

Microchip**Filter specification****TFS1575AL****1/5****Measurement condition**

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

Characteristics

Remark:

The maximum attenuation in the pass band is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 1575.42 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 in PB1				a_e	2.6	dB	max. 4.5 dB
Insertion loss in PB2					2.5	dB	max. 3.0 dB
Nominal frequency				f_N	-		1575.42 MHz
Passband 1				PB1	-	$f_N \pm$	8.00 MHz
Passband 2				PB2	-	$f_N \pm$	1.03 MHz
Pass band variation in PB1					0.2	dB	max. 2.5 dB
Pass band ripple in PB1				p-p	0.15	dB	max. 1.2 dB
Pass band ripple in PB2				p-p	0.15	dB	max. 0.3 dB
Absolute attenuation				a_{abs}			
1	MHz	... 1510	MHz		46	dB	min. 40 dB
		1540	MHz	*	36	dB	min. 25 dB
		1554	MHz	**	20	dB	min. 5 dB
		1597	MHz	***	18	dB	min. 5 dB
		1610	MHz	****	60	dB	min. 25 dB
1630	MHz	... 2000	MHz		51	dB	min. 40 dB
Group delay ripple within PB1					8	ns	max. 40 ns
VSWR within PB1					1.7 : 1		max. 2 : 1
Phase linearity within PB1				p-p	6	°	max. 30 °
Power durability				*****			max. 10 dBm
Operating temperature range				OTR	-		-40 °C ... +85 °C
Storage temperature range					-		-55 °C ... +125 °C
Temperature coefficient of frequency				TC_f^{*****}	-42	ppm/K	

*) stop band attenuation between 1510 MHz and 1540 MHz decreases linearly from 40 dB to 25 dB

**) stop band attenuation between 1540 MHz and 1554 MHz decreases linearly from 25 dB to 5 dB

***) stop band attenuation between 1597 MHz and 1610 MHz increases linearly from 5 dB to 25 dB

****) stop band attenuation between 1610 MHz and 1630 MHz increases linearly from 25 dB to 40 dB

*****) input power level:

10 dBm duty cycle 1:100 (in pass band)

20 dBm duty cycle 1:20000 (in pass band) – corresponds to 5 hours continuous power over lifetime

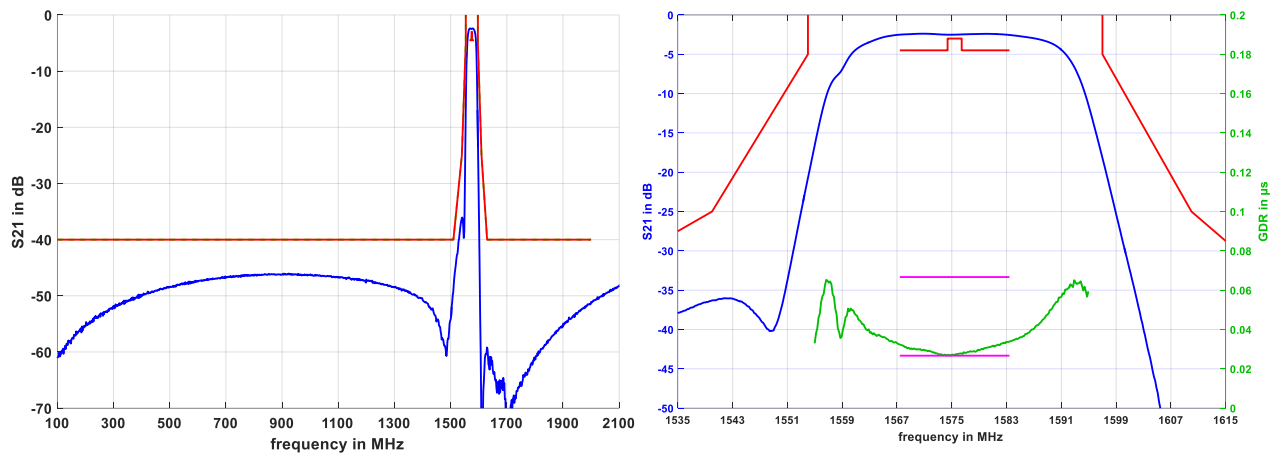
6 dBm continuous power (out of band > 1626.5 MHz)

20 dBm duty cycle 1:100 (out of band > 1626.5 MHz)

*****) $\Delta f = TC_f(T - T_A)f_N$ **Generated:****Checked / Approved:****Microchip Frequency Technology GmbH****Potsdamer Straße 18****D 14 513 TELTOW / Germany****Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30**

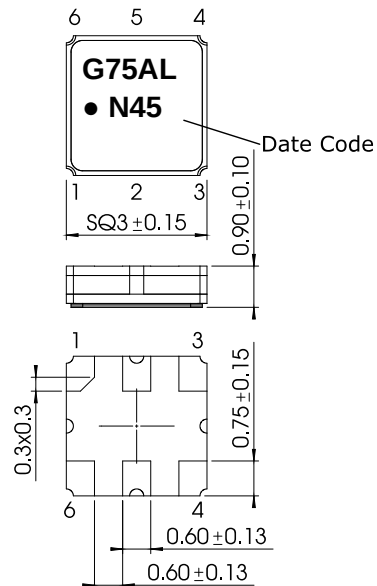
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Filter characteristic



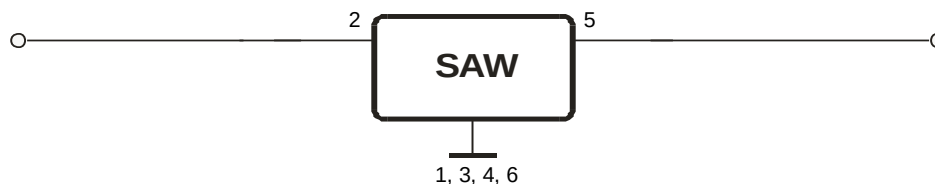
Construction and pin connection

(All dimensions in mm)



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

Date code: Year + week
 N 2021
 P 2022
 R 2023
 ...

50 Ω Test circuit

Microchip Frequency Technology GmbH

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Stability characteristics, reliability

1. Shock: 1500 g, 0.5 ms, half sine wave, 5 Shocks each of the orientations acc. to MIL-STD-883, Method 2002, Cond. B
2. Vibration: 10 Hz to 2000 Hz, 20 g acc. to MIL-STD-883, Method 2007, Cond. A
3. Temperature cycling: 100 cycles, -55 °C to 125 °C / 15 min. dwell time acc. to MIL-STD-883, Method 1010, Cond. B
4. Resistance to solder heat (reflow): reflow possible: three times max.
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4
5. SAW devices are Electrostatic Discharge (ESD) sensitive devices.

This filter is RoHS compliant (2011/65/EU+2015/863/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;

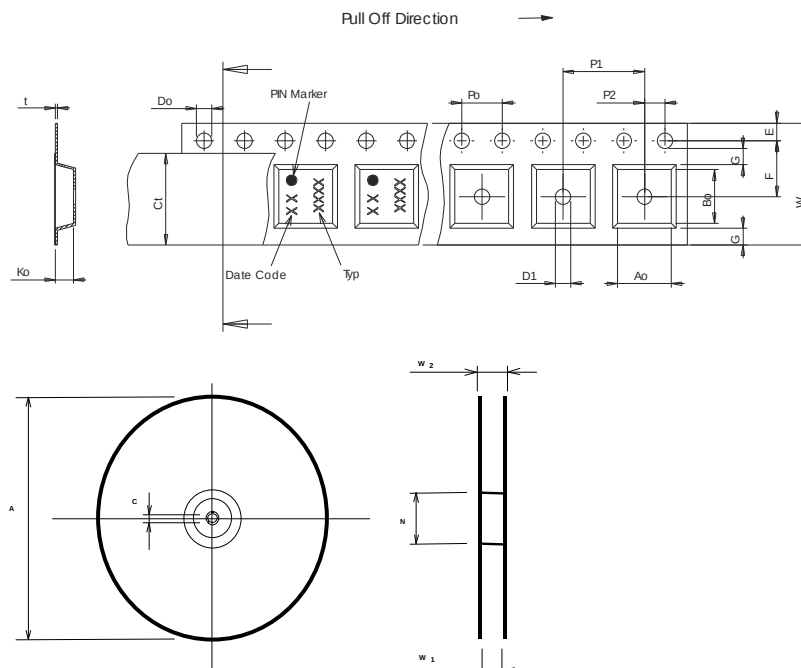
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

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	: 5.30 ±0.1
Ko	: 1.50 ±0.1
t	: 0.25 ±0.05

Reel (all dimensions in mm)

A	: 330 or 180
W1	: 8.40 +1.5/-0
W2(max)	: 14.40
N(min)	: 60.00
C	: 13.0 ±0.2



The minimum bending radius is 45 mm.

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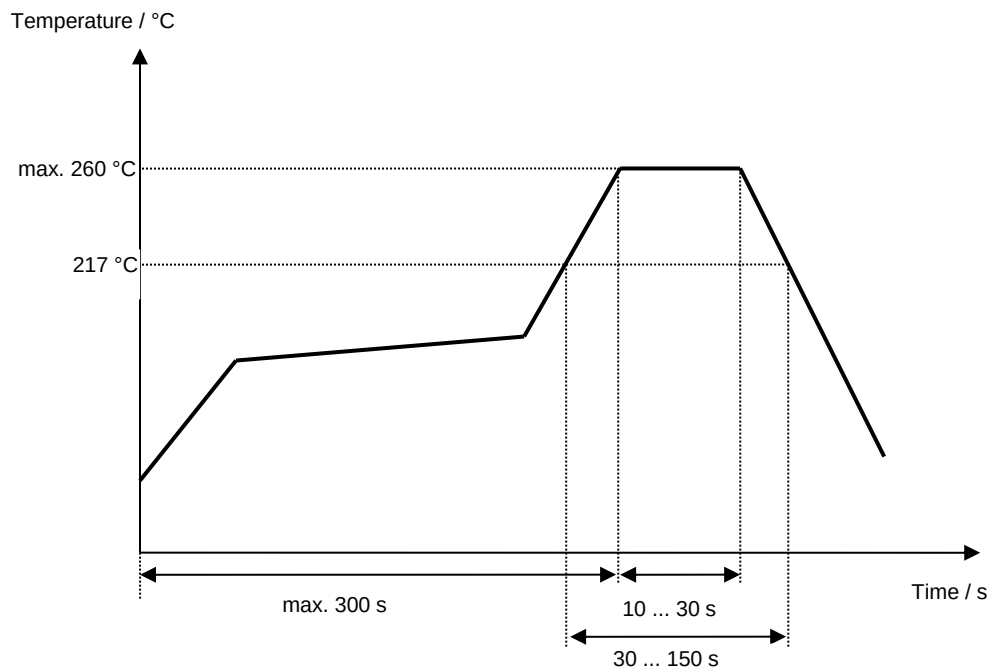
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Air reflow temperature conditions

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****TFS1575AL****5/5****History**

Version	Reason of changes	Name	Date
1.0	Generation of development specification	Schönbein	01.06.2015
2.0	Generation of filter specification	S. Springfeldt	05.01.2016
2.1	Adding input power conditions	S. Springfeldt	10.10.2016
2.2	Updating data table (typical values) according to improved variant	S. Springfeldt	11.11.2016
2.3	Adding additional power request (20dBm in-band for 5h) Updating <i>storage temperature range</i>	S. Springfeldt	23.05.2017
3.0	Adding VSWR to data table	S. Springfeldt	11.11.2021

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