

VI TELEFILTER

Filter specification

TFS 322

1/5

Measurement condition

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedance: *
 Input: 490 Ω || -1.6 pF
 Output: 490 Ω || -1.6 pF
 External Coil: 175 nH

Characteristics

Remark:

The nominal frequency f_N is fixed at 322,5 MHz. The insertion loss a_e is defined as loss value determined at f_N . Reference level for the relative attenuation a_{rel} of the TFS 322 is 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 . All specified data are met within the operating temperature range.

D a t a		typ. value	tolerance / limit
Insertion loss (reference level)	a_e	4 dB	max. 6,5 dB
Nominal frequency	f_N	-	322,5 MHz
Centre frequency	f_C	322,516 MHz	-
Passband		-	$f_N \pm 70$ kHz
Bandwidth 3 dB	BW	310 kHz	min. 280 kHz
Relative attenuation	a_{rel}		
$f_N \pm 400$ kHz		29 dB	min. 15 dB
$f_N \pm 400$ kHz ... $f_N \pm 600$ kHz		29 dB	min. 27 dB
$f_N \pm 600$ kHz ... $f_N \pm 13$ MHz		42 dB	min. 35 dB
Group delay ripple			
$f_N \pm 70$ kHz		0,8 µs	max. 2 µs
Input power level		-	max. 13 dBm
Operating temperature range	OTR	-	-20 °C ... +70 °C
Storage temperature range		-	-30 °C ... +85 °C
Frequency inversion temperature		25 °C	-
Temperature coefficient of frequency	TC_f^{**}	-0,032 ppm/K ²	-

*) 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.

***) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}^2) \times (T-T_0)^2 \times f_{T0}(\text{MHz})$.

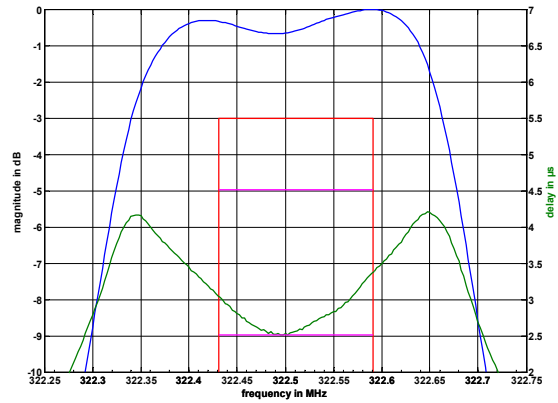
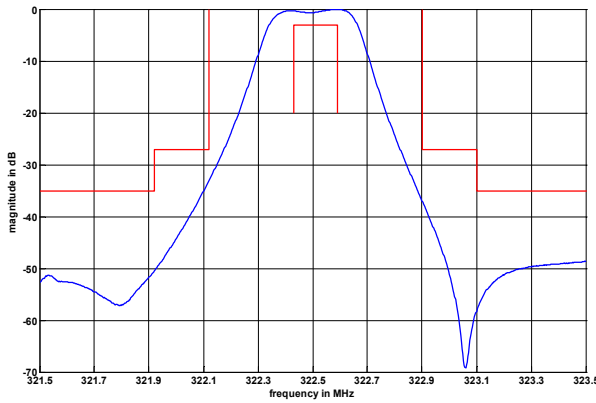
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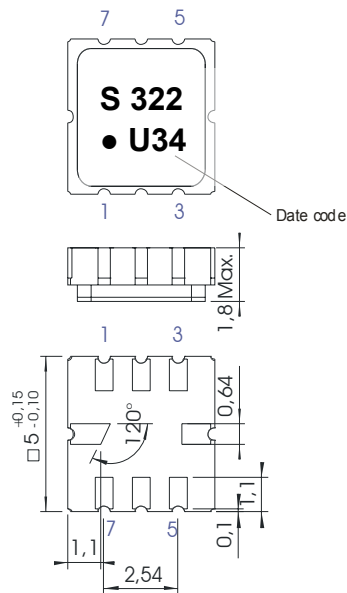
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Filter characteristic



Construction and pin connection

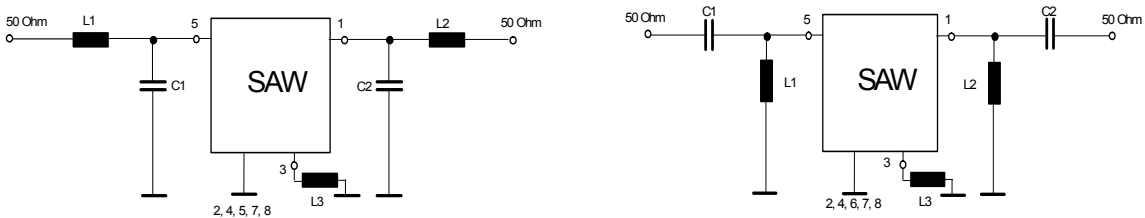
(All dimensions in mm)



- 1 Output
- 2 Ground
- 3 External Coil
- 4 Ground
- 5 Input
- 6 Ground
- 7 Ground
- 8 Ground

Date code: Year + week
 U 2006
 V 2007
 W 2008
 ...

50 Ω Test circuits



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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 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;

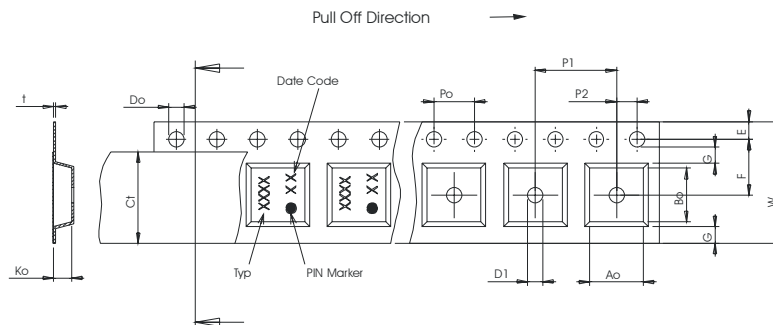
This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

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: | 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 |

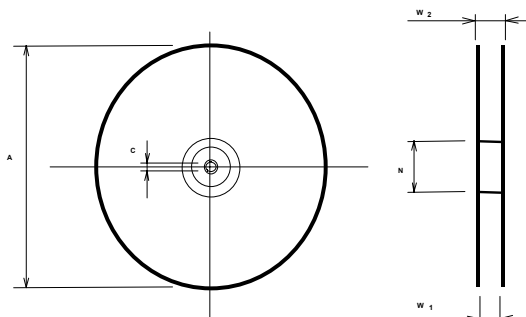
Tape (all dimensions in mm)

- 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 : 5,30 ± 0,1
- Bo : 5,30 ± 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****TFS 322****5/5****History**

Version	Reason of Changes	Name	Date
1.0	Generation of development specification according to customer requirements.	M.Springfeldt	13.04.2004
1.1	Add typical values Replace usable signal bandwidth by passband Correct tape and reel Renew remark of characteristics Fix termination impedances	Dr. Wall	22.06.2004
1.2	Correct stability characteristics Change air reflow temperature conditions Replace characteristics by standard characteristics text	Alawneh	06.03.2006
1.3	Add filter characteristic and generation of filter specification	Strehl	24.08.2006