

VI TELEFILTER

Filter specification

TFS350E

Measurement condition

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedance: *
 Input: 110 Ω || -1 pF
 Output: 110 Ω || -1 pF

Characteristics

Remark:

Reference level for the relative attenuation a_{rel} of the TFS350E is the minimum of the pass band attenuation a_{min} . The minimum of the pass band attenuation a_{min} is defined as the insertion loss a_e . The centre frequency f_c is the arithmetic mean value of the upper and lower frequencies at the 3 dB filter attenuation level relative to the insertion loss a_e . The nominal frequency f_N is fixed at 350,0 MHz without tolerance. The given values for the relative attenuation a_{rel} and for the group delay ripple have to be reached at the frequencies given below even if the centre frequency f_c is shifted due to the temperature coefficient of frequency TC_f in the operating temperature range and due to a production tolerance for the centre frequency f_c .

D a t a		typ. value	tolerance / limit
Insertion Loss (reference level)	a_e	2,75 dB	4,0 dB
		-	-
Nominal Frequency	f_N	-	350,0 MHz
Centre Frequency	f_c	350,0 MHz	-
Passband 3 dB	PB	5 MHz	min. 3,0 MHz
Relative Attenuation	a_{rel}		
$f_N - 1,5$ MHz ... $f_N + 1,5$ MHz		1,1 dB	max. 3 dB
$f_N - 10,0$ MHz ... $f_N - 340$ MHz		50 dB	min. 40 dB
$f_N + 21,0$ MHz ... $f_N + 50,0$ MHz		50 dB	min. 40 dB
Operating Temperature Range	OTR	-	- 10 °C ... + 80 °C
Storage Temperature Range		-	- 45 °C ... + 90 °C
Temperature Coefficient of Frequency	TC_f **	-32 ppm/K	-
Input Power Level		-	max. 10 dBm

*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions do not hesitate to ask for an application note or contact our design team.

***) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T0}(\text{MHz})$.

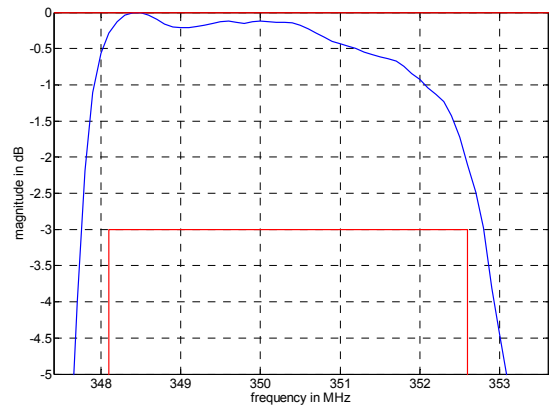
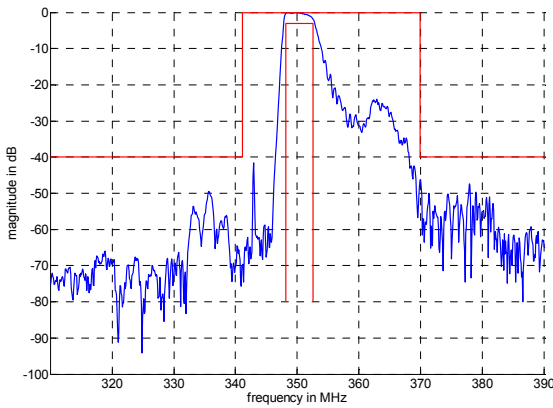
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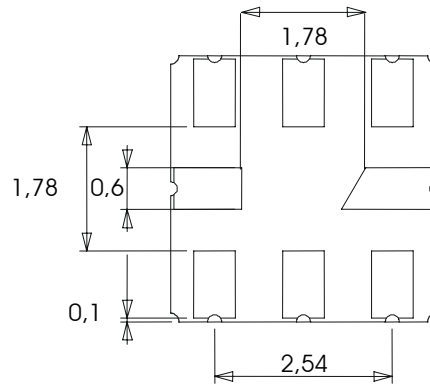
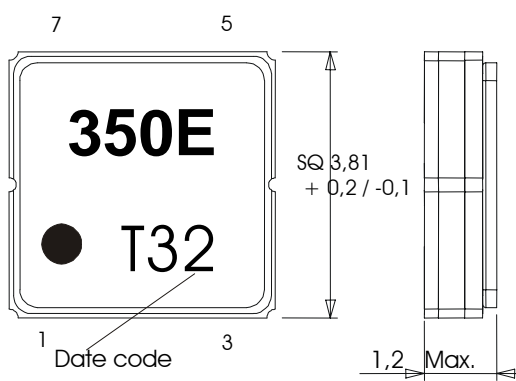
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Filter characteristic



Construction and pin connection and 50 Ω - matching network

(All dimensions in mm)

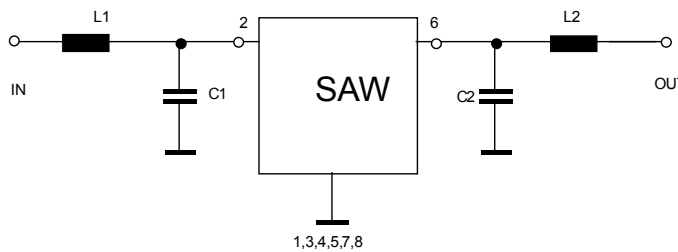


Pin 1 input rf return
 Pin 2 input
 Pin 3 ground
 Pin 4 package ground

Pin 5 output rf return
 Pin 6 output
 Pin 7 ground
 Pin 8 package ground

Date code: year + week
 T 2001
 U 2002
 V 2003
 ...

50 Ω test circuit



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Stability characteristics

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 5 g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125°C / 30 min. each / 10 cycles
DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: twice max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

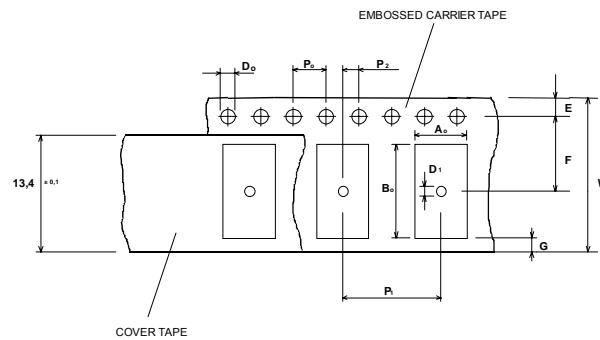
Packing

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 peer reel:	3000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

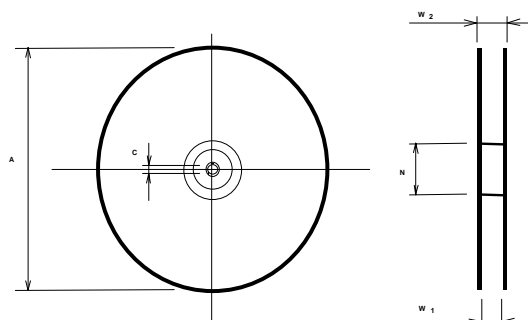
Tape (all dimensions in mm)

- W : 12,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,1
- F : 5,50 ± 0,05
- G(min) : 0,75
- P2 : 2,00 ± 0,05
- P1 : 8,00 ± 0,1
- D1(min) : 1,50
- Ao : 4,30 ± 0,1
- Bo : 4,30 ± 0,1
- Ct : 9,5 ± 0,1



Reel (all dimensions in mm)

- A : 330
- W1 : 12,4 +2/-0
- W2(max) : 18,4
- N(min) : 50
- C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

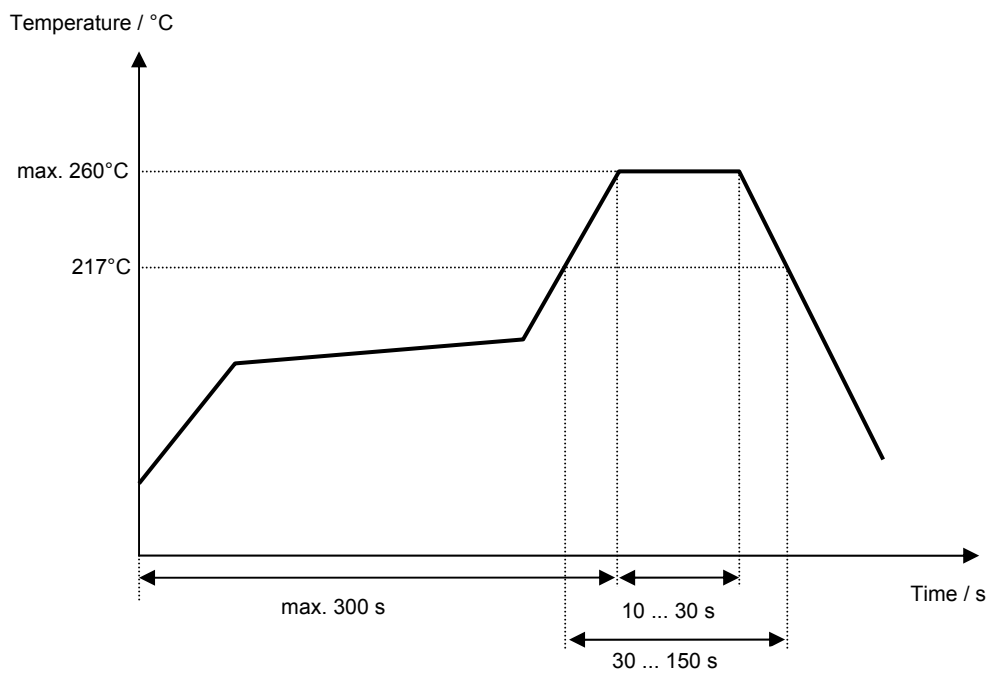
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Air reflow temperature conditions

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



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VI TELEFILTER**Filter specification****TFS350E****5/5****History**

Version	Reason of Changes	Name	Date
1.0	Generation of development specification according to customer specification.	Dr. Sabah	25.05.2003
1.1	Generation of filter specification. Changed Terminating Impedances Added filter characteristic Reworked reflow conditions	Martens	09.08.2005

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