



RF360
Europe GmbH

SAW components

SAW RF uplink filter

Base stations

LTE band 11 and LTE band 21

Series/type:	B5128
Ordering code:	B39142B5128U410
Date:	August 03, 2017
Version:	2.4

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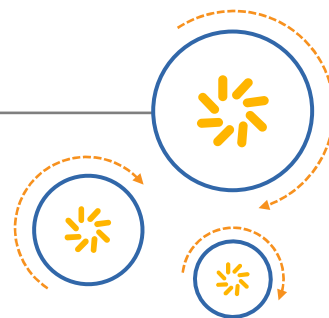
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A Qualcomm – TDK Joint Venture

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SAW components**B5128****SAW RF uplink filter****1446.45 MHz**

Data sheet

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SAW RF uplink filter	1446.45 MHz

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SAW components

B5128

SAW RF uplink filter

1446.45 MHz

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1 Application

- Low-loss RF filter for BTS systems
- Low amplitude ripple
- Usable pass band 37.1 MHz
- Unbalanced to unbalanced operation
- No matching required for operation at 50 Ω

2 Features

- Package code DCC6C
- Package size $3.0 \pm 0.1 \text{ mm} \times 3.0 \pm 0.1 \text{ mm}$
- Package height $1.1 \pm 0.125 \text{ mm}$
- 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)

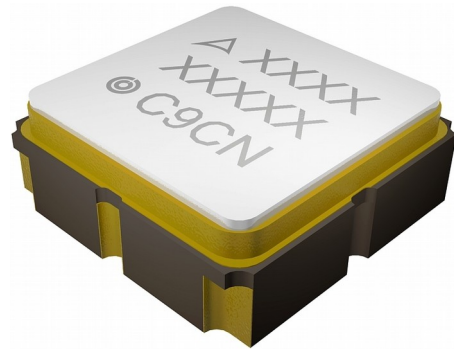


Figure 1: Picture of component with example of product marking.

SAW components

B5128

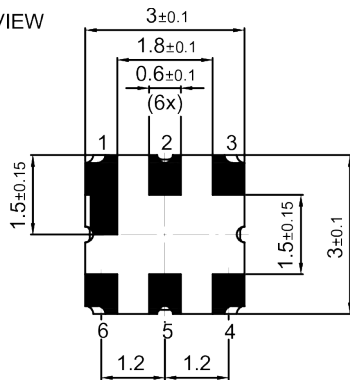
SAW RF uplink filter

1446.45 MHz

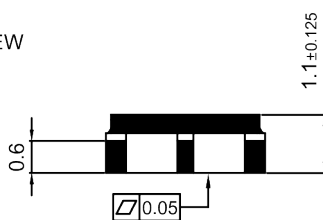
Data sheet

3 Package

BOTTOM VIEW

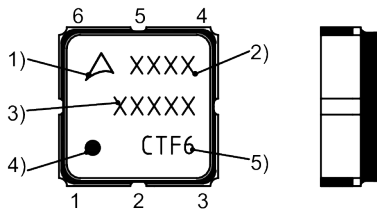


SIDE VIEW



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

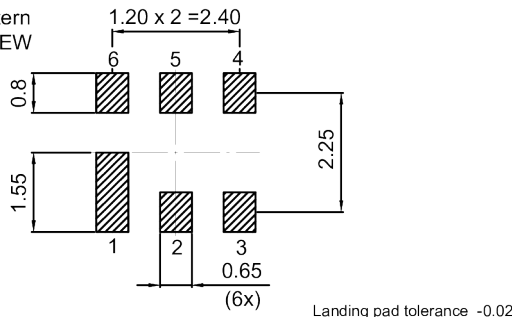
Land pattern
THRU VIEW

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

4 Pin configuration

- 2 Input (Input unbalanced)
- 5 Output (Output unbalanced)
- 1, 3, 4, 6 Ground (To be grounded)

Data sheet

5 Matching circuit

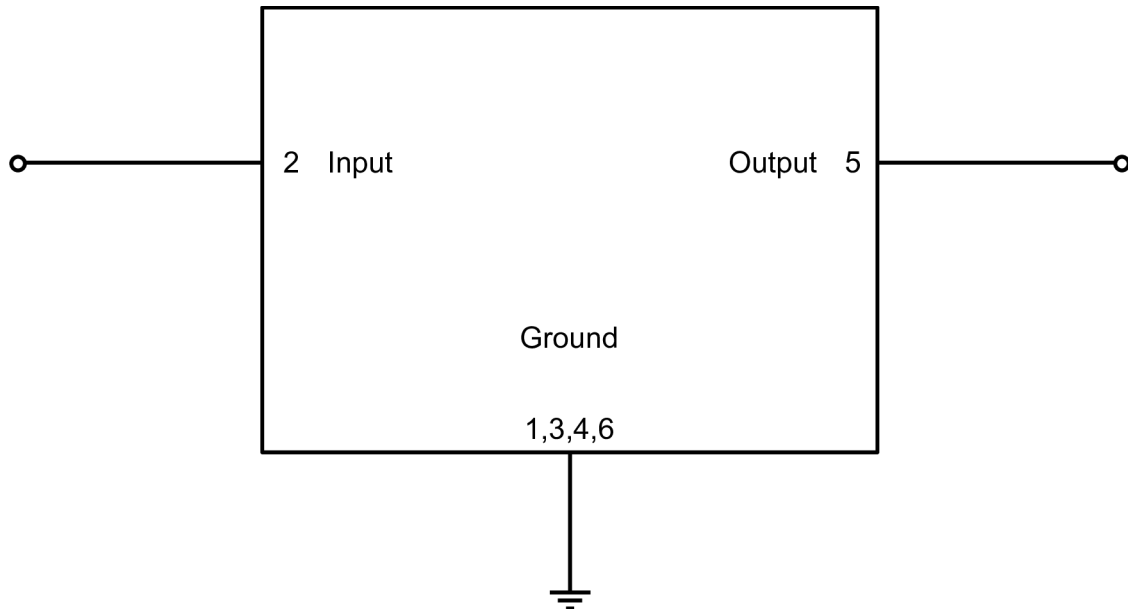


Figure 3: Schematic of matching circuit. No external matching components required.

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6 Characteristics

Temperature range for specification

 $T_{\text{SPEC}} = -40\text{ °C} \dots +105\text{ °C}$

Input terminating impedance

 $Z_{\text{IN}} = 50\ \Omega$

Output terminating impedance

 $Z_{\text{OUT}} = 50\ \Omega$

Characteristics			min. for T_{SPEC}	typ. @ +25 °C	max. for T_{SPEC}	
Center frequency		f_{C}	—	1446.45	—	MHz
Maximum insertion attenuation		α_{max}				
	1427.9... 1465	MHz	—	2.5	3.0 ¹⁾	dB
	1427.9... 1465	MHz	—	2.5	3.5	dB
Amplitude ripple (p-p)		$\Delta\alpha$				
	1427.9... 1465	MHz	—	0.8	1.3 ¹⁾	dB
	1427.9... 1465	MHz	—	0.8	1.8	dB
	1447.9... 1462.9	MHz	—	0.6	0.9 ¹⁾	dB
	1447.9... 1462.9	MHz	—	0.6	1.1	dB
Minimum return loss		α				
@ input port	1427.9... 1465	MHz	10 ¹⁾	13	—	dB
	1427.9... 1465	MHz	8.0	13	—	dB
@ output port	1427.9... 1465	MHz	8.0 ¹⁾	10	—	dB
	1427.9... 1465	MHz	6.0	10	—	dB
Minimum attenuation		α_{min}				
	1110... 1398	MHz	20	29	—	dB
	1398... 1408	MHz	5 ¹⁾	24	—	dB
	1398... 1408	MHz	4.3	24	—	dB
	1495.9... 1500	MHz	20	44	—	dB
	1500... 1510.9	MHz	35	46	—	dB
	1600... 1650	MHz	30	54	—	dB

¹⁾ Valid for temperature $T = -40\text{ °C} \dots +85\text{ °C}$.

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7 Maximum ratings

Operable temperature	$T_{OP} = -40\text{ °C} \dots +125\text{ °C}$	
Storage temperature	$T_{STG}^{1)} = -40\text{ °C} \dots +125\text{ °C}$	
DC voltage	$ V_{DC} = 5.0\text{ V}$	
ESD voltage	$V_{ESD}^{2)} = 50\text{ V}$	Machine model.
Input power @ input port: 1427.9 ... 1465 MHz	$P_{IN} = 10\text{ dBm}$	Continuous wave for 100000 h @ 85 °C.

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

²⁾ According to JESD22-A115B (MM – Machine Model), 10 negative & 10 positive pulses.

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8 Transmission coefficient

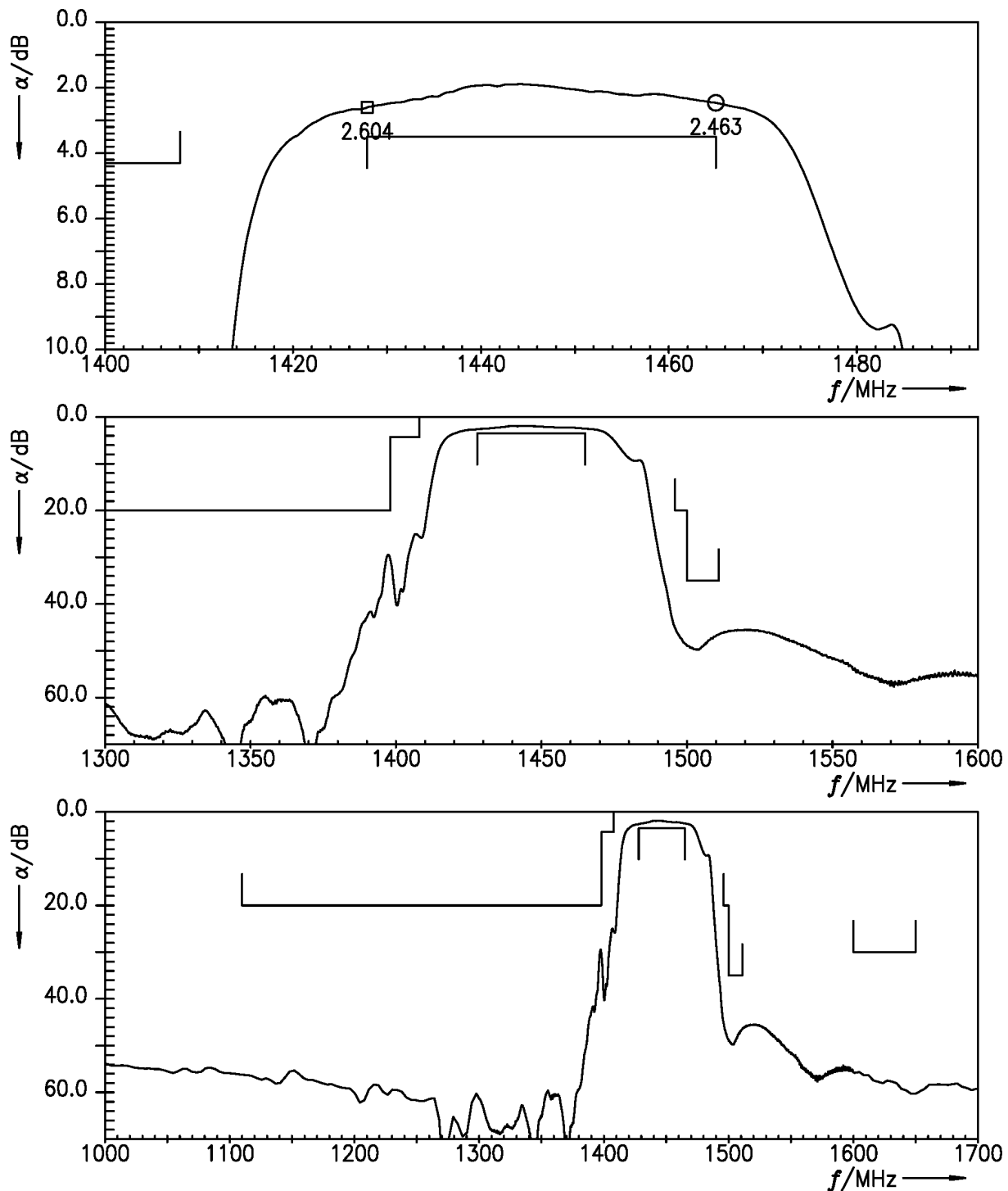


Figure 4: Attenuation.

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9 Return loss

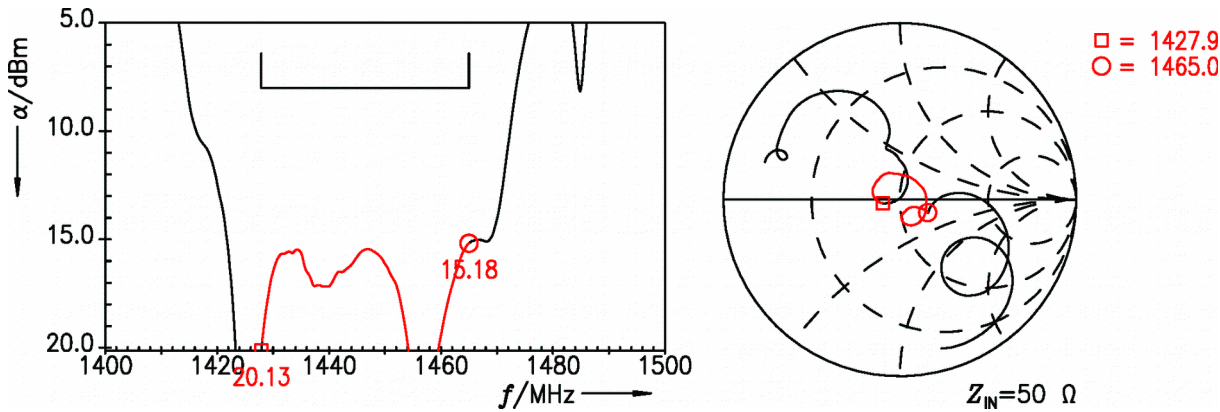


Figure 5: Return loss at IN port.

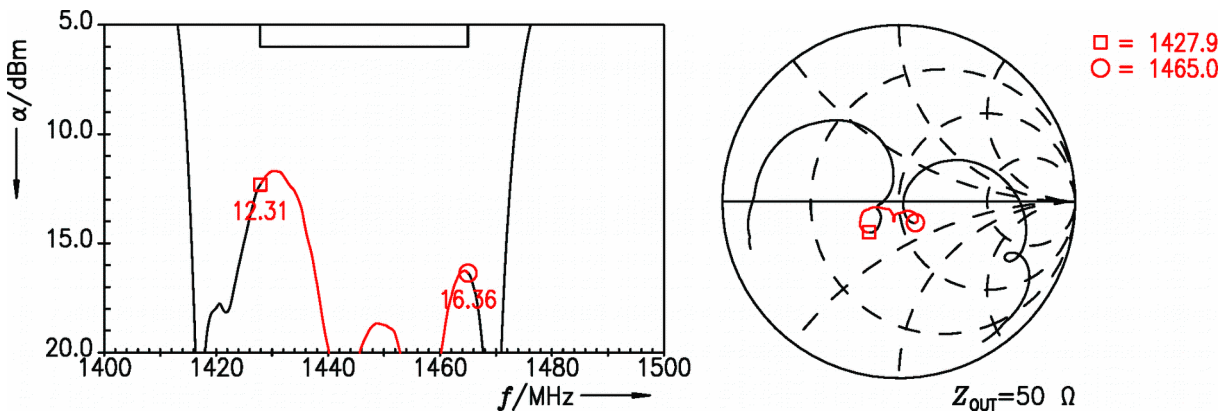


Figure 6: Return loss at OUT port.

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10 Packing material

10.1 Tape

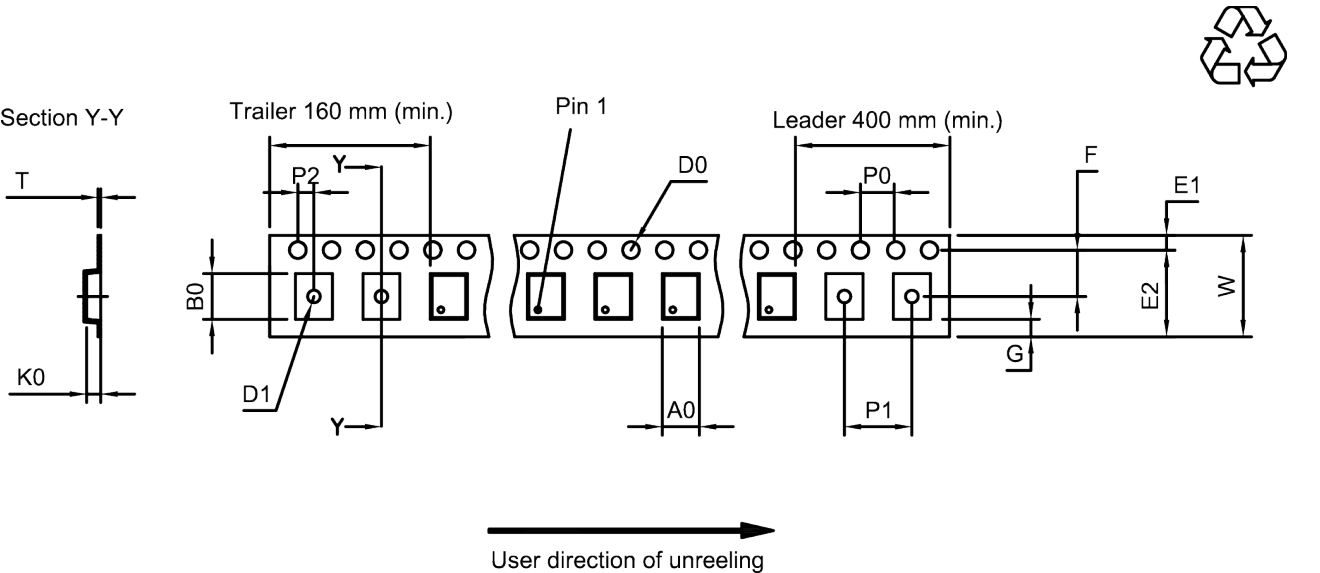


Figure 7: Drawing of tape (first-angle projection) with tape dimensions according to Table 1.

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

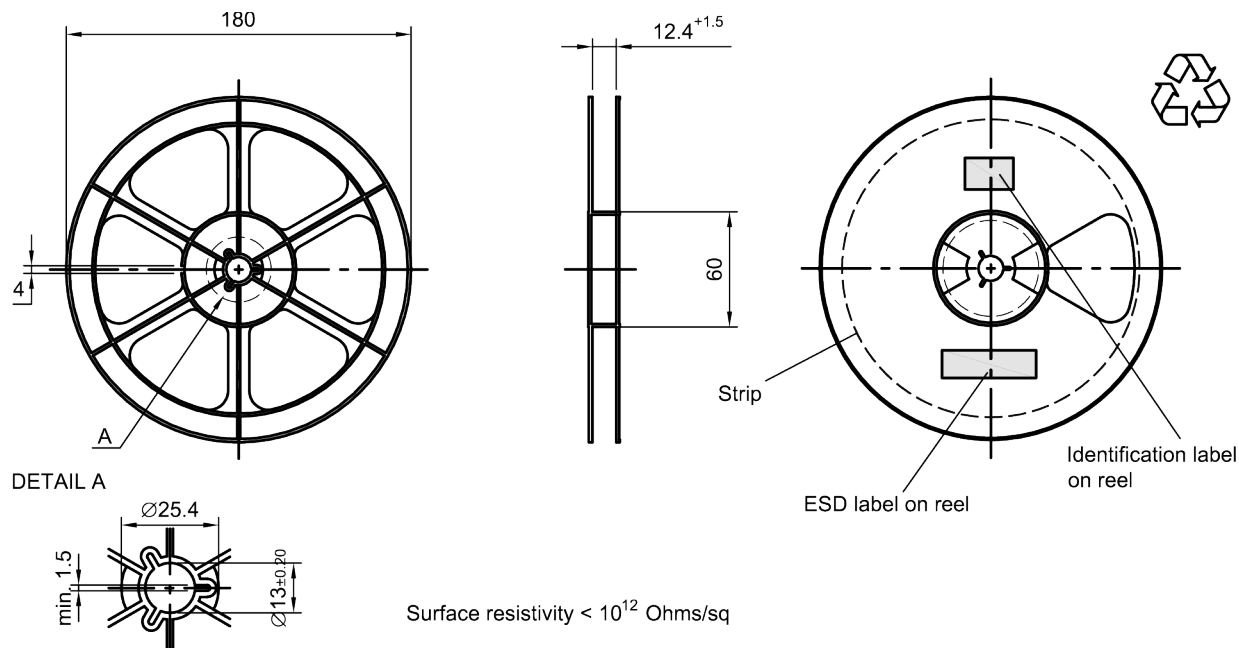


Figure 8: Drawing of reel (first-angle projection) with diameter of 180 mm.

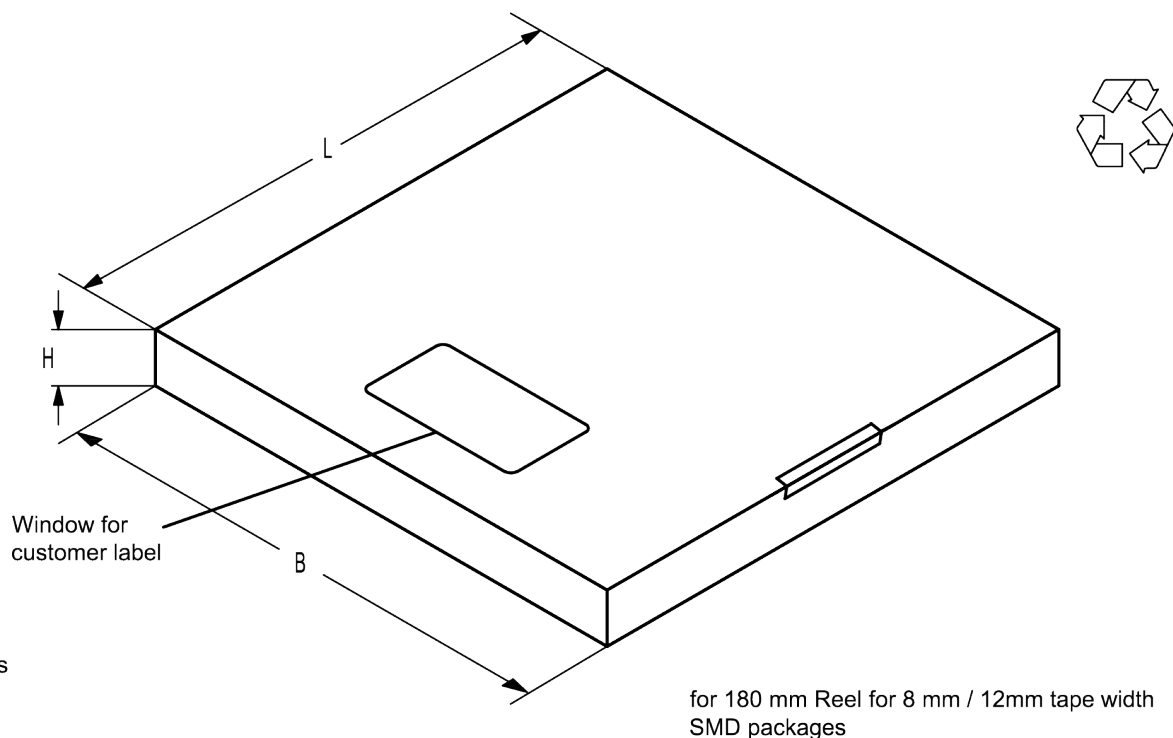


Figure 9: Drawing of folding box for reel with diameter of 180 mm.

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10.3 Reel with diameter of 330 mm

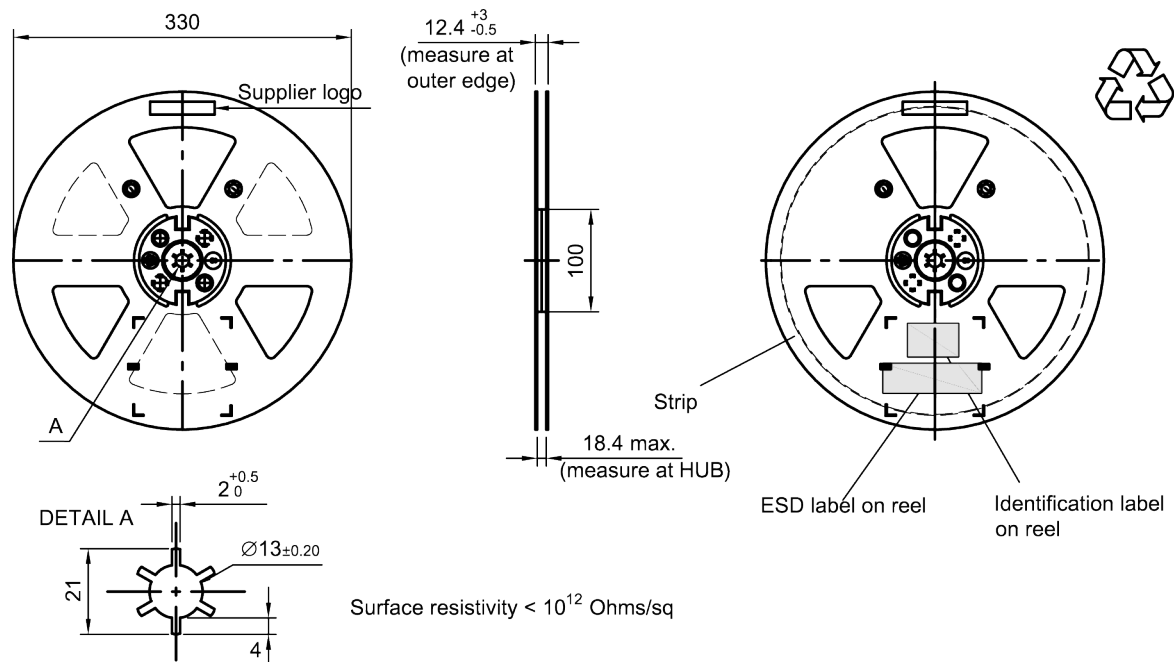
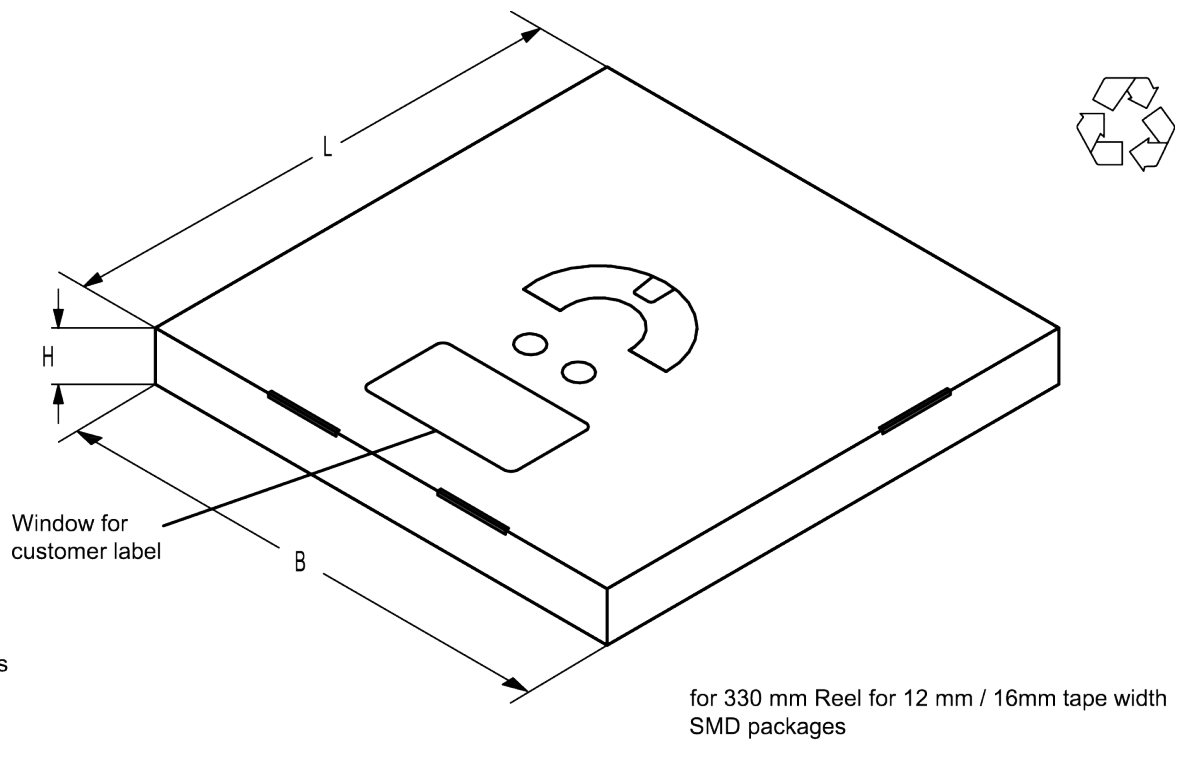


Figure 10: Drawing of reel (first-angle projection) with diameter of 330 mm.



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).

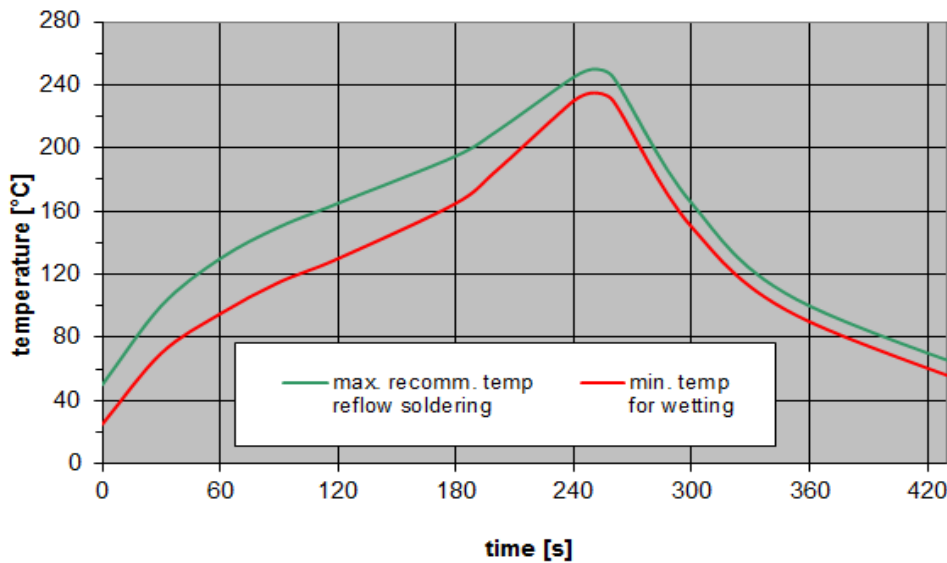


Figure 12: Recommended reflow profile for convection and infrared soldering – lead-free solder.

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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.

Data sheet

14 Cautions and warnings

14.1 Display of ordering codes for RF360 products

The ordering code for one and the same product can be represented differently in data sheets, data books, other publications and the website of RF360, or in order-related documents such as shipping notes, order confirmations and product labels. The varying representations of the ordering codes are due to different processes employed and do not affect the specifications of the respective products. Detailed information can be found on the Internet under www.rf360jv.com/orderingcodes.

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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3. **The warnings, cautions and product-specific notes must be observed.**
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