

SAW Bandpass Filter F4335



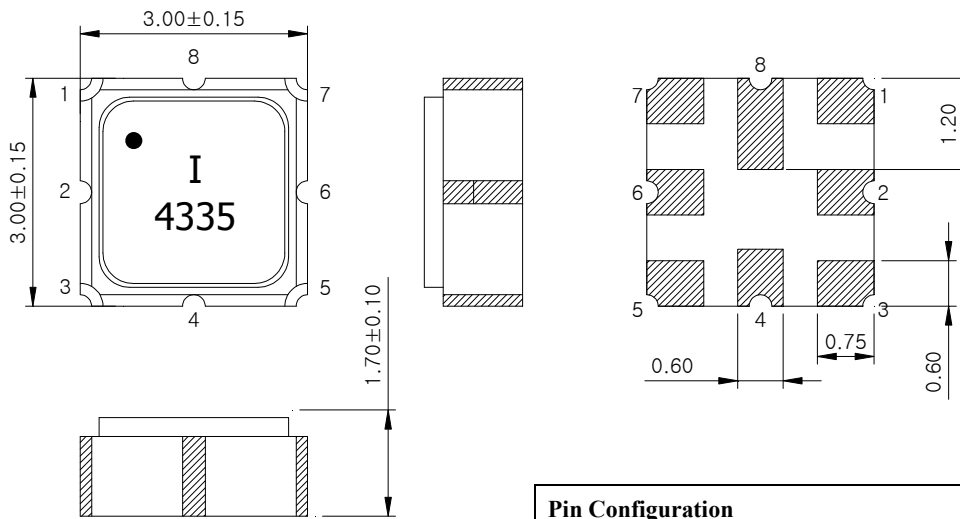
Features

- RF bandpass filter for Remote Keyless Entry systems.
- Balanced or unbalance operation
- Ceramic Surface Mounted Device Package (3.0 mm × 3.0 mm)
- RoHS Compliant
- AEC-Q200 qualified component family
- Electrostatic Sensitive Device (ESD)

RoHS Compliant

Tested by SGS Testing Korea

Package dimensions



Dimensions shown are nominal in millimeters
 Body : Al₂O₃ Ceramic
 Lid : Kovar, Ni Plated
 Terminations : Au plating 0.3 ~ 1.0 um,
 Over a 1.27 ~ 8.89 um Ni Plating

Pin Configuration	
1	Input (recommended) or input ground
2	Input ground (recommended) or input
5	Output (recommended) or output ground
6	Output ground (recommended) or output
3, 4, 5, 6	To be grounded

Maximum ratings

Parameter	Unit	Minimum	Typical	Maximum
Operalbe temperature range	℃	-45	25	120
Storage temperature range	℃	-45	25	120
DC voltage	V	-	-	6
Power handling capability	dBm	-	-	10

	ITF Co., Ltd. 102-901, Bucheon Technopark 364, Samjeong-Dong, Ojeong-Gu, Bucheon-City, Gyeonggi-Do, Korea 421-809	Part No.	F4335	
		Rev. Date	2016-05-19	
		Rev.	PS 03	1/9

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Specifications

Fc = 433.92 MHz


Operating Temperature Range : -45°C to +95°C

Typical Specification at 25°C

		Minimum	Typical	Maximum
Center frequency (Fc)	MHz	-	433.92	-
Minimum insertion loss (Matching elements Q = 47)	dB	-	2.4	3.0
Pass band (relative to α_{\min}) 433.78 ~ 434.06 MHz 433.74 ~ 434.10 MHz 433.70 ~ 434.14 MHz	dB	-	0.6	2.0
		-	0.8	3.0
		-	1.2	6.0
3dB Bandwidth	MHz	-	0.72	0.79
Relative attenuation 10.00 ~ 423.50 MHz 423.50 ~ 431.52 MHz 431.52 ~ 432.90 MHz 432.90 ~ 433.10 MHz 434.92 ~ 444.00 MHz 444.00 ~ 500.00 MHz 500.00 ~ 810.00 MHz 810.00 ~ 1200.00 MHz 1200.00 ~ 2500.00 MHz	dBc	48	60	-
		28	40	-
		20	30	-
		17	24	-
		16	25	-
		45	54	-
		42	47	-
		50	54	-
58	63	-		
Impedance for pass band matching Input : $Z_{IN} = R_{IN} \parallel C_{IN}$ Output : $Z_{OUT} = R_{OUT} \parallel C_{OUT}$	$\Omega \parallel pF$	-	290 \parallel 1.8	-
	$\Omega \parallel pF$	-	290 \parallel 1.8	-

Notes :

- 1) All specifications are based on the matching schematic shown below, measured by Agilent Network analyzer and full-2 port calibration.
- 2) Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances

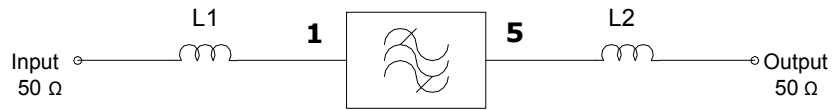
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Matching schematic

(Actual matching values may vary due to PCB layout and parasitic)



$$L1 = L2 = 36 \text{ nH}$$

(* Note : 0805 Coilcraft CS series used for inductor)

Marking configuration

1)
●
I²⁾
F4335³⁾

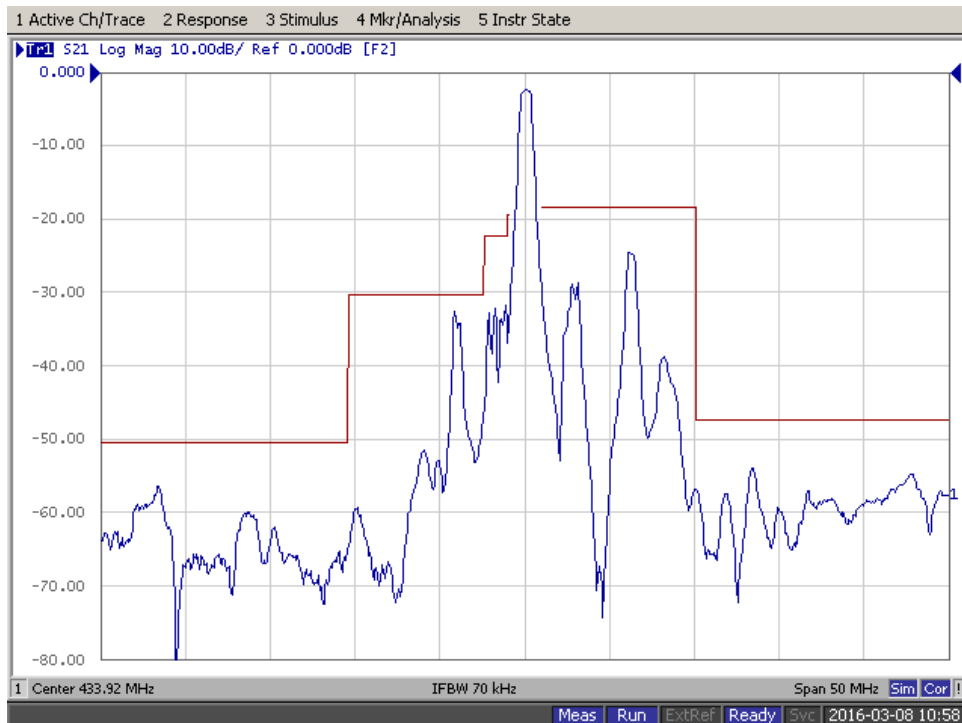
1) Pad Number 1 index
2) Manufacturer name
3) Marking

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Frequency response (at 25°C)



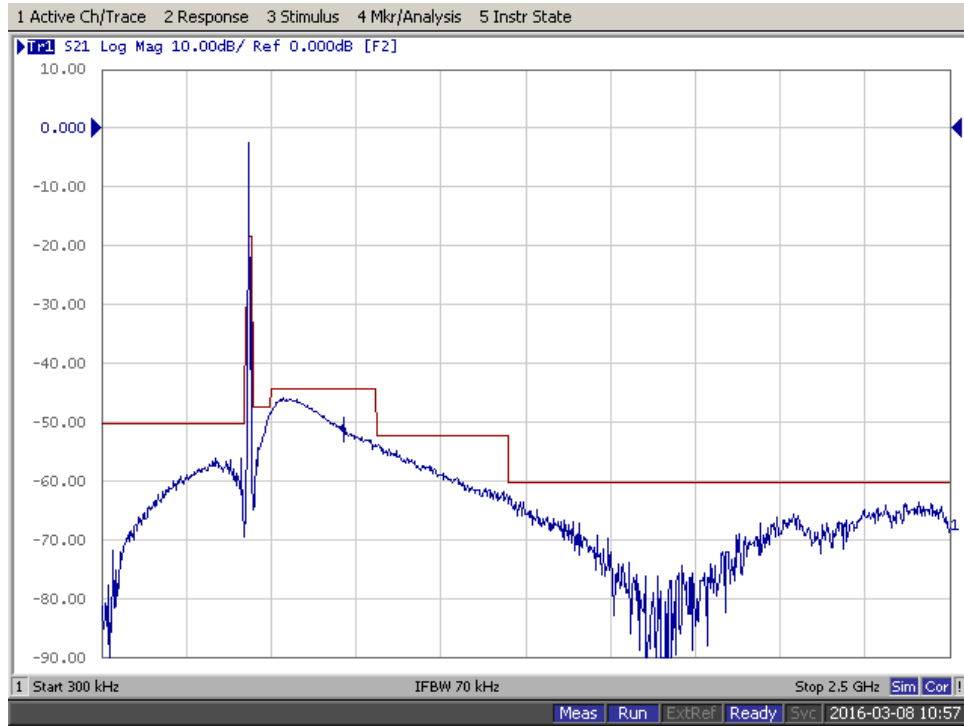
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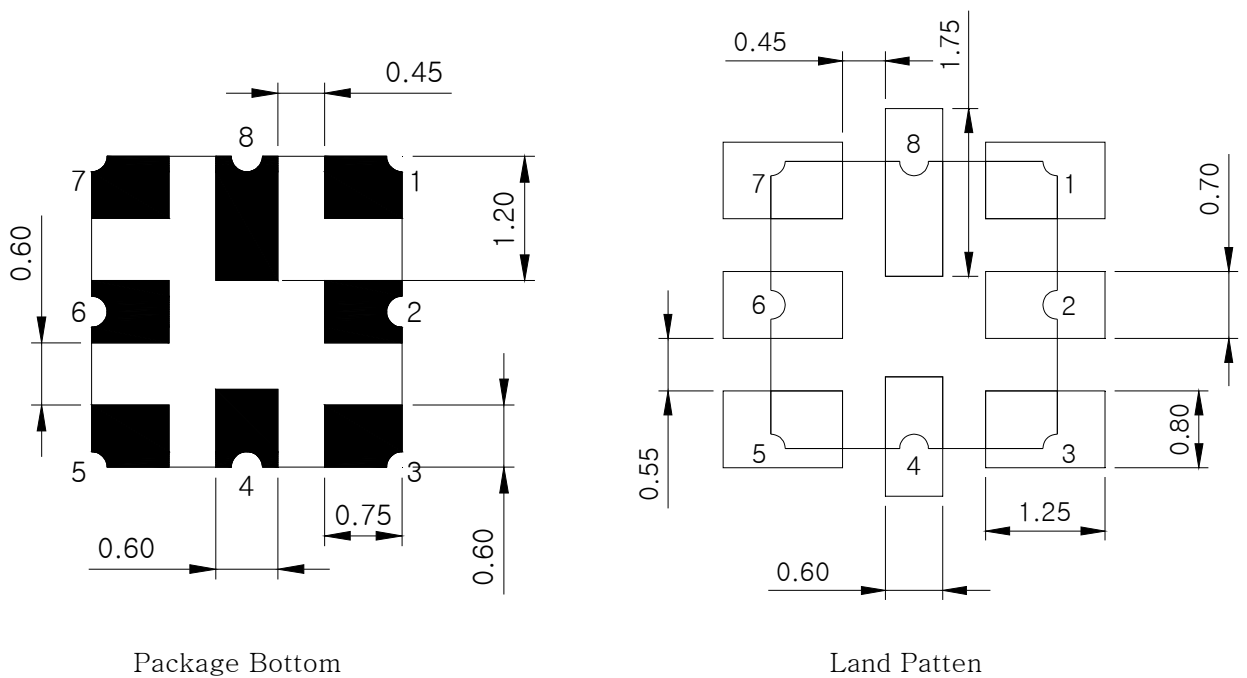
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Frequency response (wideband at 25°C)



Recommend Land Patten



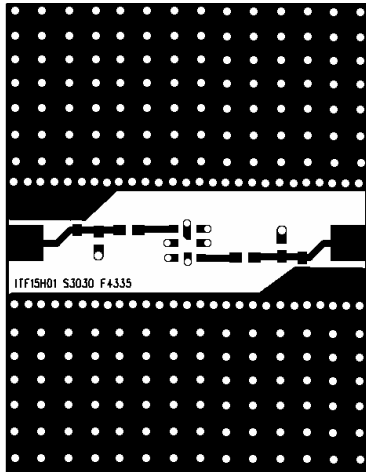
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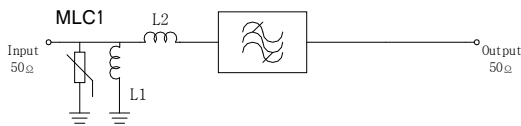
PCB Layout recommend

1. ITF PCB Layout for F4335 package. (pin number 1, 5)
2. For ultimate rejection is necessary to place enough via holes.

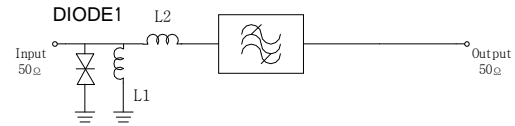


ESD protection of SAW filters

1. SAW filters are weak to Electric Static Discharge
2. Generally, to overcome damages of ESD, recommend suitable matching structure. (Depending input impedance)

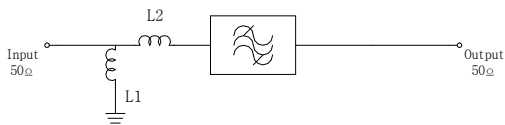


(Case A : MLC varistor used ESD matching structure)

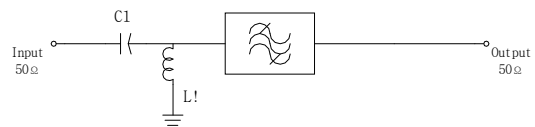


(Case B : Diode used ESD matching structure)

3. In case weak ESD used simple L-C component matching structure. (Depending input impedance)



(Case C : Shunt L // Series L matching structure)



(Case D : Series C // Shunt L matching structure)

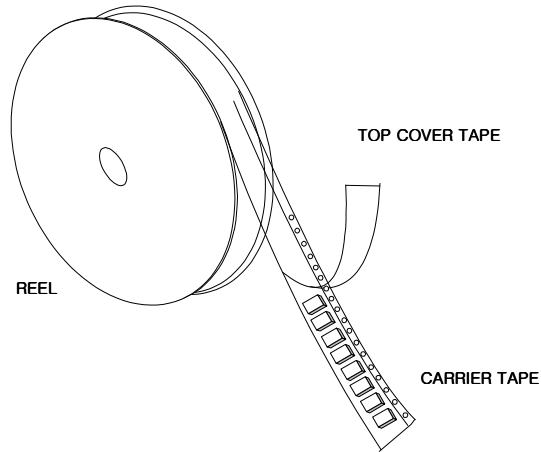
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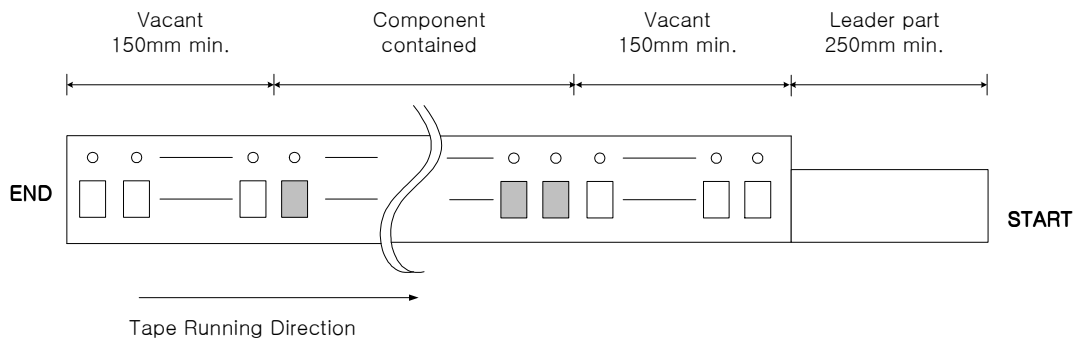
Packing specification

1. Reeling Quantity : 3000 pcs / 7" reel
2. Taping Structure : The tape shall be wound around the reel in the direction shown below.



Tape specification

1. Leader part and vacant position specification

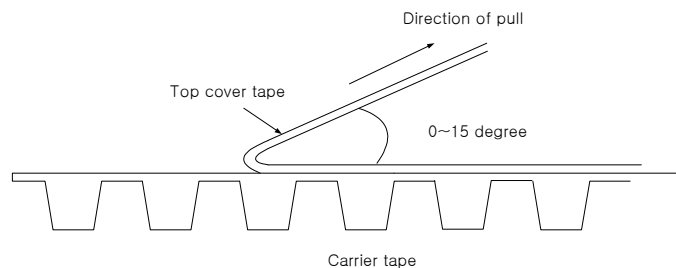


2. Tensile strength of carrier tape

4.4N/mm width

3. Top cover tape adhesion

- 1) pull off angle : 0~15°
- 2) speed : 300mm/min
- 3) force : 20~70g

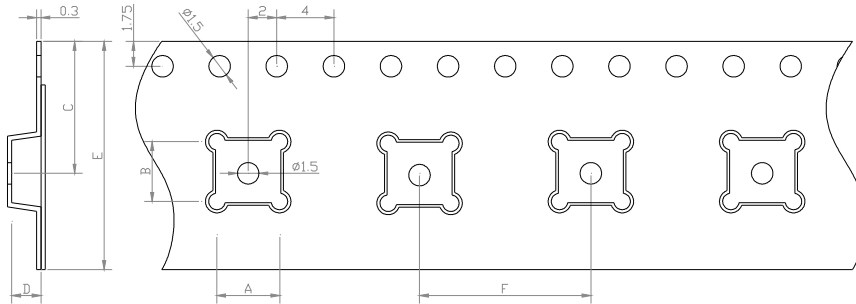


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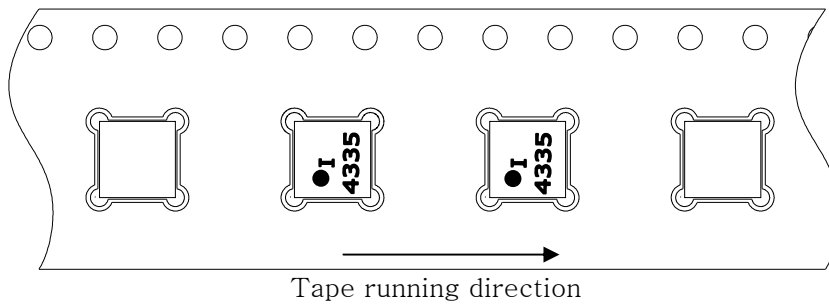


Carrier tape dimensions [unit : mm]

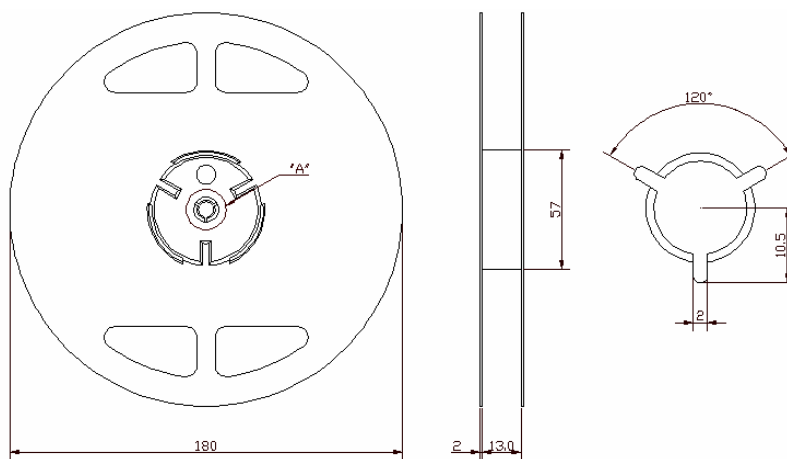


A	3.40 ± 0.1
B	3.40 ± 0.1
C	7.25 ± 0.1
D	1.70 ± 0.1
E	12.00 ± 0.1
F	8.00 ± 0.1

Part direction

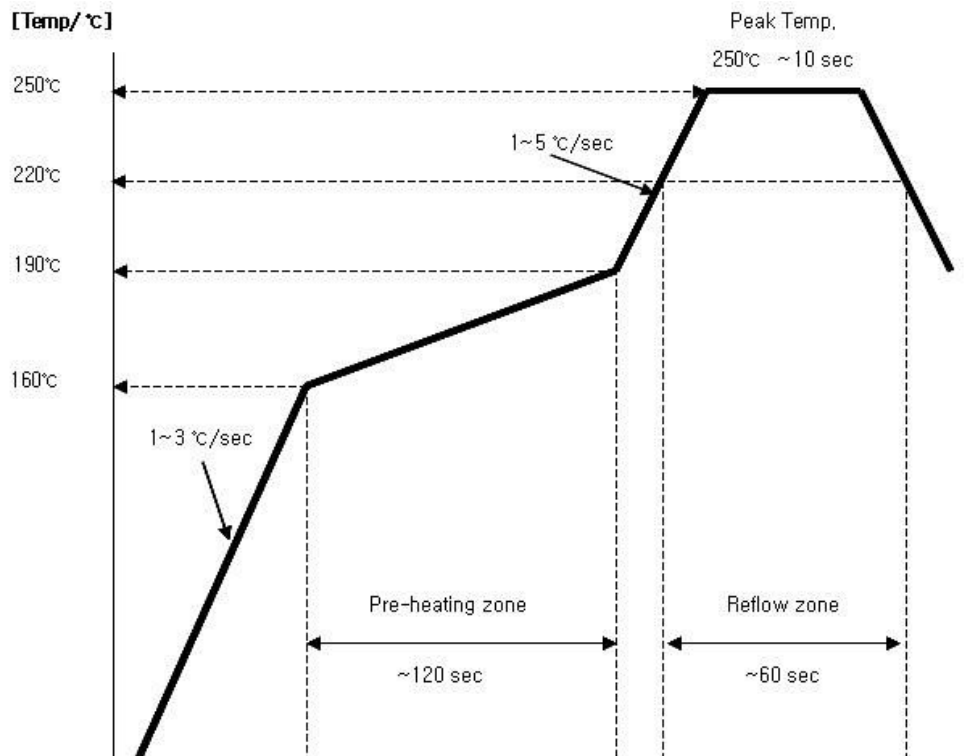


Reel dimensions [unit : mm]



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Reflow condition



Comment) The quality is guaranteed under this temperature conditions on 2 times solder reflows

Cautions

1. This is a hermetic device.
MSL (Moisture Sensitive Level) is the 1st level
2. This is an electrostatic sensitive device. Please avoid static voltage during operation and storage.
ESD (Electrostatic Discharge) Rating is class 0. (Test : HBM-Human Body Model)
3. Ultrasonic cleaning shall be avoided.
4. This device should not be used in any type of fluid such as water, oil, organic solvent, etc.

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