



RF360
Europe GmbH

SAW components

SAW RF filter

Satellite radio
L-band SatCom

Series/type:	B5367
Ordering code:	B39152B5367U410
Date:	January 09, 2018
Version:	2.2

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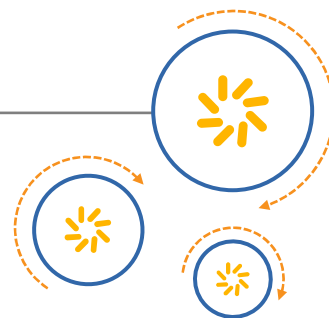
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SAW components**B5367****SAW RF filter****1538.5 MHz**

Data sheet

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SAW components

B5367

SAW RF filter

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1 Application

- RF filter for L-band SatCom Rx
- Matching required for operation at 50 Ω
- Usable pass band 41 MHz

2 Features

- Package code DCC6C
- Package size 3.0 $\pm$ 0.1 mm $\times$ 3.0 $\pm$ 0.1 mm
- Package height 1.1 $\pm$ 0.125 mm
- Approximate weight 0.04 g
- RoHS compatible
- Package for Surface Mount Technology (SMT)
- Ni/Au-plated terminals
- Lead free soldering compatible with J-STD20C
- Electrostatic Sensitive Device (ESD)
- Moisture Sensitivity Level 1 (MSL1)

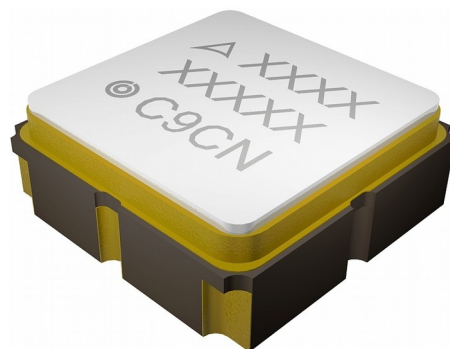


Figure 1: Picture of component with example of product marking.

SAW components

SAW RF filter

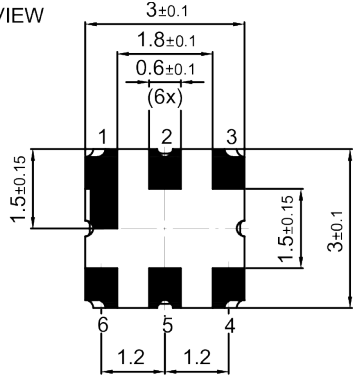
B5367

1538.5 MHz

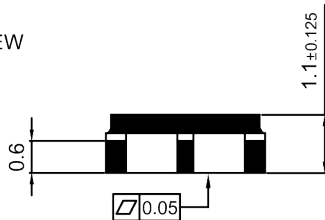
Data sheet

3 Package

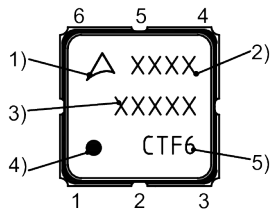
BOTTOM VIEW



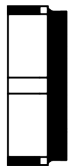
SIDE VIEW



TOP VIEW

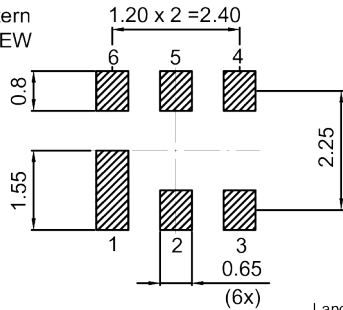


SIDE VIEW



- 1) Company logo
- 2) Device designation
- 3) Last five digits of the lot number
- 4) Marking for pad number 1
- 5) Example of production location and date code

Land pattern
THRU VIEW



Landing pad tolerance -0.02

Figure 2: Drawing of package. See Sec. Package information (p. 17).

4 Pin configuration

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

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5 Matching circuit

$$\blacksquare C_{s2a} = 3.3 \text{ pF}$$

$$\blacksquare L_{p2b} = 4.3 \text{ nH}$$

$$\blacksquare C_{s2c} = 3.3 \text{ pF}$$

$$\blacksquare L_{p5} = 6.8 \text{ nH}$$

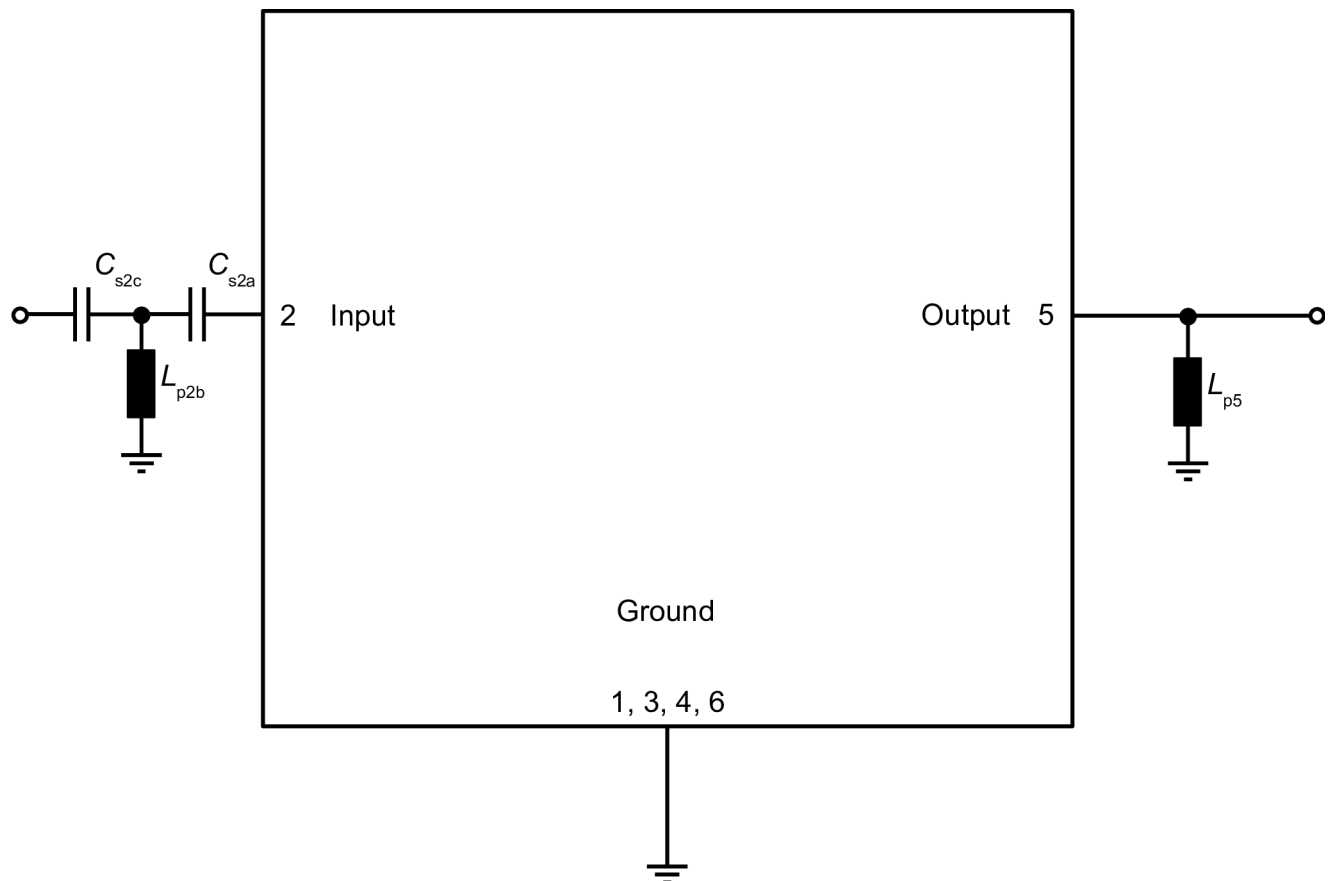


Figure 3: Schematic of matching circuit.

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6 Characteristics

Temperature range for specification

 T_{SPEC} = -40 °C ... +85 °C

Input terminating impedance

 Z_{IN} = 50 Ω with ser. 3.3 pF, par. 4.3 nH, & ser. 3.3 pF¹⁾

Output terminating impedance

 Z_{OUT} = 50 Ω with par. 6.8 nH¹⁾

Characteristics			min. for T_{SPEC}	typ. @ +25 °C	max. for T_{SPEC}	
Center frequency		f_{C}	—	1538.5	—	MHz
Maximum insertion attenuation		α_{max}	—	3.5	4.5	dB
	1518... 1559	MHz	—	3.5	4.5	
Amplitude ripple (p-p)		$\Delta\alpha$	—	1.8	3.2	dB
	1518... 1559	MHz	—	1.8	3.2	
Maximum group delay		τ_{max}	—	40	60	ns
	1518... 1559	MHz	—	40	60	
Maximum VSWR		VSWR _{max}	—	1.6	2.3	
@ input port	1518... 1559	MHz	—	1.6	2.3	
@ output port	1518... 1559	MHz	—	1.7	2.3	
Minimum attenuation		α_{min}				
	10... 1501	MHz	22	32	—	dB
	1501... 1511	MHz	10	14	—	
	1582... 1592	MHz	10	44	—	
	1592... 1700	MHz	32	37	—	
	2400... 2500	MHz	20	32	—	

¹⁾ See Sec. Matching circuit (p. 6).

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7 Maximum ratings

Operable temperature	$T_{OP} = -40\text{ °C} \dots +85\text{ °C}$	
Storage temperature	$T_{STG}^{1)} = -55\text{ °C} \dots +85\text{ °C}$	
DC voltage	$ V_{DC} ^{2)} = 0\text{ V (max.)}$	
ESD voltage		
	$V_{ESD}^{3)} = 500\text{ V (max.)}$	Human body model.
	$V_{ESD}^{4)} = 200\text{ V (max.)}$	Machine model.
Input power	P_{IN}	
@ input port: 1518 ... 1559 MHz	10 dBm	Continuous wave for 100000 h @ 85 °C.
@ input port: 1518 ... 1559 MHz	24 dBm	Continuous wave for 5000 h @ 85 °C.

¹⁾ Not valid for packaging material. Storage temperature for packaging material is -25 °C to +40 °C.

²⁾ In case of applied DC voltage blocking capacitors are mandatory.

³⁾ According to JESD22-A114F (HBM – Human Body Model), 1 negative & 1 positive pulse.

⁴⁾ According to JESD22-A115B (MM – Machine Model), 10 negative & 10 positive pulses.

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8 Transmission coefficient

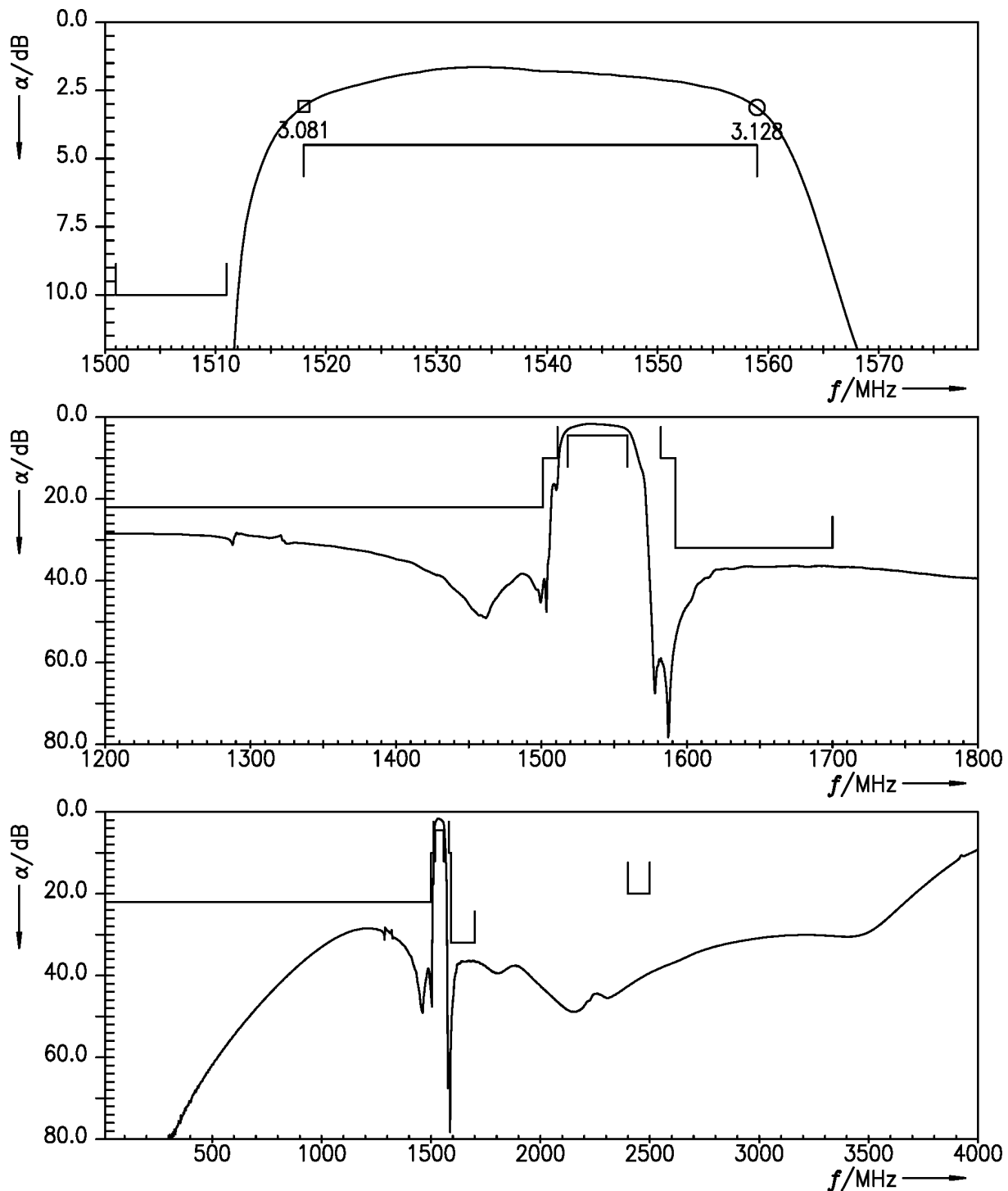


Figure 4: Attenuation.

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9 Reflection coefficients

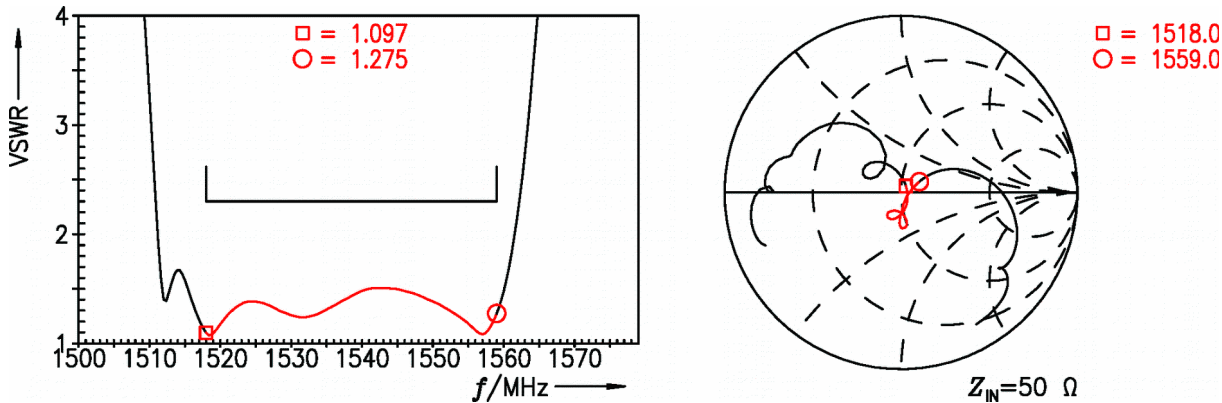


Figure 5: Reflection coefficient at IN port.

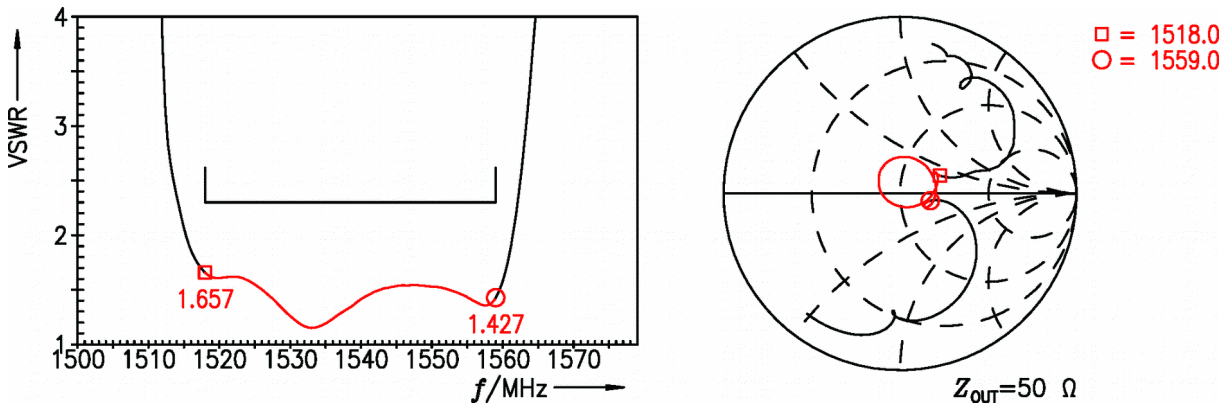


Figure 6: Reflection coefficient at OUT port.

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10 Packing material

10.1 Tape

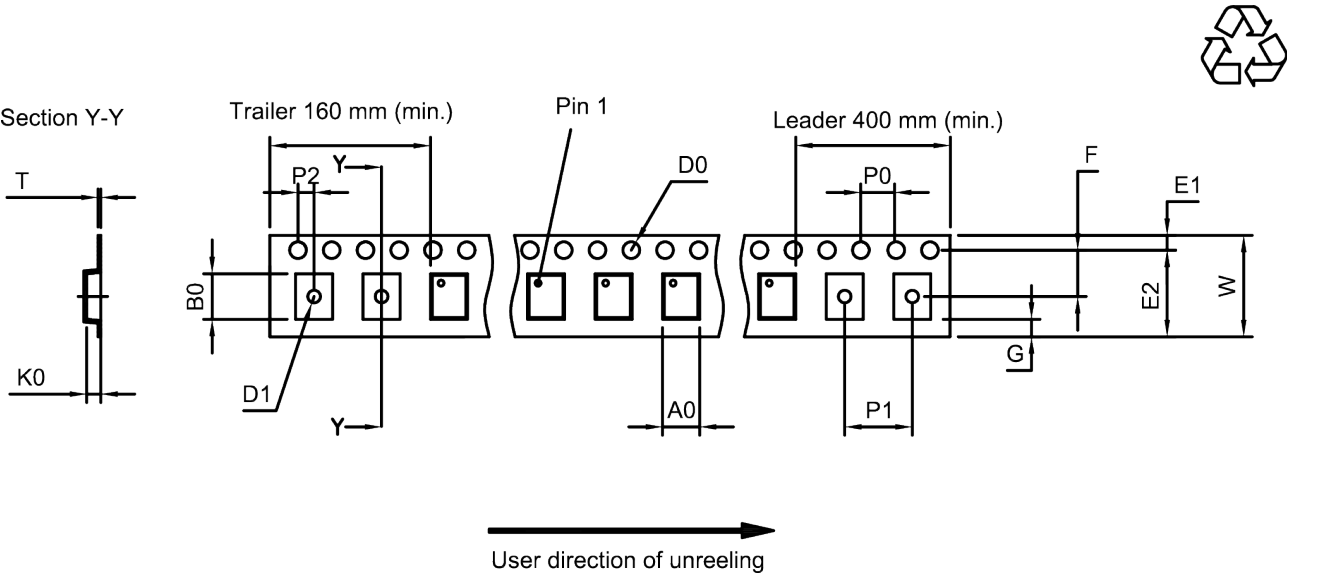


Figure 7: Drawing of tape (first-angle projection) with tape dimensions according to Table 1.

A ₀	3.25±0.1 mm	E ₂	10.25 mm (min.)	P ₁	4.0±0.1 mm
B ₀	3.3±0.1 mm	F	5.5±0.05 mm	P ₂	2.0±0.1 mm
D ₀	1.5+0.1/-0 mm	G	0.75 mm (min.)	T	0.2±0.05 mm
D ₁	1.5 mm (min.)	K ₀	1.5±0.1 mm	W	12.0+0.3/-0.1 mm
E ₁	1.75±0.1 mm	P ₀	4.0±0.1 mm		

Table 1: Tape dimensions.

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10.2 Reel with diameter of 180 mm

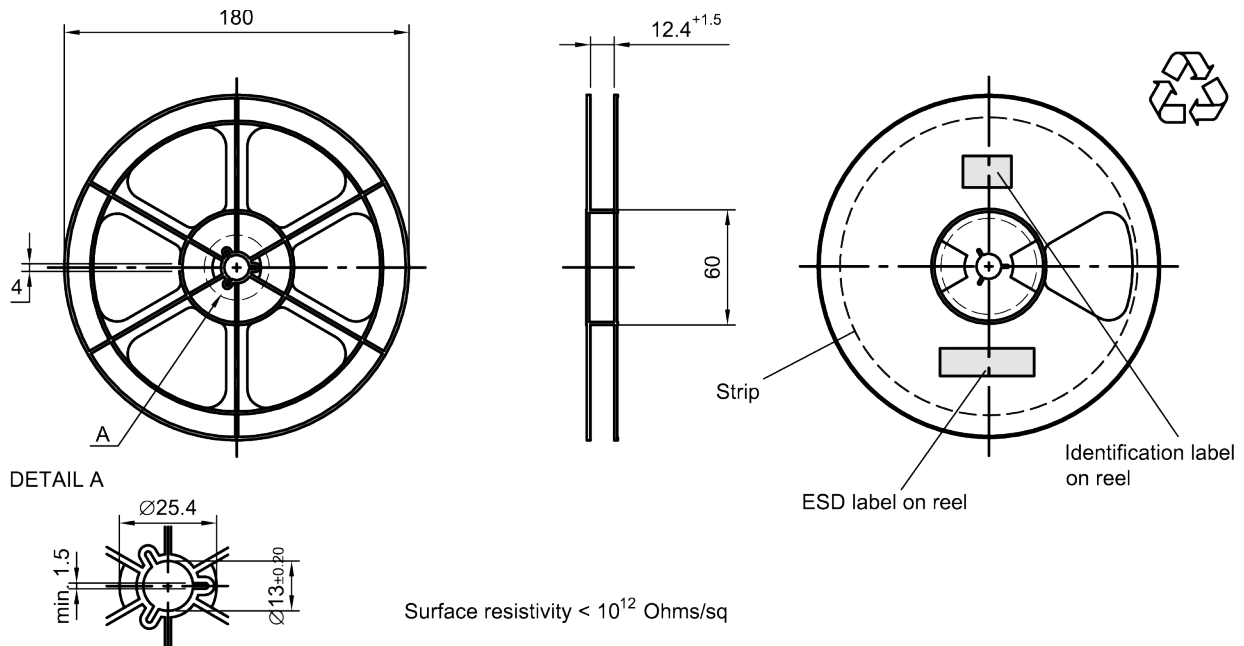


Figure 8: Drawing of reel (first-angle projection) with diameter of 180 mm.

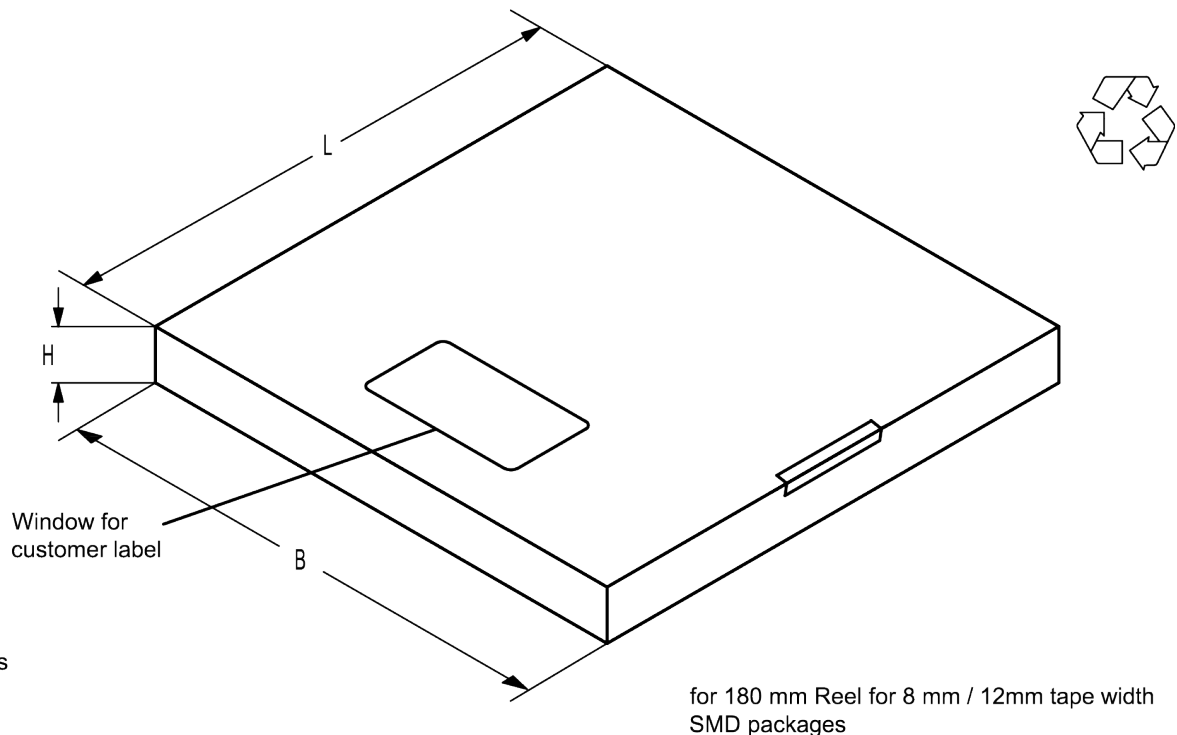


Figure 9: Drawing of folding box for reel with diameter of 180 mm.

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10.3 Reel with diameter of 330 mm

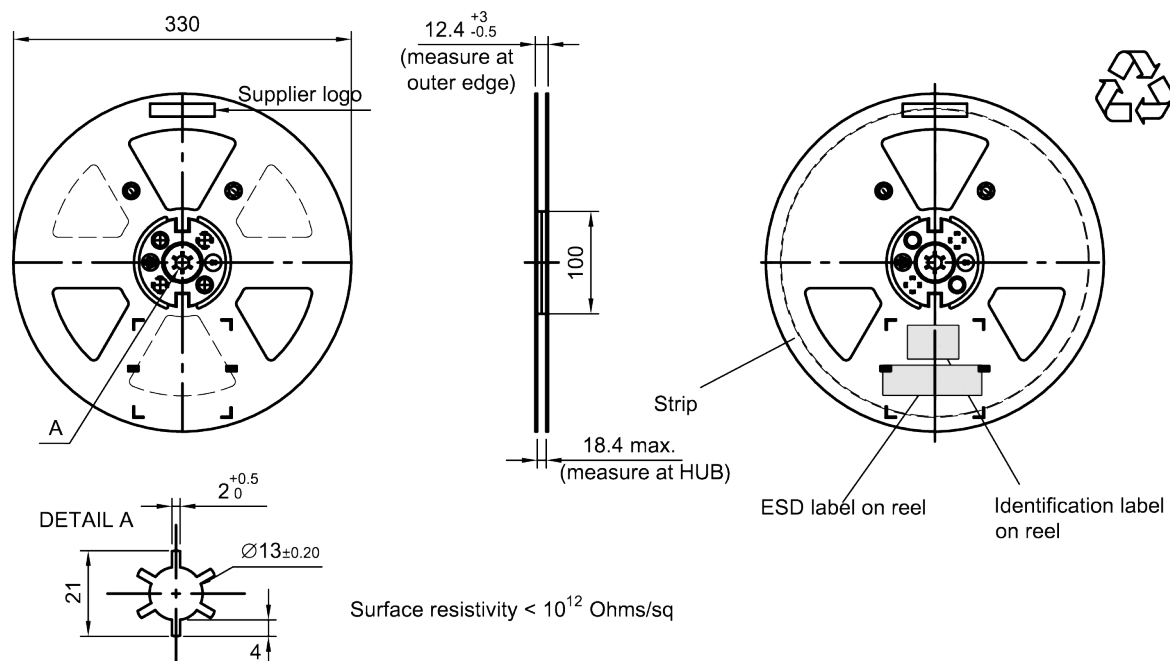
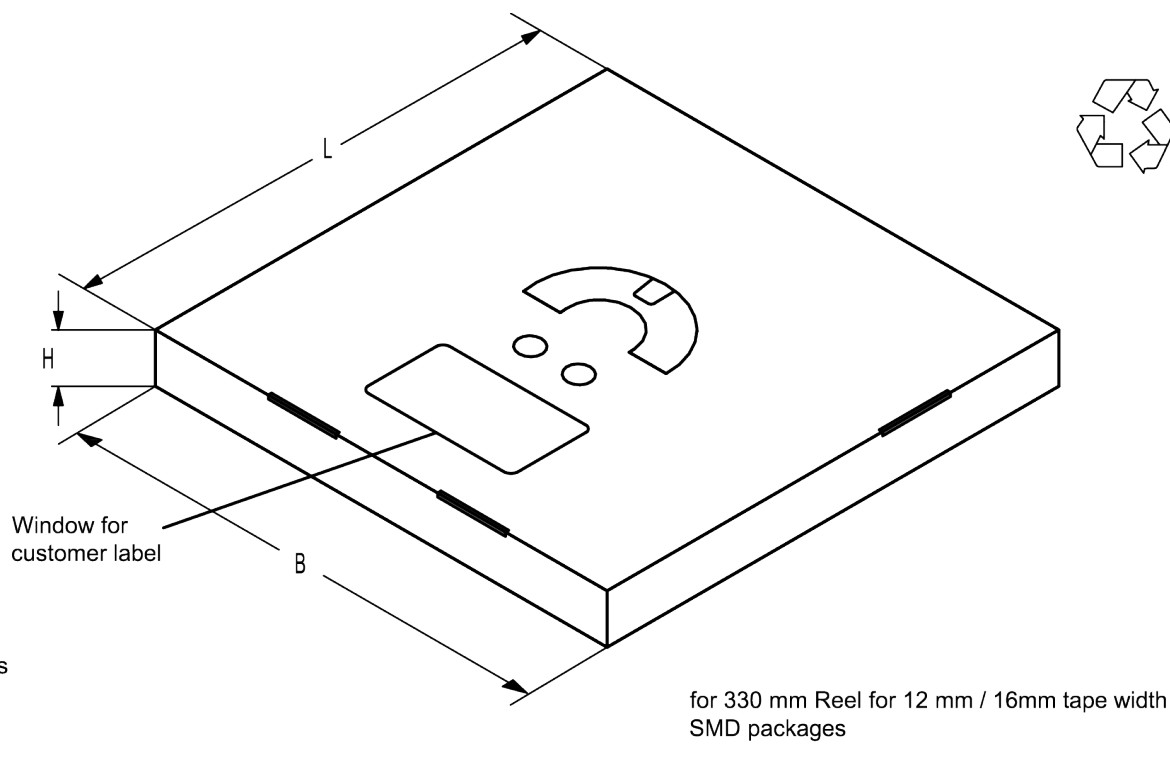


Figure 10: Drawing of reel (first-angle projection) with diameter of 330 mm.



Dimensions

L = 340

B = 340

H = 25

Figure 11: Drawing of folding box for reel with diameter of 330 mm.

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11 Marking

Products are marked with device designation, lot number, as well as production location and date code.

- Device designation: The 4-character device designation of the ordering code is used for the marking.

Example for 4-character device designation: B3xxxxB1234xxxx

- Lot number: The last 5 digits of the lot number are used for the marking.

Example: 12345

- Production location and date code: The production location is Wuxi (encoded in the first character 'C'). The production date code is encoded in the last three characters according to Table 2.

1 st digit (day)						2 nd digit (year)				3 rd digit (month)			
Day	Code	Day	Code	Day	Code	Year	Code	Year	Code	Month	Code	Month	Code
1	1	11	A	21	M	2010	A	2022	P	Jan	1	Jul	7
2	2	12	B	22	N	2011	B	2023	R	Feb	2	Aug	8
3	3	13	C	23	P	2012	C	2024	S	Mar	3	Sep	9
4	4	14	D	24	R	2013	D	2025	T	Apr	4	Oct	0
5	5	15	E	25	S	2014	E	2026	U	May	5	Nov	N
6	6	16	F	26	T	2015	F	2027	V	Jun	6	Dec	D
7	7	17	H	27	U	2016	H	2028	W				
8	8	18	J	28	V	2017	J	2029	X				
9	9	19	K	29	W	2018	K	2030	Z				
10	0	20	L	30	X	2019	L	2031	A				
				31	Z	2020	M	2032	B				
						2021	N	and so on					

Table 2: Production date code.

Example of how to decode production location and date code:

Code: **C T F 6**

Location: C → Wuxi

Day: T → 26th

Year: F → 2015

Month: 6 → June

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12 Soldering profile

The recommended soldering process is in accordance with IEC 60068-2-58 – 3rd edit and IPC/JEDEC J-STD-020B.

ramp rate	≤ 3 K/s
preheat	125 °C to 220 °C, 150 s to 210 s, 0.4 K/s to 1.0 K/s
T > 220 °C	30 s to 70 s
T > 230 °C	min. 10 s
T > 245 °C	max. 20 s
T ≥ 255 °C	–
peak temperature T _{peak}	250 °C +0/-5 °C
wetting temperature T _{min}	230 °C +5/-0 °C for 10 s ± 1 s
cooling rate	≤ 3 K/s
soldering temperature T	measured at solder pads

Table 3: Characteristics of recommended soldering profile for lead-free solder (Sn95.5Ag3.8Cu0.7).

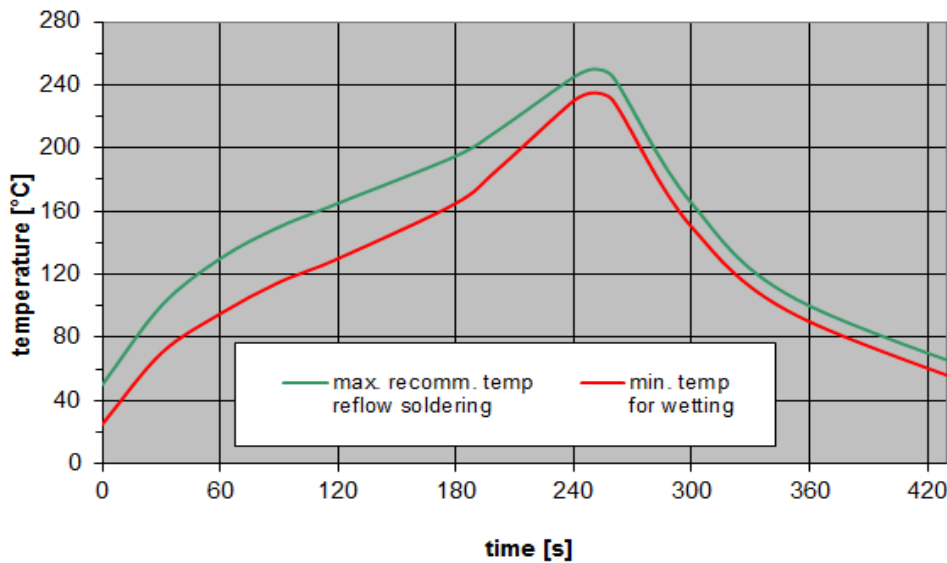


Figure 12: Recommended reflow profile for convection and infrared soldering – lead-free solder.

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13 Annotations**13.1 Matching coils**

See TDK inductor pdf-catalog <http://www.tdk.co.jp/tefe02/coil.htm#aname1> and Data Library for circuit simulation <http://www.tdk.co.jp/etvcl/index.htm>.

13.2 RoHS compatibility

ROHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8th, 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("Directive") with due regard to the application of exemptions as per Annex III of the Directive in certain cases.

13.3 Scattering parameters (S-parameters)

The pin/port assignment is available in the headers of the S-parameter files. Please contact your local RF360 sales office.

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14 Cautions and warnings**14.1 Display of ordering codes for RF360 products**

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14.2 Material information

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our sales offices.

For information on recycling of tapes and reels please contact one of our sales offices.

14.3 Moldability

Before using in overmolding environment, please contact your local RF360 sales office.

14.4 Package information**Landing area**

The printed circuit board (PCB) land pattern (landing area) shown is based on RF360 internal development and empirical data and illustrated for example purposes, only. As customers' SMD assembly processes may have a plenty of variants and influence factors which are not under control or knowledge of RF360, additional careful process development on customer side is necessary and strongly recommended in order to achieve best soldering results tailored to the particular customer needs.

Dimensions

Unless otherwise specified all dimensions are understood using unit millimeter (mm).

Projection method

Unless otherwise specified first-angle projection is applied.

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