

SMD 1575.42 MHz SAW Filter



AFS1575.42S4

Request Samples



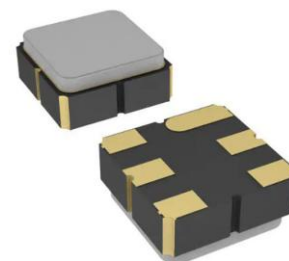
Check Inventory



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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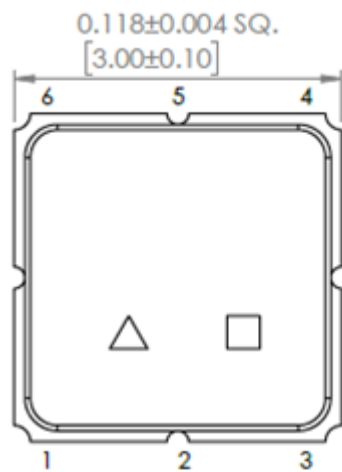


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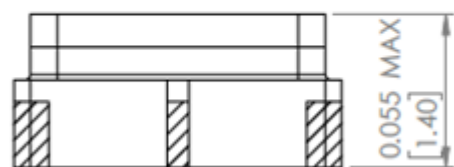


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MSL Level = 1

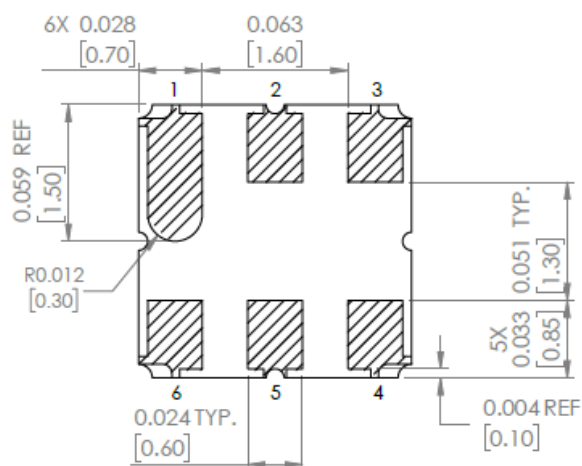
Product Dimensions



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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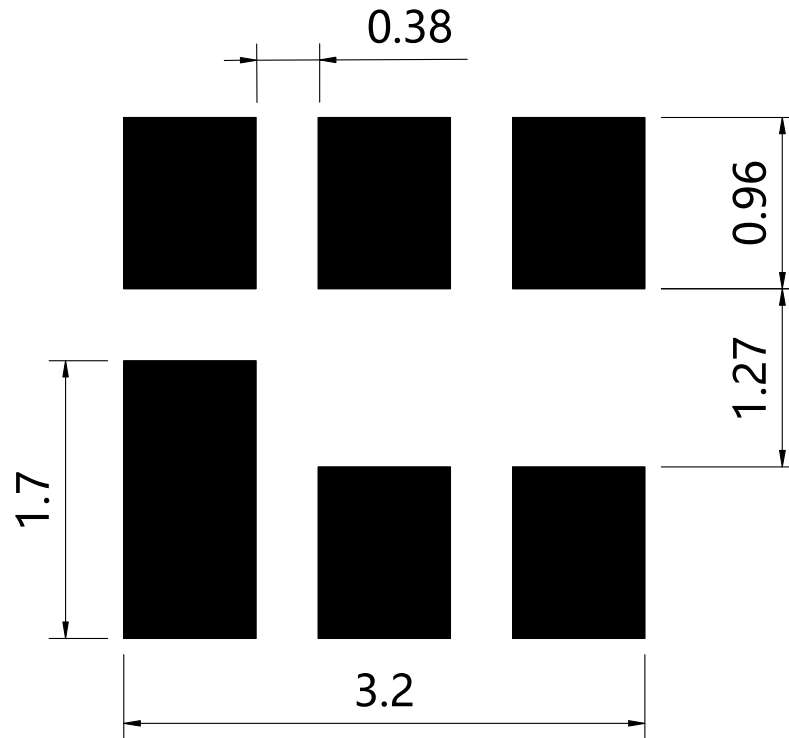


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3.0 x 3.0 x 1.4 mm
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Recommended Land Pattern



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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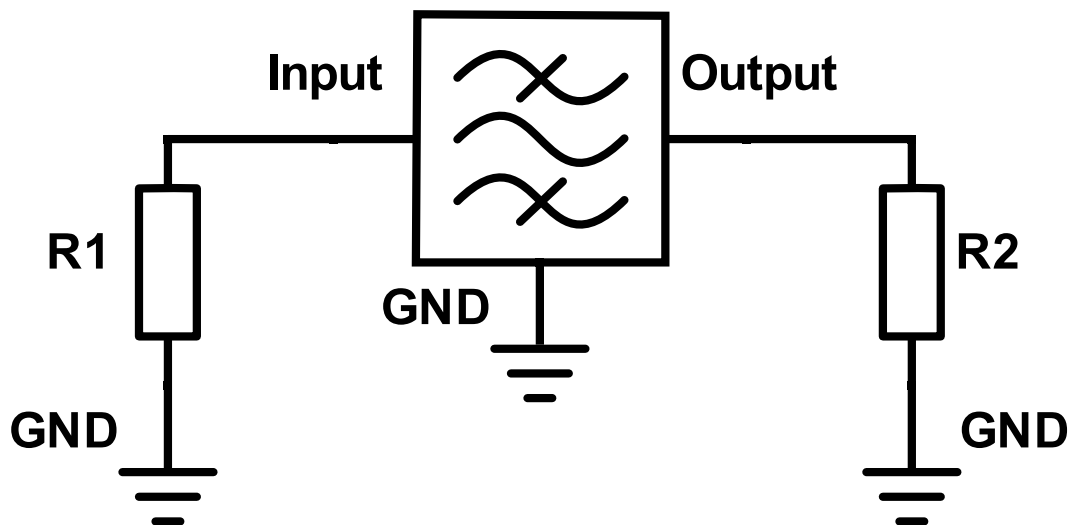


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3.0 x 3.0 x 1.4 mm
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Measurement Circuit



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

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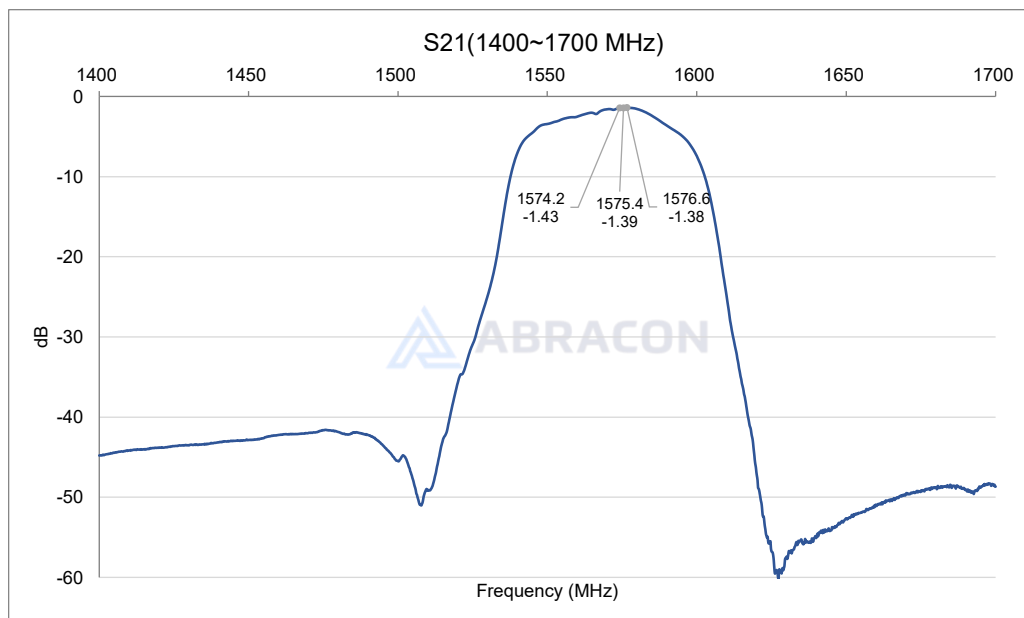
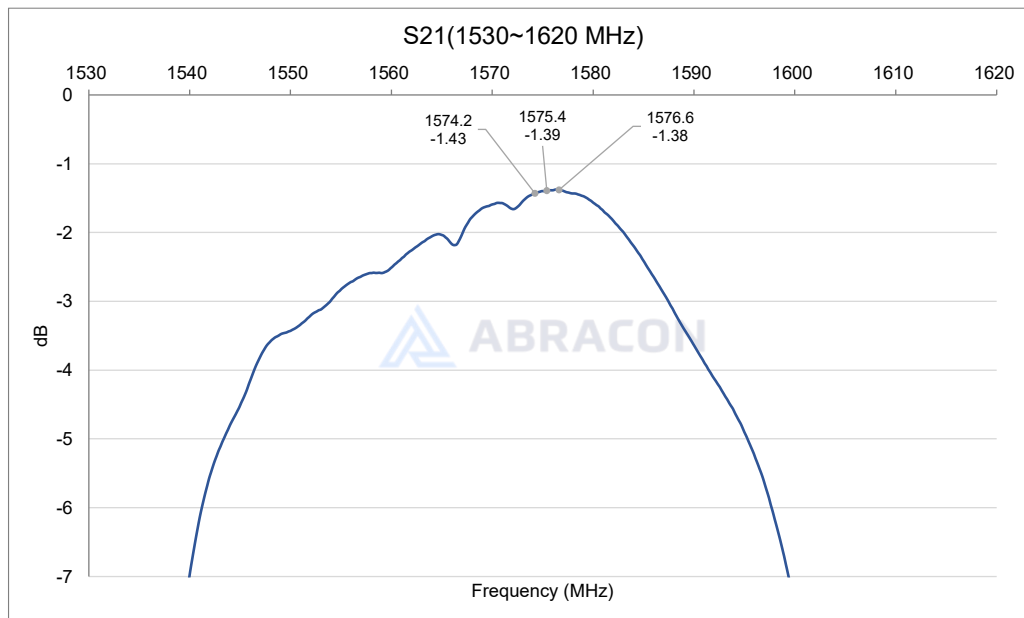
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Frequency Characteristics

S21 Narrow Band



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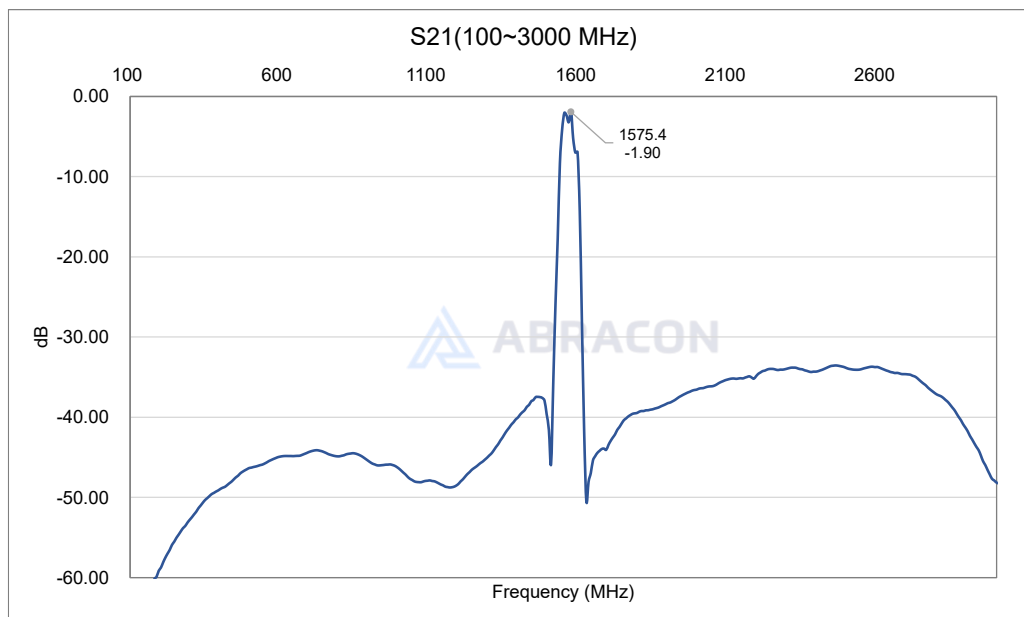


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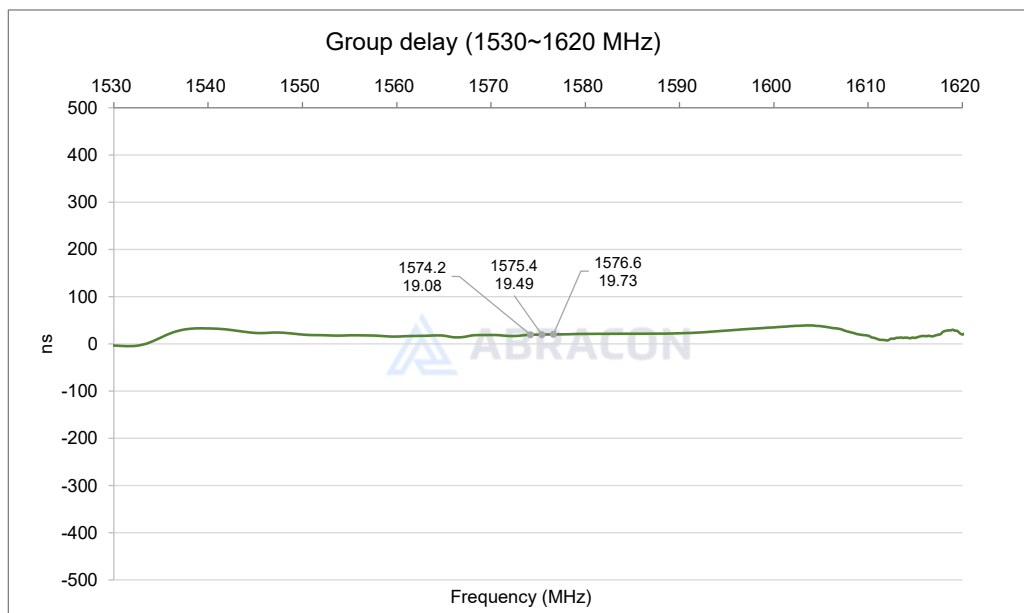


3.0 x 3.0 x 1.4 mm
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S21 Wide Band



Group Delay



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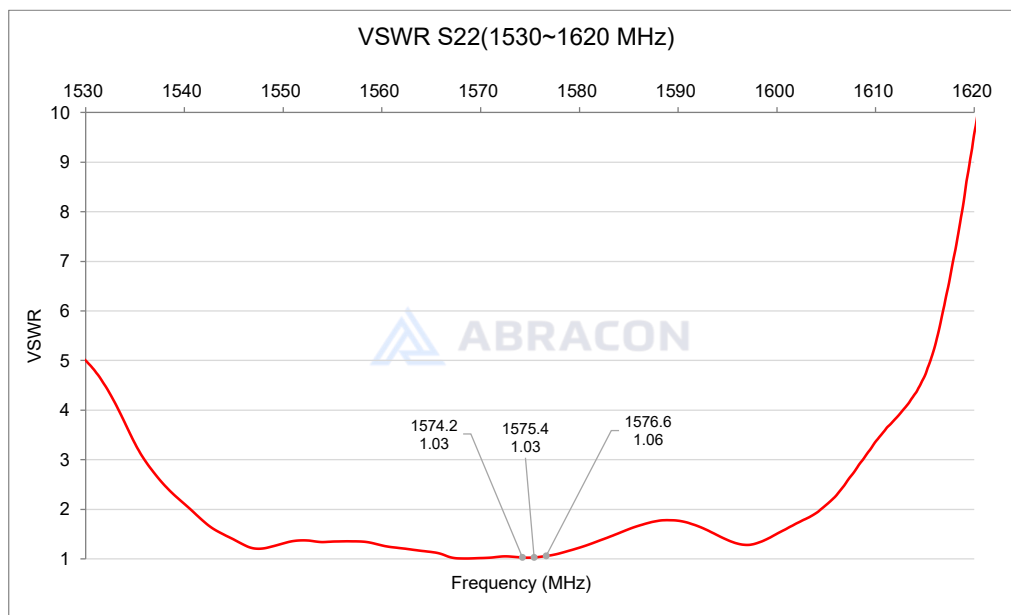
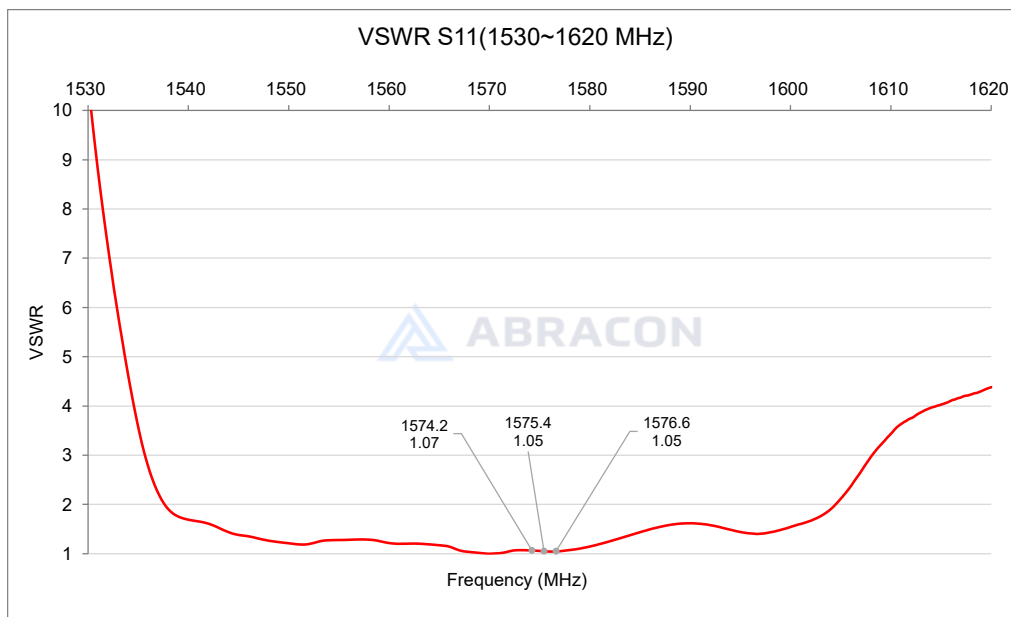


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3.0 x 3.0 x 1.4 mm
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VSWR (S11 & S22)



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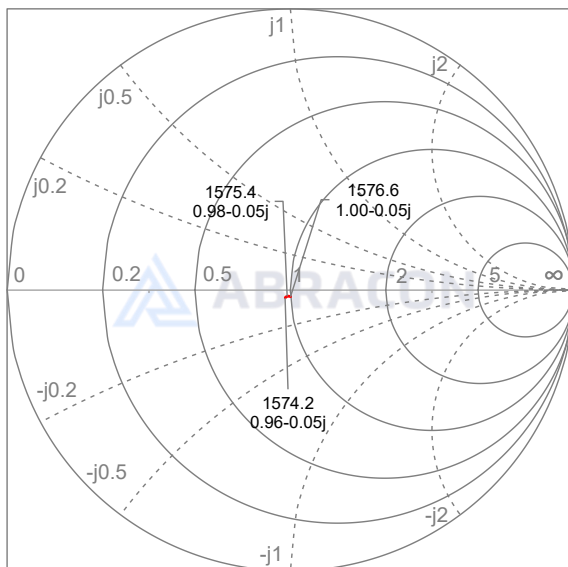
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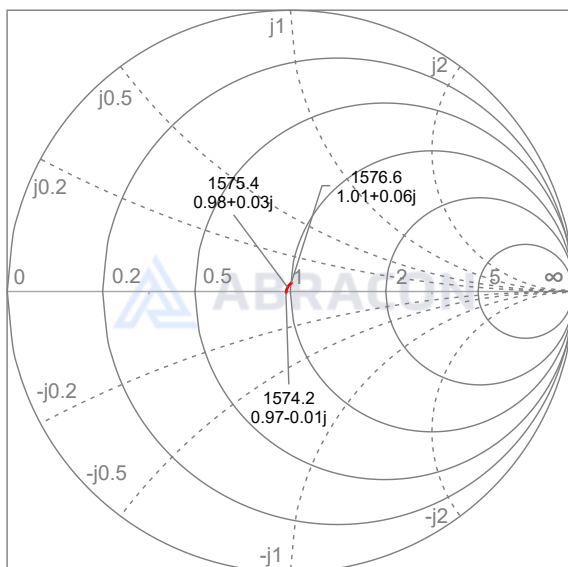
3.0 x 3.0 x 1.4 mm
RoHS Compliant
MSL Level = 1

Smith Chart (S11 & S22)

Smith chart S11 (1574.2~1576.6MHz)



Smith chart S22 (1574.2~1576.6MHz)



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3.0 x 3.0 x 1.4 mm
RoHS Compliant
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Reflow Profile [JEDEC J-STD-020]

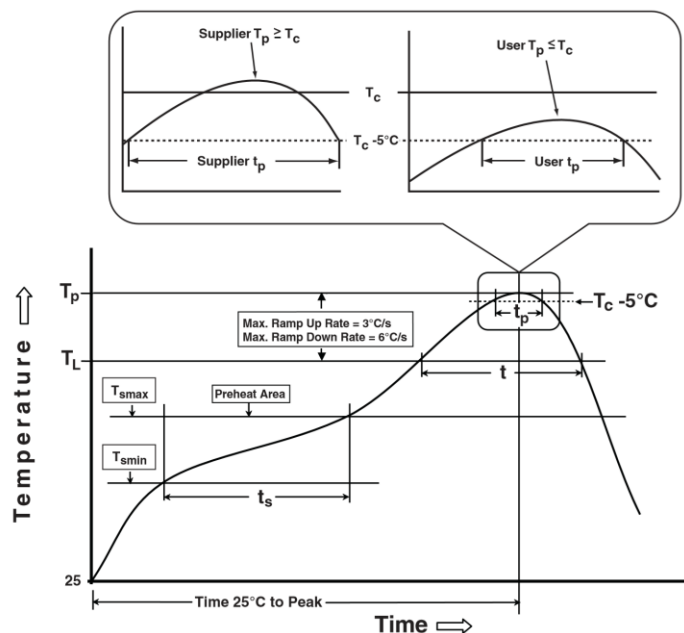


Table 1

SnPb Eutectic Process

Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥ 350
<2.5mm	235°C	220°C
≥ 2.5mm	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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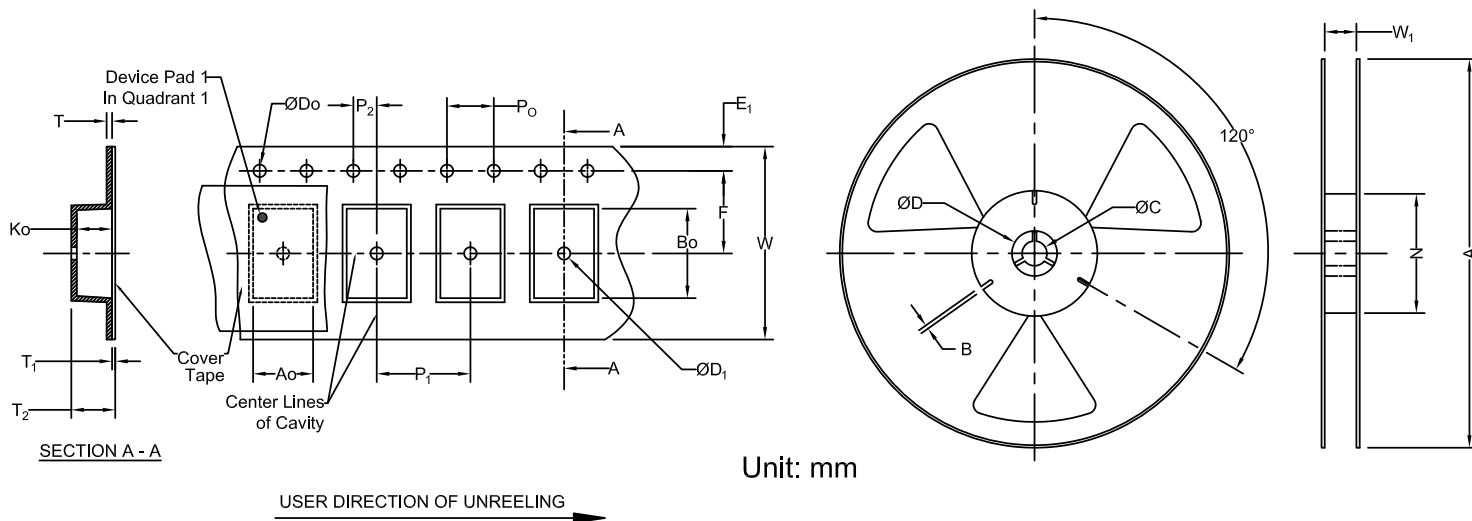
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RoHS Compliant
MSL Level = 1

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

ATTENTION: Abracon LLC's products are Commercial-Off-The-Shelf ('COTS'), which are designed, intended, and validated for use in commercial, industrial, and automotive applications. The customer is responsible for testing and verifying the performance of an Abracon solution to meet their system-level requirements.



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