

Microchip**Filter specification****TFS 1489****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50 Ω	
Output:	50 Ω	

Characteristics

Remark:

The maximum attenuation in the passband is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 1489.0 MHz without any tolerance or limit. The values of absolute attenuation a_{abs} are guaranteed for the whole operating temperature range. The frequency shift of the filter in the operating temperature range is included in the production tolerance scheme.

D a t a		typ. value		tolerance / limit	
Insertion loss		a_e	2.9 dB	max.	4.0 dB
Nominal frequency		f_N	-		1489.0 MHz
Passband		PB	-	$f_N \pm$	12.5 MHz
Absolute attenuation		a_{abs}			
1	MHz ... 100 MHz		68 dB	min.	60 dB
100	MHz ... 1395 MHz		47 dB	min.	40 dB
1395	MHz ... 1401 MHz		44 dB	min.	30 dB
1577	MHz ... 1583 MHz		42 dB	min.	30 dB
2884	MHz ... 3072 MHz		26 dB	min.	20 dB
4373	MHz ... 4561 MHz		13 dB	min.	5 dB
VSWR within PB			1.4 : 1	max.	2 : 1
Input power level			-	max.	0 dBm
Operating temperature range		OTR	-		0 °C ... + 85 °C
Storage temperature range			-		- 45 °C ... + 85 °C
Temperature coefficient of frequency		TC_f *	-44 ppm/K		-

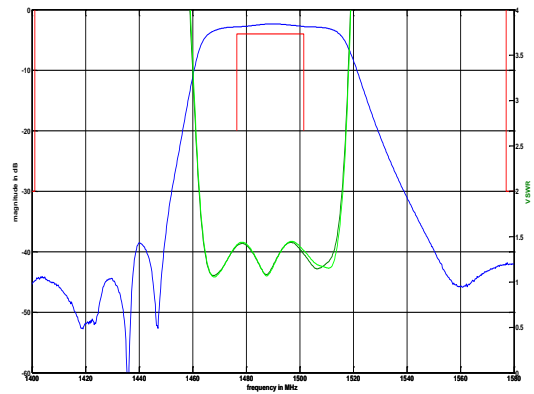
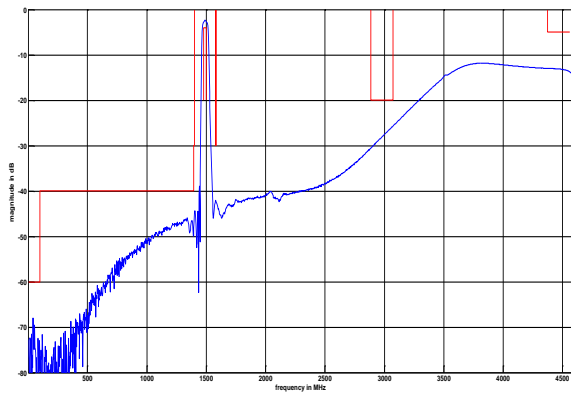
*) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{CAT}(\text{MHz})$.

Generated:**Checked / Approved:**

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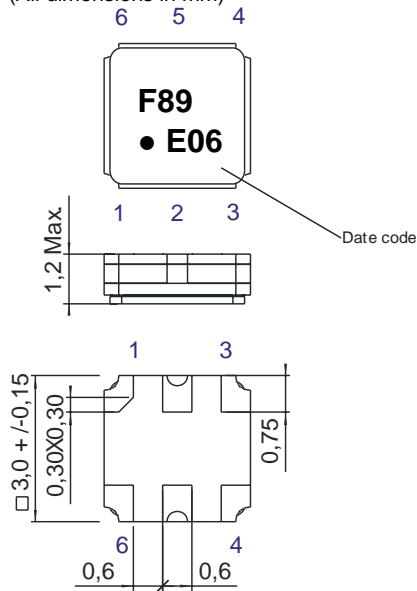
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Filter characteristic



Construction and pin connection

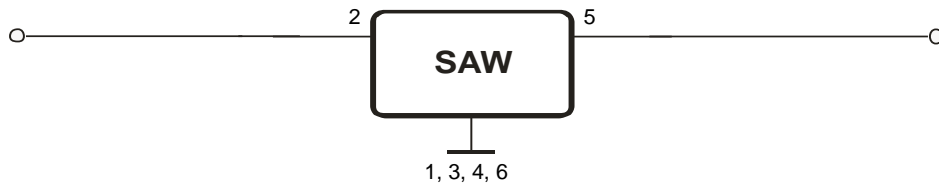
(All dimensions in mm)



- 1 Ground
- 2 Input
- 3 Ground
- 4 Ground
- 5 Output
- 6 Ground

Date code: Year + week
 E 2014
 F 2015
 G 2016
 ...

50 Ω Test circuit



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Stability characteristics, reliability

After the following tests the filter shall meet the whole specification:

1. Shock: 500g, 1 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0.35 mm or g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125°C / 15 min. each / 100 cycles
DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: three times max.;
for temperature conditions, see page 4: "Air reflow temperature conditions"
5. ESD ANSI/ESD S20.20-1999, class 1A for HBM

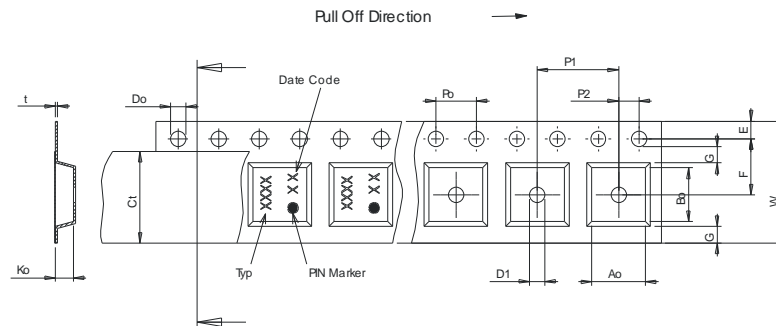
This filter is RoHS compliant (2011/65/EU)

Packing

- Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;
- | | |
|---|-------------|
| max. pieces of filters per reel: | 9000 |
| reel of empty components at start: | min. 300 mm |
| reel of empty components at start including leader: | min. 500 mm |
| trailer: | min. 300 mm |

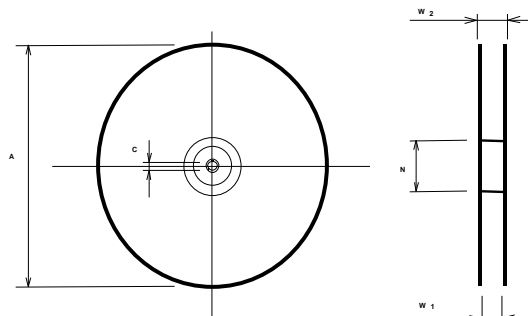
Tape (all dimensions in mm)

- W : 8,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,1
- F : 3,50 ± 0,05
- G(min) : 0,75
- P2 : 2,00 ± 0,05
- P1 : 4,00 ± 0,1
- D1(min) : 1,50
- Ao : 3,25 ± 0,1
- Bo : 3,25 ± 0,1
- Ct : 5,5 ± 0,1



Reel (all dimensions in mm)

- A : 330
- W1 : 8,4 +1,5/-0
- W2(max) : 14,4
- N(min) : 50
- C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

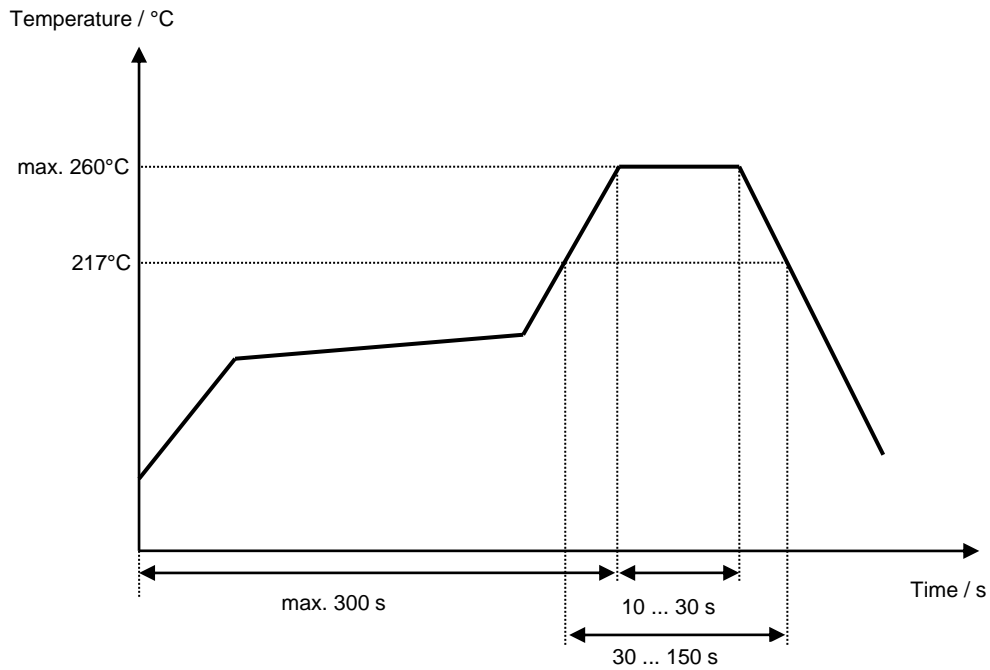
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Air reflow temperature conditions

Conditions	Exposure
Average ramp-up rate (30°C to 217°C)	less than 3°C/second
> 100°C	between 300 and 600 seconds
> 150°C	between 240 and 500 seconds
> 217°C	between 30 and 150 seconds
Peak temperature	max. 260°C
Time within 5°C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak to 50°C)	less than 6°C/second
Time from 30°C to Peak temperature	no greater than 300 seconds

Chip-mount air reflow profile



Microchip**Filter specification****TFS 1489****5/5****History**

Version	Reason of changes	Name	Date
1.0	- Generation of development specification	S. Channaa	05.06.2009
1.1	- Change construction	S. Channaa	01.07.2009
1.2	- Change construction	S. Channaa	10.07.2009
1.3	- Change construction and pin connection	S. Channaa	29.07.2009
2.0	- Generation of filter specification - Relaxation of input power level and stop band attenuation @ 3072 MHz	S.Springfeldt	29.10.2010
3.0	- Change of OTR due to customer request	S.Springfeldt	28.01.2011
3.1	- Maximum input power updated	Kortenbeutel	04.02.2014

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