

Vectron International

Filter specification

TFS 1581

1/5

Measurement condition

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	200	Ω
Output:	200	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 1581.5 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 PB		a_e	4.0 dB	max.	5.0	dB
Nominal frequency		f_N	-		1581.5	MHz
Passband		PB	-		$f_N \pm 28.5$	MHz
Passband variation			0.6 dB	max.	3.0	dB
Absolute attenuation		a_{abs}				
0.3 MHz ... 1485 MHz			34 dB	min.	30	dB
1485 MHz ... 1510 MHz			14 dB	min.	7	dB
1665 MHz ... 1685 MHz			19 dB	min.	10	dB
1685 MHz ... 3000 MHz			38 dB	min.	30	dB
Group delay ripple						
1553 MHz ... 1585 MHz			4 ns	max.	10	ns
1593 MHz ... 1610 MHz			4 ns	max.	10	ns
Group delay variation (unit to unit)		*				
1553 MHz ... 1585 MHz			+/-2 ns	max.	+/-6	ns
1593 MHz ... 1610 MHz			+/-2 ns	max.	+/-6	ns
Return loss within PB			9 dB	min.	7	dB
Input power level in PB			-	max.	10	dBm
Operating temperature range		OTR	-		- 40 °C ... + 85 °C	
Storage temperature range			-		- 40 °C ... + 85 °C	
Temperature coefficient of frequency		TC_f **	-76 ppm/K			

*) measured at: f_N , $f_N + 28.5$ MHz, $f_N - 28.5$ MHz

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

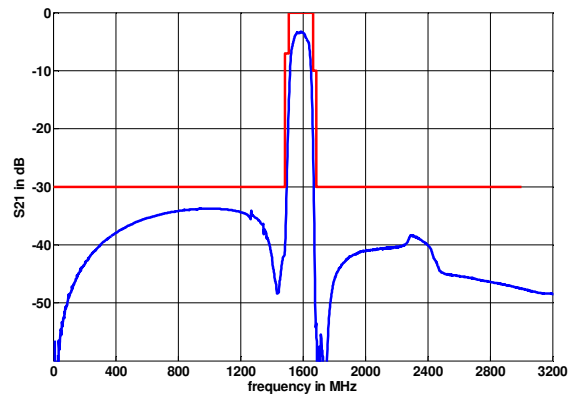
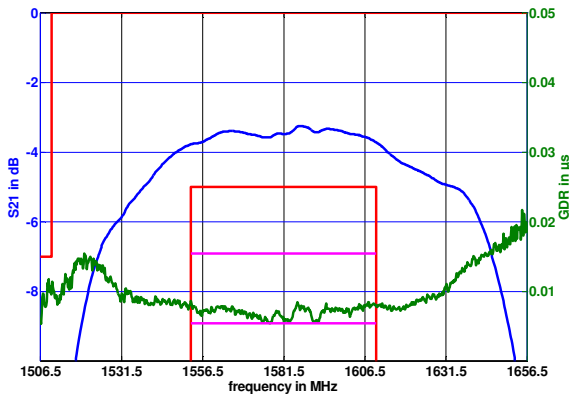
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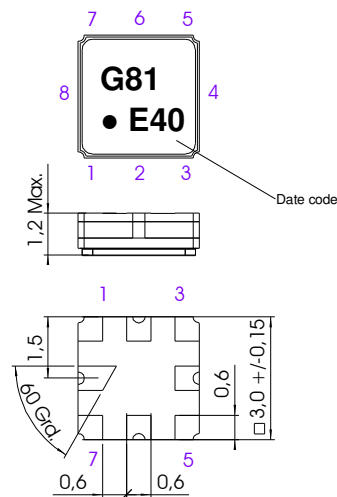
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Filter characteristic



Construction and pin connection

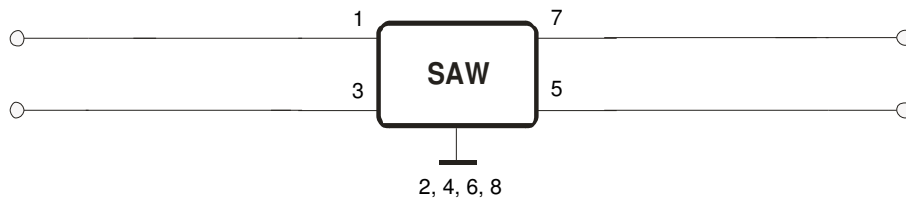
(All dimensions in mm)



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

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

200 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 5 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)

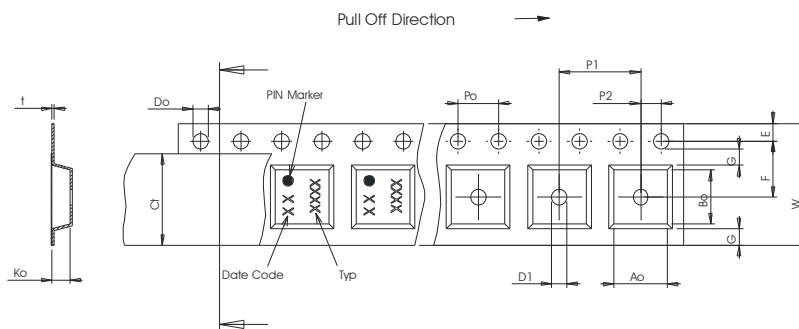
Packing

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:	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

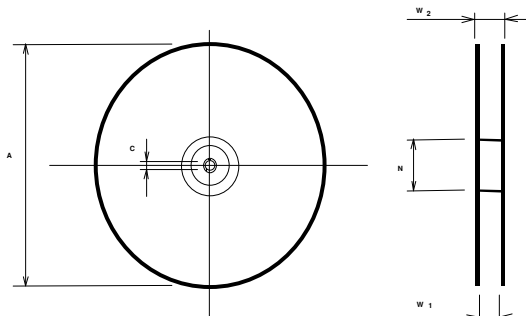
Tape (all dimensions in mm)

- W : 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 : 5,3 ± 0,1



Reel (all dimensions in mm)

- A : 330 or 180
- W1 : 8,4 +1,5/-0
- W2(max) : 14,4
- N(min) : 60
- C : 13,0 ± 0,2



The minimum bending radius is 45 mm.

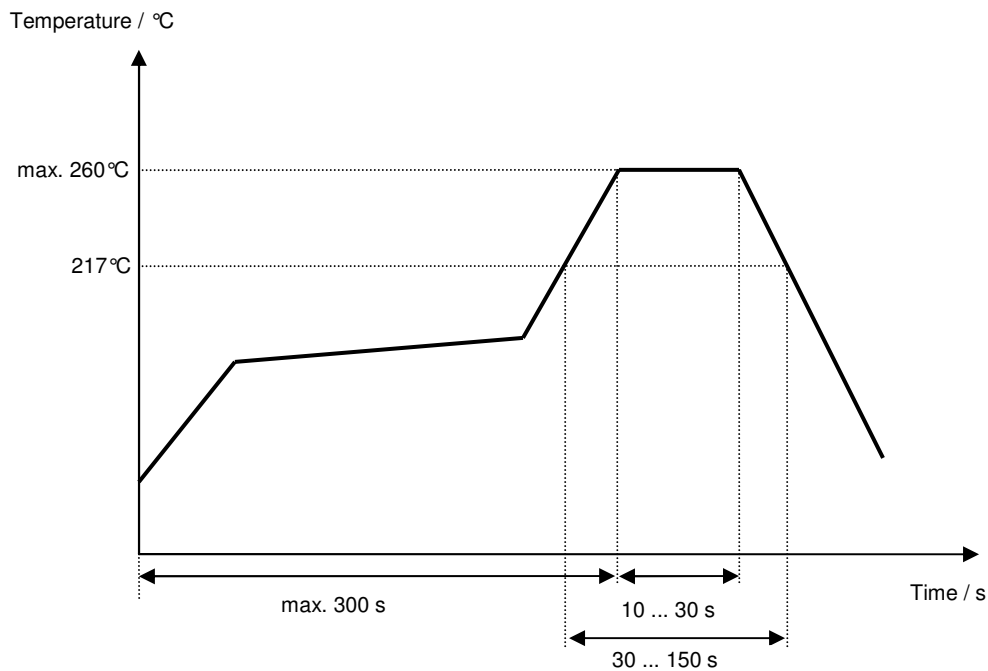
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Air reflow temperature conditions

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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History

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	A. Molke	12.08.2013
1.1	- Change from development spec to filter spec - Typical values added - Filter characteristic added	A. Molke	29.09.2014