

SMD 1575.42 MHz SAW Filter



AFS1575.42S4

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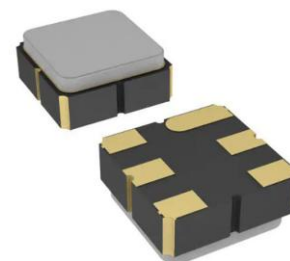
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3.0 x 3.0 x 1.4 mm
RoHS Compliant
MSL Level = 1

Description

Designed for demanding navigation and timing applications, this high-performance GPS L1 band filter delivers exceptional signal clarity. Housed in a compact 3.0 x 3.0 x 1.4 mm package, it features a low insertion loss of 1.5 dB and excellent out-of-band rejection exceeding 38 dB. The 50-ohm single-ended design ensures easy integration, making it ideal for precision GNSS positioning, mission-critical timing, and geofencing in asset tracking, fleet management, autonomous vehicles, and micro-mobility solutions. RoHS compliant and MSL Level 1 rated for reliable manufacturing.



Features

- Supports GPS L1 Band
- 3.0 x 3.0 x 1.4 mm in Size
- Low Insertion Loss: 1.5 dB
- Out-of-Band Rejection: > 38 dB
- 50 Ohms Single-Ended Input & Output
- Maximum Input Power: +10 dBm
- [RoHS Compliant](#) | [MSL Level 1](#)

Applications

- Asset Tracking
- Fleet Management
- Micro-Mobility Solutions
- UAVs, Robotics & Autonomous Vehicles
- Precision GNSS Positioning
- Mission-Critical GNSS Timing
- Geofencing

Ordering Information

Part Number	Description
AFS1575.42S4	SMD 1575.42 MHz SAW Filter on Cut Tape
AFS1575.42S4-T	SMD 1575.42 MHz SAW Filter on Tape & Reel
AFS1575.42S4-EVB	SMD 1575.42 MHz SAW Filter Evaluation Board

Note: Other options not listed may be available upon request via [Abracon online support](#)



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Electrical Specification

Parameters	Minimum	Typical	Maximum	Units	Notes
Center Frequency (fc)	-	1575.42	-	MHz	
VSWR ⁽¹⁾	-	1.1	2.0	-	1574.22 ~ 1576.62MHz
Insertion Loss ⁽¹⁾	-	1.5	2.0	dB	1574.22 ~ 1576.62MHz
Amplitude Ripple ⁽¹⁾	-	0.15	1.0	dB	1574.22 ~ 1576.62MHz
Group Delay ⁽¹⁾		19.44	19.77	ns	1574.22 ~ 1576.62MHz
Group Delay Ripple ⁽¹⁾		0.2	0.36	ns	1574.22 ~ 1576.62MHz
Attenuation ⁽¹⁾ (Refer to min. insertion loss)	37	40	-	dB	DC ~ 1382 MHz
	40	47	-		1382 ~ 1397 MHz
	40	45	-		1397 ~ 1478 MHz
	40	47	-		1478 ~ 1487 MHz
	30	52	-		1487 ~ 1500 MHz
	30	49	-		1625 ~ 1640 MHz
	38	42	-		1640 ~ 2000MHz
	33	38.5	-		2000 ~ 3000MHz
DC Voltage	-	-	0	V	
Input Power	-	-	10	dBm	
Terminating Source Impedance	-	50	-	Ω	
Terminating Load Impedance	-	50	-	Ω	

Notes: (1) Averaged values of linear S-Parameters at +25°C

(2) A matching network is necessary (refer to the Measurement Circuits section)

Mechanical Specification

Parameters	Specifications
Dimension	3.0 x 3.0 x 1.4 mm
Mounting Type	Surface Mount

Environmental Specification

Parameters	Specifications
Operating Temperature Range	-40°C ~ +85°C
Storage Temperature Range	-50°C ~ +100°C
MSL level	1



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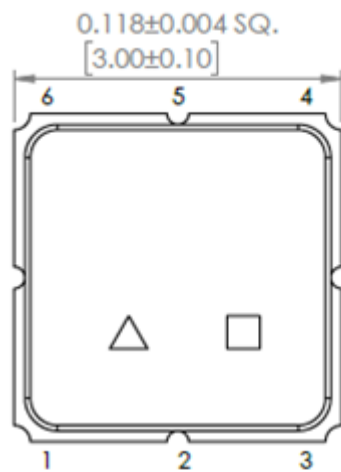


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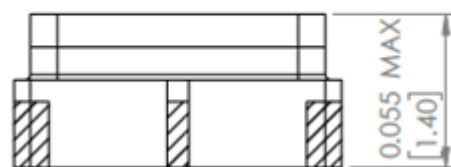


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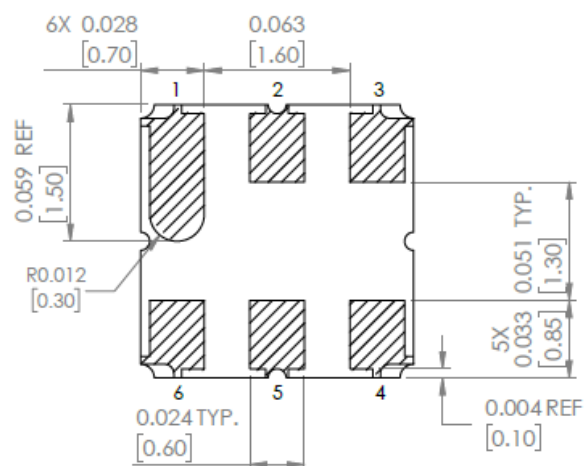
Product Dimensions



TOP VIEW



FRONT VIEW



BOTTOM VIEW

NOT SPECIFIED TOLERANCE: ± 0.005 [0.15]

Unit: Inches[mm]

Pin No.	Function
1, 3, 4, 6	GND
2	Input
5	Out

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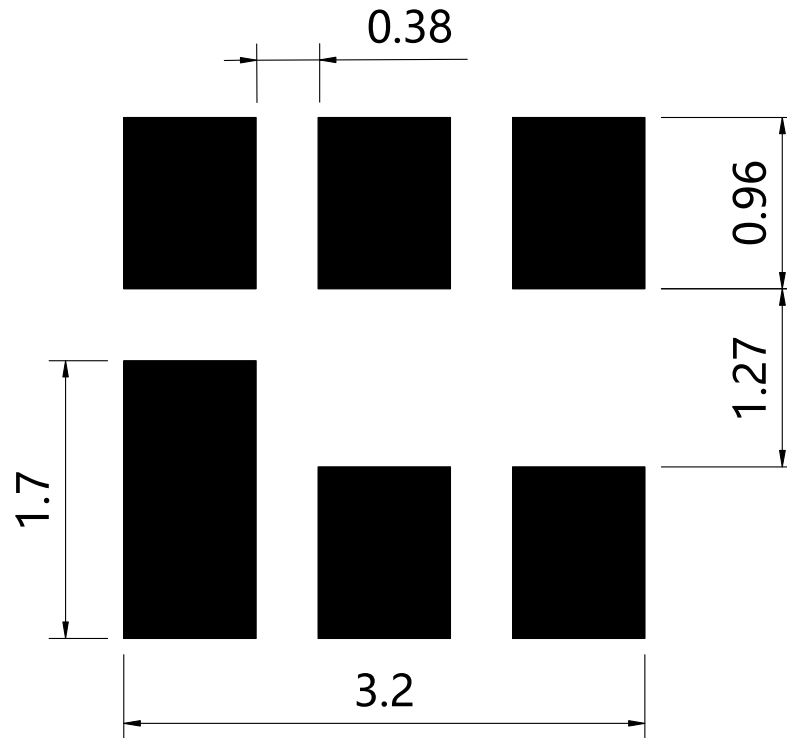


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3.0 x 3.0 x 1.4 mm
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Recommended Land Pattern



Unit: mm

Please note: The line width should be designed to achieve a 50-ohm characteristic impedance, depending on the PCB material and thickness. For technical assistance, please contact [Abracon online support](#) through our online support platform

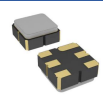


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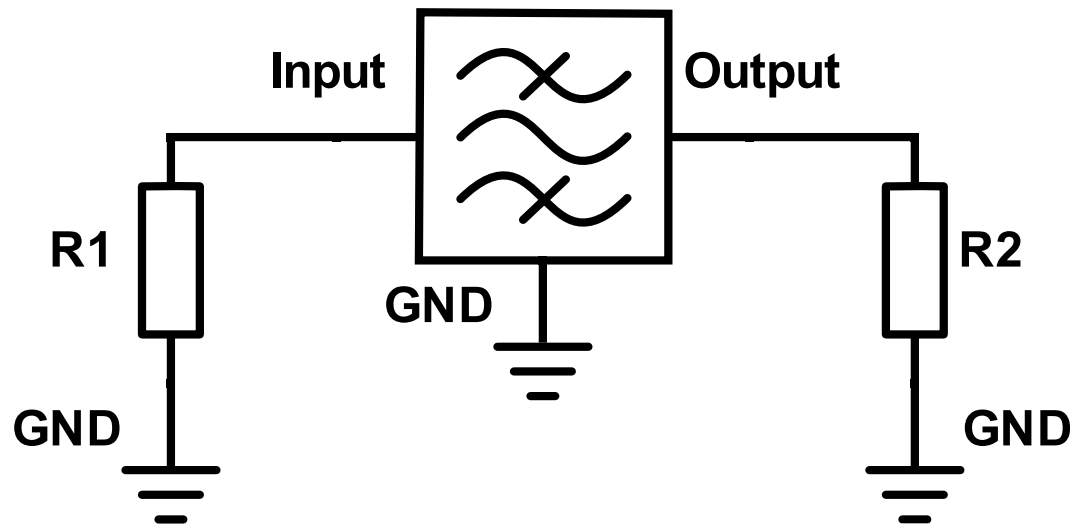


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3.0 x 3.0 x 1.4 mm
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Measurement Circuit



Pin No.	Description
2	Input (R1): 50 Ω
5	Output (R2): 50 Ω
1, 3, 4, 6	Ground

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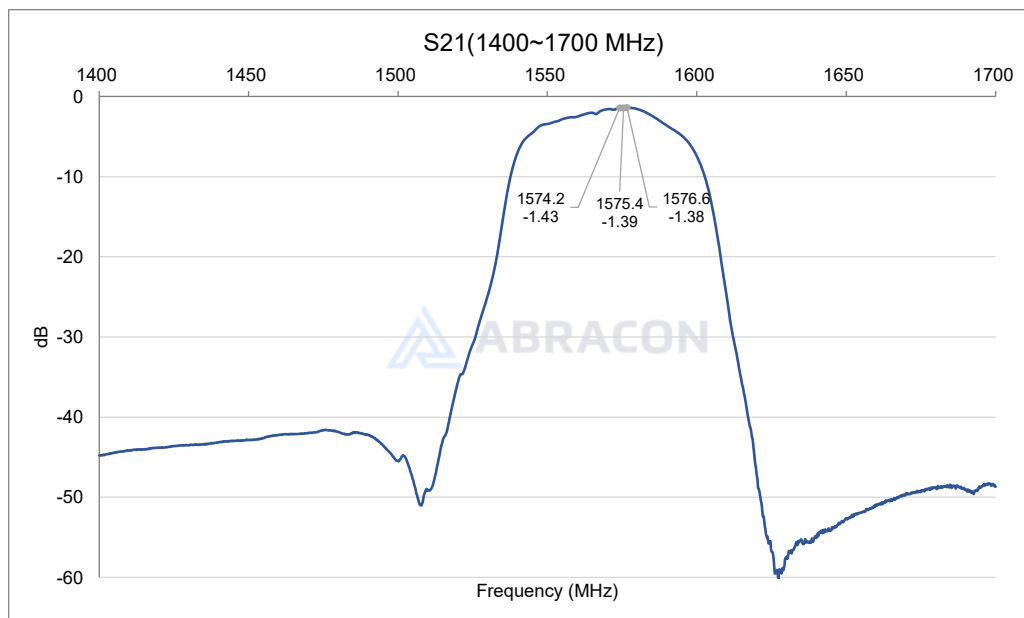
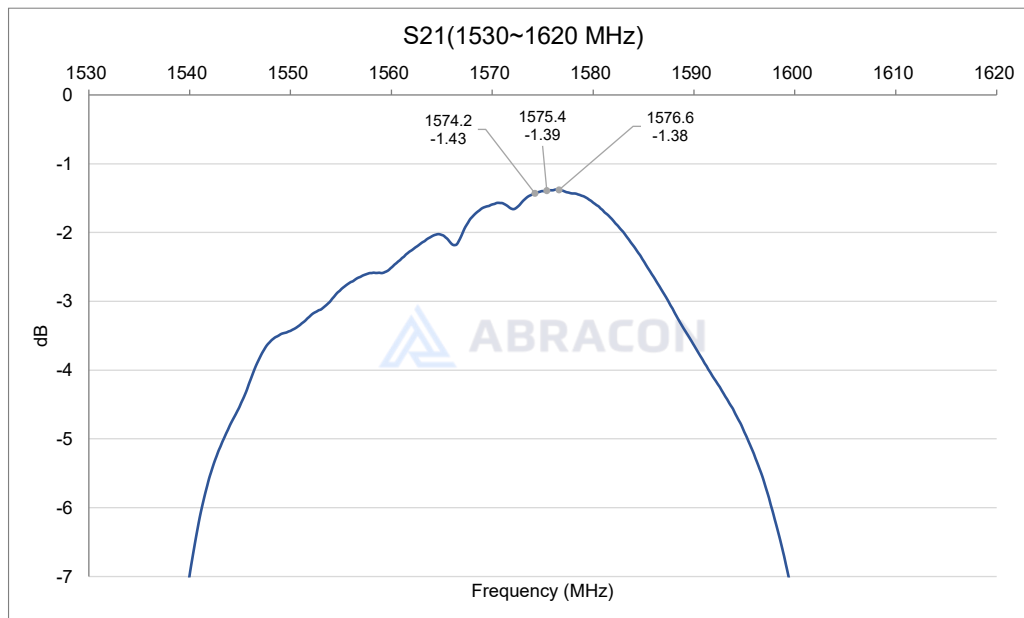
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Frequency Characteristics

S21 Narrow Band



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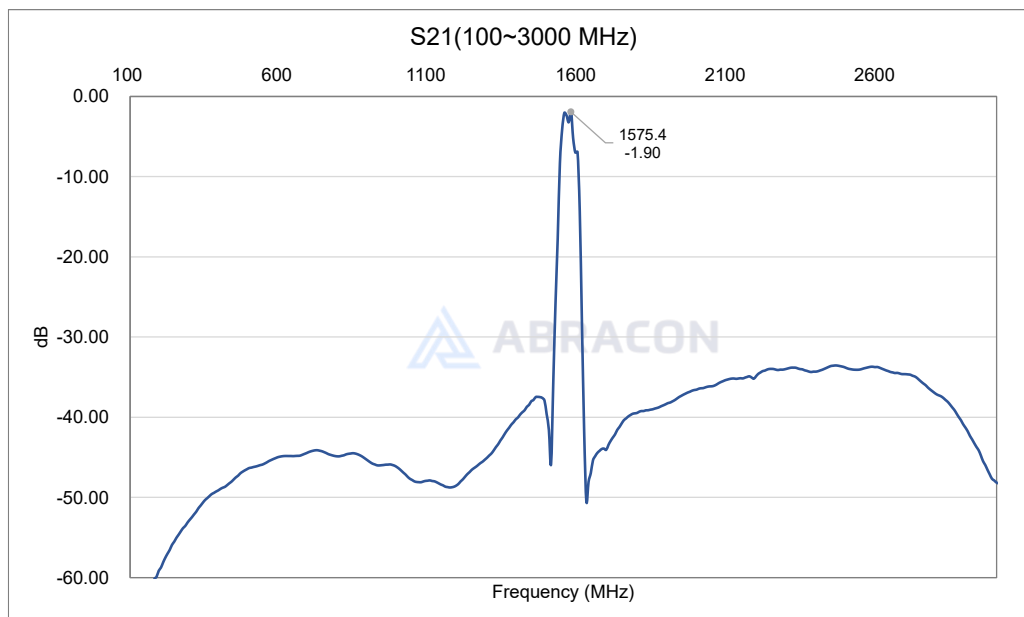


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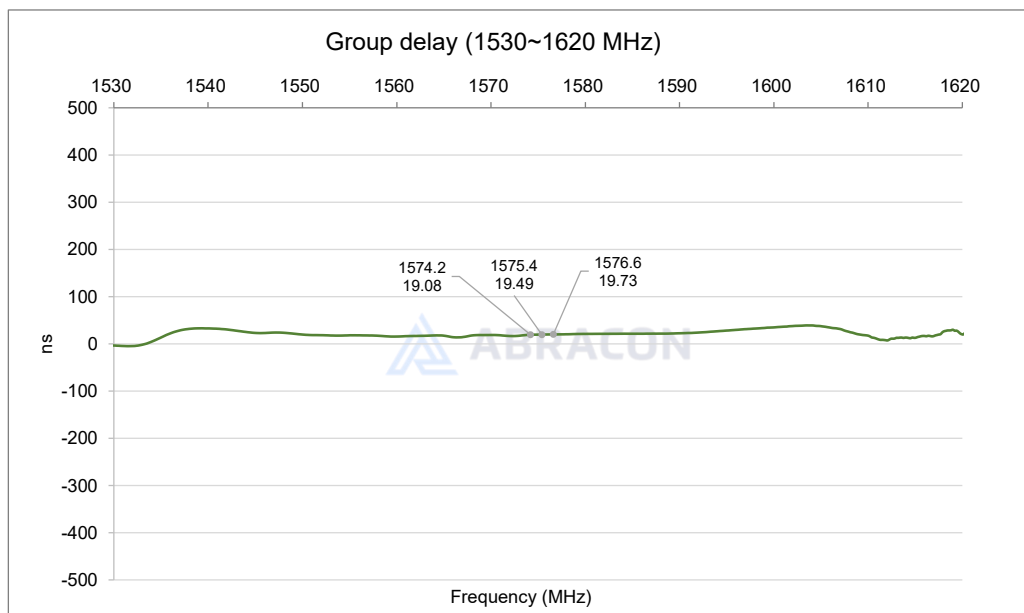


3.0 x 3.0 x 1.4 mm
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S21 Wide Band



Group Delay



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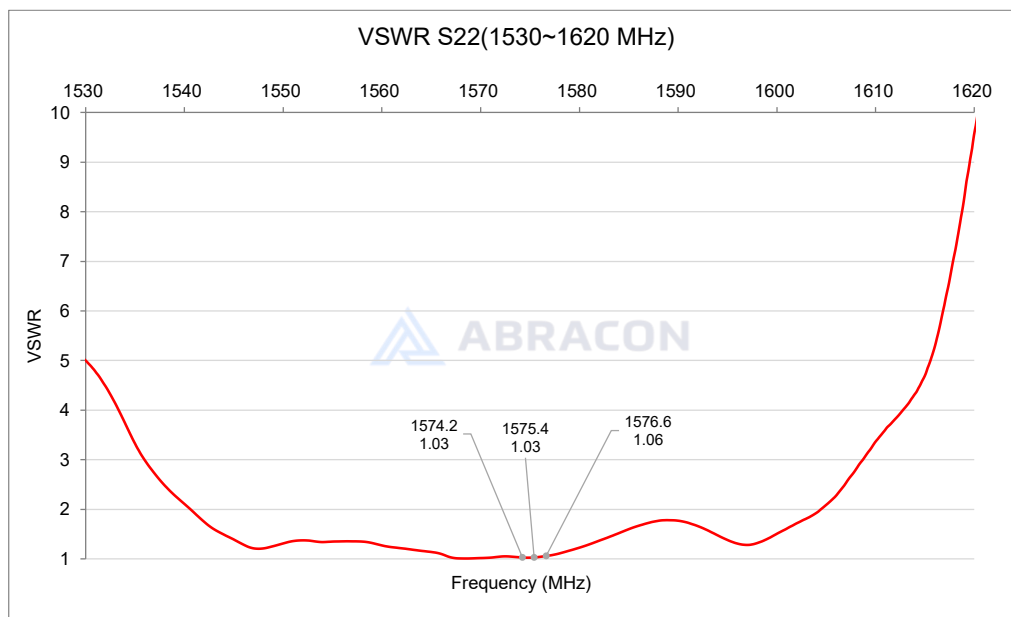
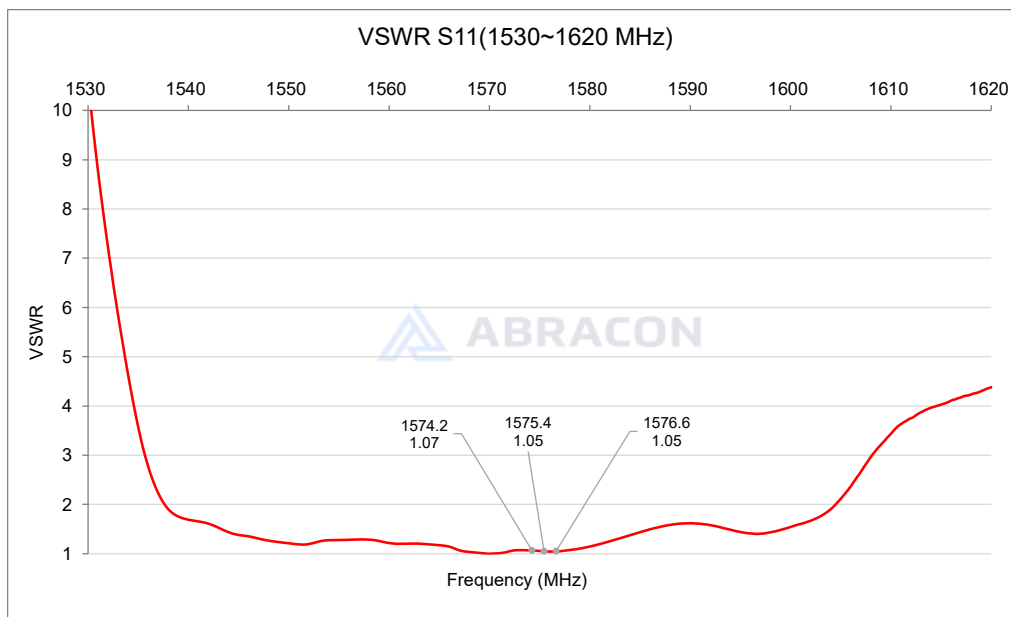


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3.0 x 3.0 x 1.4 mm
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VSWR (S11 & S22)



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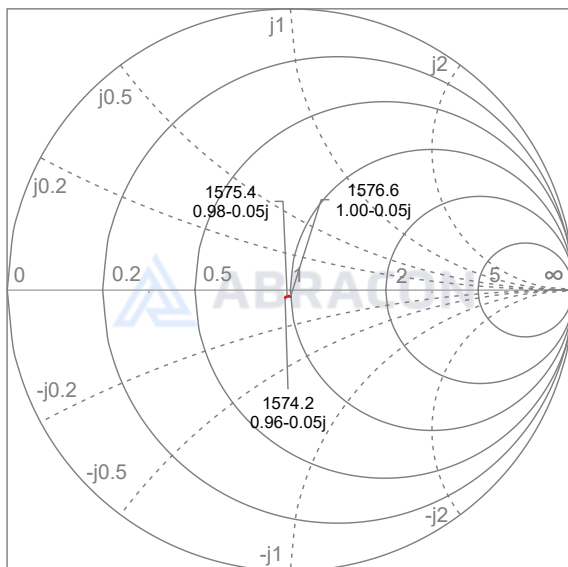
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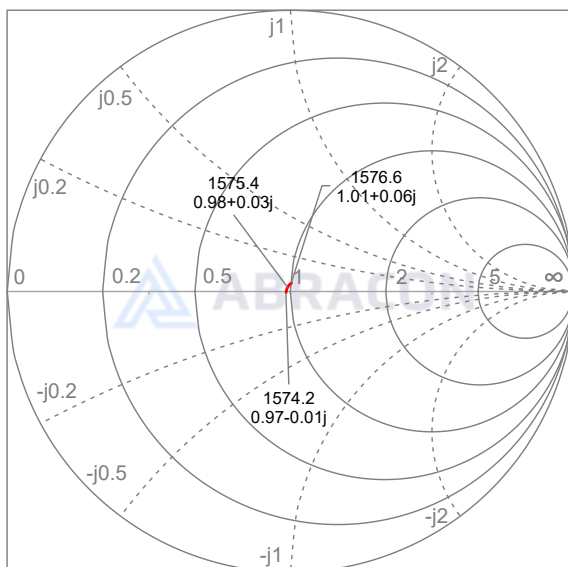
3.0 x 3.0 x 1.4 mm
RoHS Compliant
MSL Level = 1

Smith Chart (S11 & S22)

Smith chart S11 (1574.2~1576.6MHz)



Smith chart S22 (1574.2~1576.6MHz)



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Reflow Profile [JEDEC J-STD-020]

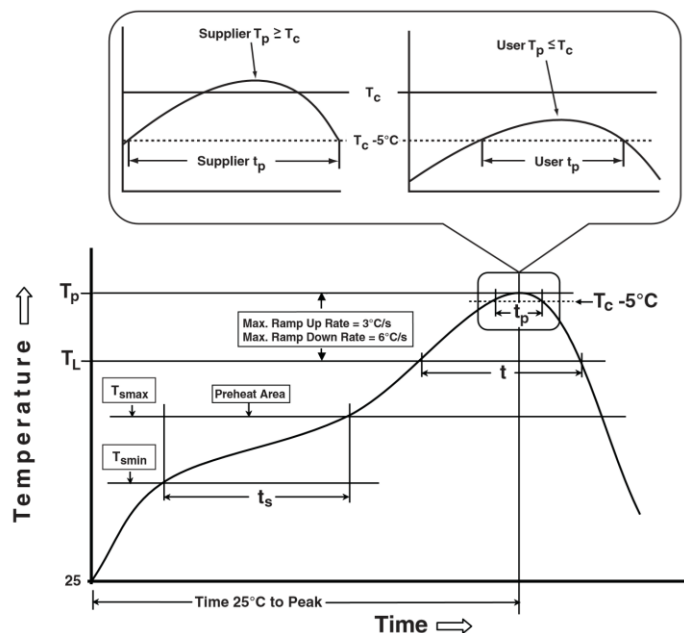


Table 1

SnPb Eutectic Process

Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥ 350
<2.5mm	235°C	220°C
≥ 2.5 mm	220°C	220°C

Table 2

Pb-Free Process

Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
<1.6mm	260°C	260°C	260°C
1.6mm - 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T_{smin})	100°C	150°C
Temperature maximum (T_{smax})	150°C	180°C
Time (T_{smin} to T_{smax}) (t_s)	60 – 120 sec.	60 – 90 sec.
Average ramp-up rate (T_{smax} to T_p)	3°C/sec. max	3°C/sec. max
Liquidous temperature (T_L)	183°C	220°C
Time at Liquidous (T_L)	60 – 150 sec.	50 – 80 sec.
Peak package body temperature (T_p)*	See Table 1	See Table 2
Time (T_p)** within 5°C of the specified classification temperature (T_c)	20 sec.	20 ~ 40 sec.
Ramp-down rate (T_p to T_{smax})	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

*Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

**Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.



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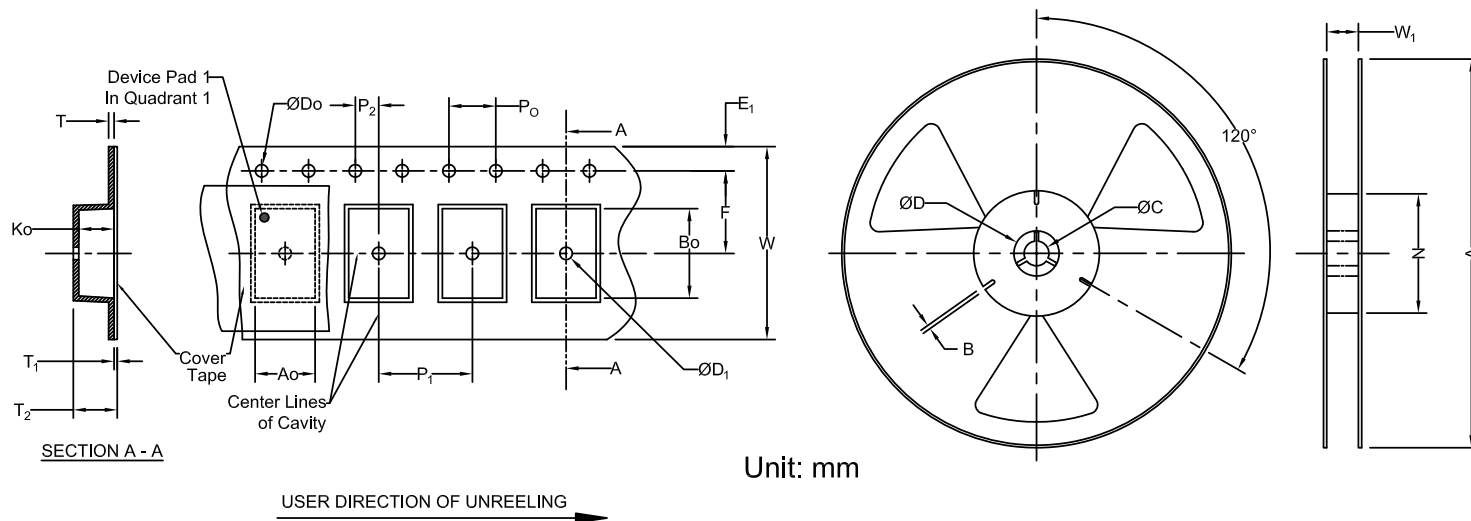
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MSL Level = 1

Packaging

Tape & Reel Dimension



Carrier Tape Specifications (mm)

E1	P0	F	P1	P2	W	A0	B0	K0	Reel Qty
1.75 ± 0.1	4.0 ± 0.05	5.5 ± 0.05	8.0 ± 0.05	2.0 ± 0.05	12.0 ± 0.3	3.35 ± 0.1	3.35 ± 0.1	1.4 ± 0.1	1,000

Reel Specifications (mm)

A	W ₁	N	B	C	D
330 ± 1.0	12.0 ± 1.0	100 ± 1.0	2.0 ± 0.5	13 ± 0.5	20.2 min

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