

SMD Full Band GNSS Band Pass Ceramic Filter



AFII-LC-0081

Request Samples



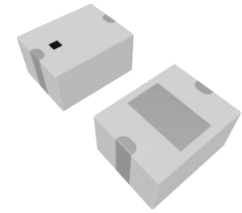
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3.2 x 2.5 x 1.75 mm
RoHS Compliant
MSL Level = 1

Description

Designed for next-generation positioning systems, this high-performance GNSS filter offers full-band & multi-constellation support for GPS, GLONASS, BEIDOU, and GALILEO. Its compact 3.2 x 2.5 x 1.75 mm package delivers exceptional RF performance with a 550 MHz bandwidth, low 0.85 dB insertion loss, and high out-of-band rejection exceeding 25 dB. With 50-ohm impedance, 6W power handling, and critical MSL Level 1 compliance for reliable manufacturing, it is the ideal solution for automotive telematics, UAV navigation, asset tracking, and precision agriculture systems requiring robust, accurate signal integrity.



Features

- GPS/GLONASS/BEIDOU/GALILEO Support
- GNSS Full Band Support
- Bandwidth 550 MHz
- Compact in Size 3.2 x 2.5 x 1.75 mm
- Low Insertion Loss: 0.85 dB
- High Out-of-Band Rejection: > 25 dB
- Internal DC Blocking Capacitor at Input & Output
- 50-ohm Single-Ended Input and Output
- Maximum Input Power: 6W
- [RoHS Compliant](#) | [MSL Level 1](#)

Applications

- RF Modules
- RTK Systems
- Automotive Transportation & Telematics
- Asset Tracking / Fleet Management
- UAVs, Robotics & Autonomous Vehicles
- Micro-Mobility Solutions
- Precision Agriculture

Ordering Information

Part Number	Description
AFII-LC-0081	SMD Full Band GNSS Band Pass Ceramic Filter on Cut Tape
AFII-LC-0081-T	SMD Full Band GNSS Band Pass Ceramic Filter on Tape & Reel
AFII-LC-0081-EVB	SMD Full Band GNSS Band Pass Ceramic Filter Evaluation Board

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



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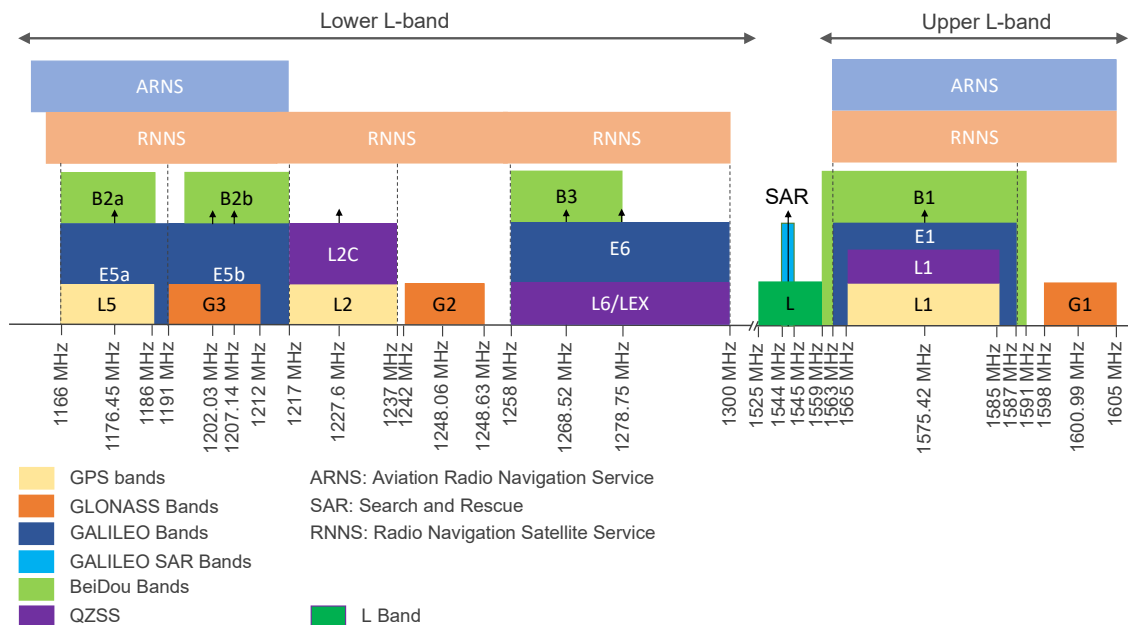
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GNSS Frequency Bands Covered

System	Band	Frequency Range
GPS	L1	1575.42MHz
	L2	1227.6MHz
GLONASS	G1	1598.06-1609.31MHz
	G2	1242.93-1251.68MHz
	G3	1202.025MHz
Galileo	E1	1575.42MHz
	E5a	1176.45MHz
	E5b	1201.5MHz
	E6	1278.75MHz
BeiDou	B1	1561MHz
	B2	1207.14MHz
	B3	1268.52MHz
QZSS	L1	1575.42MHz
	L2	1227.6MHz
	L5	1176.45MHz
	L6	1278.75MHz
IRNSS/NAVIC	L5	1176.45MHz
	L6	1278.75MHz
SBAS	L1/E1/B1	1575.42MHz
	L5/B2a/E5a	1176.45MHz



Frequency allocation: GNSS systems, upper L bands and lower L bands



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Electrical Specification

Parameters	Minimum	Typical	Maximum	Units	Notes
Center Frequency (fc)	-	1400	-	MHz	-
VSWR	-	1.2	1.5	-	1125~1675 MHz
Insertion Loss	-	0.85	1.9	dB	1125~1675 MHz
Amplitude Ripple	-	0.2	1.3	dB	1125~1675 MHz
Attenuation (Reference level from 0 dB)	40	-	-	dB	DC - 900 MHz
	25	-	-		900- 1002 MHz
	35	-	-		2000 - 2500 MHz
	27	-	-		2500 - 5950 MHz
Group Delay (+25 °C)	-	1.89	4.36	ns	1125~1675 MHz
Group Delay Ripple (+25 °C)	-	0.58	2.47	ns	1125~1675 MHz
Source Impedance ⁽¹⁾ (single ended)	-	50	-	Ω	
Load Impedance ⁽¹⁾ (single ended)	-	50	-	Ω	
Input Power Level	-	-	6	W	-

Notes: (1) A matching network is unnecessary (refer to the Measurement Circuits section).

Mechanical Specification

Parameters	Specifications
Filter Dimension	3.2 x 2.5 x 1.75 mm
Mounting Type	Surface Mount
Additional Resources	Download STEP File, Package Drawing, 3D PDF

Environmental Specification

Parameters	Specifications
Operating Temperature Range	-45°C ~ +85°C
Storage Temperature Range	-10°C ~ +40°C
MSL level	1



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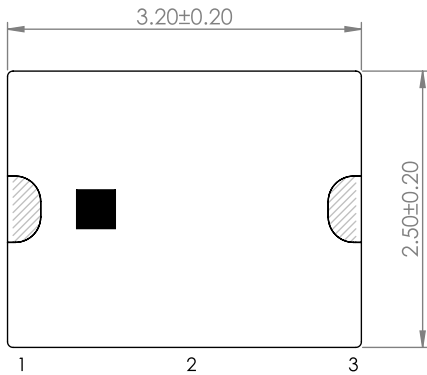


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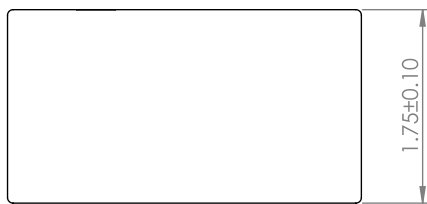


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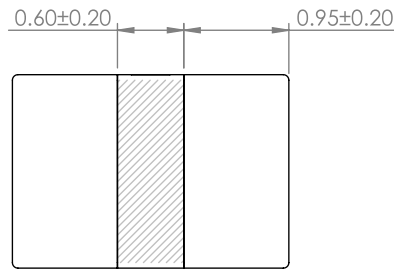
Product Dimensions



TOP VIEW

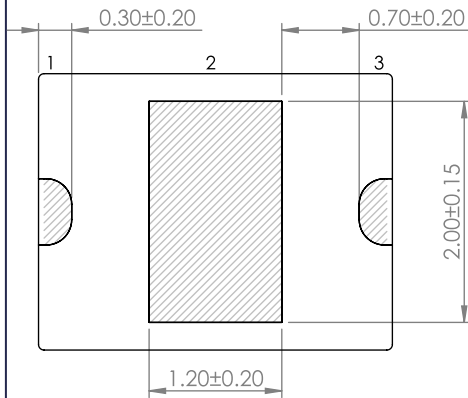
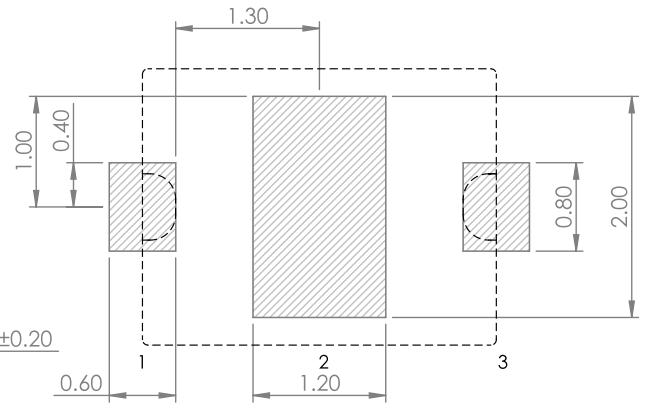


FRONT VIEW



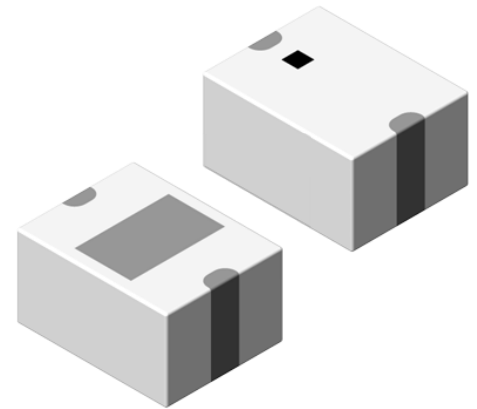
SIDE VIEW

RECOMMENDED LAND PATTERN



BOTTOM VIEW

Pin#	FUNCTION
1	IN
2	GND
3	OUT



Unit: mm

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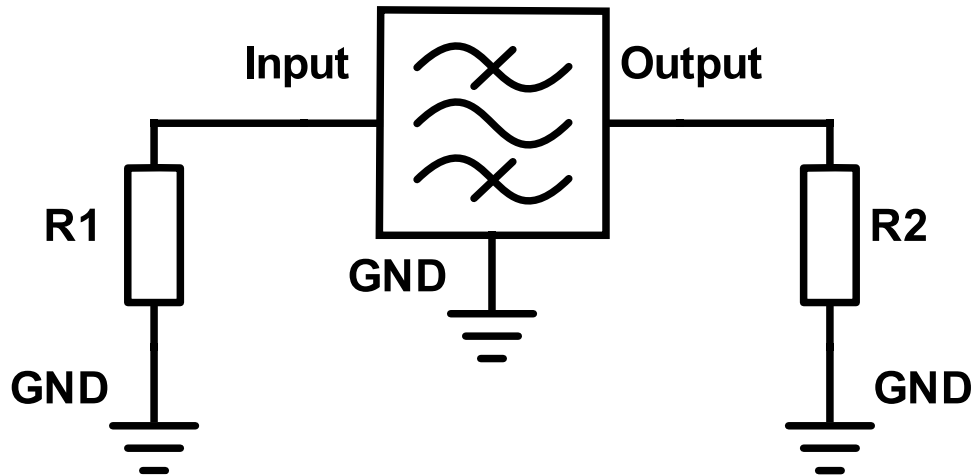


Check Inventory



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Measurement Circuit



Port	Matching Component
Input (1)	R1: 50Ω
Output (3)	R2: 50Ω

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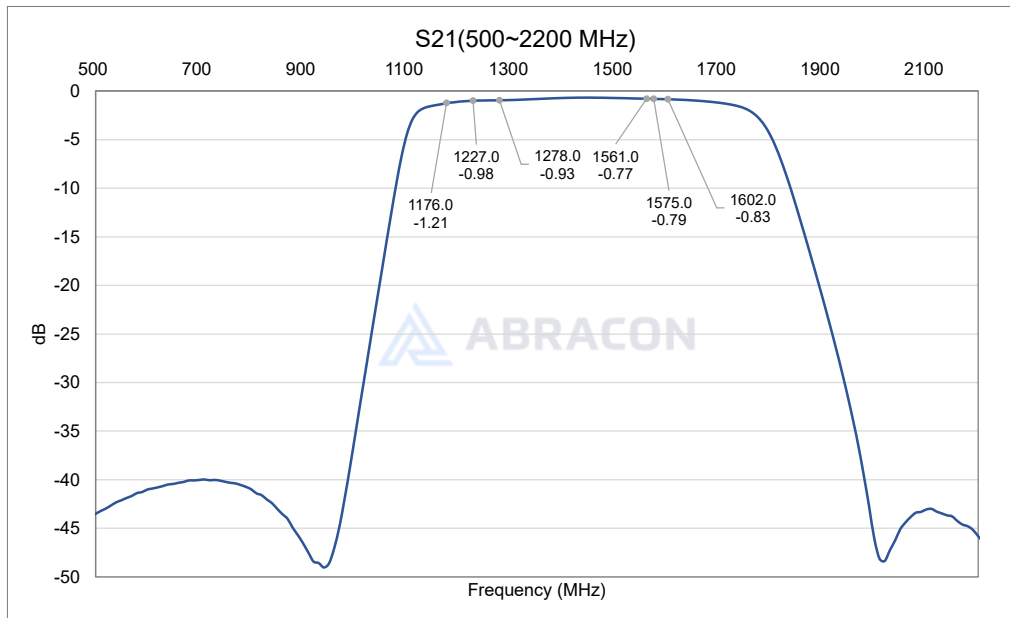
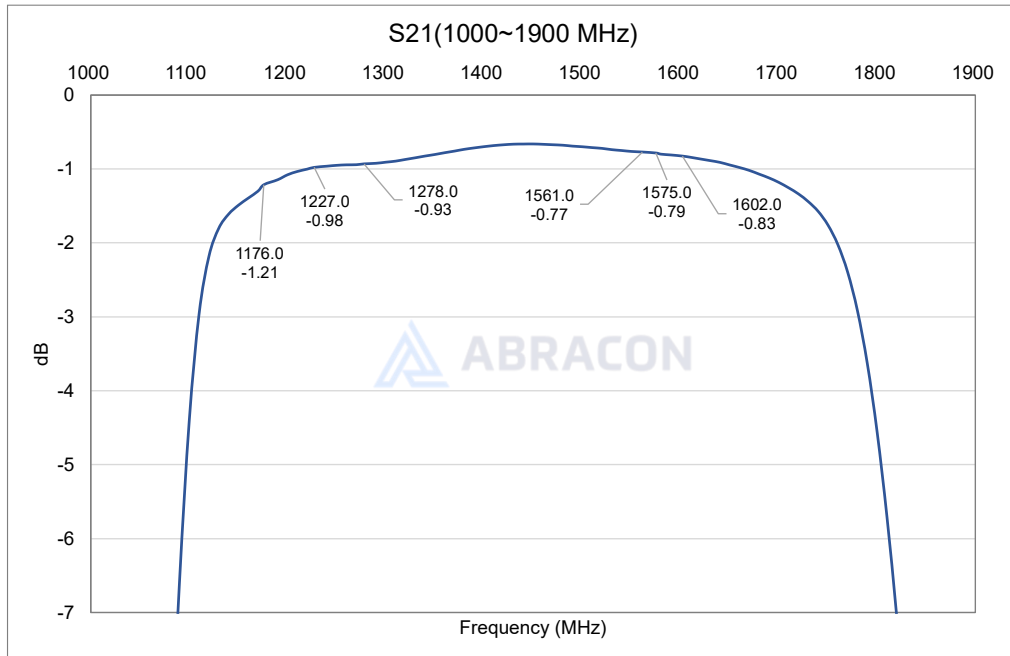
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Frequency Characteristics

S21 narrow band



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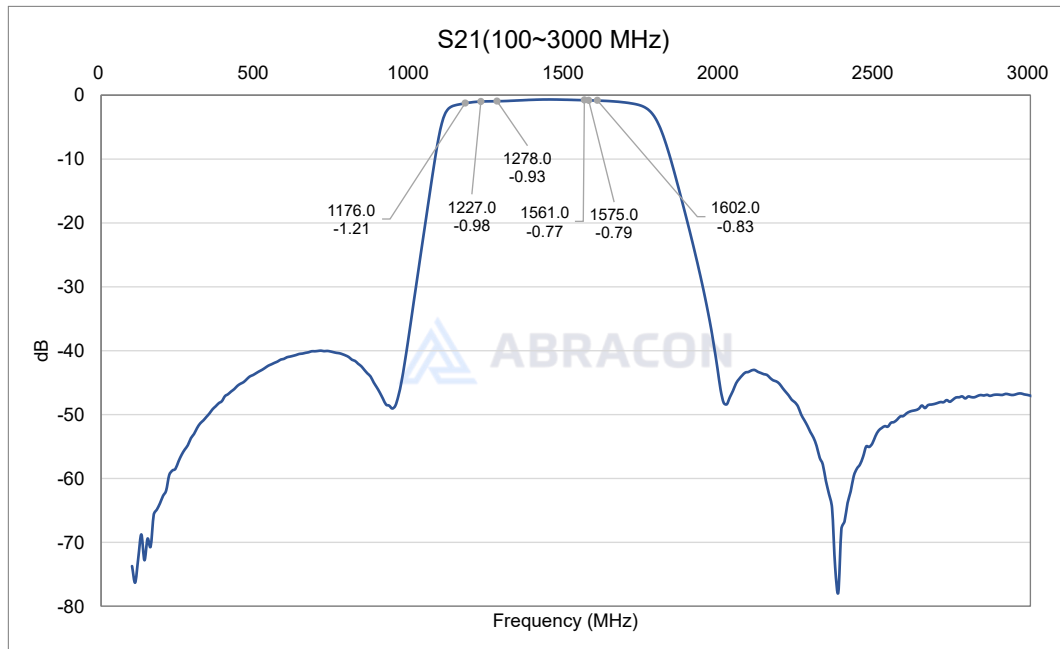


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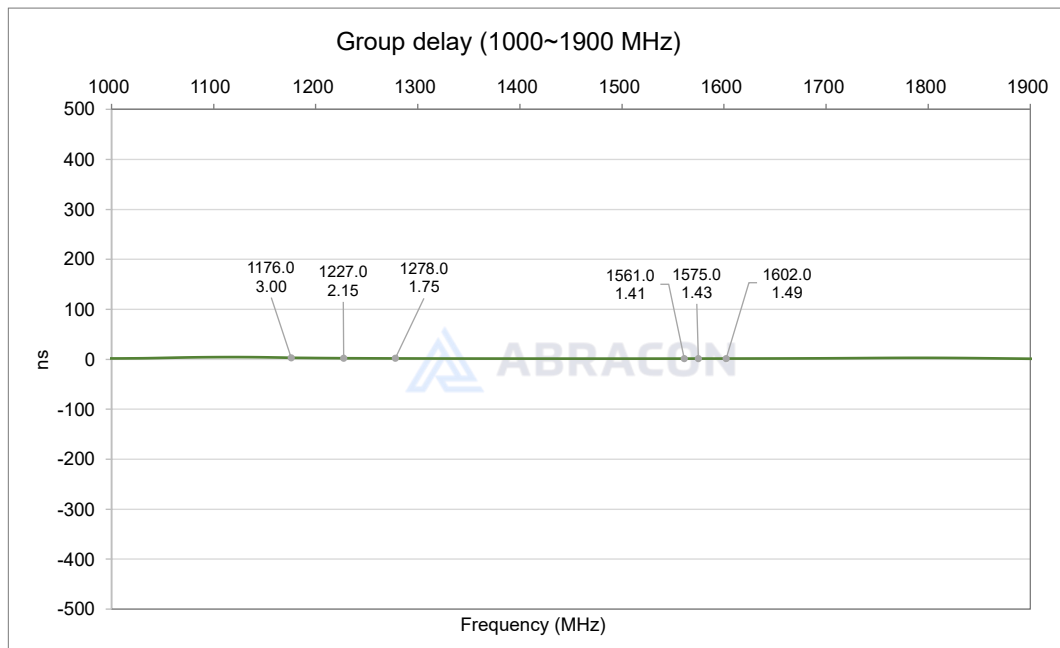


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S21 wide band



Group Delay



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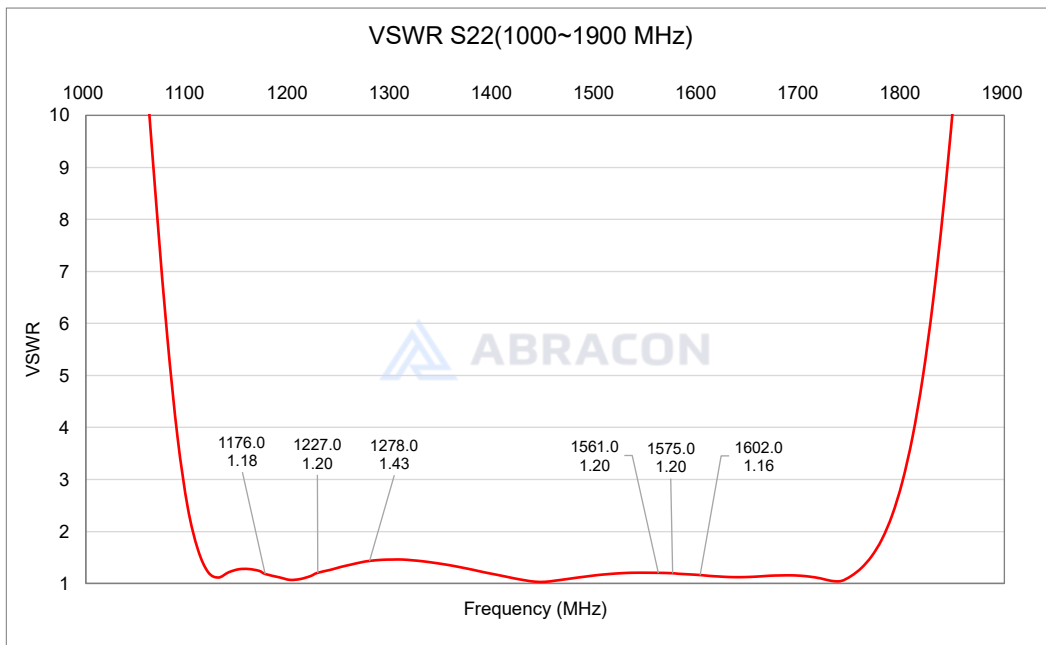
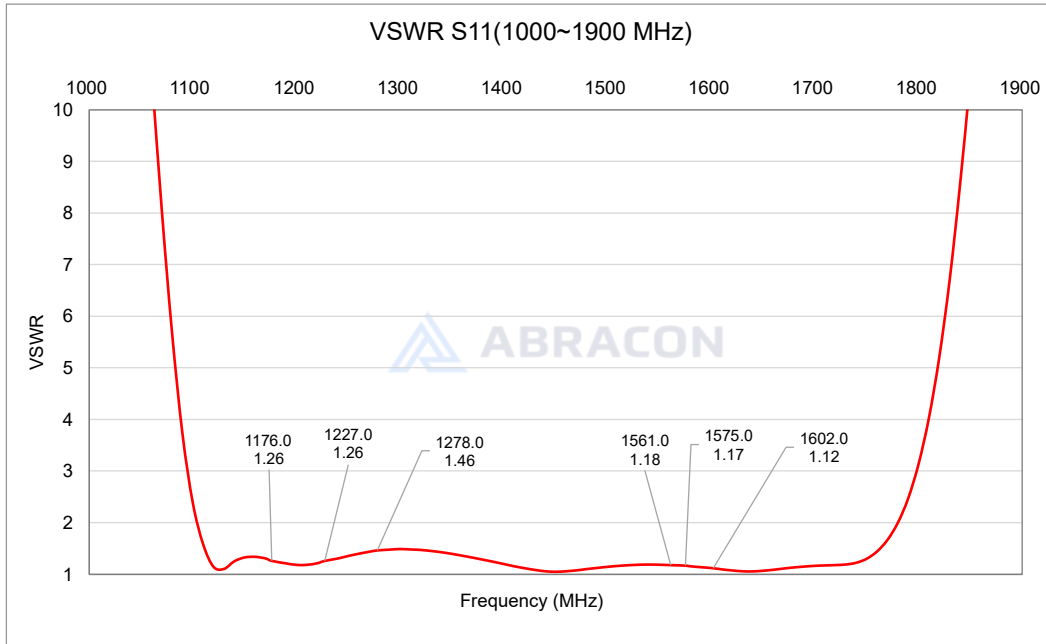


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VSWR (S11 & S22)



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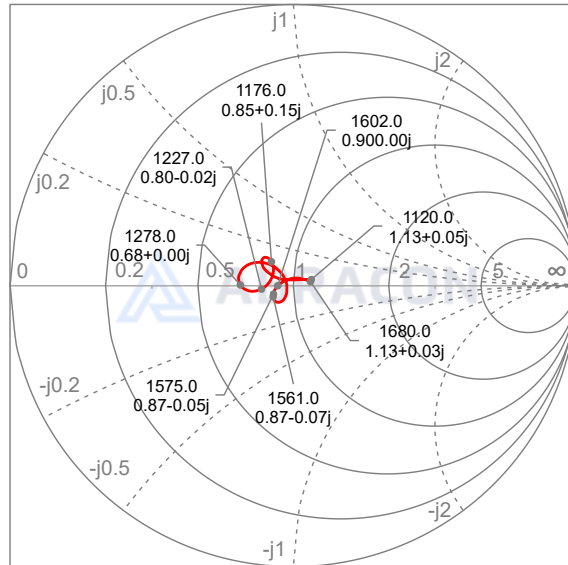


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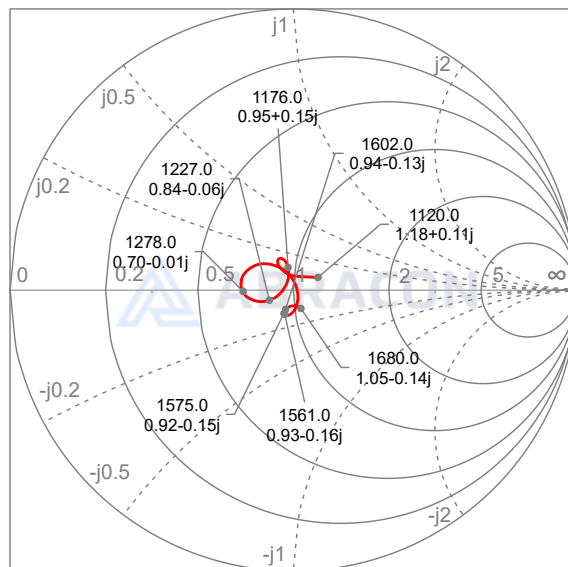


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Smith chart S11 (1120~1680MHz)



Smith chart S22 (1120~1680MHz)



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Reflow Profile [JEDEC J-STD-020]

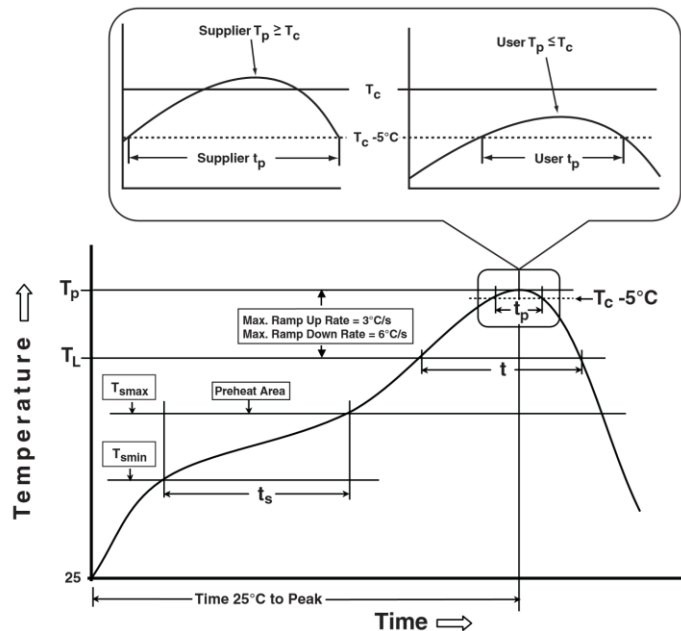


Table 1

SnPb Eutectic Process Classification Temperatures (T_c)		
Package Thickness	Volume mm^3 <350	Volume mm^3 \geq 350
<2.5mm	235°C	220°C
\geq 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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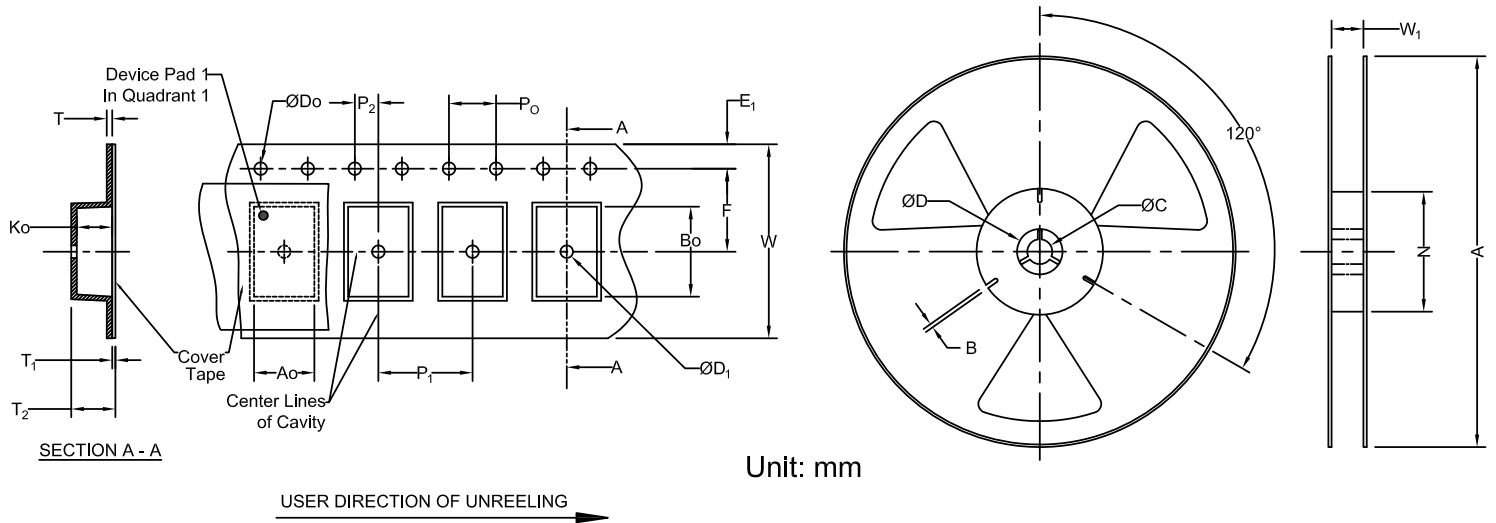
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Packaging

Tape & Reel Dimension



Carrier Tape Specifications (mm)

Do	E ₁	P ₀	P ₂	T	F	P ₁	W	A ₀	B ₀	K ₀	Reel Qty
1.50 ± 0.1	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	0.27 Max.	3.5 ± 0.05	4.0 ± 0.1	8.0 ± 0.3	2.85 ± 0.1	3.50 ± 0.1	1.95 ± 0.05	2,000

Reel Specifications (mm)

A	W ₁	N	C	B
178.0 ± 1.0	8.4 +1.5/-0.0	58.0 ± 0.2	13.5 ± 0.2	2.45 ± 0.2

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