



SAW components

SAW RF filter for base stations CDMA 450

Series/type:	B5365
Ordering code:	B39451B5365U410
Date:	May 05, 2016
Version:	2.0

SAW components	B5365
SAW RF filter for base stations	452.4 MHz

Data sheet

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1 Application

- RF filter for CDMA 450
- Unblanced to unblanced operation
- Low amplitude ripple
- Usable pass band 4.8 MHz
- No matching required for operation

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)

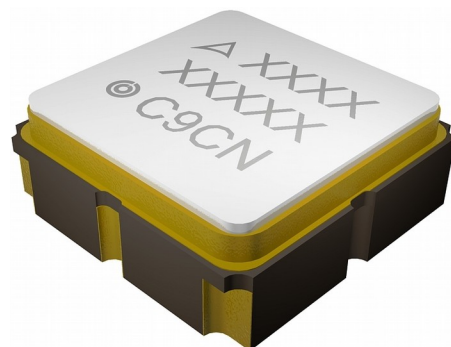
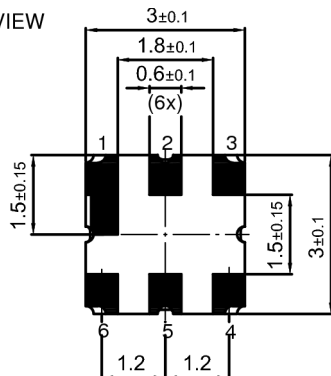


Figure 1: Picture of component with example of product marking.

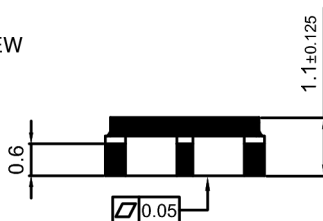
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3 Package

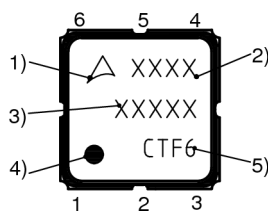
BOTTOM VIEW



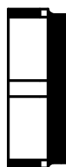
SIDE VIEW



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

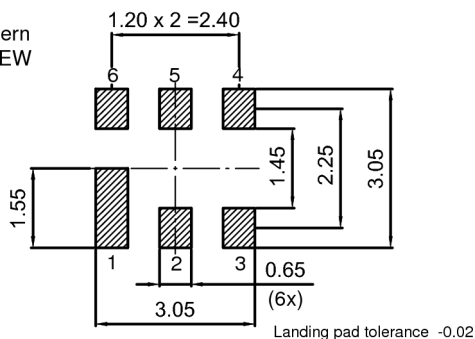
Land pattern
THRU VIEW


Figure 2: Drawing of package. See Sec. Package information (p. 16).

4 Pin configuration

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

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5 Matching circuit

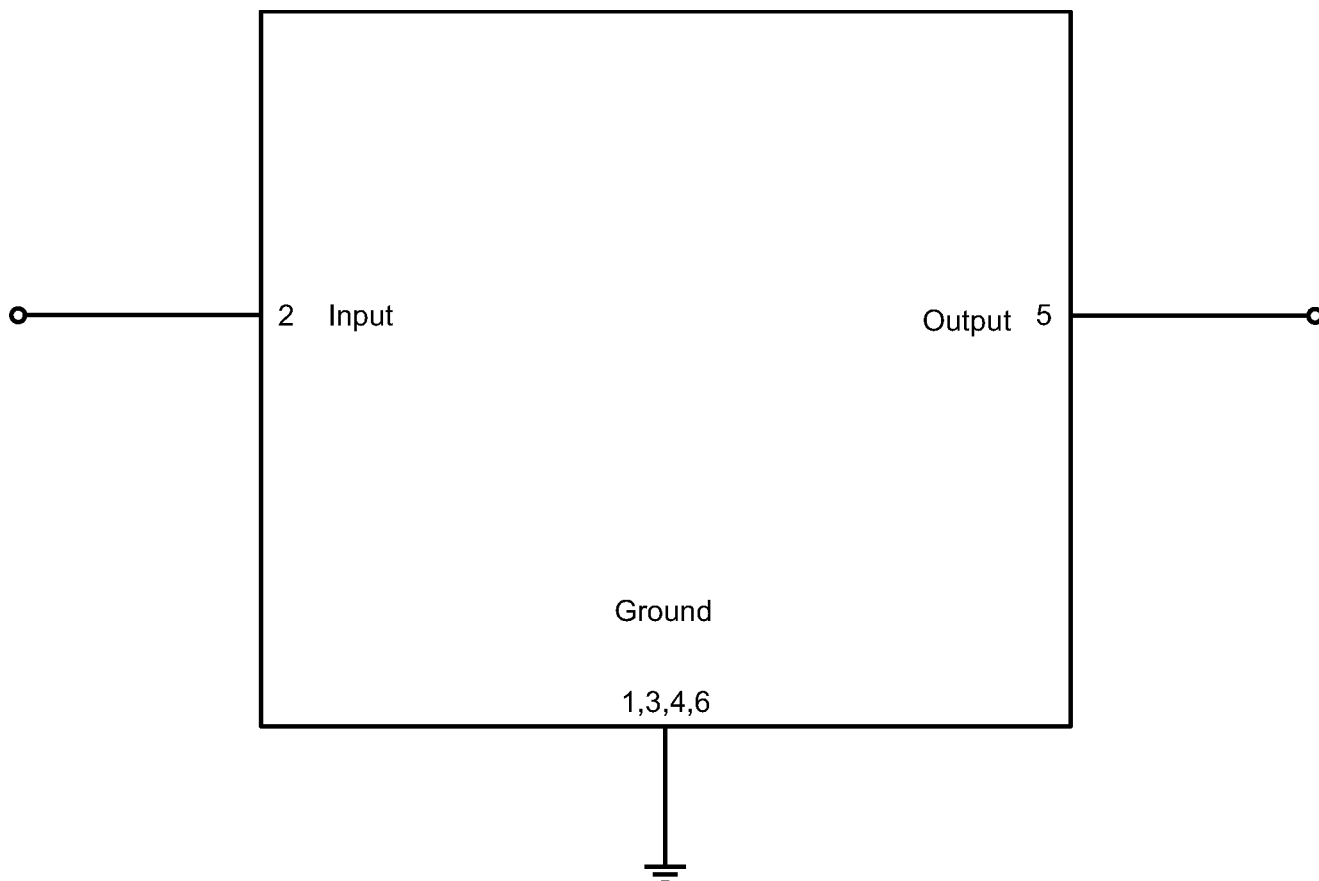


Figure 3: Schematic of matching circuit. No external matching components required.

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6 Characteristics

Temperature range for specification	T_{SPEC}	= -30 °C ... +80 °C
Input terminating impedance	Z_{IN}	= 50 Ω
Output terminating impedance	Z_{OUT}	= 50 Ω

Characteristics			min. for T_{SPEC}	typ. @+25 °C	max. for T_{SPEC}	
Center frequency		f_C	—	452.4	—	MHz
Maximum insertion attenuation		α_{max}	—	2.0	2.8	dB
	450... 454.8	MHz	—	2.0	2.8	dB
Amplitude ripple (p-p)		$\Delta\alpha$	—	0.8	1.8	dB
	450... 454.8	MHz	—	0.8	1.8	dB
Maximum VSWR		$VSWR_{max}$	—	1.5	2.0	
@ input port	450... 454.8	MHz	—	1.5	2.0	
@ output port	450... 454.8	MHz	—	1.5	2.0	
Minimum attenuation		α_{min}				
	0.3... 440	MHz	25	36	—	dB
	460... 464.8	MHz	30	40	—	dB
	464.8... 1700	MHz	20	27	—	dB
	1700... 2000	MHz	15	22	—	dB

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7 Maximum ratings

Operable temperature	$T_{OP} = -45\text{ °C} \dots +125\text{ °C}$	
Storage temperature	$T_{STG} = -45\text{ °C} \dots +125\text{ °C}$	
DC voltage	$V_{DC} = 5.0\text{ V}$	
ESD voltage	$V_{ESD} = 150\text{ V}$	

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8 Transmission coefficient

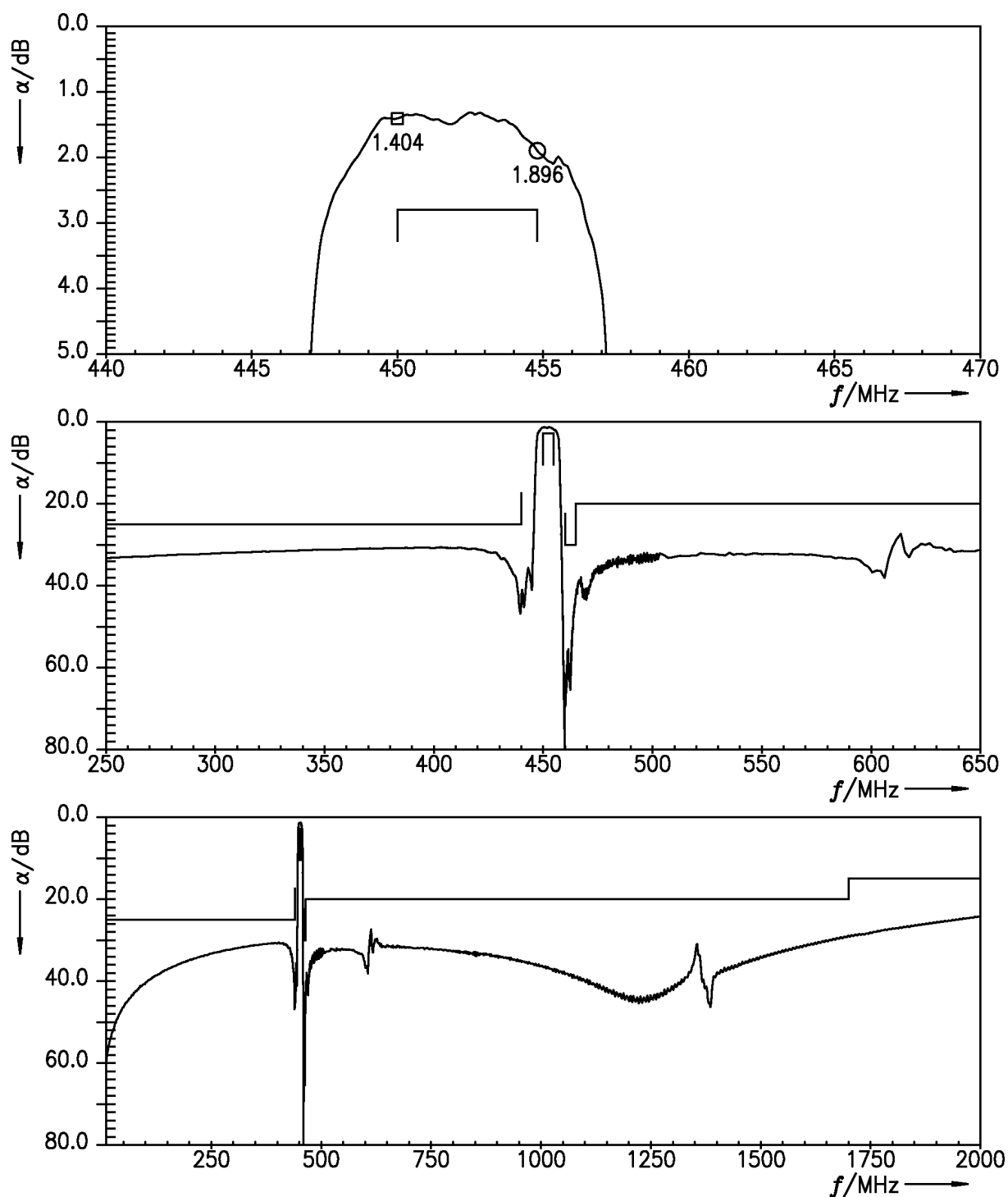


Figure 4: Attenuation.

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9 Reflection coefficients

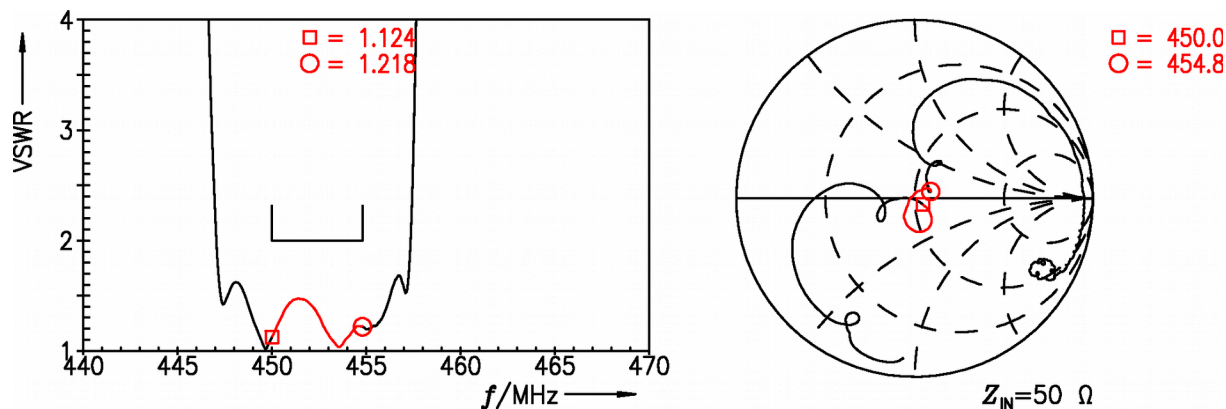


Figure 5: Reflection coefficient at IN port.

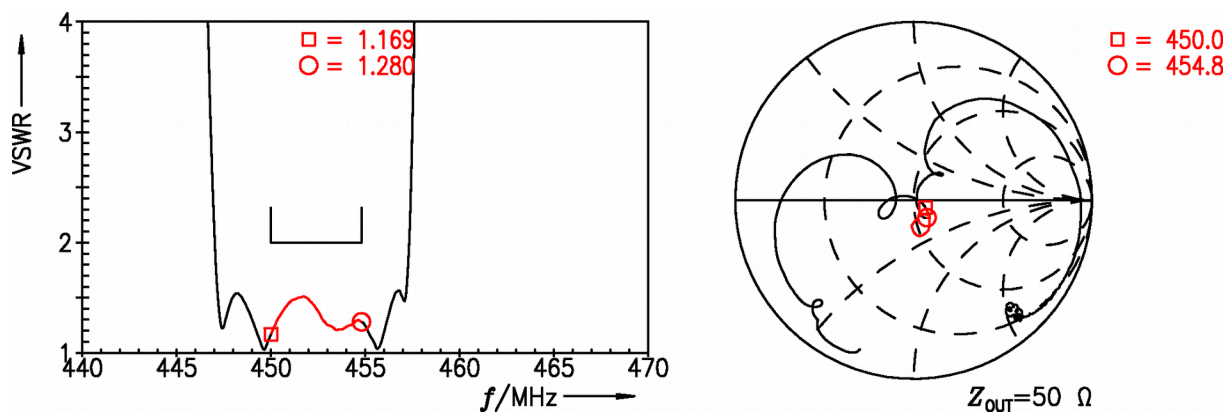


Figure 6: Reflection coefficient at OUT port.

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10 Packing material

10.1 Tape

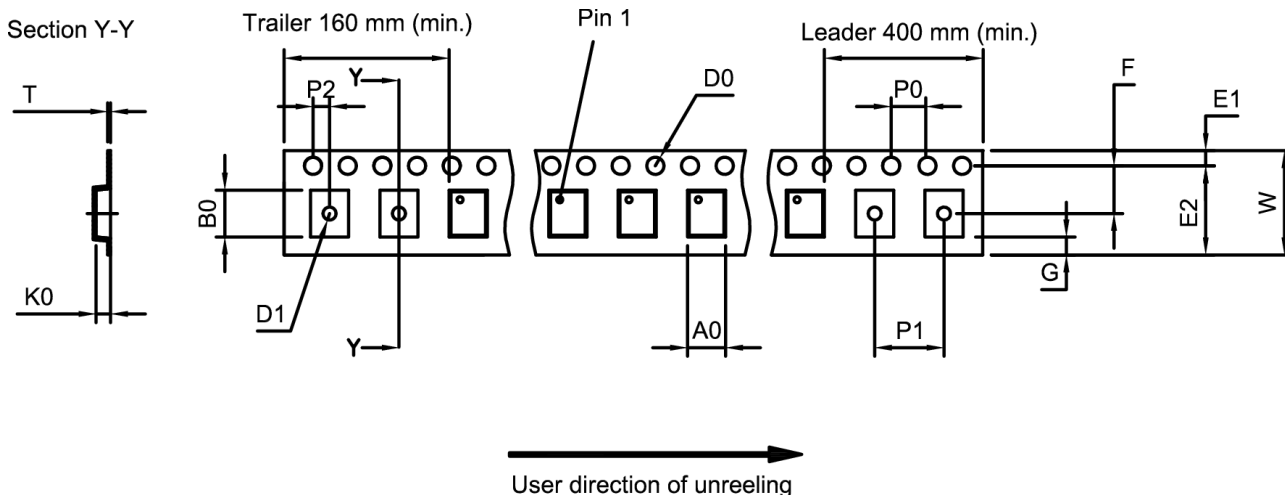


Figure 7: Drawing of tape (first-angle projection) with tape dimensions according to Table 1.

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.

10.2 Reel with diameter of 180 mm

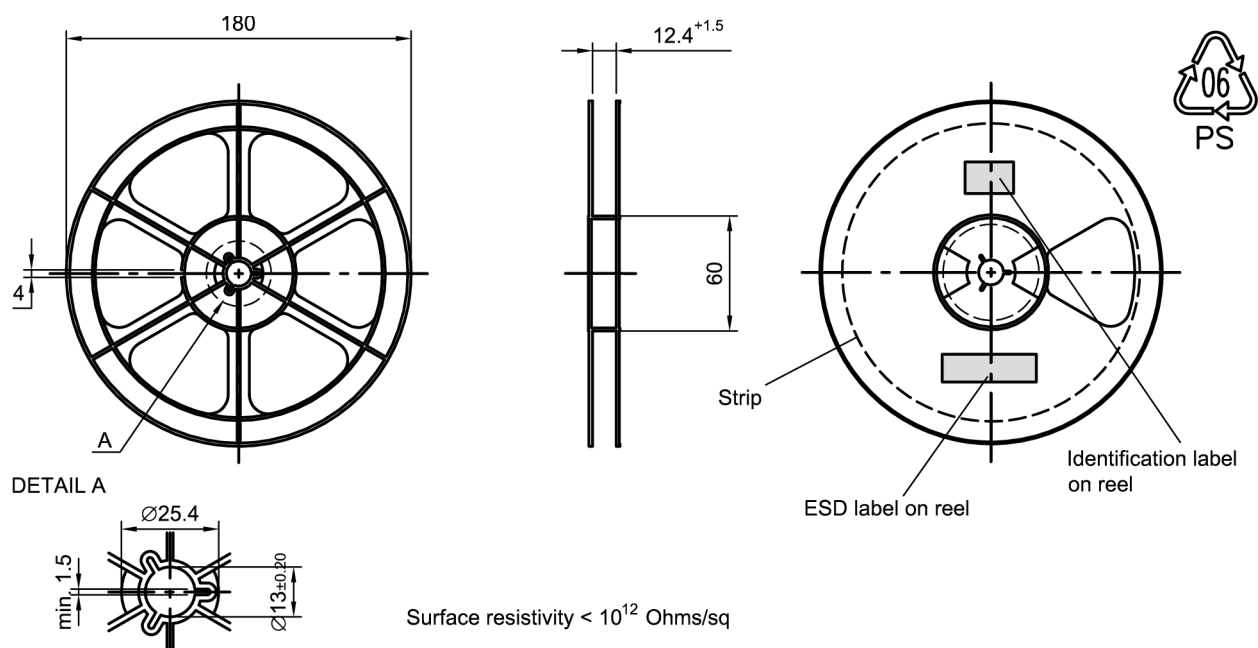
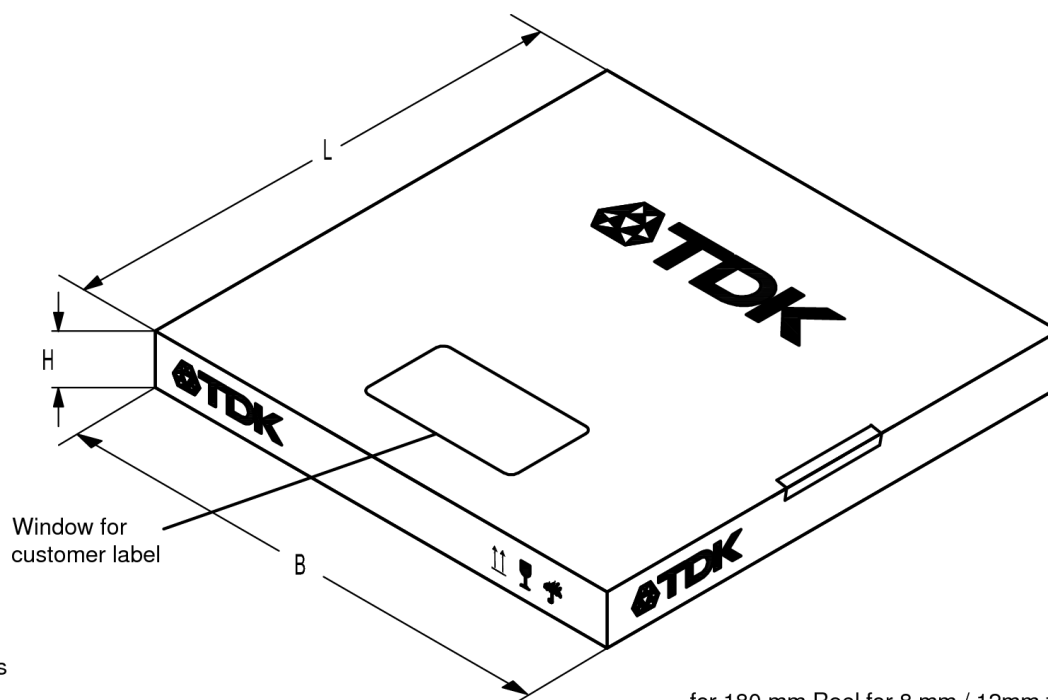


Figure 8: Drawing of reel (first-angle projection) with diameter of 180 mm.

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Dimensions

L = 182
B = 185
H = 26

for 180 mm Reel for 8 mm / 12mm tape width
SMD packages

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

10.3 Reel with diameter of 330 mm

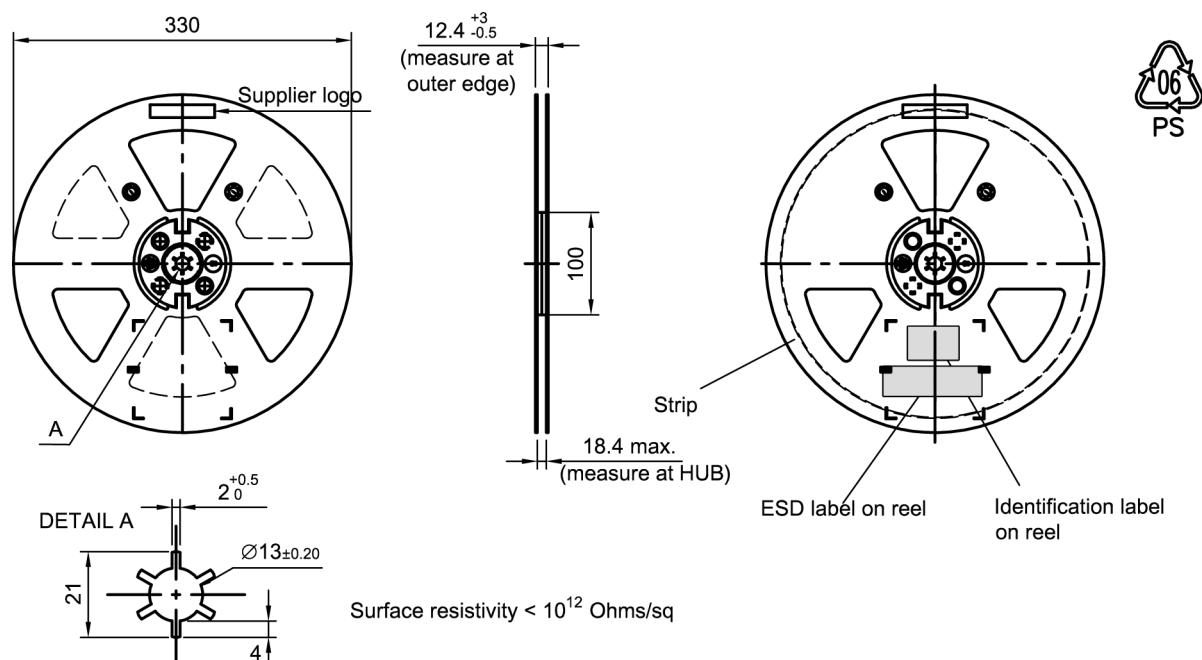


Figure 10: Drawing of reel (first-angle projection) with diameter of 330 mm.

Data sheet

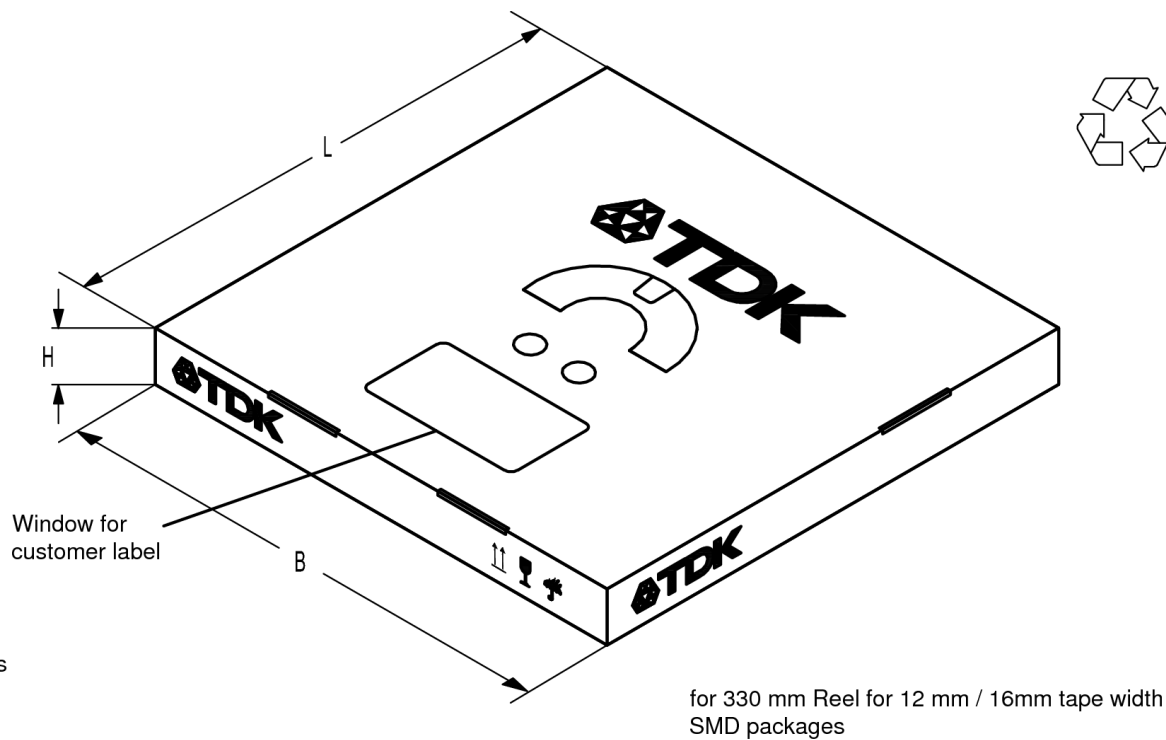


Figure 11: Drawing of folding box for reel with diameter of 330 mm.

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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: **CTF6**

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
$T > 220\text{ °C}$	30 s to 70 s
$T > 230\text{ °C}$	min. 10 s
$T > 245\text{ °C}$	max. 20 s
$T \geq 255\text{ °C}$	–
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).

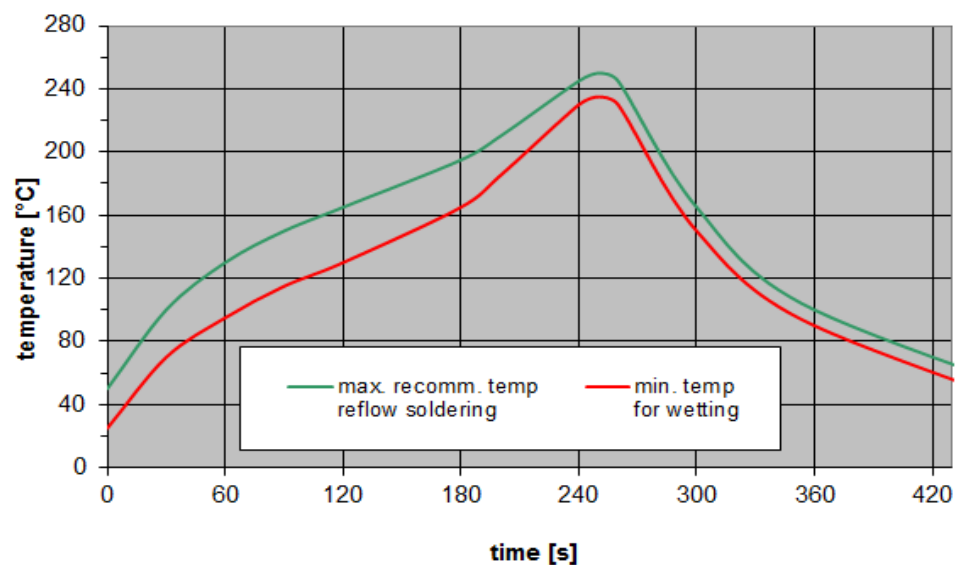


Figure 12: Recommended reflow profile for convection and infrared soldering – lead-free solder.

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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 EPCOS sales office.

Data sheet

14 Cautions and warnings

14.1 Display of ordering codes for EPCOS 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 EPCOS, 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.epcos.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.

14.3 Moldability

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

14.4 Package information

Landing area

The printed circuit board (PCB) land pattern (landing area) shown is based on EPCOS 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 EPCOS, 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.

Important notes

The following applies to all products named in this publication:

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2. We also point out that **in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
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