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**		
Insertion loss Passband RX1[1]			$a_{e,RX1}$		2.3	dB	max.	3.5	dB
Nominal frequency RX1[2]			$f_{N,RX1}$		-			1227.5	MHz
Passband RX1			PB_{RX1}		-		$f_{N,RX1}$ ±	14.5	MHz
Pass band variation RX1			$\Delta a_{e,RX1}$		0.5	dB	max.	2.5	dB
Absolute attenuation RX1[3]			$a_{abs,RX1}$						
100	MHz ...	900	MHz		38	dB	min.	35	dB
900	MHz …	1150	MHz		36	dB	min.	33	dB
1150	MHz …	1178	MHz		33	dB	min.	30	dB
1277	MHz …	1561	MHz		40	dB	min.	36	dB
1561	MHz …	1590	MHz		39	dB	min.	38	dB
1590	MHz …	2000	MHz		40	dB	min.	37	dB
2000	MHz ...	2200	MHz		40	dB	min.	35	dB
2200	MHz ...	2400	MHz		35	dB	min.	28	dB
Group delay variation within PB_{RX1}					30	ns	max.	50	ns
Group delay variation (unit to unit)[5]					5		max.	± 20	ns
Return loss within PB_{RX1}					9	dB	min.	8	dB

Data High Band					**typ. value**		**tolerance / limit**		
Insertion loss Passband RX2[1]			$a_{e,RX2}$		2.3	dB	max.	3.0	dB
Nominal frequency RX2[2]			$f_{N,RX2}$		-			1575.5	MHz
Passband RX2			PB_{RX2}		-		$f_{N,RX2}$ ±	14.5	MHz
Pass band variation RX2			$\Delta a_{e,RX2}$		0.7	dB	max.	2.0	dB
Absolute attenuation RX2[3]			$a_{abs,RX2}$						
100	MHz ...	1000	MHz		40	dB	min.	37	dB
1000	MHz ...	1213	MHz		38	dB	min.	33	dB
1213	MHz ...	1242	MHz		39	dB	min.	37	dB
1242	MHz ...	1450	MHz		38	dB	min.	36	dB
1450	MHz ...	1516	MHz		33	dB	min.	30	dB
1635	MHz ...	2000	MHz		40	dB	min.	37	dB
2000	MHz ...	2200	MHz		40	dB	min.	35	dB
2200	MHz ...	2400	MHz		38	dB	min.	28	dB
Group delay variation within PB_{RX2}					20	ns	max.	30	ns
Group delay variation (unit to unit)[5]					7		max.	± 10	ns
Return loss within PB_{RX2}					8.5	dB	min.	8	dB

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C o m m o n D a t a		**typ. value**		**tolerance / limit**		
Input power level		-		max.	25	dBm
Operating temperature range	OTR	-		- 40 °C ... + 85 °C		
Storage temperature range		-		- 40 °C ... + 85 °C		
Temperature coefficient of frequency	TC_f [4]	-42	ppm/K		-	

Remarks:
1) The maximum attenuation in the pass bands is defined as the insertion loss $a_{e,RXi}$ (i = 1, 2).
2) The nominal frequency $f_{N,RXi}$ (i = 1, 2) is fixed at 1227.5 MHz and 1575.5 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) $\Delta f = TC_f(T - T_A)f_N$
5) Measured at $f_{N,RXi}$, $f_{N,RXi}$ + PB_{RXi}/2 and $f_{N,RXi}$ - PB_{RXi}/2 (i = 1, 2)

Generated:

Checked / Approved:

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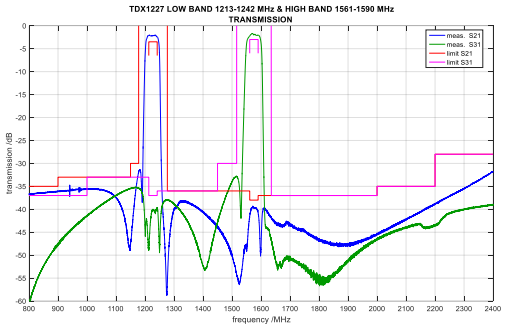
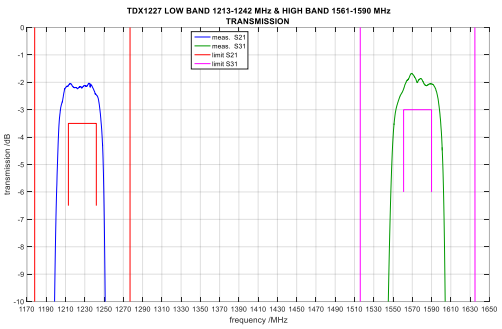
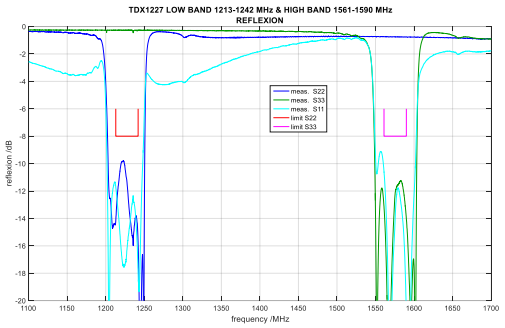
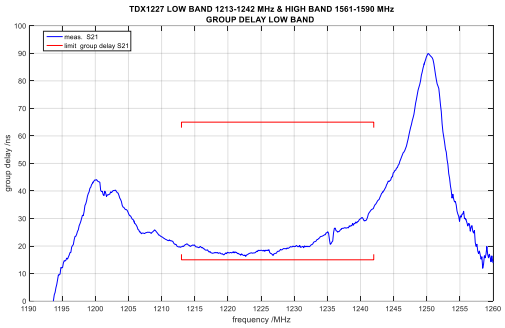
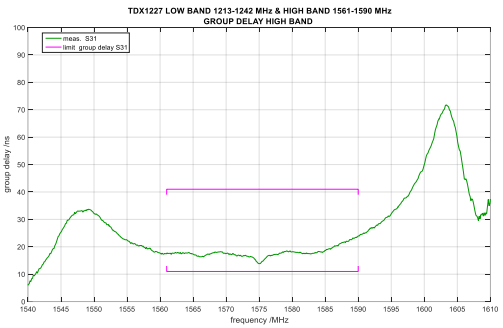
Diplexer characteristic











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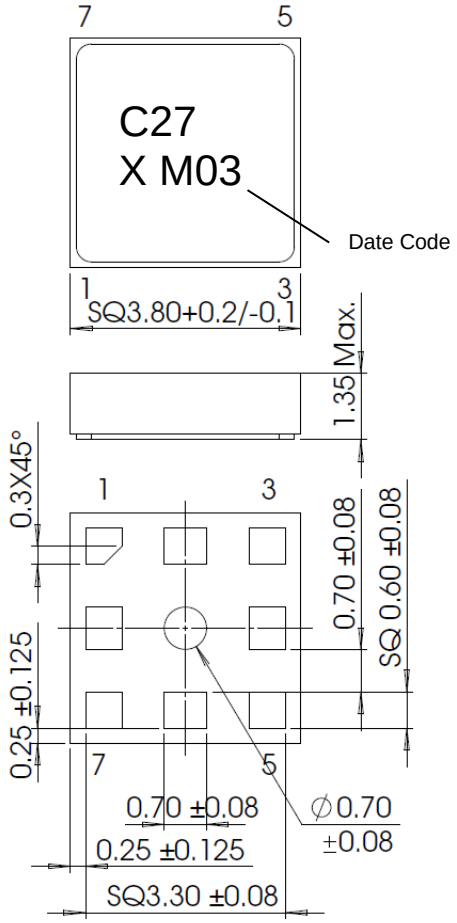
Construction and pin connection

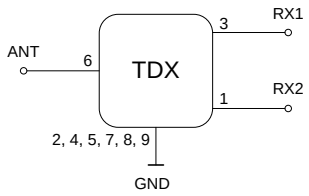
(All dimensions in mm)



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

Date code:	Year + week
M	2020
N	2021
P	2022
...	

50 Ω Test circuit



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Stability characteristics, reliability

After the following tests the component 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 plan, 3 plans;
   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 refer to the attached "Air reflow temperature conditions" on page 4;

This component is RoHS compliant acc. to 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;

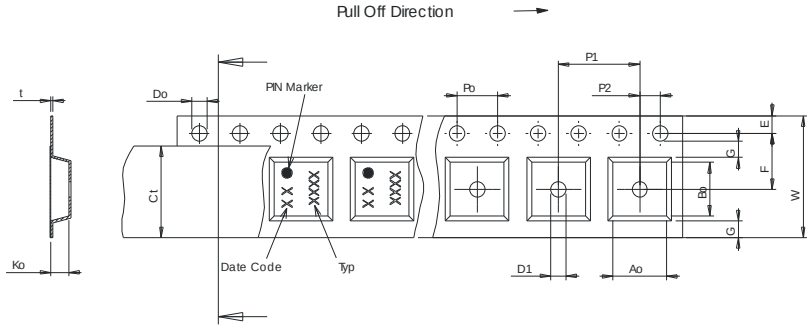
max. number of components per reel:	3000
length of empty cavities at start:	min. 300 mm
length of empty cavities at start including leader:	min. 500 mm
length of trailer:	min. 300 mm

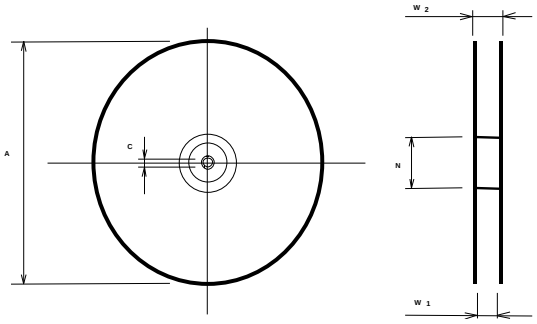
Tape (all dimensions in mm)

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
K_0	:	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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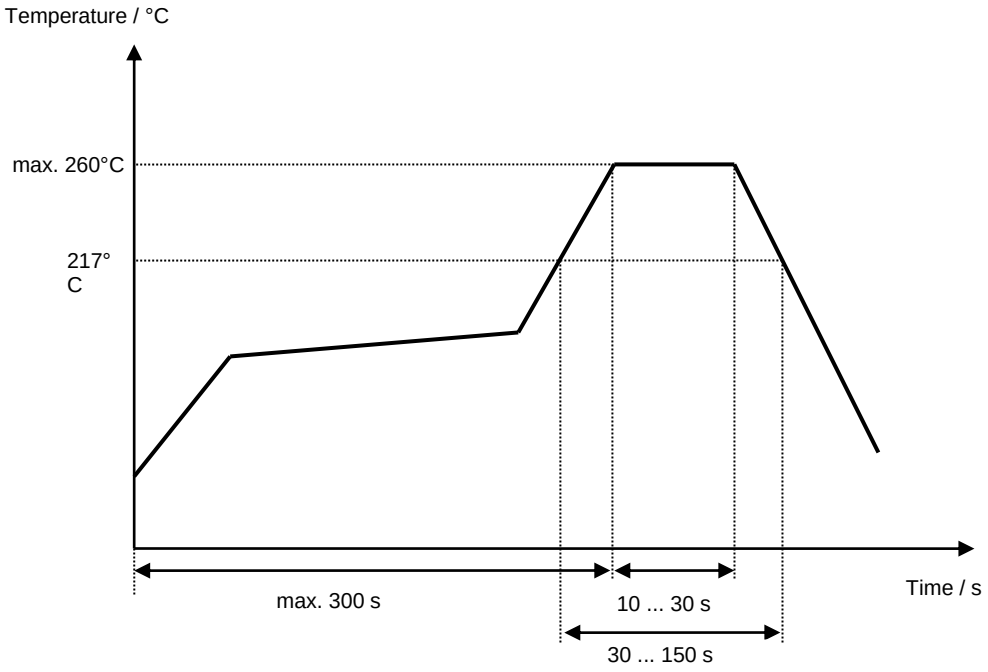
Air reflow temperature conditions

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

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	Buchleitner	27.01.2015
2.0	- Insertion loss, absolute attenuation, group delay variation and return loss according development results	Buchleitner	17.10.2016
3.0	Construction and pin connection drawing	Buchleitner	22.01.2020

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