

**Microchip**

**Filter specification**

**TFS1278E**

**1/5**

**Measurement condition**

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

**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 1278.75 MHz without any tolerance or limit. The values of absolute attenuation  $a_{abs}$  are guaranteed over the whole operating temperature range. The frequency shift of the filter within the operating temperature range is included in the production tolerance scheme.

D a t a		typ. value		tolerance / limit		
<b>Insertion loss</b>		$a_e$	2.1 dB	max.	3	dB
<b>Nominal frequency</b>		$f_N$			1278.75	MHz
<b>Passband</b>		PB		$f_N \pm$	20	MHz
<b>Passband variation</b>		PBV	1.0 dB	max.	2	dB
<b>Absolute attenuation</b>		$a_{abs}$				
10	MHz ... 1222 MHz		31 dB	min.	30	dB
1222	MHz ... 1237 MHz		34 dB	min.	18	dB
1322	MHz ... 1337 MHz		50 dB	min.	18	dB
1337	MHz ... 3000 MHz		33 dB	min.	30	dB
<b>Group delay ripple within PB</b>		GDR	16 ns	max.	50	ns
Return loss within PB		RL	9 dB	min.	8	dB
<b>Input power level</b>						
Continuous wave over life time within PB				max.	10	dBm
<b>Operating temperature range</b>		OTR			-40 °C ... +85 °C	
<b>Storage temperature range</b>					-55 °C ... +125 °C	
Temperature coefficient of frequency		$TC_f^*$	-38 ppm/K			

\*)  $\Delta f = TC_f(T - T_A)f_N$

**Generated:**

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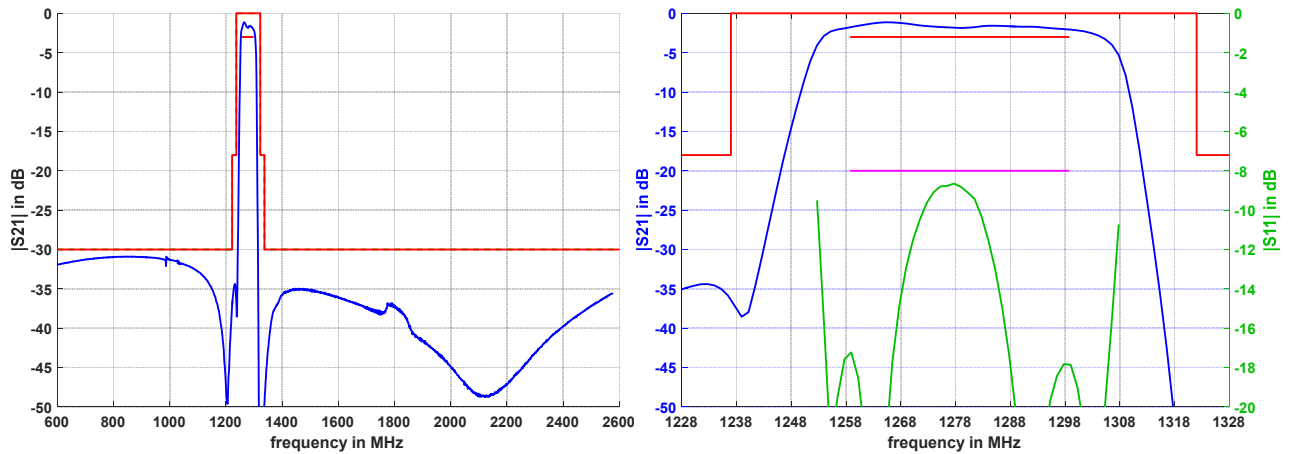
**Checked / Approved:**

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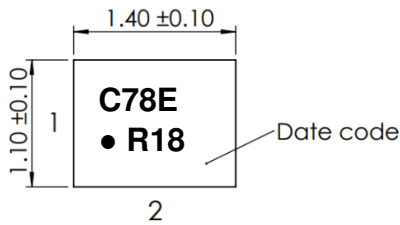
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**Filter characteristic**

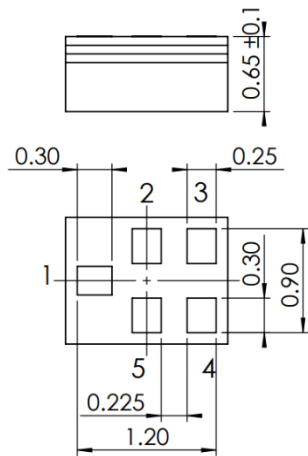


**Construction and pin connection**

(All dimensions in mm)

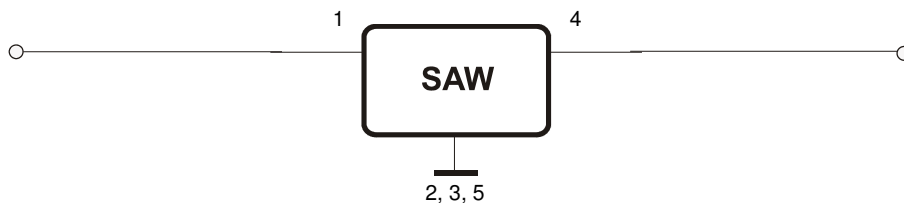


- 1 Input
- 2 Ground
- 3 Ground
- 4 Output
- 5 Ground



Date code: Year + week  
 R 2023  
 S 2024  
 T 2025  
 ...

**50 Ω Test circuit**



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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.
6. Moisture Sensitivity Level: Level 2a (MSL2a) acc. to IPC/JEDEC J-STD-020

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

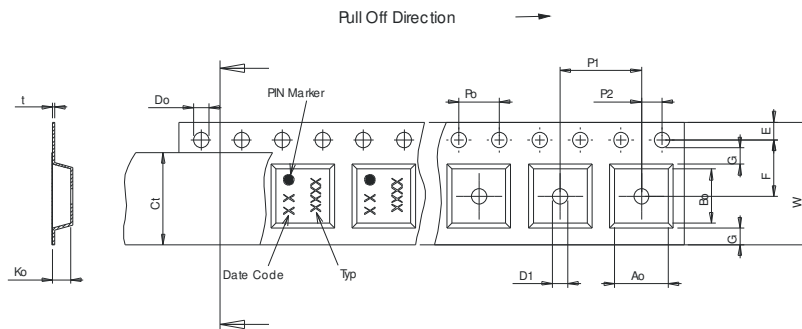
**Packing**

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

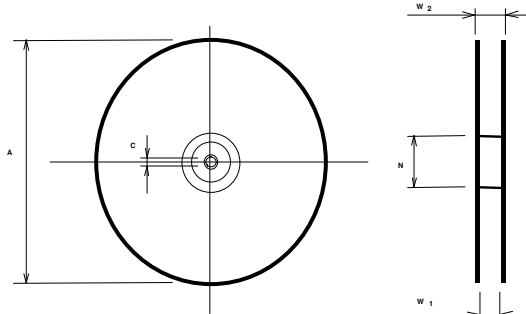
**Tape (all dimensions in mm)**

- W : 8.00 +0.3/-0.1
- Po : 4.00 ±0.1
- Do : 1.50 +0.1/-0
- E : 1.75 ±0.1
- F : 3.50 ±0.05
- G(min) : 1.7
- P2 : 2.00 ±0.05
- P1 : 4.00 ±0.1
- D1(min) : 0.60 +0.1/-0
- Ao : 1.30 ±0.05
- Bo : 1.60 ±0.05
- Ct : 5.30 ±0.1
- Ko : 0.70 ±0.05
- t : 0.25 ±0.03



**Reel (all dimensions in mm)**

- A : 330 or 180
- W1 : 8.40 +1.5/-0
- W2(max): 14.40
- N(min) : 60.00
- C : 13.00 ±0.2



The minimum bending radius is 45 mm.

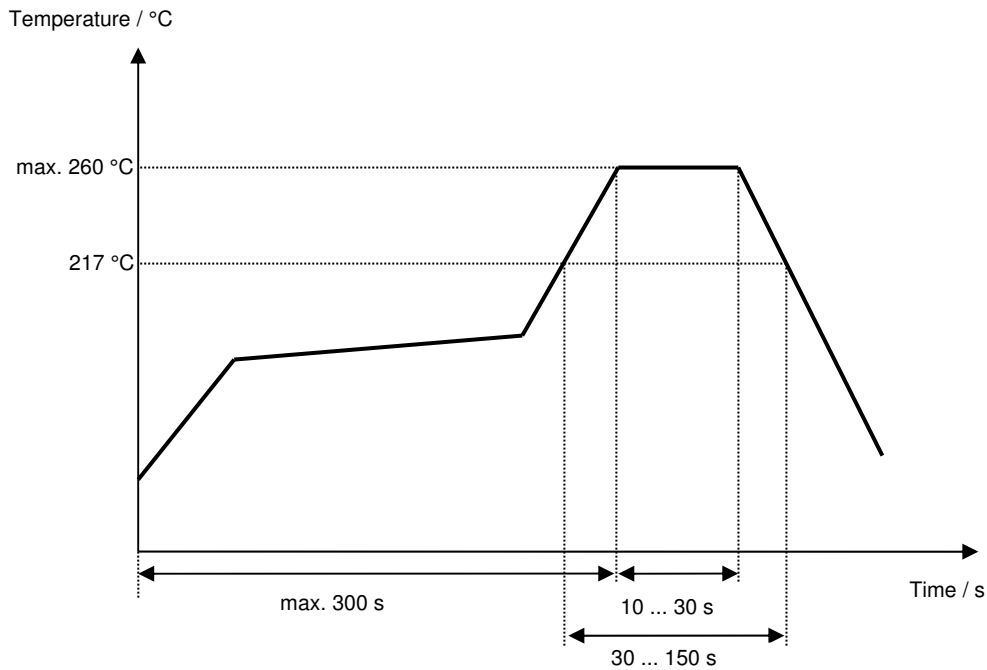
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**Air reflow temperature conditions**

<b>Conditions</b>	<b>Exposure</b>
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**



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**Microchip****Filter specification****TFS1278E****5/5****History**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generation of development specification	Yousaf	14.09.2022
2.0	- Generation of filter specification - Update package drawing - Update data table	S. Springfieldt	05.05.2023

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