Measurement condition

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50	Ω
Output:	50	Ω

Characteristics

Remark:
The maximum attenuation within passband 1 is defined as the insertion loss a_e. The nominal frequency f_N is fixed at 642 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**	
Nominal frequency	f_N				642 MHz
Passband 1 **(OTR1)**	PB1			f_N ±	12.0 MHz
Insertion loss within PB1 **(OTR1)**	a_e	2.0	dB	max.	3.0 dB
Passband 2 **(OTR2)**	PB2			f_N ±	17.0 MHz
Insertion loss within PB2 **(OTR2)**		2.8	dB	max.	4.0 dB
Passband variation within PB2 **(OTR2)**		1.0	dB	max.	2.0 dB
Absolute attenuation **(OTR1)**	a_{abs}				
f_N ± 80 MHz … f_N ± 149 MHz		50	dB	min.	33.5 dB
f_N + 149 MHz … f_N + 300 MHz		49	dB	min.	45.0 dB
1 MHz … 200 MHz		58	dB	min.	50.0 dB
200 MHz … f_N - 149 MHz		62	dB	min.	55.0 dB
Group delay ripple within PB1 **(OTR1)**	p-p	10	ns	max.	0.2 µs
IIP3	*	-		min.	36 dBm
Input power level		-		max.	10 dBm
Operating temperature range 1	OTR1	-		- 10 °C ... + 75 °C	
Operating temperature range 2	OTR2	-		23 °C	
Storage temperature range		-		- 40 °C ... + 85 °C	
Temperature coefficient of frequency	TC_f **	-76	ppm/K		

*) $f_{in1} = f_C - 14$ MHz; $f_{in2} = f_C - 14.4$ MHz; $P_{in} = 0$ dBm; $f_{measurement1} = f_C - 13.6$ MHz; $f_{measurement2} = f_C - 14.8$ MHz. 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.

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

Generated:

Checked / Approved:

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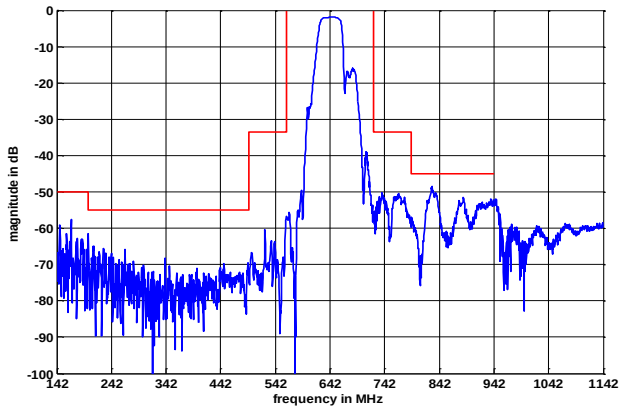
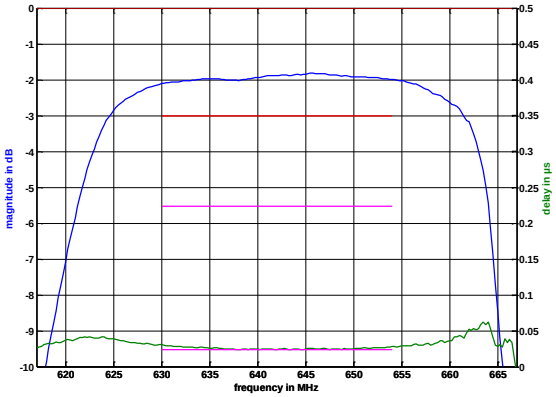
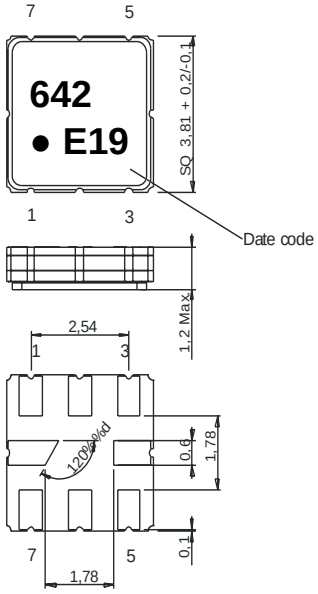
Filter characteristic





Construction and pin connection

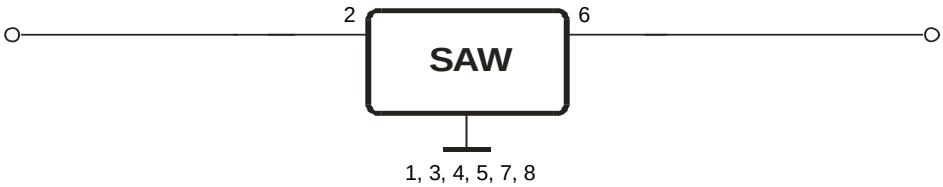
(All dimensions in mm)



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

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

50 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)

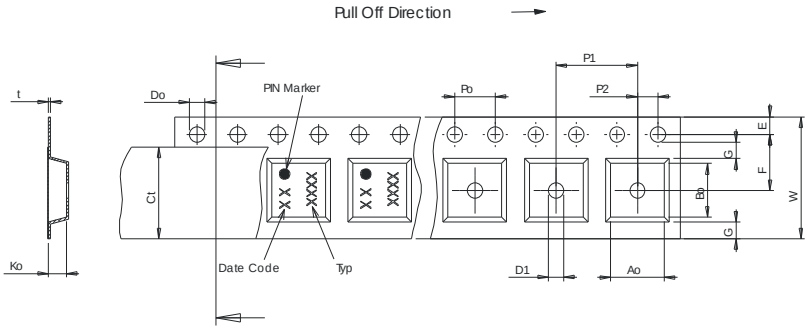
Packing

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:	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

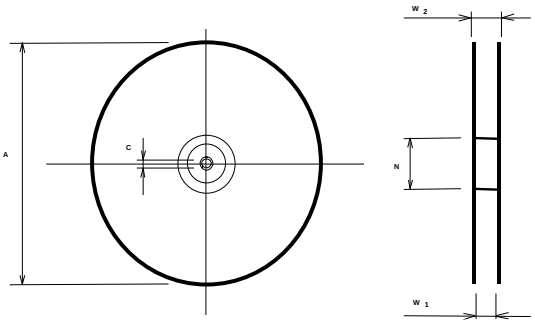
Tape (all dimensions in mm)

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	:	9,2	± 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.

Air reflow temperature conditions

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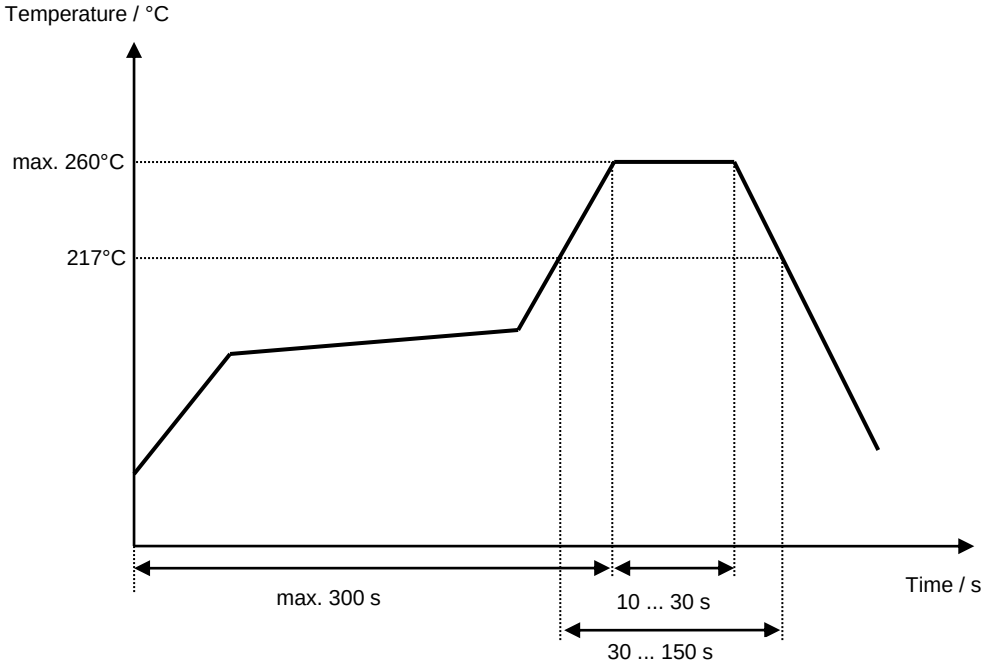
Conditions	**Exposure**
Average ramp-up rate (30°C to 217°C)	less than 3°C/second
> 100°C	between 300 and 600 seconds
> 150°C	between 240 and 500 seconds
> 217°C	between 30 and 150 seconds
Peak temperature	max. 260°C
Time within 5°C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (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	Springfeldt	14.04.2004
1.1	- Adjust attenuation and loss to new customer requirements	Noack	26.11.2004
1.2	- Adjust attenuation and loss to new customer requirements	Martens	29.11.2004
1.3	- Change of absolute attenuation	Strehl	20.01.2005
1.4	- Change stability characteristics - Add typical values and filter characteristic - Generation of filter specification	Strehl	04.05.2005
1.5	- Add IIP3 and stability characteristics	Strehl	19.07.2006
2.0	- Additional passband with larger bandwidth specified for OTR2 - Orientation of tape and reel updated - Typos corrected	Molke	07.05.2014

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