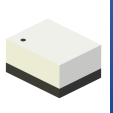


SMD 1176 MHZ SAW FILTER



AFII-SW-0060

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1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

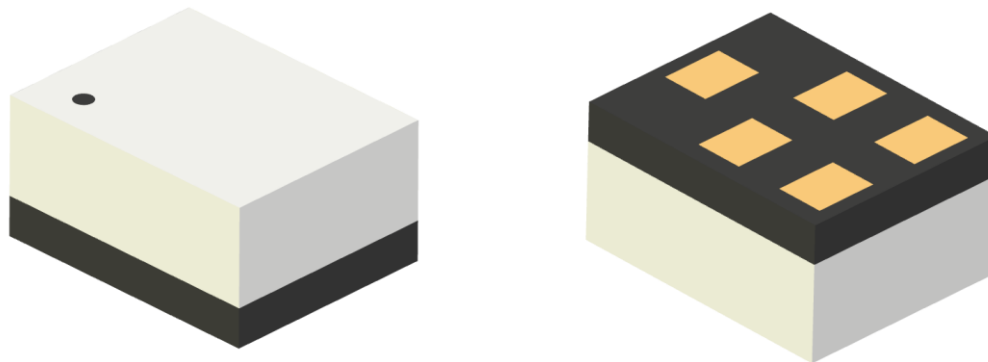
Features

- Supports GNSS L5/E5a/B2a Band
- 1.4 x 1.1 x 0.7mm in Size
- Low Insertion Loss: 1.4 dB
- Out-of-Band Rejection: > 35 dB
- 50 Ohms Single-Ended Input & Output
- Maximum Input Power: +10 dBm

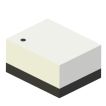
Applications

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

Product Image



SMD 1176 MHZ SAW FILTER



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1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

Electrical Specification

Parameters	Minimum	Typical	Maximum	Units	Notes
Center Frequency(fc)	-	1176	-	MHz	-
VSWR	-	1.8	2.3		1166.22 ~ 1186.68MHz
Insertion Loss ⁽¹⁾	-	1.4	1.6	dB	1166.22 ~ 1186.68MHz
Amplitude Ripple ⁽¹⁾	-	0.5	1.0		1166.22 ~ 1186.68MHz
Group Delay ⁽¹⁾	-	19	22		1166.22 ~ 1186.68MHz
Group Delay Ripple ⁽¹⁾	-	0.17	0.6	ns	1166.22 ~ 1186.68MHz
Attenuation ⁽²⁾ (Reference level from 0 dB)	30	35	-	dB	698 ~960 MHz
	30	35	-		1427 ~1463 MHz
	30	35	-		1700 ~2200 MHz
	34	40	-		2300 ~2400 MHz
	35	42	-		2400 ~2483 MHz
	35	42	-		2500 ~2690MHz
	30	45	-		2690 ~3000MHz
Source Impedance ⁽³⁾ (single ended)	-	50	-	Ω	-
Load Impedance ⁽³⁾ (single ended)	-	50	-	Ω	-
RF Power Dissipation	-	10	-	dBm	

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

(2) Averaged values of linear S-Parameters at +25°C

(3) A matching network is unnecessary (refer to the Measurement Circuits section).

Mechanical Specification

Parameters	Specifications
Filter Dimension	1.4 x 1.1 x 0.7mm
Mounting Type	Surface Mount

Environmental Specification

Parameters	Specifications
Operating Temperature Range	-30°C ~ +85°C
Storage Temperature Range	-40°C ~ +85°C
ESD (HBM)	>100 V
ESD (CDM)	>100 V
MSL level	3
RoHS Compliant	Yes

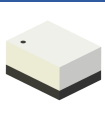


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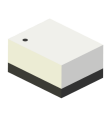


1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

Ordering Information

Part Number	Description
AFII-SW-0060	SMD 1176 MHZ SAW FILTER on Cut Tape
AFII-SW-0060-T	SMD 1176 MHZ SAW FILTER on Tape & Reel
AFII-SW-0060-EVB	SMD 1176 MHZ SAW FILTER Evaluation Board

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



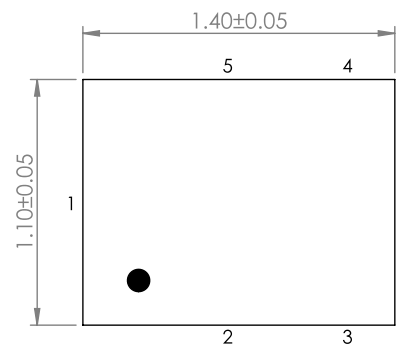
SMD 1176 MHZ SAW FILTER

AFII-SW-0060

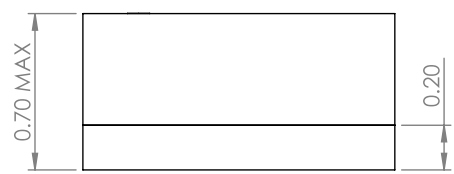
Request Samples  Check Inventory 

1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

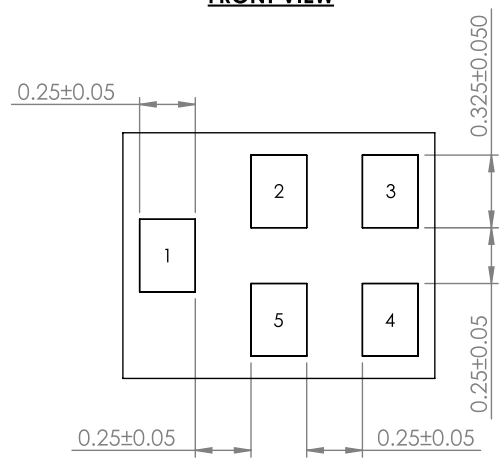
Product Dimensions



TOP VIEW



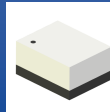
FRONT VIEW



BOTTOM VIEW

Unit : mm

Pin No.	Description
1	Input
4	Output
2, 3, 5	Ground



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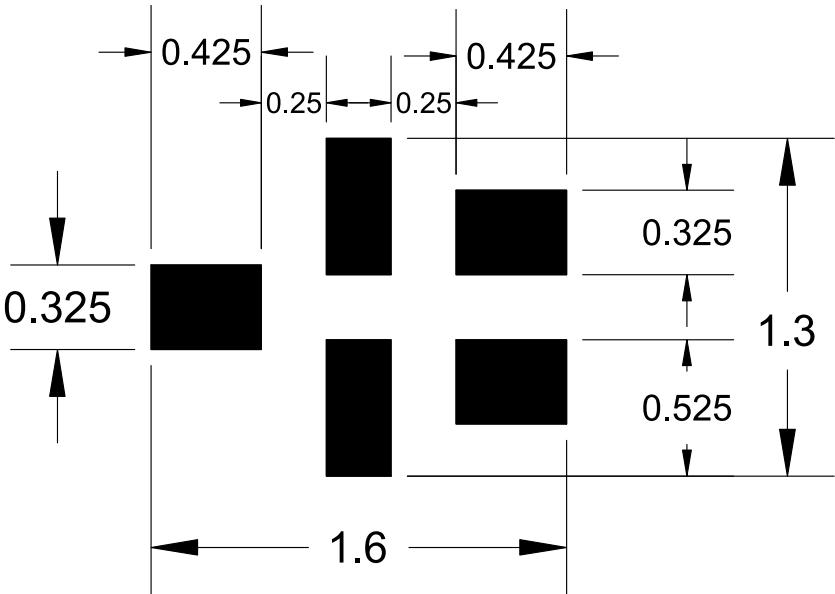


Check Inventory



1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

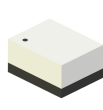
Recommended Land Pattern



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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Request Samples

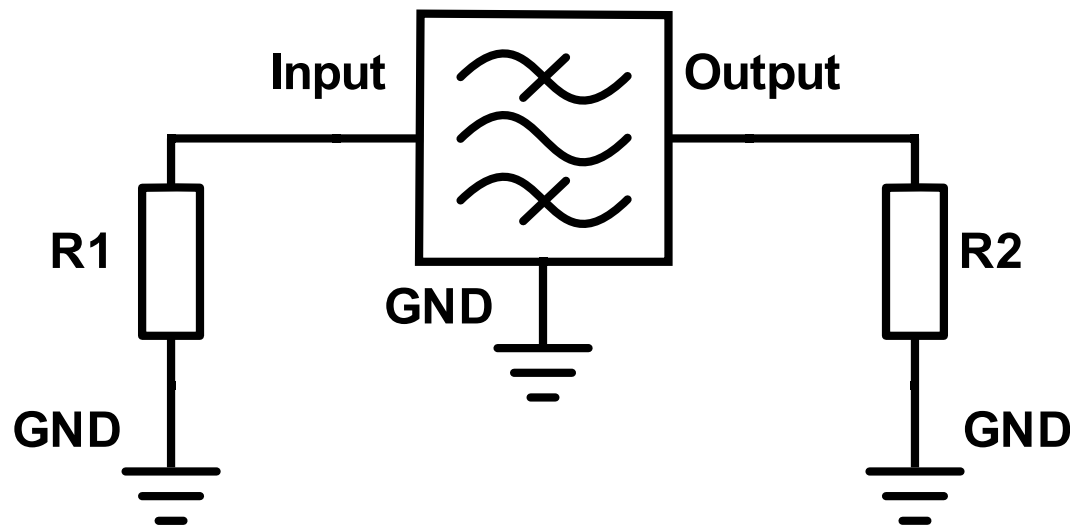


Check Inventory



1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

Measurement Circuit



Port	Matching Component
Input (Pin 1)	R1: 50 Ω
Output (Pin 4)	R2: 50 Ω

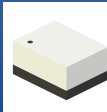


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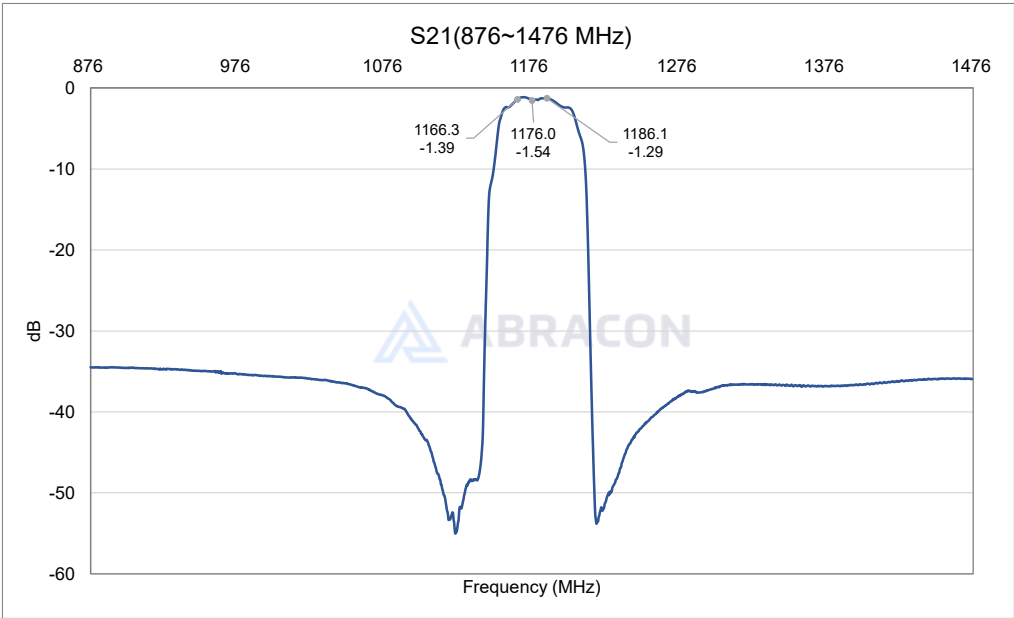
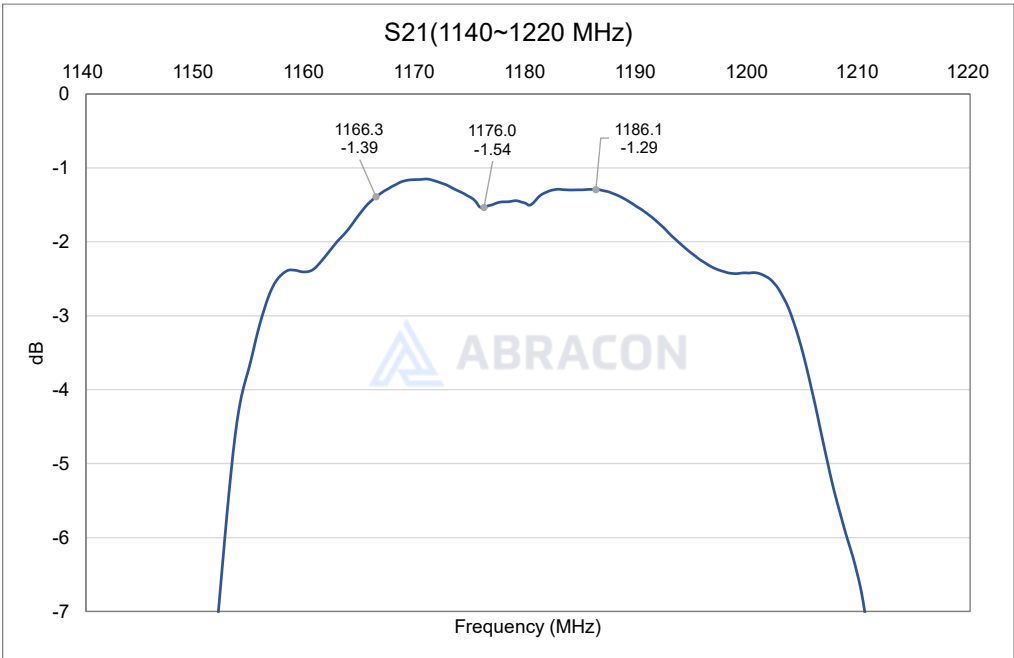
Check Inventory

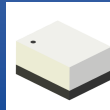


1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

Frequency Characteristics

S21 narrow band





SMD 1176 MHz SAW FILTER

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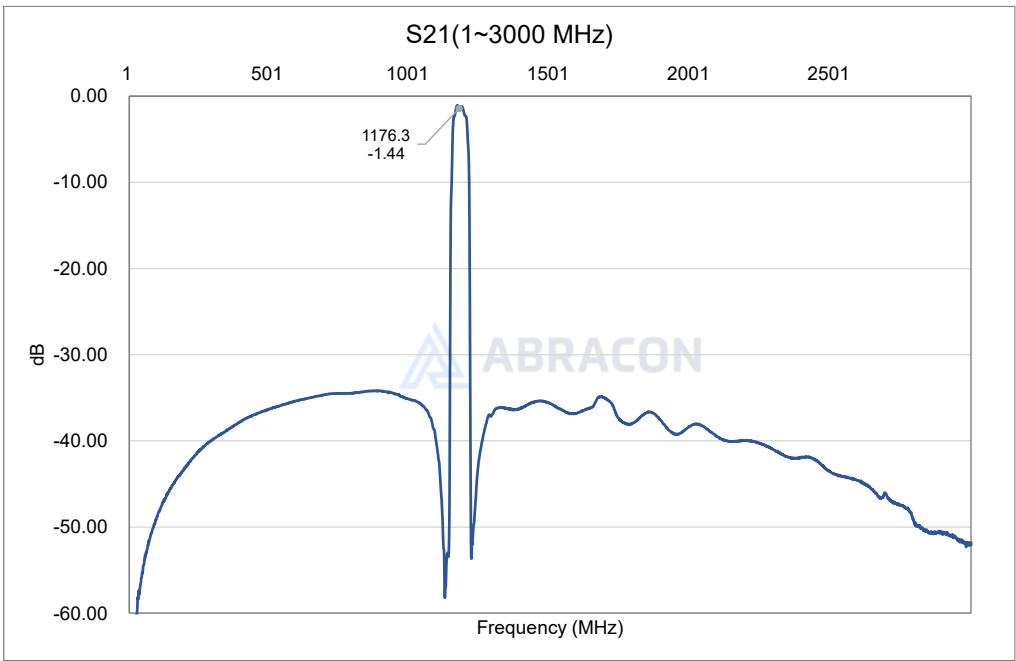


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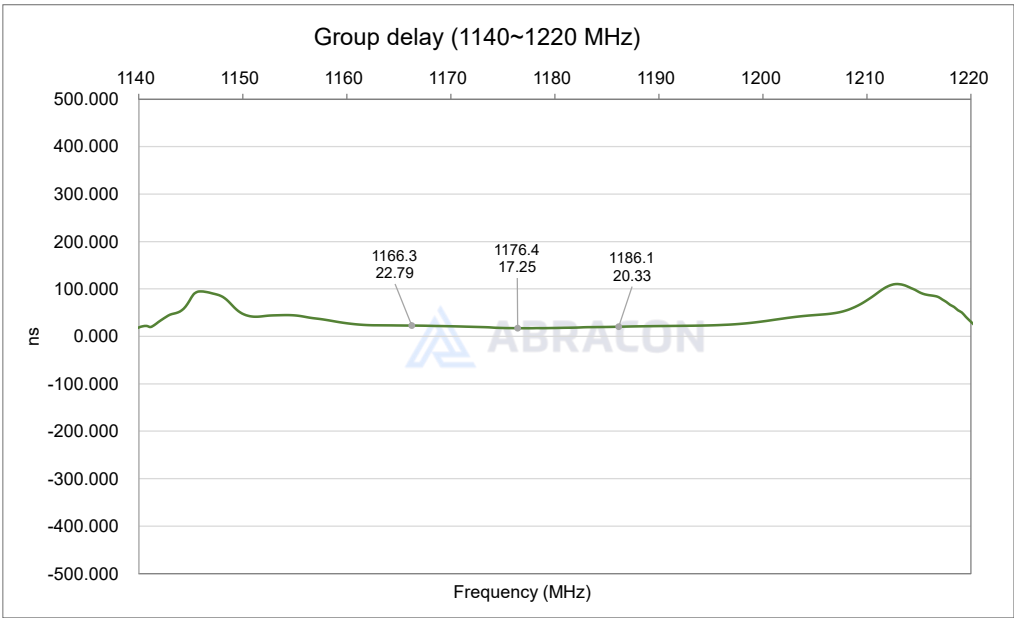


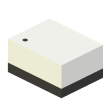
1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

S21 Wide Band



Group Delay





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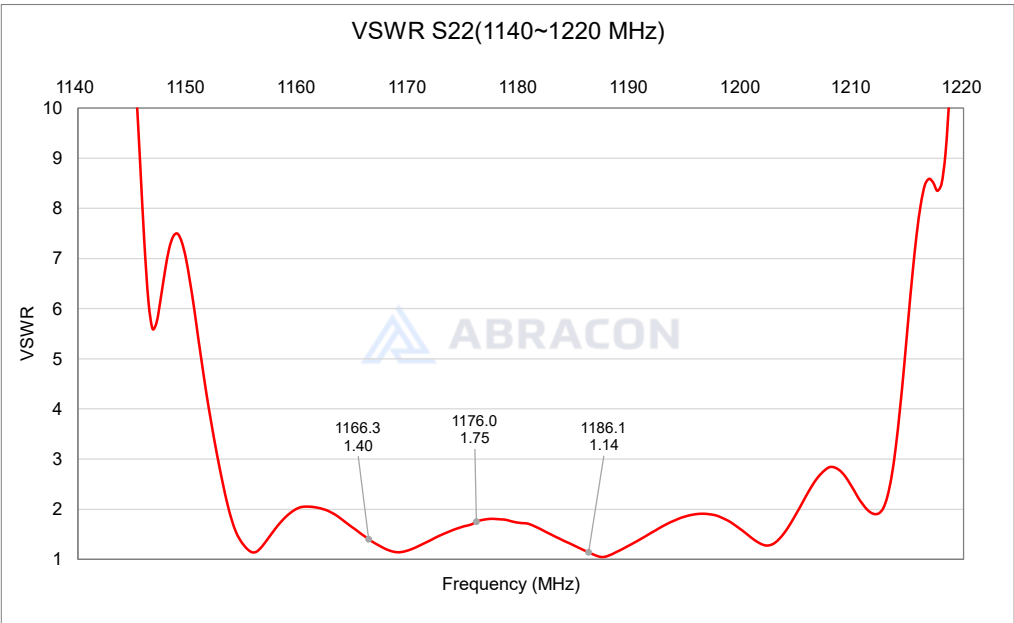
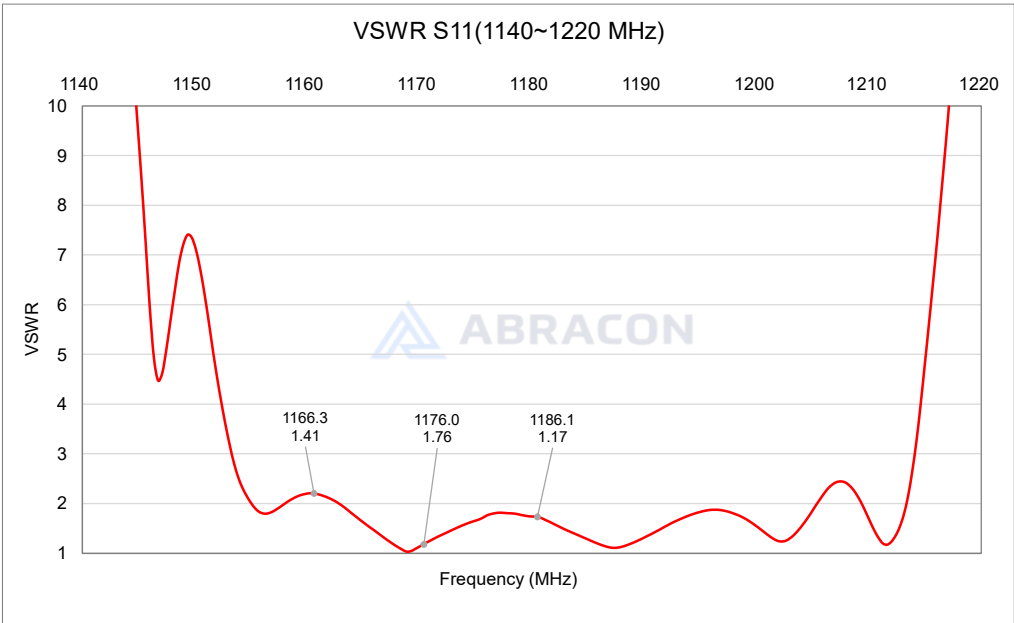


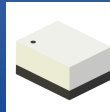
Check Inventory



1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

VSWR (S11 & S22)





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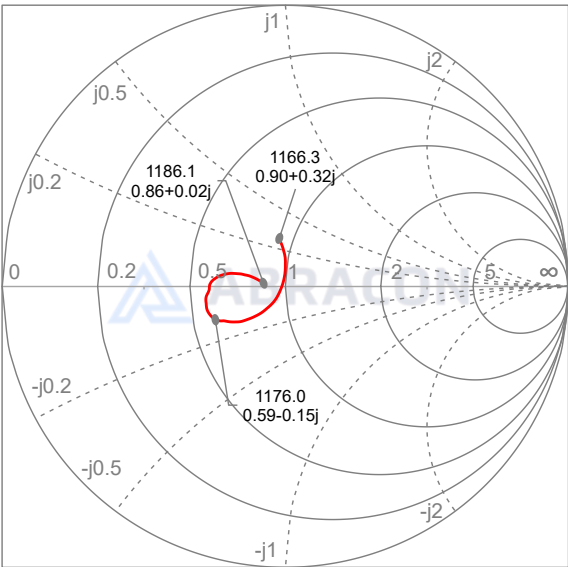
Check Inventory



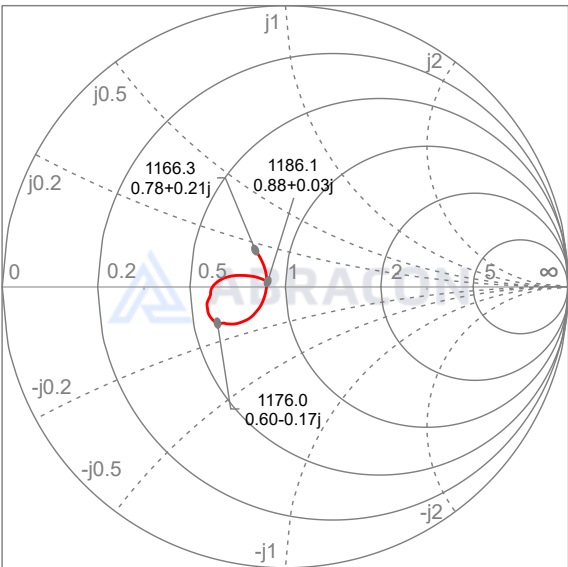
1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

Smith Chart (S11 & S22)

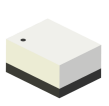
Smith chart S11 (1166~1186MHz)



Smith chart S22 (1166~1186MHz)



SMD 1176 MHZ SAW FILTER



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1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

Reflow Profile [JEDEC J-STD-020]

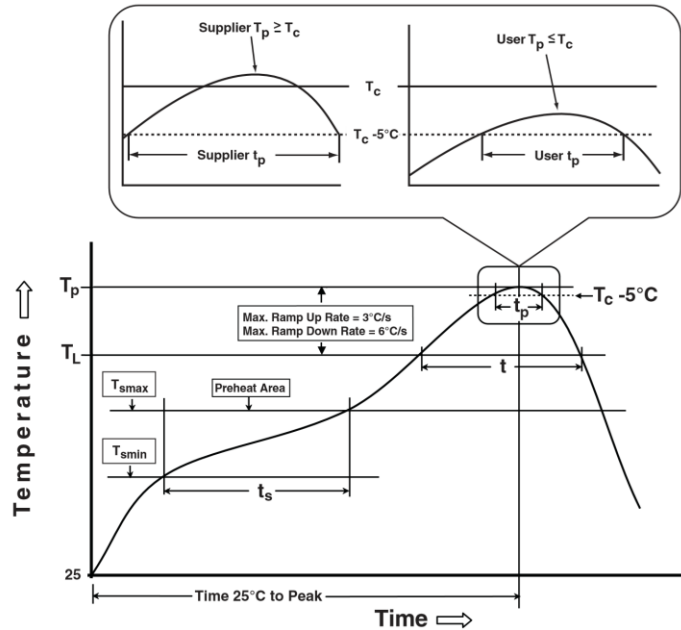


Table 1

SnPb Eutectic Process
Classification Temperatures (T_c)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥ 350
<2.5mm	235°C	220°C
$\geq 2.5\text{mm}$	220°C	220°C

Table 2

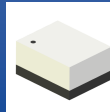
Pb-Free Process
Classification Temperatures (T_c)

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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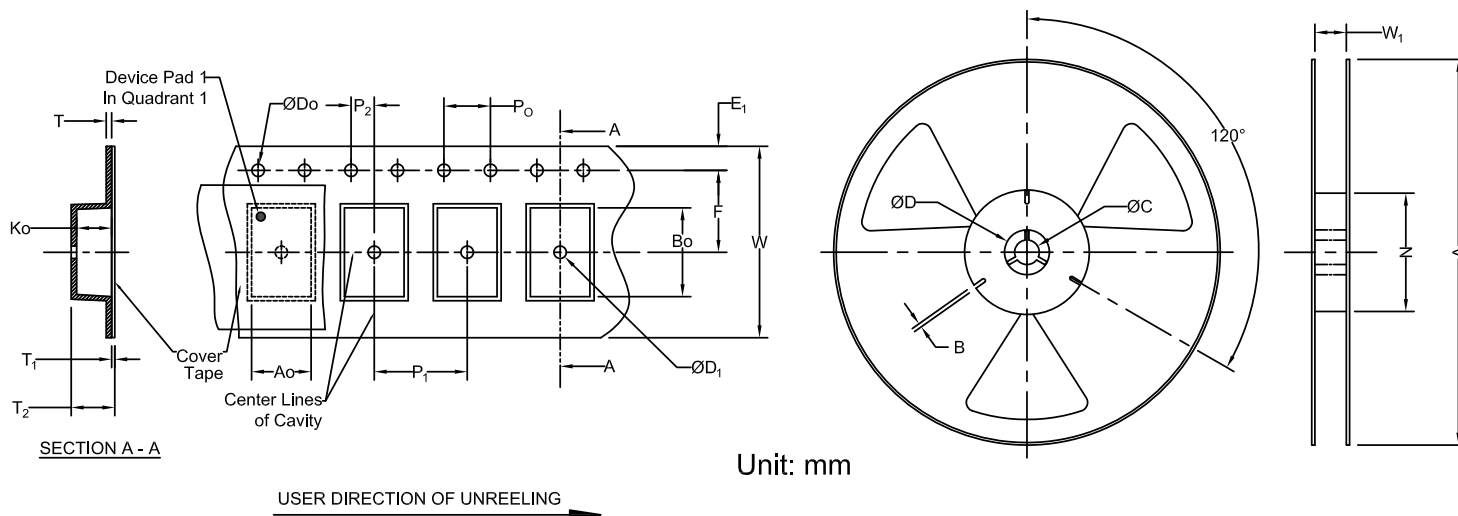
Check Inventory



1.4 x 1.1 x 0.7mm
RoHS Compliant
MSL Level = 3

Packaging

Tape & Reel Dimension



Carrier Tape Specifications (mm)

D0	D1	E1	P0	P2	F	P1	W	A0	B0	K0	Reel Qty
1.55 ± 0.05	0.60 ± 0.05	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	3.5 ± 0.05	4.0 ± 0.1	8.0 ± 0.1	1.30 ± 0.05	1.60 ± 0.05	0.77 ± 0.05	5,000

Reel Specifications (mm)

A	W1	N	C
178.0 ± 1.0	8.48 ± 0.15	57.12 ± 0.15	13.12 ± 0.15

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