

Measurement condition

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedance: *
 Input: 200 Ω || -0.37 pF
 Output: 75 Ω

Characteristics

Remark:

The nominal frequency f_N is fixed at 1680.0 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 1680 is 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	2.3 dB	max. 3.0 dB
Nominal frequency	f_N	-	1680.0 MHz
Passband	PB	-	$f_N \pm 20.0$ MHz
Passband variation		1.4 dB	max. 2.0 dB
Relative attenuation	a_{rel}		
0.3 MHz ... 860 MHz		57 dB	min. 55 dB
860 MHz ... 1100 MHz		50 dB	min. 46 dB
1100 MHz ... 1539.7 MHz		45 dB	min. 43 dB
1800 MHz ... 2000 MHz		45 dB	min. 33 dB
2000 MHz ... 2250 MHz		43 dB	min. 40 dB
2250 MHz ... 6000 MHz		31 dB	min. 15 dB
Group delay ripple			
1665 MHz ... 1699 MHz		3 ns	max. 15 ns
Input VSWR within PB		2.0 : 1	max. 2.4 : 1
Output VSWR within PB		2.0 : 1	max. 2.4 : 1
CMRR *** within PB		26 dB	min. 20 dB
Input power level		-	max. 0 dBm
Permissible DC voltage		-	max. 0 V
Operable temperature range		-	- 30 °C ... + 80 °C
Operating temperature range	OTR	-	- 20 °C ... + 50 °C
Storage temperature range		-	- 50 °C ... +125 °C
Temperature coefficient of frequency	TC_f **	-42 ppm/K	

*) 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.

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

****) CMRR: Common Mode Rejection Ratio

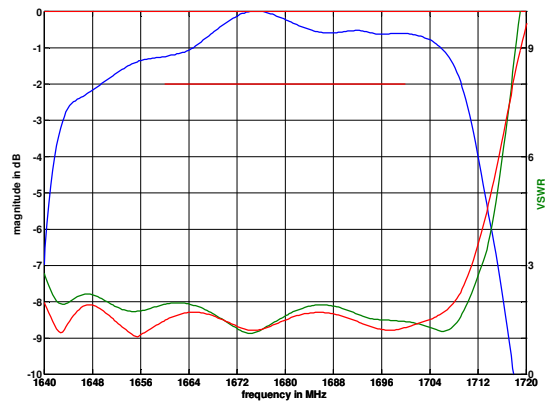
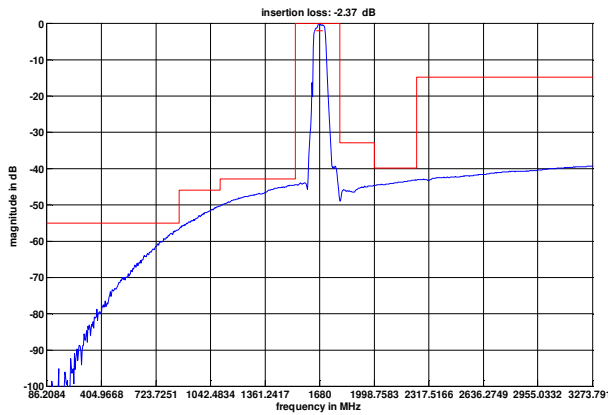
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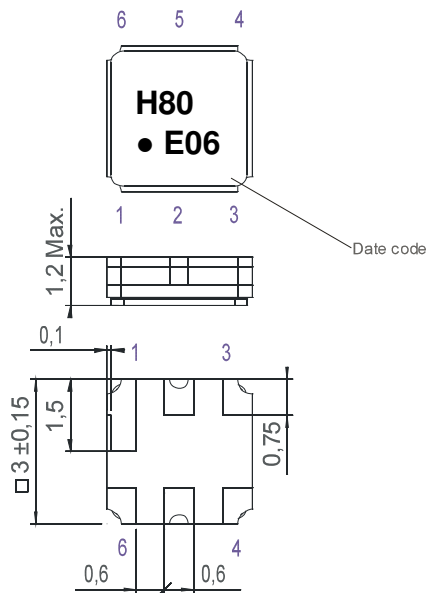
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Filter characteristic



Construction and pin connection

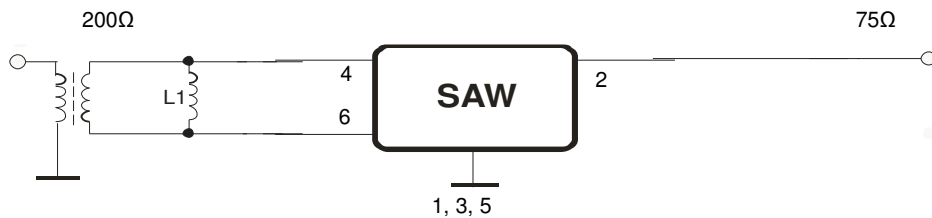
(All dimensions in mm)



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

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

200 Ω / 75 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 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"

This filter is RoHS compliant (2011/65/EU)

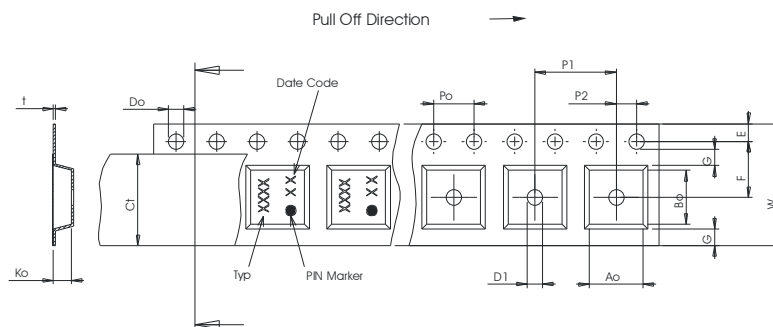
Packing

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: 9000
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

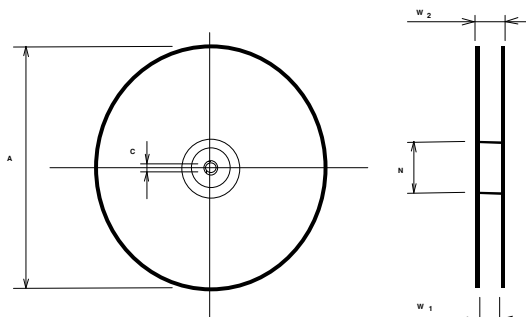
Tape (all dimensions in mm)

- 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 : 5,5 ± 0,1



Reel (all dimensions in mm)

- A : 330
- W1 : 8,4 +1,5/-0
- W2(max) : 14,4
- N(min) : 50
- C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

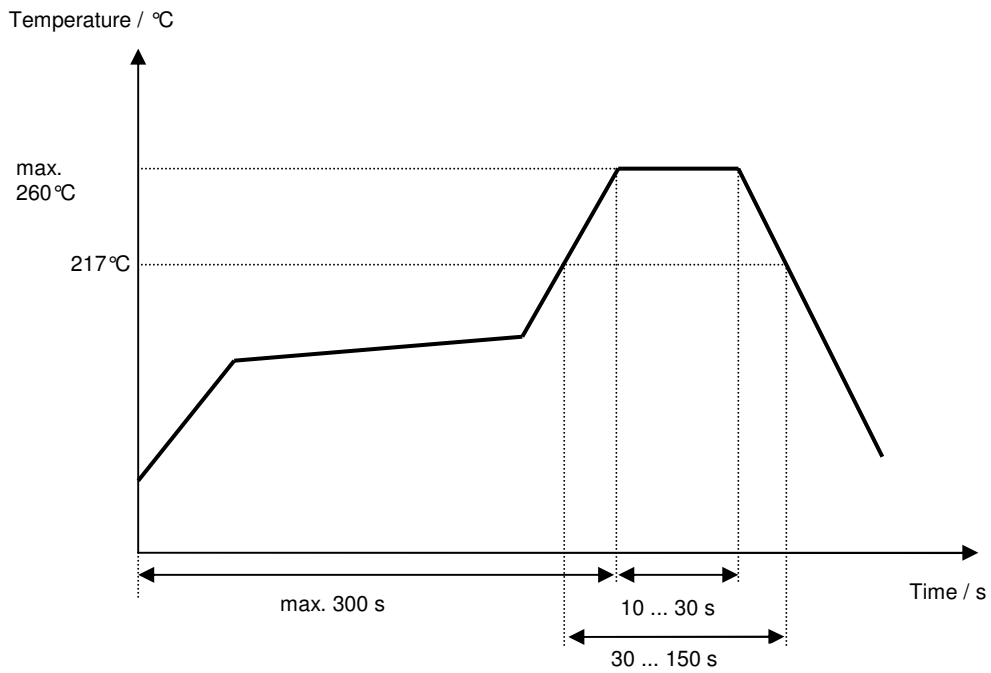
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Air reflow temperature conditions

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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History

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	S. Channaa	12.09.2008
1.1	- Change Input power level, add typical values and filter characteristic - Generation of filter specification	S. Channaa	17.12.2008
1.2	- Correct construction	S. Channaa	16.03.2009
1.3	- Maximum input power updated	Kortenbeutel	04.02.2014