

**Measurement condition**

Ambient temperature $T_A$ :	23	°C
Input power level:	0	dBm
Terminating impedance:	50	Ohm (all ports)

**Characteristics****Data Low Band**

		typ. value		tolerance / limit	
<b>Insertion loss RX1<sup>1</sup></b>		$a_{e,RX1}$	4.0 dB	max.	5.0 dB
<b>Nominal frequency RX1<sup>2</sup></b>		$f_{N,RX1}$	-		1210.0 MHz
<b>Passband RX1</b>		$PB_{RX1}$	-	$f_{N,RX1} \pm$	44.0 MHz
<b>Pass band variation RX1</b>		$\Delta a_{e,RX1}$	1.3 dB	max.	3.0 dB
<b>Absolute attenuation RX1<sup>3</sup></b>		$a_{abs,RX1}$			
600 MHz ...	1095 MHz	32	dB	min.	30 dB
1350 MHz ...	1525 MHz	37	dB	min.	30 dB
1525 MHz ...	1610 MHz	35	dB	min.	33 dB
1610 MHz ...	2400 MHz	32	dB	min.	30 dB
<b>Group delay variation within <math>PB_{RX1}</math></b>			8.0 ns	max.	10 ns
<b>Group delay variation (unit to unit)</b>			$\pm 2.0$ ns	max.	$\pm 5$ ns
<b>Return loss within <math>PB_{RX1}</math></b>			10.0 dB	min.	9 dB

**Data High Band**

		typ. value		tolerance / limit	
<b>Insertion loss RX2<sup>1</sup></b>		$a_{e,RX2}$	4.0 dB	max.	5.0 dB
<b>Nominal frequency RX2<sup>2</sup></b>		$f_{N,RX2}$	-		1567.5 MHz
<b>Passband RX2</b>		$PB_{RX2}$	-	$f_{N,RX2} \pm$	42.5 MHz
<b>Pass band variation RX2</b>		$\Delta a_{e,RX2}$	0.5 dB	max.	3.0 dB
<b>Absolute attenuation RX2<sup>3</sup></b>		$a_{abs,RX2}$			
600 MHz ...	1166 MHz	32	dB	min.	30 dB
1166 MHz ...	1254 MHz	35	dB	min.	33 dB
1254 MHz ...	1425 MHz	35	dB	min.	30 dB
1705 MHz ...	2400 MHz	40	dB	min.	30 dB
<b>Group delay variation within <math>PB_{RX2}</math></b>			4.0 ns	max.	6 ns
<b>Group delay variation (unit to unit)</b>			$\pm 2.0$ ns	max.	$\pm 5$ ns
<b>Return loss within <math>PB_{RX2}</math></b>			10.0 dB	min.	9 dB

**Common Data**

		typ. value		tolerance / limit	
<b>Input power level</b>			-	max.	25 dBm
<b>Operating temperature range</b>		OTR	-		- 40 °C ... + 85 °C
<b>Storage temperature range</b>			-		- 40 °C ... + 85 °C
<b>Temperature coefficient of frequency</b>		$TC_f^4$	-74 ppm/K		-

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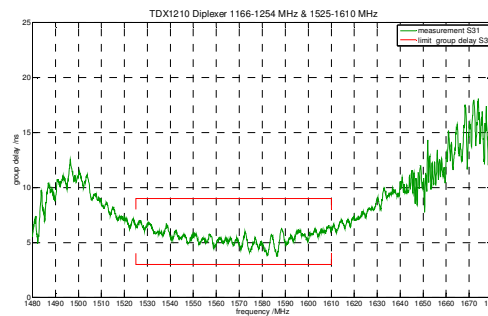
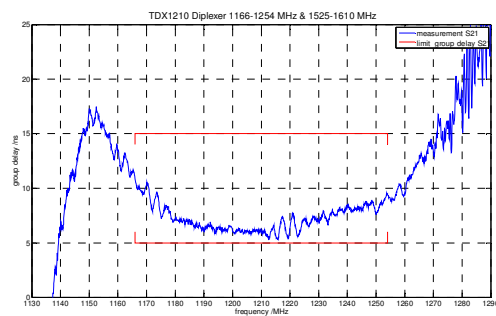
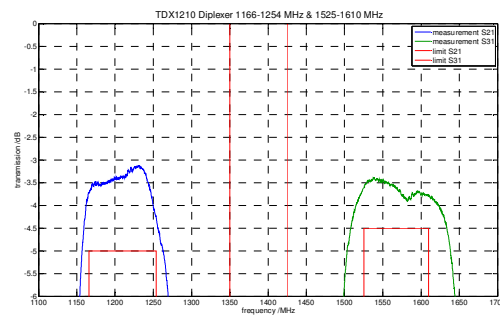
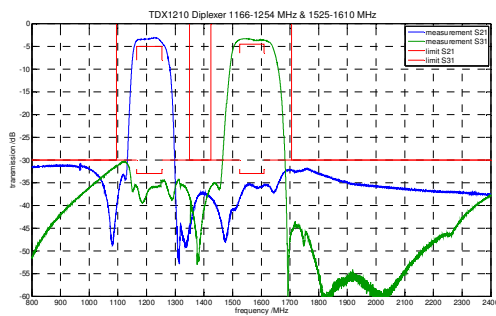
## Remarks:

- 1) The maximum attenuation in the pass bands is defined as the insertion loss  $a_{e,RX_i}$  ( $i = 1, 2$ ).
- 2) The nominal frequency  $f_{N,RX_i}$  ( $i = 1, 2$ ) is fixed at 1210.0 MHz and 1568.5 MHz respectively without any tolerance or limit.
- 3) The values of absolute attenuation  $a_{abs}$  are guaranteed for the whole operating temperature range. The frequency shift of the diplexer in the operating temperature range is included in the production tolerance scheme.
- 4)  $\Delta f = TC_f(T - T_A)f_N$

## Generated:

## Checked / Approved:

## Diplexer characteristic

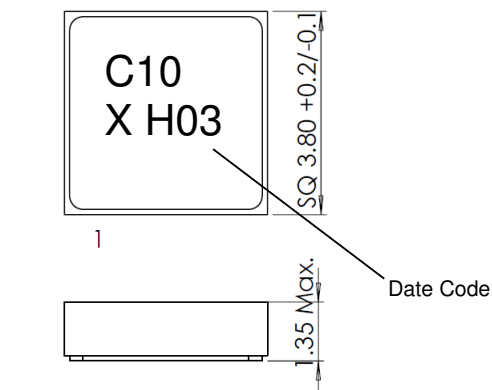


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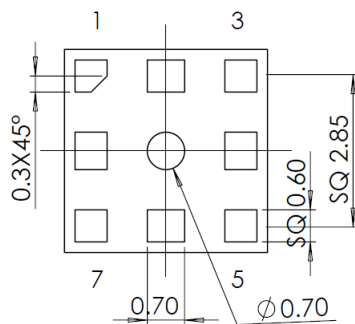
### Construction and pin connection

(All dimensions in mm)

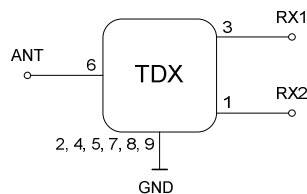


1	RX2
2	GND
3	RX1
4	GND
5	GND
6	Input ANT
7	GND
8	GND
9	GND

Date code:	Year + week
H	2016
J	2017
K	2018
...	



### 50 Ω Test circuit



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### Stability characteristics, reliability

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

- Shock: 500 g, 1 ms, half sine wave, 3 shocks each plane;  
DIN IEC 68 T2 - 27
- Vibration: 10 Hz to 2000 Hz, 0.35 mm or 5 g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 68 T2 - 6
- Change of temperature: -55 °C to 125 °C / 15 min. each / 100 cycles  
DIN IEC 68 part 2 – 14 Test N
- Resistance to solder heat (reflow): reflow possible: three times max.;  
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;
- SAW devices are Electrostatic Discharge (ESD) sensitive devices.

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

### Packing

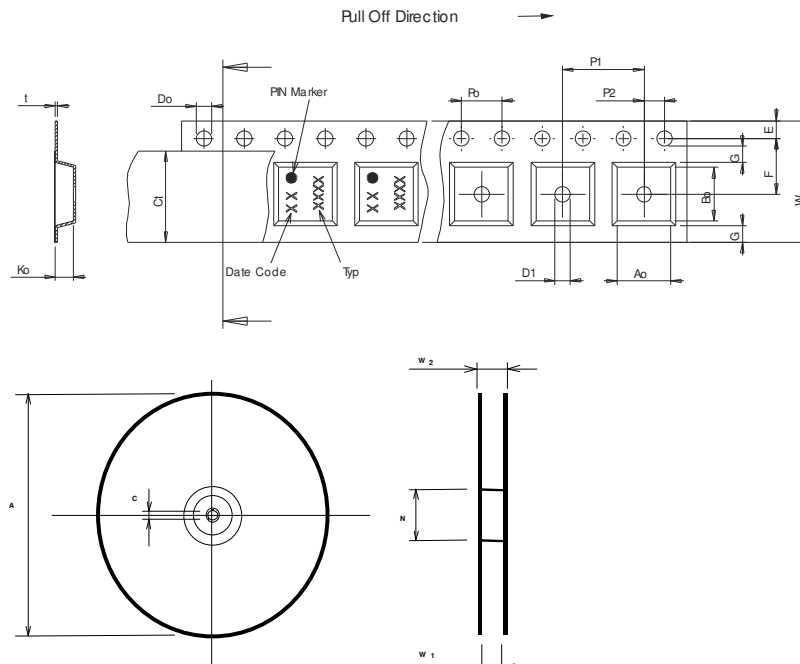
Tape & Reel:	IEC 286 – 3, with exception of value for N and minimum bending radius; tape type II, embossed carrier tape with top cover tape on the upper side;	
	max. number of components per reel:	3000
	length of empty cavities at start:	min. 300 mm
	length of empty cavities at start including leader:	min. 500 mm
	length of 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	: 9.5 ± 0.1
Ko	: 1.8 ± 0.1
t	: 0.30 ± 0.05

#### 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.

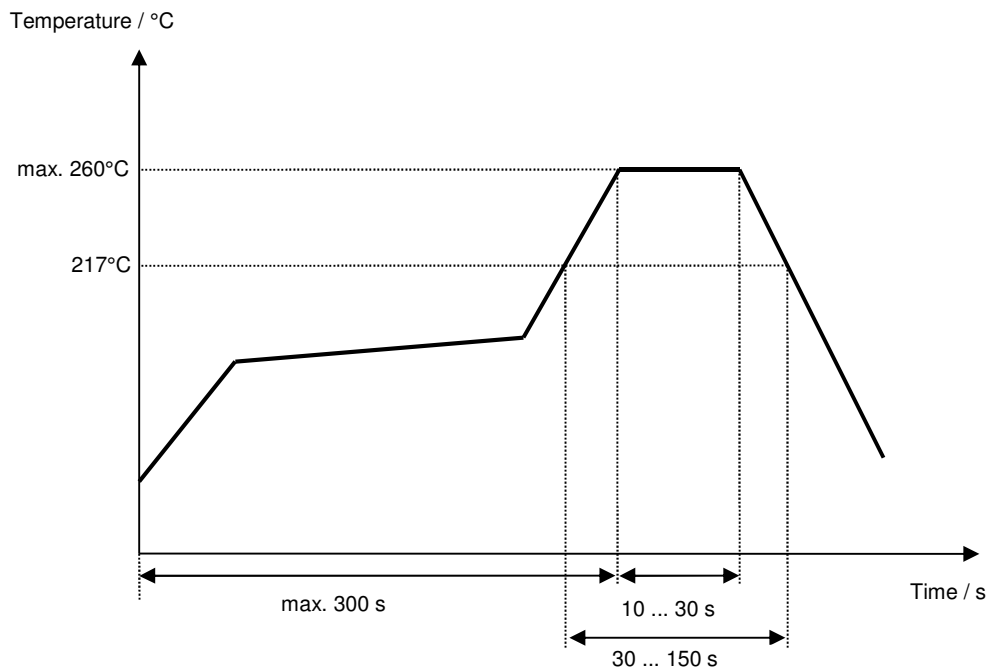
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## Air reflow temperature conditions

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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**History**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generation of development specification	Buchleitner	10.09.2015
2.0	- High band 1567.5 +/- 42.5 MHz	Buchleitner	17.09.2015
3.0	- Frequency ranges for absolute attenuation adjusted to RX1 and RX2 passband frequencies, group delay variation in RX1 band max. 10 ns, absolute attenuation for RX2 in RX1 band min. 33 dB, correction data code (year code), stability characteristics and reliability acc. company standars, some format changes	Buchleitner	02.02.2016
3.1	Diplexer characteristic added	Buchleitner	04.02.2016
3.2	Diplexer characteristic format changed, missing unit for unit to unit variation of group delay inserted	Buchleitner	09.02.2016

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