

SMD 169 MHz Low Pass Ceramic Filter



AFII-LC-0093

Request Samples



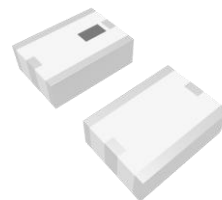
Check Inventory



4.5 x 3.2 x 1.5 mm
RoHS Compliant
MSL Level = 1

Description

This compact SMD LC filter is optimized for Sub-GHz applications, including wM-Bus at 169 MHz, smart metering, and FM radio broadcast (88-108 MHz). Measuring 4.5 x 3.2 x 1.5 mm, it features low insertion loss of 1.6 dB and out-of-band rejection exceeding 20 dB for effective harmonic suppression to meet regulatory certification requirements. With 50-ohm single-ended I/O ports, this RoHS-compliant, MSL Level 1 component integrates seamlessly into land mobile radio (LMR) and other communication systems, ensuring signal purity and interference control in space-constrained RF designs.



Features

- 4.5 x 3.2 x 1.5 mm in Size
- Low Insertion Loss: 1.6 dB
- Out-of-Band Rejection: > 20 dB
- 50 Ohms Single-Ended Input & Output
- [RoHS Compliant](#) | [MSL Level 1](#)

Applications

- Sub-GHz / wM-Bus 169MHz
- Smart Metering
- FM Radio Broadcast (88-108 MHz)
- Land Mobile Radio (LMR)
- Harmonic Suppression for Regulatory Certification

Ordering Information

Part Number	Description
AFII-LC-0093	SMD 169 MHz Low Pass Ceramic Filter on Cut Tape
AFII-LC-0093-T	SMD 169 MHz Low Pass Ceramic Filter on Tape & Reel
AFII-LC-0093-EVB	SMD 169 MHz Low Pass Ceramic 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 (f_0)	-	169	-	MHz	-
Passband	1	-	170	MHz	-
VSWR	-	-	2	-	-
Insertion Loss ⁽¹⁾	-	0.7	1.6	dB	-
Amplitude Ripple	-	0.26	-	dB	-
Relative Attenuation ⁽¹⁾ (Reference level: 0dB)	30	-	-	dB	@ 220 MHz
	20	-	-		@ 300 ~1000 MHz
Group Delay ⁽¹⁾	-	-	7.9	ns	
Group Delay Ripple ⁽¹⁾	-	1	4.6		
Source Impedance ⁽²⁾ (single ended)	-	50	-	Ω	-
Load Impedance ⁽²⁾ (single ended)	-	50	-	Ω	-

Notes: (1) Typical values are the average values within the corresponding frequency band.

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

Mechanical Specification

Parameters	Specifications
Dimension	4.5 x 3.2 x 1.5 mm
Mounting Type	Surface Mount
Additional Resources	Download STEP File, Package Drawing, 3D PDF

Environmental Specification

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



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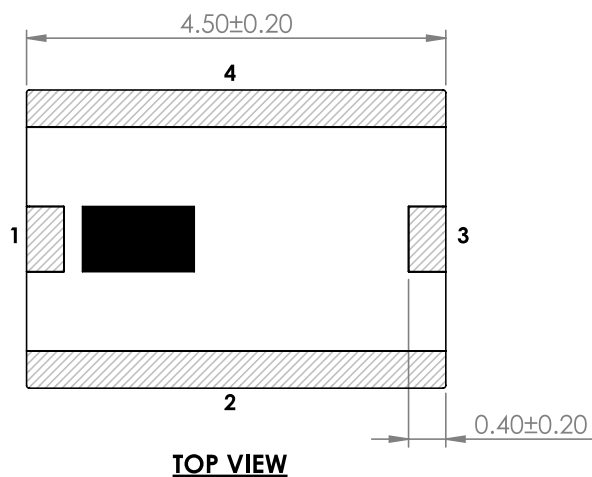


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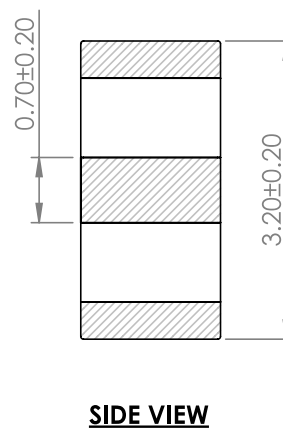


4.5 x 3.2 x 1.5 mm
RoHS Compliant
MSL Level = 1

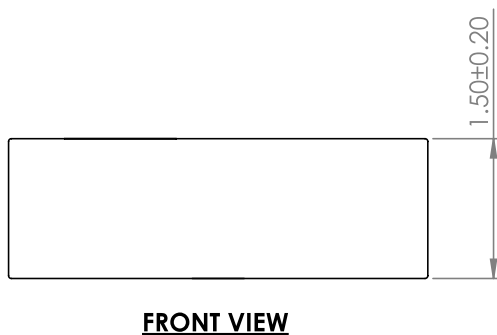
Product Dimensions



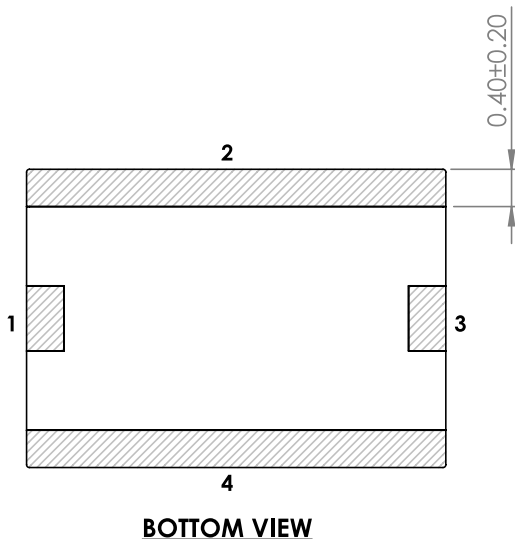
TOP VIEW



SIDE VIEW

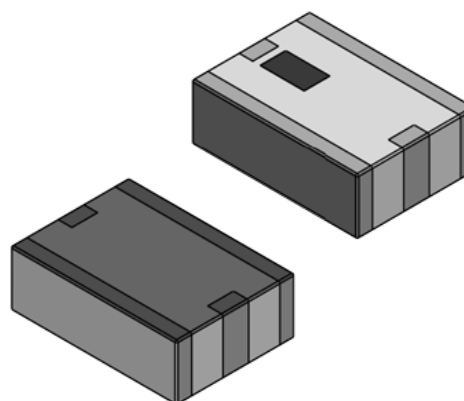


FRONT VIEW



BOTTOM VIEW

Pin #	FUNCTION
1	IN
2	GND
3	OUT
4	GND



Unit: mm



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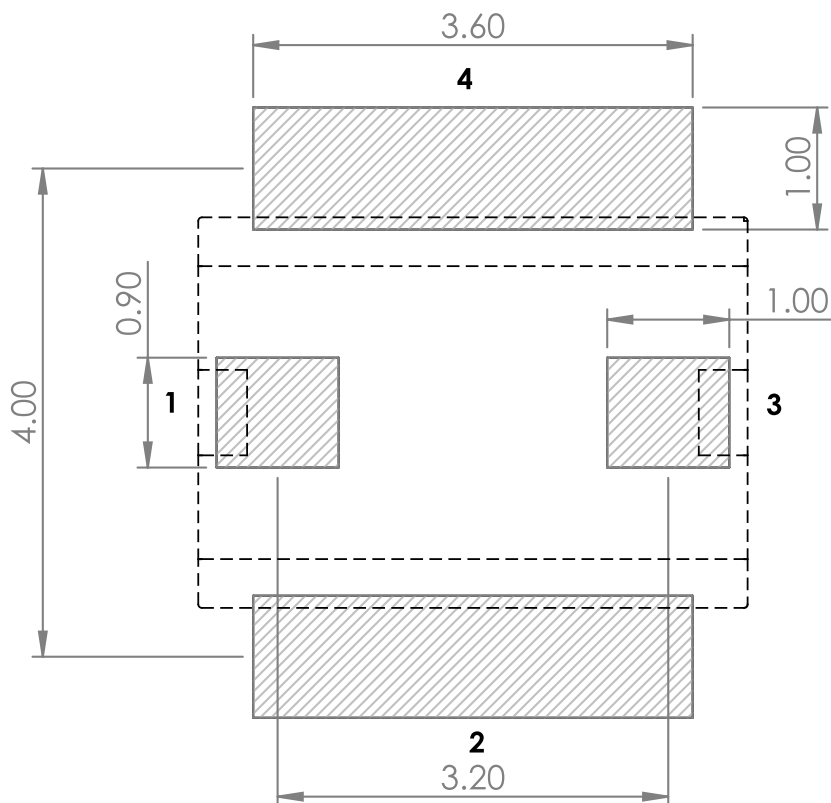


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4.5 x 3.2 x 1.5 mm
RoHS Compliant
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Recommended Land Pattern



Unit: mm

Please note: To ensure signal integrity, please design the PCB trace width for a 50-ohm characteristic impedance based on your specific board material and thickness. If you need technical assistance, please contact [Abracon online support](#) via our online support platform.

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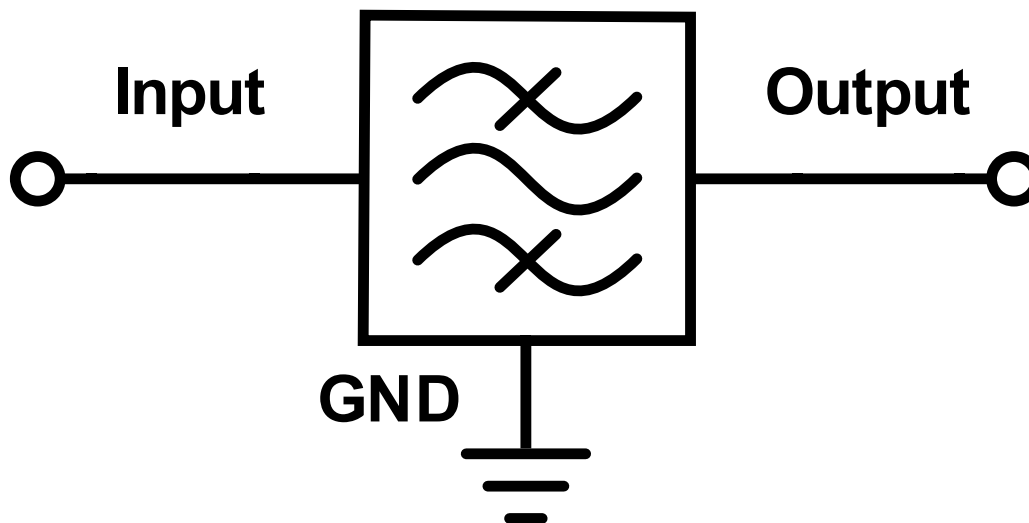


4.5 x 3.2 x 1.5 mm

RoHS Compliant

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Measurement Circuit



Pin No.	Description
1	Input Impedance: 50 Ω
3	Output Impedance: 50 Ω
2, 4	Ground

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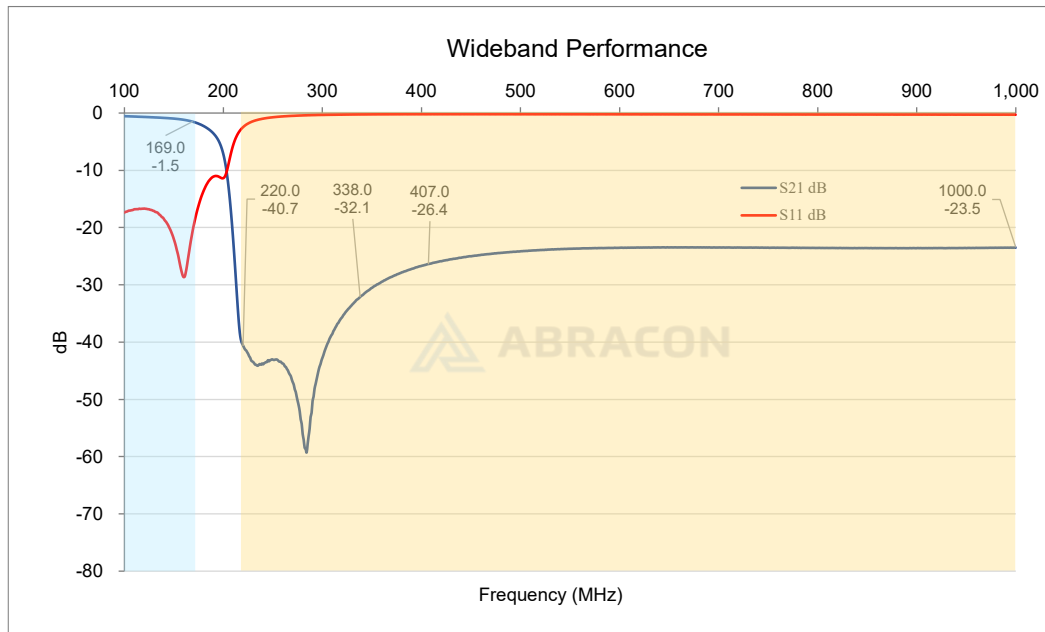


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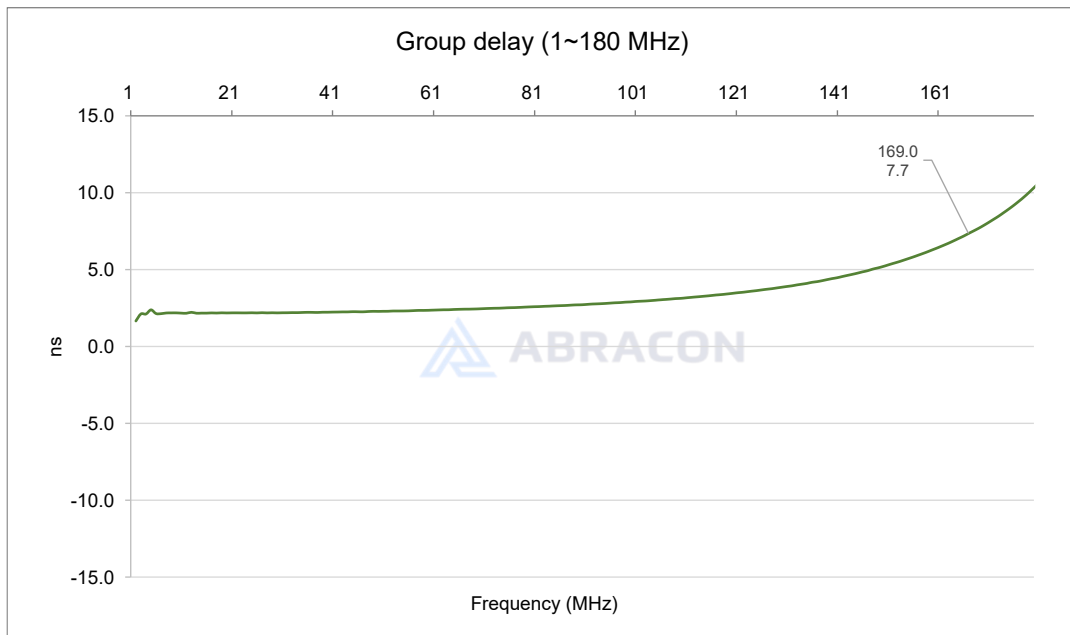


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Frequency Characteristics



Group Delay



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Reflow Profile [JEDEC J-STD-020]

Solder paste: Sn/3.0Ag/0.5Cu

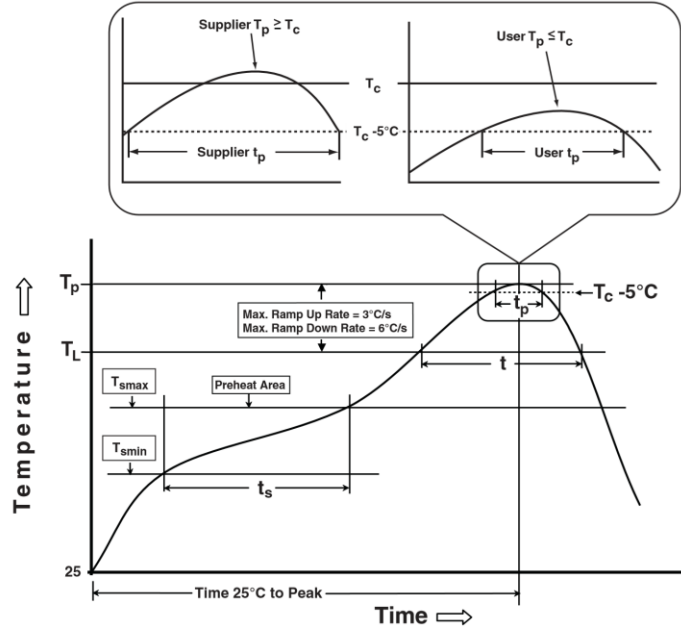


Table 1

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	200°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	217°C
Time at Liquidous (T_L)	60 – 150 sec.	60 – 150 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.	10 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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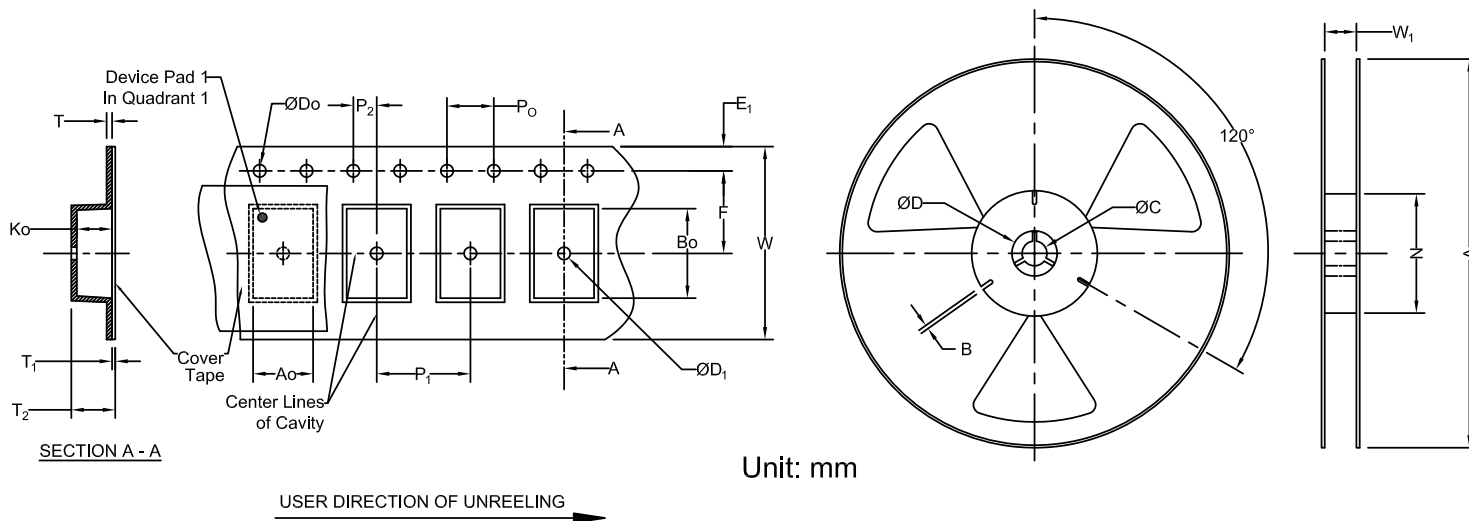
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Packaging

Tape & Reel Dimension



Carrier Tape Specifications (mm)

E1	D0	P0	P2	F	P1	W	A0	B0	K ₀	T	Reel Qty
1.75 ± 0.1	1.5 ± 0.1	4.0 ± 0.1	2.0 ± 0.1	5.5 ± 0.05	8.0 ± 0.05	12.0 ± 0.1	3.5 ± 0.20	4.8 ± 0.20	2.3 max	0.45 max	2,000

Reel Specifications (mm)

A	W ₁	N	C
178 ± 2.0	10.0 ± 1.5	58 ± 2.0	13.5 ± 0.2

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