

VI TELEFILTER**Filter specification****TFS 60 A****1/5****Measurement condition**

Ambient temperature T_A : 25 °C
 Input power level: 0 dBm
 Terminating impedance: source: 50 Ω
 load: 2 k Ω || 3 pF

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the TFS 60A is the insertion loss. 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 temperature coefficient of frequency TC_f is valid both for the reference frequency f_C and the frequency response of the filter in the operating temperature range.

D a t a	typ. Value	Limit
Insertion loss a_e (reference level)	27,9 dB	$27,1 \pm 1,5$ dB
Nominal frequency f_N	-	60 MHz
Centre frequency f_C	60 MHz	$60 \pm 0,12$ MHz
Pass band PB	-	$f_N \pm 8$ MHz
Pass band ripple (p-p)	0,4 dB	max. 0,7 dB
Relative attenuation a_{rel}		
$f_C \pm 8$ MHz	0,4 dB	max. 0,7 dB
$f_C \pm 9,825$ MHz	2,7 dB	max. 3 dB
$f_C \pm 11,825$ MHz	35 dB	max. 30 dB
$f_C \pm 12,325$ MHz	4 dB	min. 3 dB
$f_C \pm 12,5$ MHz	32 dB	min. 30 dB
$f_C - 20$ MHz	36 dB	min. 34 dB
$f_C + 20$ MHz	39 dB	min. 33 dB
Reflected wave signal suppression	55 dB	min. 44 dB
Feedthrough signal suppression	45 dB	min. 44 dB
Absolute group delay in $f_N \pm 8,5$ MHz	700 ns	max. 800 ns
Group delay ripple in $f_N \pm 8,5$ MHz smoothing aperture 3,6 MHz	3,8 ns	max. 4 ns
Operable temperature range	-	-25 °C ... 65 °C
Storage temperature range	-	-40 °C ... 85 °C
Temperature coefficient of frequency TC_f^*	-72 ppm / K	-
DC voltage V_{DC}	-	max. 12 V
AC voltage V_{PP}	-	max. 10 V

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

generated: _____

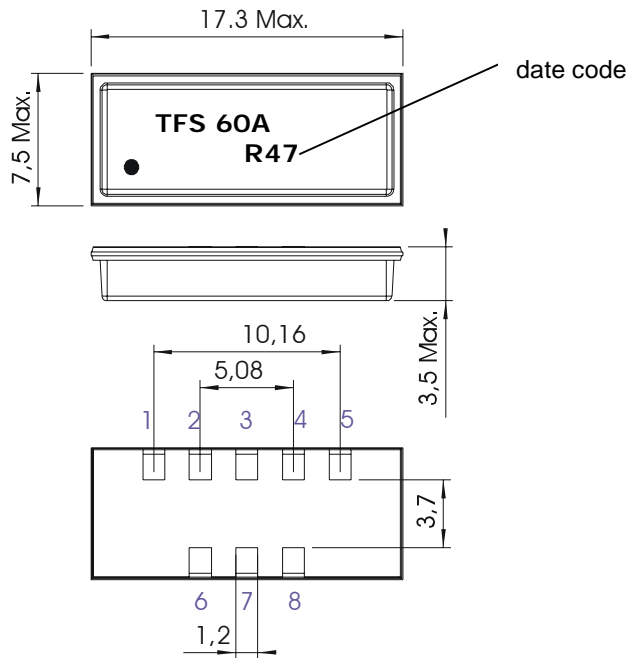
checked / approved: _____

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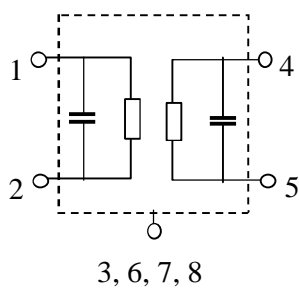
Construction and Pin Connection

(All dimensions in mm)



1	input
2	input - ground
3	chip carrier - ground
4	output
5	output
6,7,8	internally connected to pin 3

date code:	year + week
N	2001
P	2002
R	2003
...	

Equivalent circuit for ports

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Stability Characteristics

After the following tests the filter shall meet the whole specification:

1. Shock: 500g, 18 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5g 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, please refer to the attached "Air reflow temperature conditions" on page 4;

Packing

- Tape & Reel: DIN 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;

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Air reflow temperature conditions

1st and 2nd air reflow profile

Name:	pre-heating periods	main-heating periods	peak temperature
Temperature:	150 °C - 170 °C	over 200 °C	255 °C ± 5 °C
Time:	60 sec. - 90 sec.	20 sec. - 25 sec.	

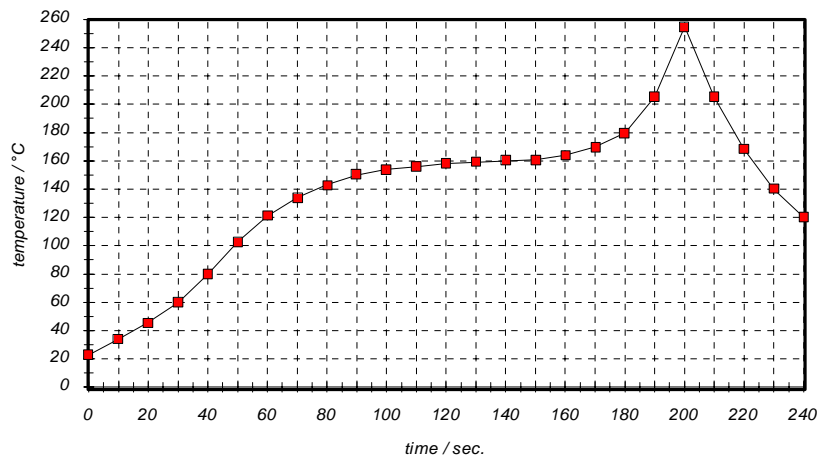
Chip-mount air reflow profile

Table for temperature vs. time during the air reflow process

Tolerance of temperatures: ± 5 °C

time / sec.	temperature / °C	time / sec.	temperature / °C
0	23	140	160
10	34	150	161
20	46	160	164
30	60	170	170
40	80	180	180
50	103	190	205
60	121	195	230
70	134	200	255
80	143	205	230
90	150	210	205
100	154	215	180
110	156	220	165
120	158	230	140
130	159	240	120

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History

Version	Reason of Changes	Name	Date
1.0	- generate specification	Pfeiffer	10.04.2003
1.1	- package changed, terminating impedance added - typical values added	Pfeiffer	14.10.2003
1.2	- limit of absolute group delay added - typical values of reflected wave signal and feedthrough signal suppression, and group delay ripple changed	Pfeiffer	20.11.2003

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