



RF360 Europe GmbH

A Qualcomm – TDK Joint Venture



SAW Components

BAW Bandpass Filter

WLAN 2G

Series/type:	B8852
Ordering code:	B39242B8852P810
Date:	December 18, 2015
Version:	2.0

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SAW Components	B8852
BAW Bandpass Filter	2442 MHz

Data sheet

Table of contents

1	Application	3
2	Features	3
3	Package	4
4	Pin configuration	4
5	Matching circuit	5
6	Characteristics	6
7	Maximum ratings	7
8	Transmission coefficient	8
9	Reflection coefficients	9
10	Packing material	10
11	Marking	13
12	Soldering profile	15
13	Annotations	16
14	Cautions and warnings	16
	Contact and Important notes	17

Data sheet

1 Application

- Low-loss BAW RF single filter for Bluetooth/WLAN with LTE Band 7 Rx / Band 40 / Band 38 coexistence.
- Usable passband 79.0 MHz.
- Unbalanced to unbalanced operation.
- Filter impedance 50 Ω .
- High out of band selectivity.
- Excellent insertion loss.

2 Features

- Package size 1.1 \pm 0.1 mm \times 0.9 \pm 0.1 mm.
- Package height 0.45 mm (max.).
- Approximate weight 0.0012 g.
- RoHS compatible.
- Package for Surface Mount Technology (SMT).
- Ni/Au-plated terminals.
- Electrostatic Sensitive Device (ESD).
- Moisture Sensitivity Level 3 (MSL3).

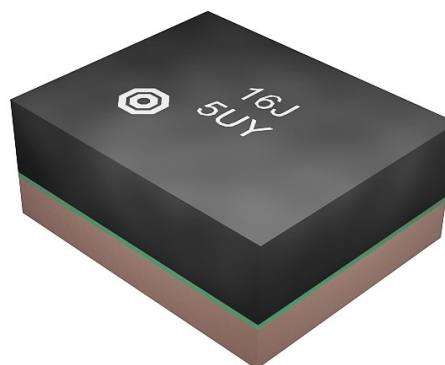
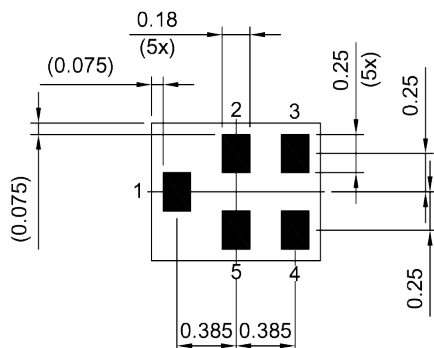


Figure 1: Picture of component with example of marking.

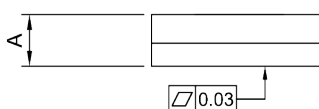
Data sheet

3 Package

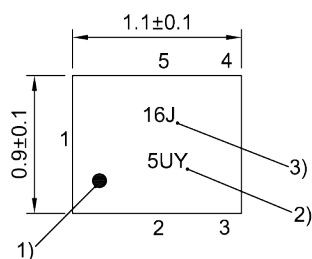
BOTTOM VIEW


 Pad and pitch tolerance ± 0.05

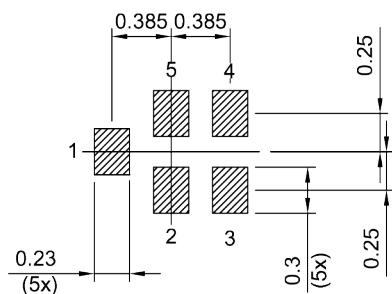
SIDE VIEW



TOP VIEW



- 1) Marking for pad number 1
- 2) Example of encoded lot number
- 3) Example of encoded filter type number

 Land pattern
THRU VIEW

 Landing pad tolerance -0.02

4 Pin configuration

- 1 Input (to PA (unbalanced))
- 4 Output (to ANT (unbalanced))
- 2, 3, 5 Ground

Figure 2: Drawing of package with package height $A = 0.45$ mm (max.). See Simplified drawings (p. 16).

Data sheet

5 Matching circuit

$$\blacksquare L_{s1} = 2.0 \text{ nH}$$

$$\blacksquare L_{s4} = 2.0 \text{ nH}$$

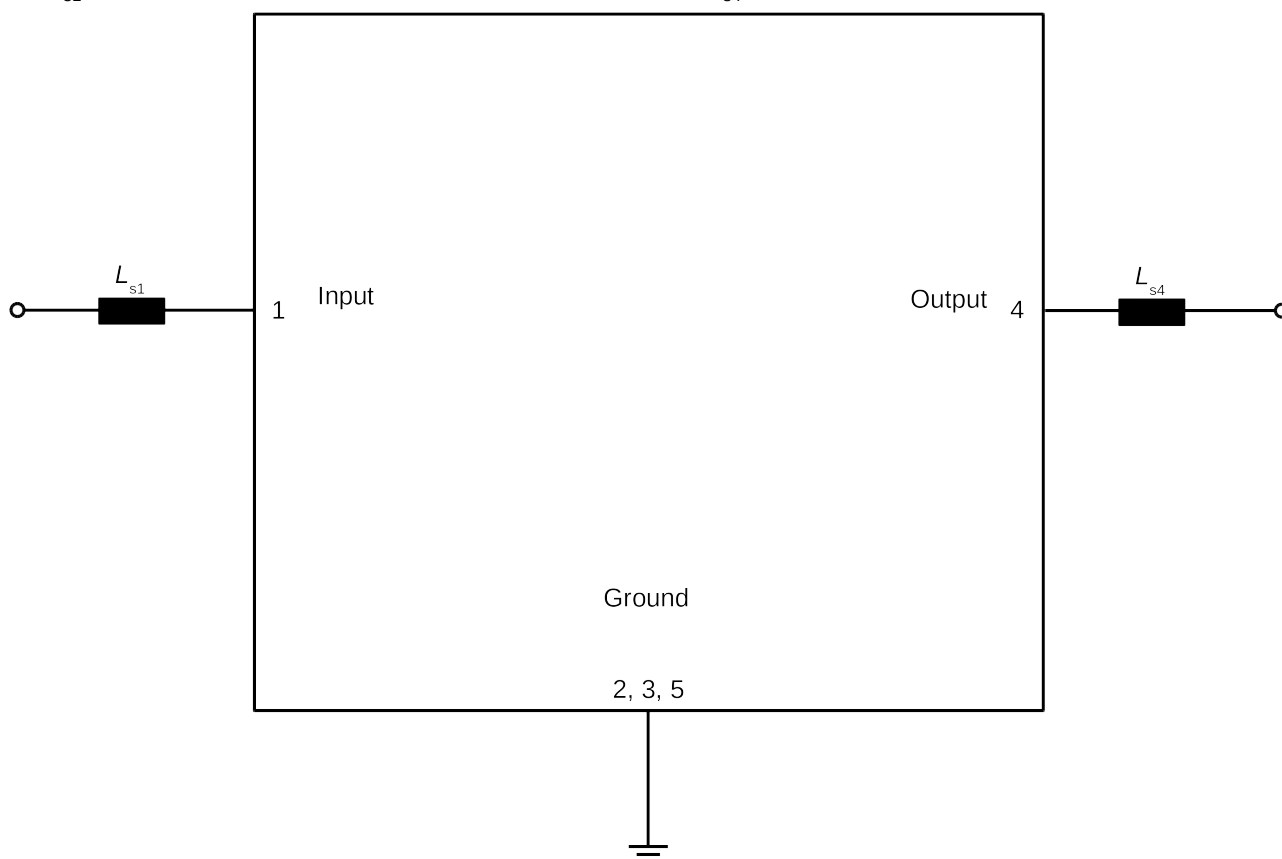


Figure 3: Schematic of matching circuit.

SAW Components	B8852
BAW Bandpass Filter	2442 MHz

Data sheet

6 Characteristics

Temperature range for specification	T	= -30 °C to +85 °C
Input terminating impedance	Z_{IN}	= 50 Ω with ser. 2.0 nH
Output terminating impedance	Z_{OUT}	= 50 Ω with ser. 2.0 nH

Characteristics			min.	typ. @+25 °C	max.	
Center frequency		f_c	—	2442	—	MHz
Maximum insertion attenuation		α_{max}				
Channel 1	2403.1... 2420.9 MHz		—	1.0 ¹⁾	1.8 ¹⁾	dB
Channel 2	2408.1... 2425.9 MHz		—	0.8 ¹⁾	1.8 ¹⁾	dB
Channel 3-10	2413.1... 2465.9 MHz		—	0.7 ¹⁾	1.8 ¹⁾	dB
Channel 11	2453.1... 2470.9 MHz		—	0.8 ¹⁾	1.8 ¹⁾	dB
Channel 12	2458.1... 2475.9 MHz		—	0.8 ¹⁾	1.8 ¹⁾	dB
Channel 13	2463.1... 2480.9 MHz		—	0.9 ¹⁾	1.8 ¹⁾	dB
Maximum VSWR		VSWR _{max}				
Channel 1-13 @ input port	2403.1... 2480.9 MHz		—	1.6	2.4	
Channel 1-13 @ output port	2403.1... 2480.9 MHz		—	1.6	2.4	
Minimum attenuation		α_{min}				
	100... 1805 MHz		27	31	—	dB
	1805... 2170 MHz		29	33	—	dB
	2300... 2360 MHz		39	44	—	dB
	2360... 2365 MHz		38 ²⁾	47 ²⁾	—	dB
	2365... 2370 MHz		38 ²⁾	43 ²⁾	—	dB
	2370... 2380 MHz		6 ²⁾	41 ²⁾	—	dB
	2550... 2570 MHz		39	44	—	dB
	2570... 2620 MHz		34	39	—	dB
	2620... 2690 MHz		33	38	—	dB
	4800... 5805 MHz		35	39	—	dB
	7200... 7500 MHz		30	36	—	dB

1) Averaged value within each Wifi channel width of 17.8 MHz.

2) Averaged values of linear S-parameter over any 5MHz.

SAW Components	B8852
BAW Bandpass Filter	2442 MHz

Data sheet

7 Maximum ratings

Storage temperature	$T_{STG} = -40\text{ °C to }+90\text{ °C}$	
DC voltage	$V_{DC} = 5.0\text{ V}^{4)}$	
ESD voltage		
	$V_{ESD}^{1)}$ 50 V	Machine model.
	$V_{ESD}^{2)}$ 300 V	Human body model.
	$V_{ESD}^{3)}$ 600 V	Charged device model.
Input power	P_{IN}	
@ input port : 2403.1 ... 2480.9 MHz (WLAN channel 1 to channel 13)	24 dBm	20 MHz OFDM signal for 5000 h @ 65 °C.
@ input port: other frequency range(s)	5.0 dBm	Continuous wave for 5000 h @ 65 °C.

¹⁾ According to JESD22-A115B (MM – Machine Model), 10 negative & 10 positive pulses.

²⁾ According to JESD22-A114F (HBM – Human Body Model), 1 negative & 1 positive pulse.

³⁾ According to JESD22-C101C (CDM – Field Induced Charged Device Model), 3 negative & 3 positive pulses.

⁴⁾ 168h Damp Heat Steady State acc. To IEC60068-2-67 Cy.

Data sheet

8 Transmission coefficient

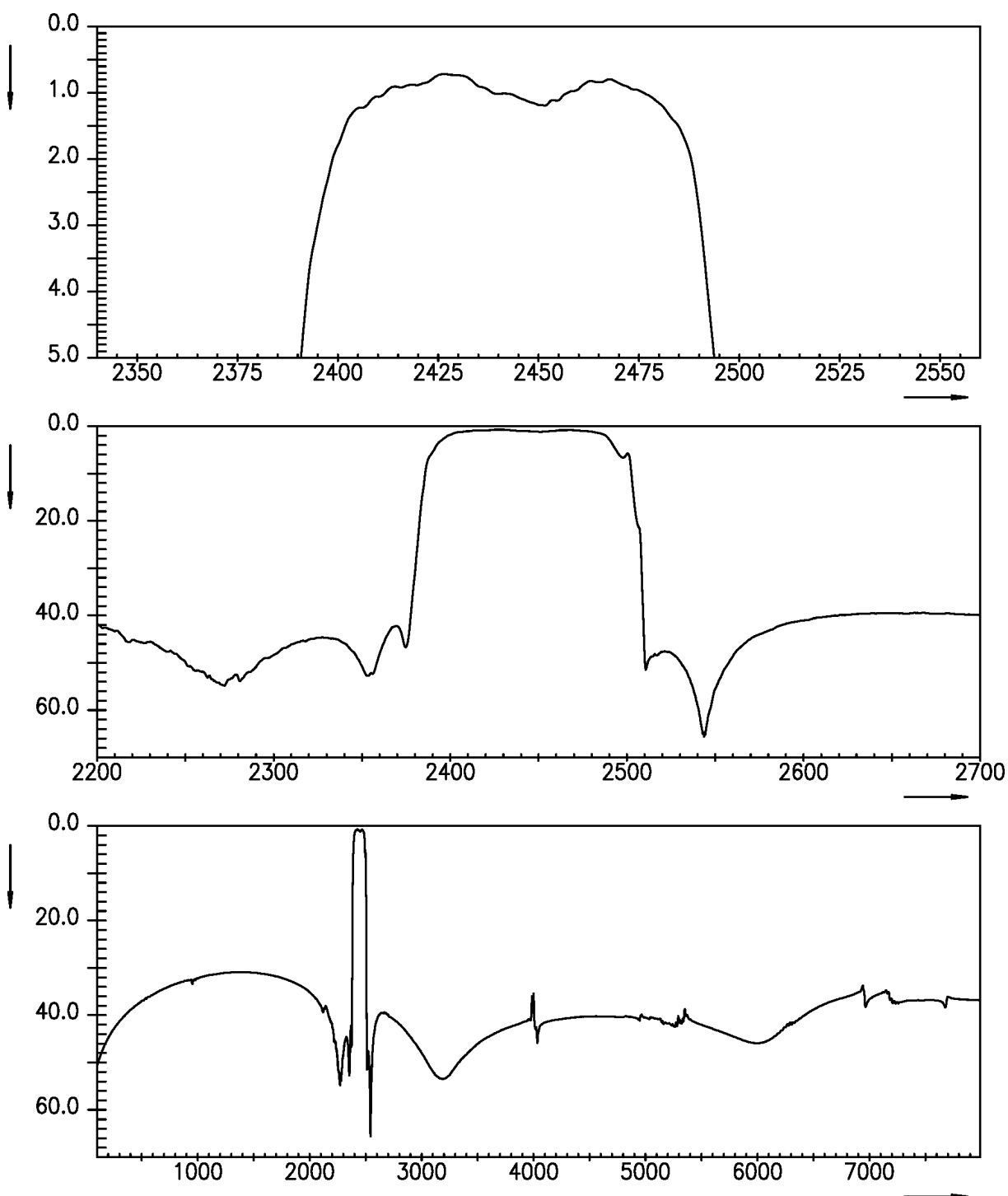


Figure 4: Attenuation.

Data sheet

9 Reflection coefficients

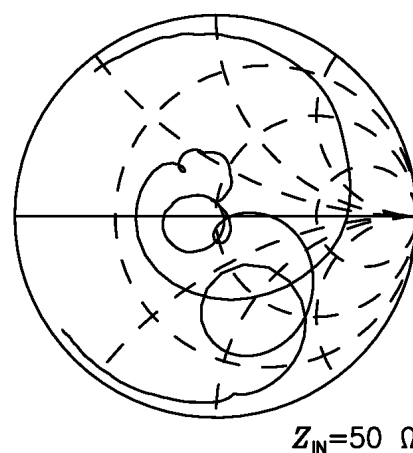
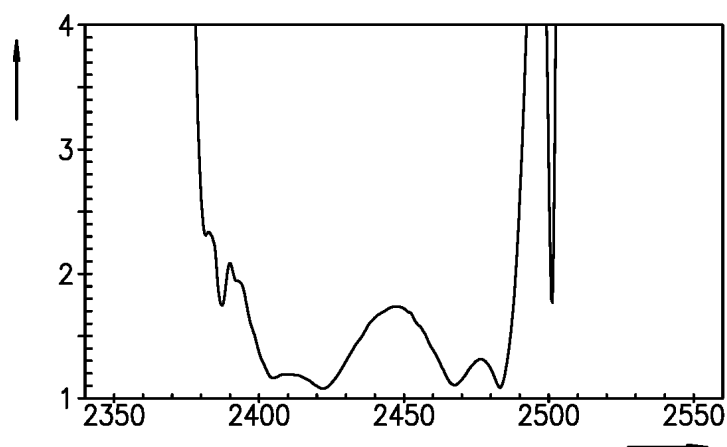


Figure 5: Reflection coefficient at IN port.

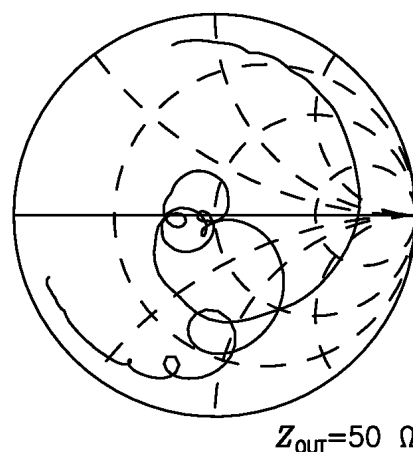
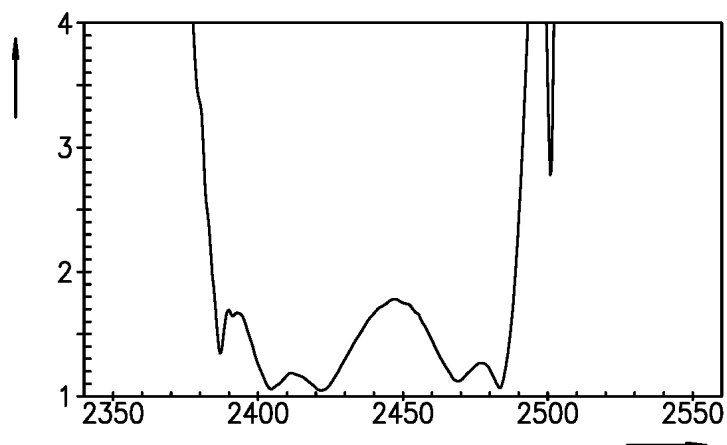


Figure 6: Reflection coefficient at OUT port.

Data sheet

10 Packing material

10.1 Tape

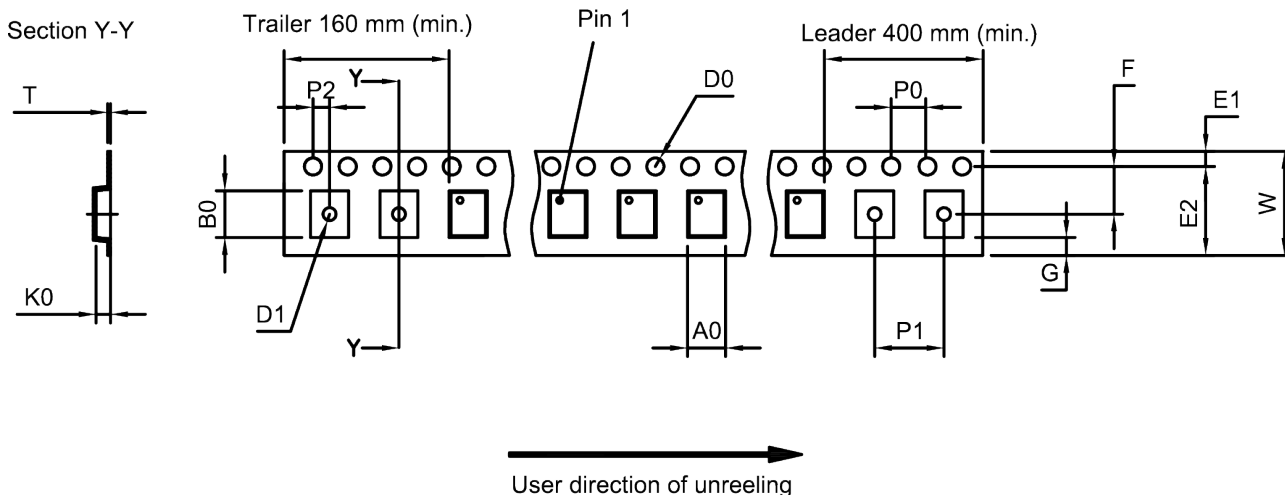


Figure 7: Drawing of tape (first-angle projection) with tape dimensions according to Table 1.

A_0	1.02 ± 0.05 mm	E_2	6.25 mm (min.)	P_1	2.0 ± 0.1 mm
B_0	1.22 ± 0.05 mm	F	3.5 ± 0.05 mm	P_2	2.0 ± 0.05 mm
D_0	1.55 ± 0.05 mm	G	—	T	0.25 ± 0.03 mm
D_1	0.55 ± 0.1 mm	K_0	0.6 ± 0.05 mm	W	$8.0 + 0.3 / - 0.1$ 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

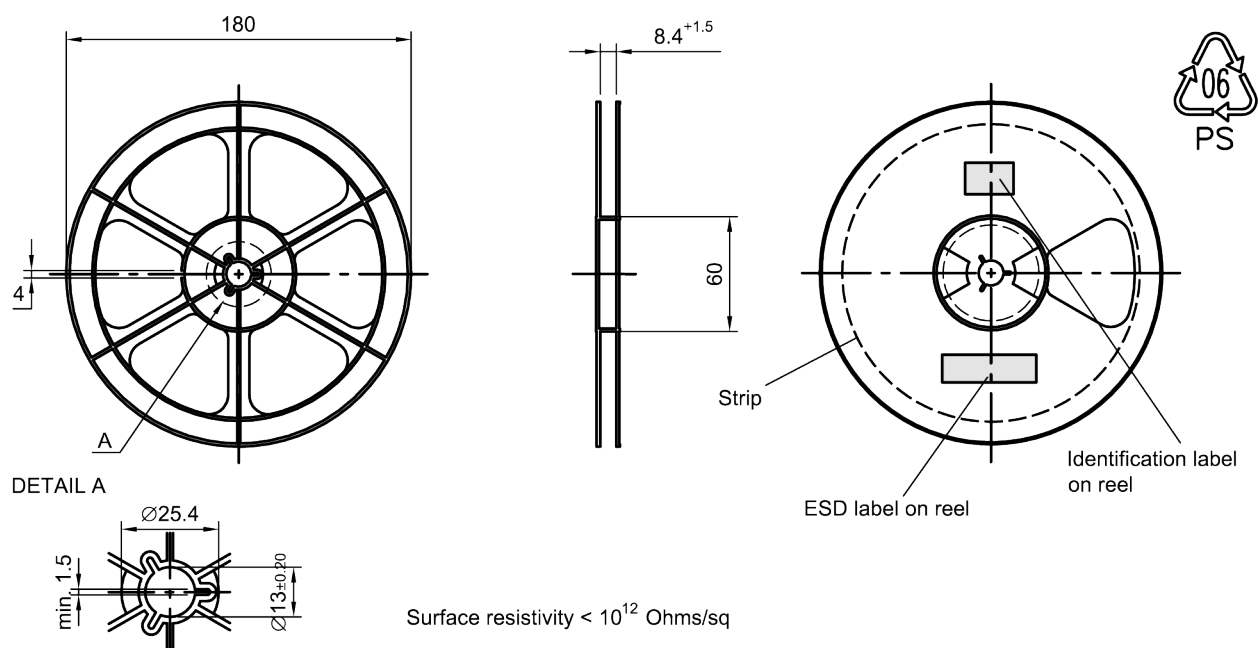


Figure 8: Drawing of reel (first-angle projection) with diameter of 180 mm.

Data sheet

Dimensions [mm]

X = 220±5

Y = 235±5

Sealing area 10±3

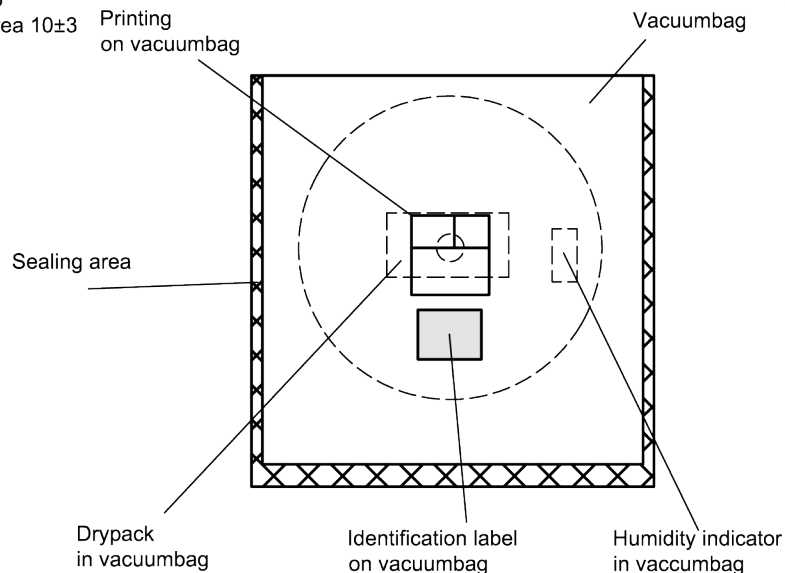


Figure 9: Drawing of moisture barrier bag (MBB) for reel with diameter of 180 mm.

Dimensions [mm]

L = 188

B = 188

H = 30

Tolerance ±5

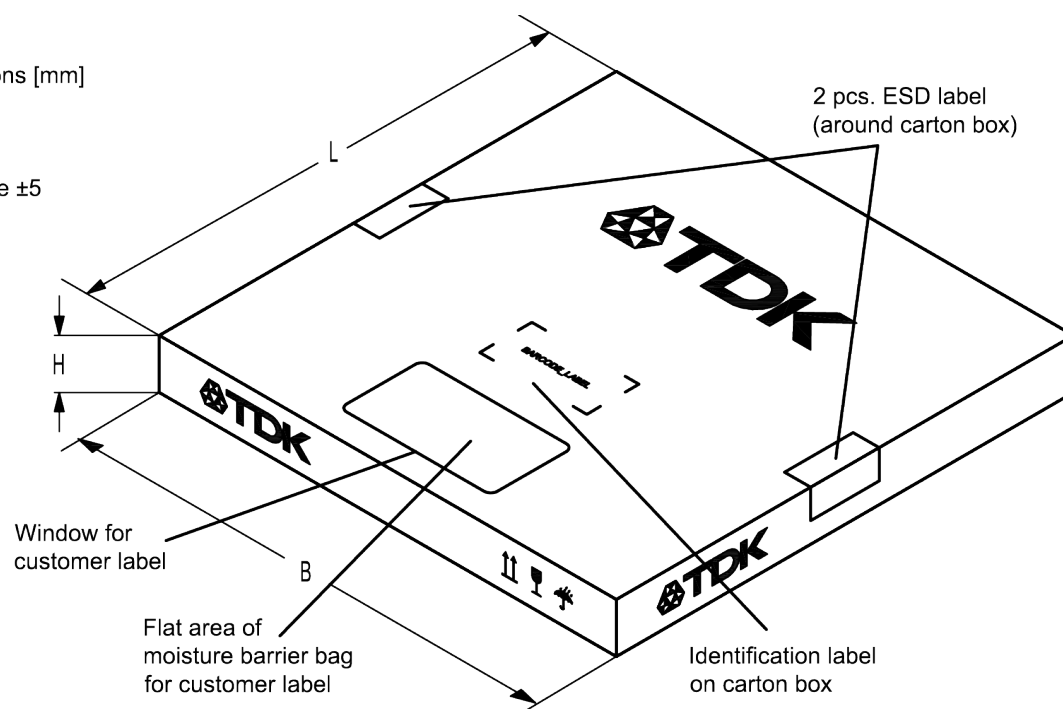


Figure 10: Drawing of folding box for reel with diameter of 180 mm.

Data sheet

10.3 Reel with diameter of 330 mm

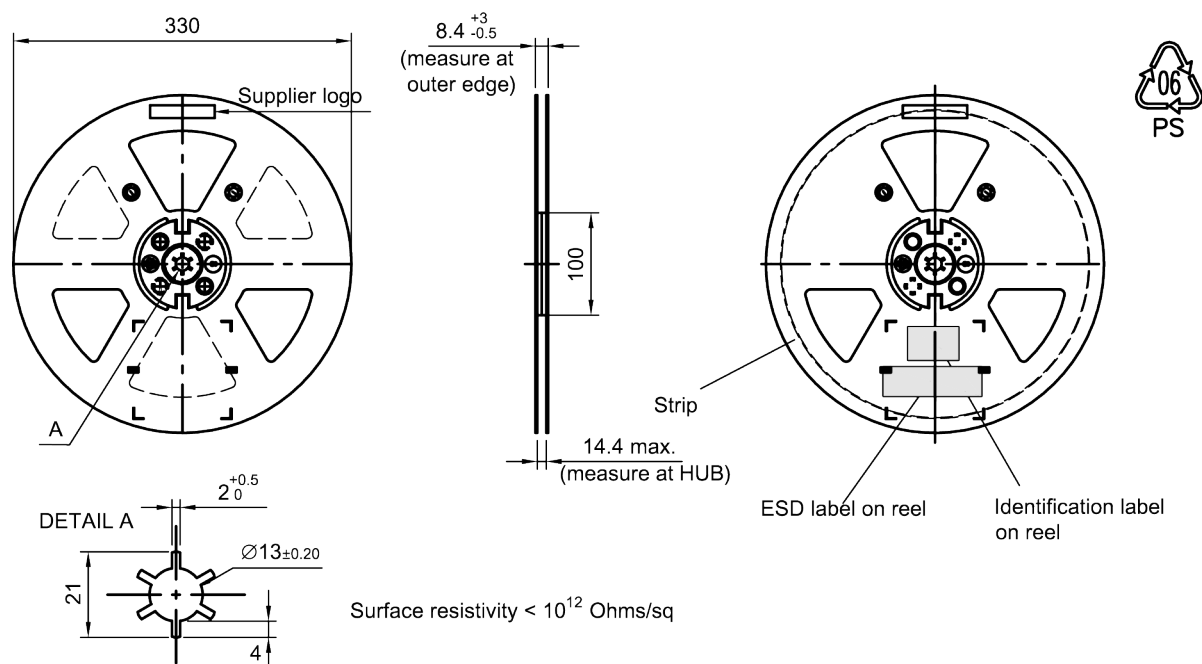


Figure 11: Drawing of reel (first-angle projection) with diameter of 330 mm.

Dimensions [mm]

X = 400+5

Y = 418+5

Sealing area 10±3

Printing
on vacuumbag

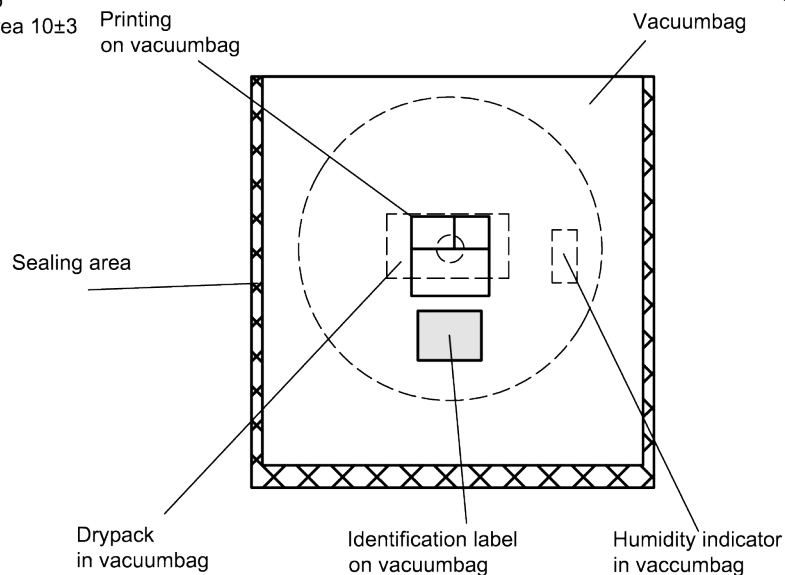


Figure 12: Drawing of moisture barrier bag (MBB) for reel with diameter of 330 mm.

Data sheet

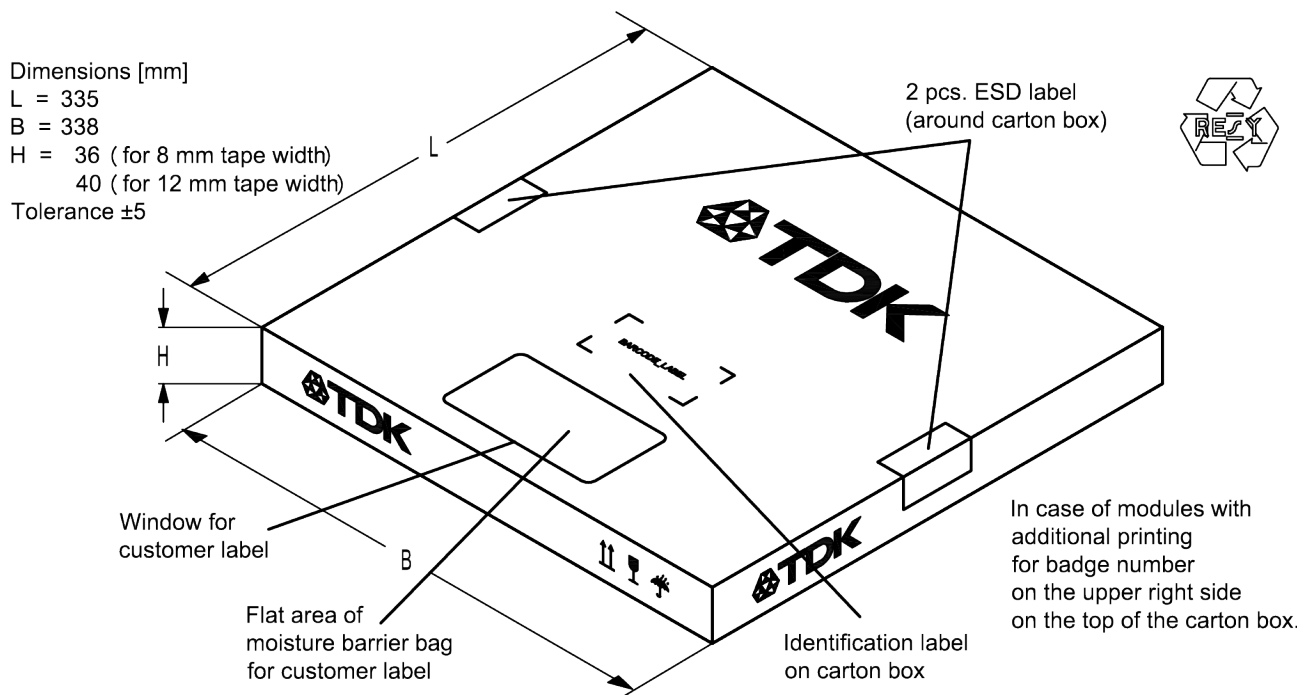


Figure 13: Drawing of folding box for reel with diameter of 330 mm.

11 Marking

Products are marked with product type number and lot number encoded according to Table 2:

■ Type number:

The 4 digit type number of the ordering code, is encoded by a special BASE32 code into a 3 digit marking.

e.g., B3xxxxB**1234**xxxx,

Example of decoding type number marking on device

in decimal code.

16J

=>

1234

$$1 \times 32^2 + 6 \times 32^1 + 18 (=J) \times 32^0$$

=

1234

The BASE32 code for product type B8852 is 8MM.

■ Lot number:

The last 5 digits of the lot number, are encoded based on a special BASE47 code into a 3 digit marking.

e.g., **12345**,

Example of decoding lot number marking on device

in decimal code.

5UY

=>

12345

$$5 \times 47^2 + 27 (=U) \times 47^1 + 31 (=Y) \times 47^0$$

=

12345

Data sheet

Adopted BASE32 code for type number			
Decimal value	Base32 code	Decimal value	Base32 code
0	0	16	G
1	1	17	H
2	2	18	J
3	3	19	K
4	4	20	M
5	5	21	N
6	6	22	P
7	7	23	Q
8	8	24	R
9	9	25	S
10	A	26	T
11	B	27	V
12	C	28	W
13	D	29	X
14	E	30	Y
15	F	31	Z

Adopted BASE47 code for lot number			
Decimal value	Base47 code	Decimal value	Base47 code
0	0	24	R
1	1	25	S
2	2	26	T
3	3	27	U
4	4	28	V
5	5	29	W
6	6	30	X
7	7	31	Y
8	8	32	Z
9	9	33	b
10	A	34	d
11	B	35	f
12	C	36	h
13	D	37	n
14	E	38	r
15	F	39	t
16	G	40	v
17	H	41	\
18	J	42	?
19	K	43	{
20	L	44	}
21	M	45	<
22	N	46	>
23	P		

Table 2: Lists for encoding and decoding of marking.

Data sheet

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
$T \geq 255$ °C	–
peak temperature T_{peak}	250 °C ± 5 °C
wetting temperature T_{min}	230 °C ± 5 °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).

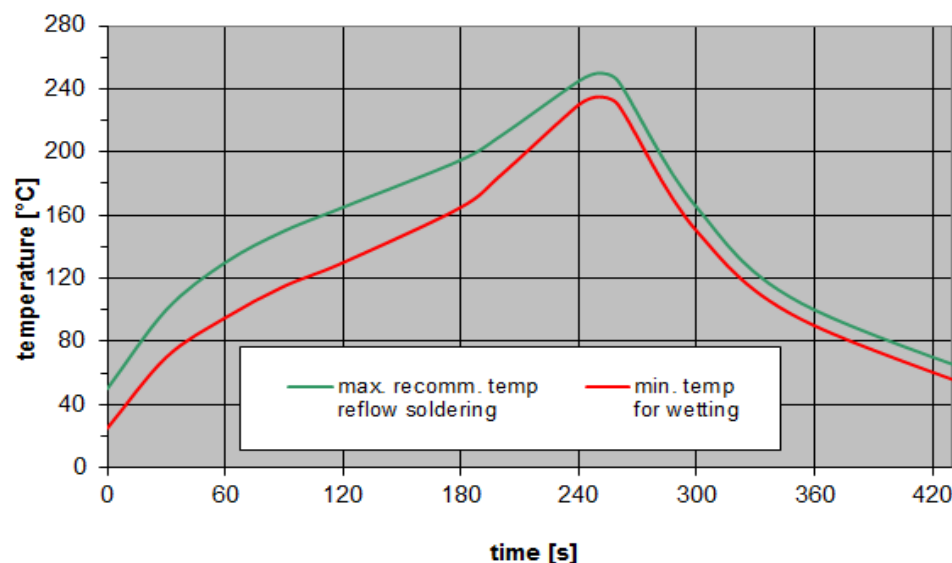


Figure 14: Recommended reflow profile for convection and infrared soldering – lead-free solder.

SAW Components	B8852
BAW Bandpass Filter	2442 MHz

Data sheet

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.

13.4 Ordering codes and packing units

Ordering code	Packing unit
B39242B8852P810	15000 pcs
B39242B8852P810S 5	5000 pcs

Table 4: Ordering codes and packing units.

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 Moldability

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

14.3 Simplified drawings

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.

Contact and Important notes

For further information please contact your local EPCOS sales office or visit our web page at www.epcos.com.

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