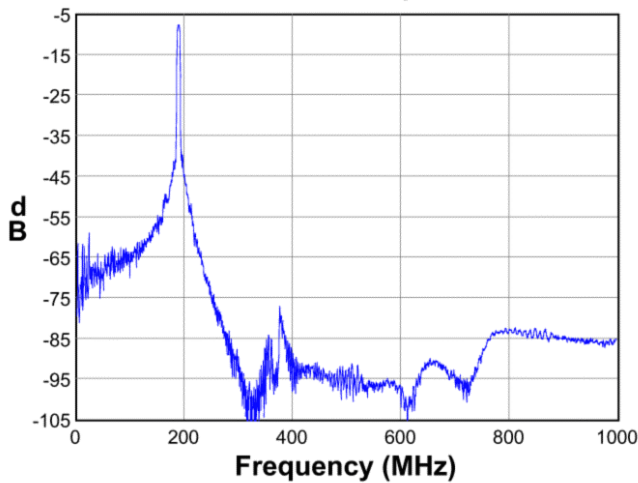
**Frequency Response**



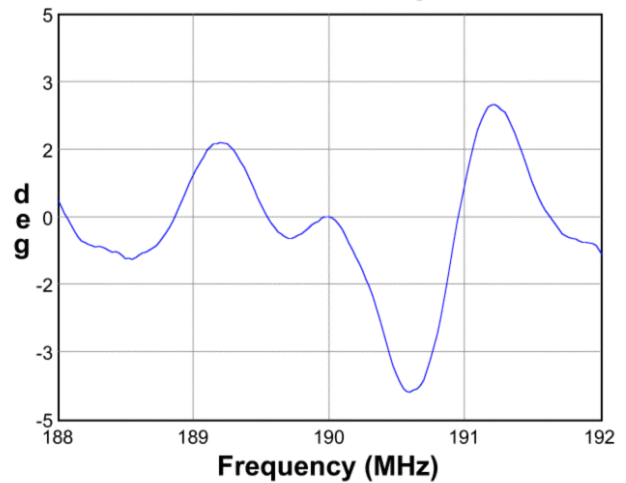
**Passband Response**



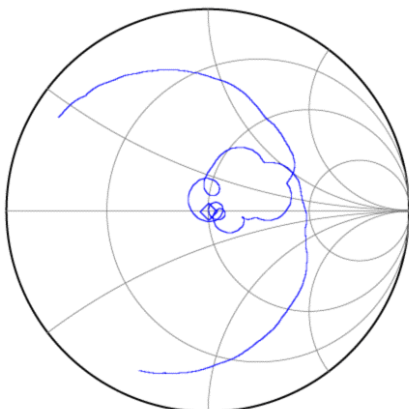
**Wideband Response**



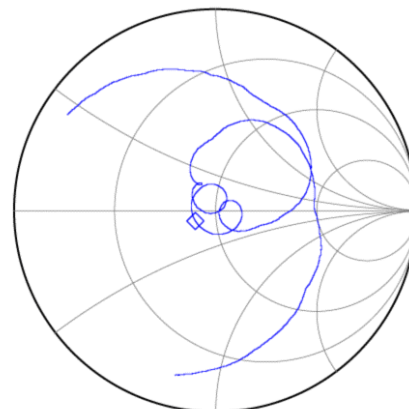
**Phase Linearity**



**Input Smith Chart**



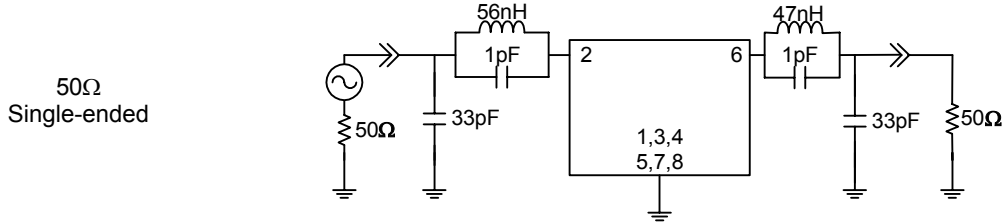
**Output Smith Chart**



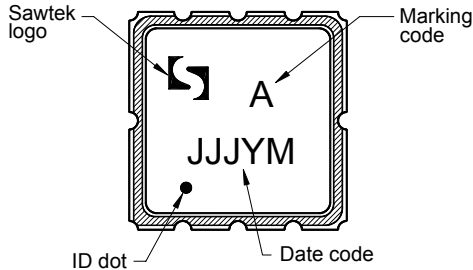
**Data Sheet**

**Matching Schematics**

Actual matching values may vary due to PCB layout and parasitics

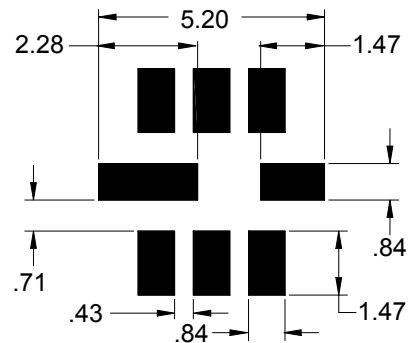


**Marking**



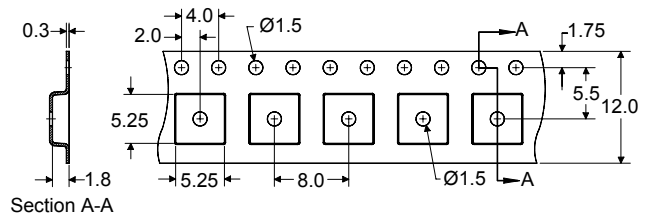
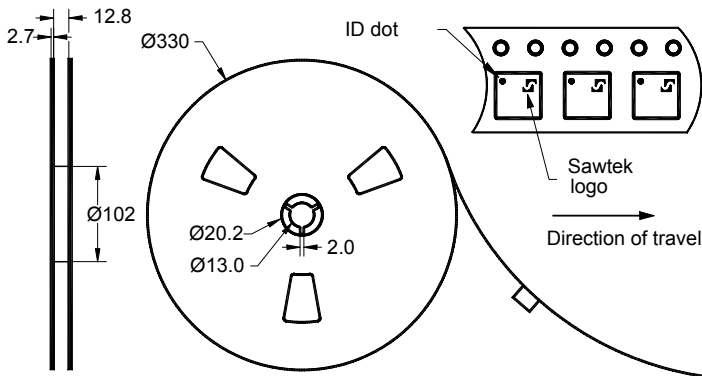
The date code consists of: JJJ = Julian day,  
Y = last digit of year, M = manufacturing site code

**PCB Footprint**



This footprint represents a recommendation only  
Dimensions shown are nominal in millimeters

**Tape and Reel**



Dimensions shown are nominal in millimeters  
Packaging quantity: 4000 units/reel

**Data Sheet**

**Maximum Ratings**

Parameter	Symbol	Minimum	Maximum	Unit
Operating Temperature Range	T	-30	+70	°C
Storage Temperature Range	T <sub>stg</sub>	-40	+85	°C

**Warnings**

- Electrostatic Sensitive Device (ESD)
- Avoid ultrasonic exposure



**Links to Additional Technical Information**

[PCB Layout Tips](#)

[Qualification Flowchart](#)

[Soldering Profile](#)

[S-Parameters](#)

[Other Technical Information](#)

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