Qualcomm

RF360
Europe GmbH

SAW Components

SAW Filter

TD-LTE / TD-SCDMA 1900

Series/type:	B8837
Ordering code:	B39192B8837P810
Date:	September 30, 2015
Version:	2.2

RF360 Europe GmbH, Anzinger Str. 13, München, Germany

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EPCOS AG is a TDK Group Company.

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Data sheet

1 Application

- Low-loss SAW RF filter for mobile telephone TD-LTE/TD-SCDMA systems.
- Unbalanced to unbalanced operation.
- Usable pass band 40 MHz.
- No matching network required for operation at 50Ω.
- Suitable for GPRS class 1 to 12.

2 Features

- Package size 1.1 mm × 0.9 mm.
- Package height 0.45 mm max.
- RoHS compatible.
- Approximate weight 0.001 g.
- Package for Surface Mount Technology (SMT).
- Ni, gold-plated terminals.
- Electrostatic Sensitive Device (ESD).
- Moisture Sensitivity Level 3 (MSL3).

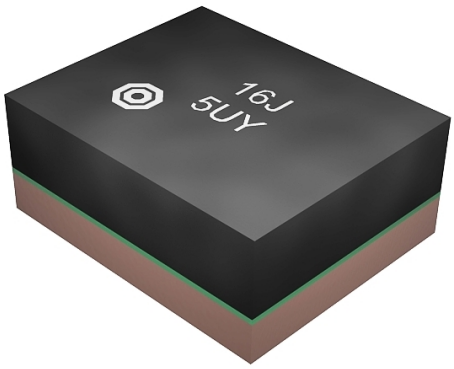

Figure 1: Picture of component with example of marking.

3 Package

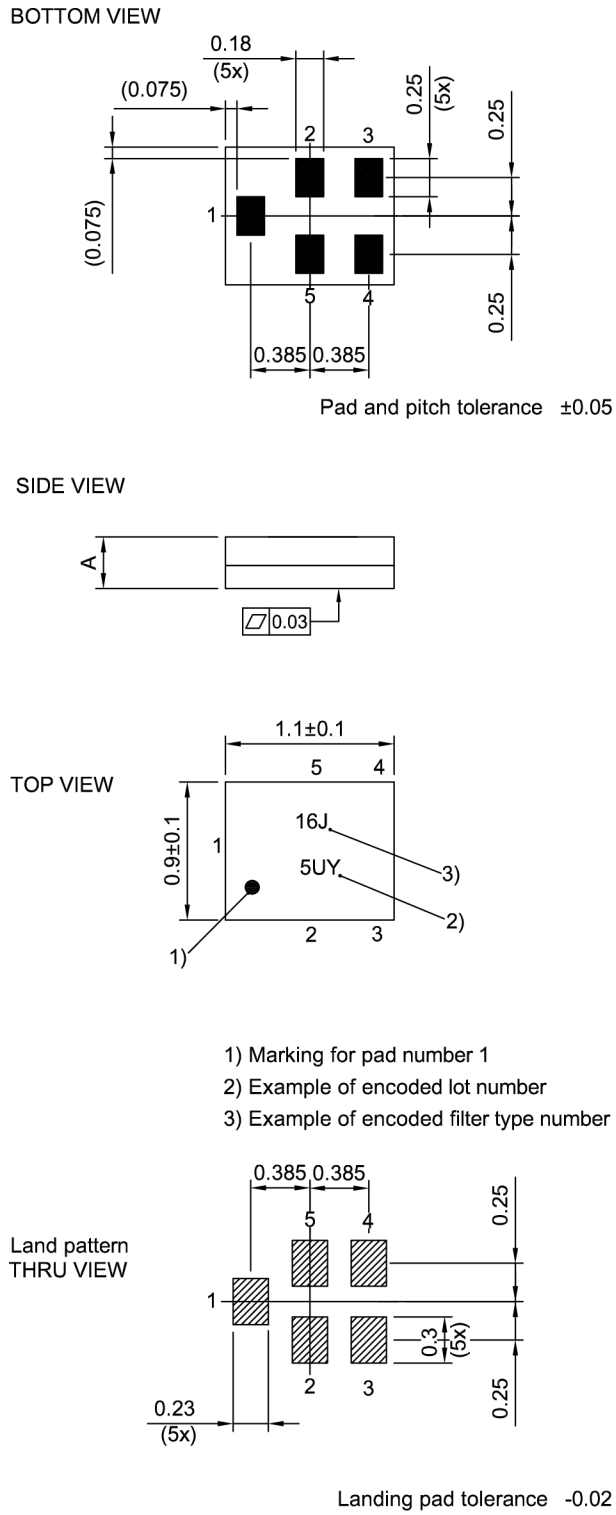

Figure 2: Drawing of package with package height A = 0.45 mm (max.). See Simplified drawings (p. 16).

4 Pin configuration

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

5 Matching circuit

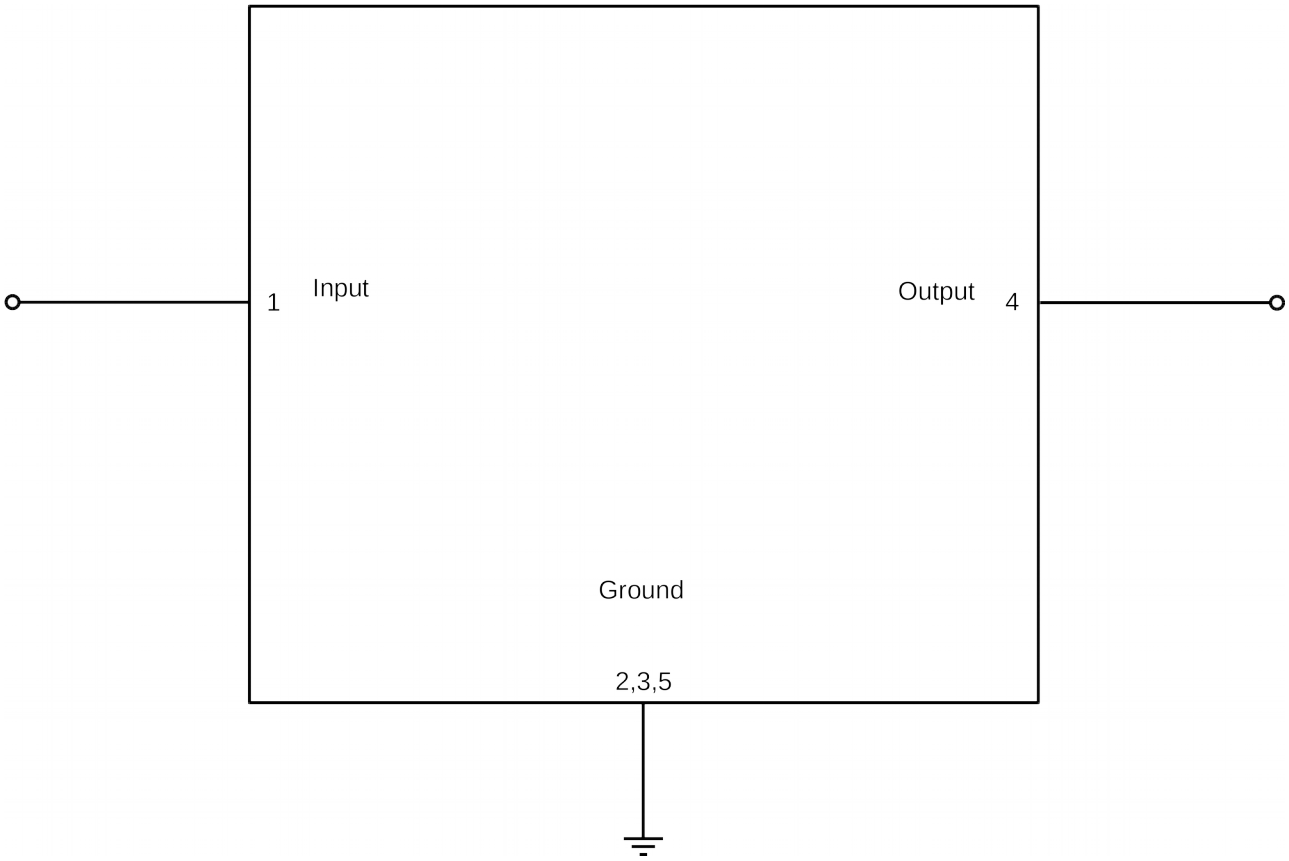

Figure 3: Schematic of matching circuit. No external matching components required.

6 Characteristics

Temperature range for specification T = −30 °C to +85 °C
Input terminating impedance Z_{IN} = 50 Ω
Output terminating impedance Z_{OUT} = 50 Ω

Characteristics				min.	typ. @+25 °C	max.	
Center frequency			f_C	—	1900	—	MHz
Maximum insertion attenuation			α_{max}				
	1880... 1920	MHz		—	1.4	1.9	dB
Amplitude ripple (p-p)			$\Delta\alpha$				
	1880... 1920	MHz		—	0.5	1.2	dB
Maximum VSWR			$VSWR_{max}$				
@ input port	1880... 1920	MHz		—	1.7	2.0	
@ output port	1880... 1920	MHz		—	1.7	2.0	
Minimum attenuation			α_{min}				
	10... 915	MHz		40	43	—	dB
	915... 1710	MHz		40	43	—	dB
	1710... 1735	MHz		38	42	—	dB
	1735... 1785	MHz		38	41	—	dB
	1785... 1830	MHz		28	31	—	dB
	1830... 1850	MHz		30	32	—	dB
	1980... 2025	MHz		23	27	—	dB
	2025... 2400	MHz		30	36	—	dB
	2400... 2500	MHz		40	43	—	dB
	2496... 2690	MHz		32	36	—	dB
	4900... 5950	MHz		26	31	—	dB
	5640... 5760	MHz		30	35	—	dB
	7520... 7680	MHz		27	33	—	dB

7 Maximum ratings

Storage temperature	T_{STG} =	−40 °C to +85 °C[1)]	
DC voltage	V_{DC} =	5.0 V (max.)[2)]	
ESD voltage			
	V_{ESD} [3)]	50 V (max.)	Machine model.
	V_{ESD} [4)]	100 V (max.)	Human body model.
	V_{ESD} [5)]	500 V (max.)	Charged device model.
Input power @ input port: 1880 ... 1920 MHz	P_{IN} =	11 dBm	Effective power in the on-state, duty cycle 4:8.

1) Extended upper limit: 168h@125°C acc. to IEC 60068-2-2 Bb.
2) 168h Damp Heat Steady State acc. to IEC 60068-2-67 Cy.
3) According to JESD22-A115B (MM – Machine Model), 10 negative & 10 positive pulses.
4) According to JESD22-A114F (HBM – Human Body Model), 1 negative & 1 positive pulse.
5) According to JESD22-C101C (CDM – Field Induced Charged Device Model), 3 negative & 3 positive pulses.

8 Transmission coefficient

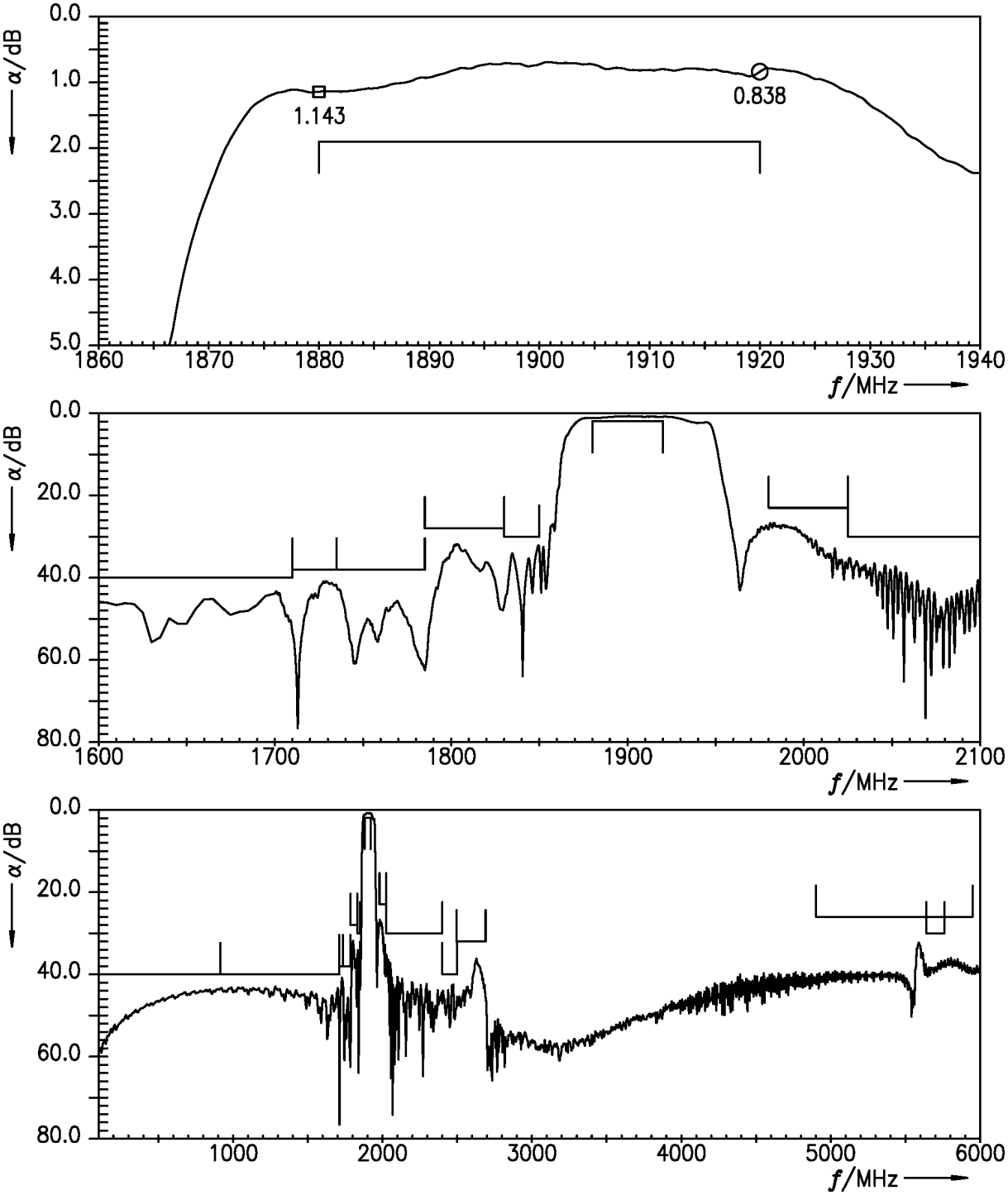

Figure 4: Attenuation.

9 Reflection coefficients

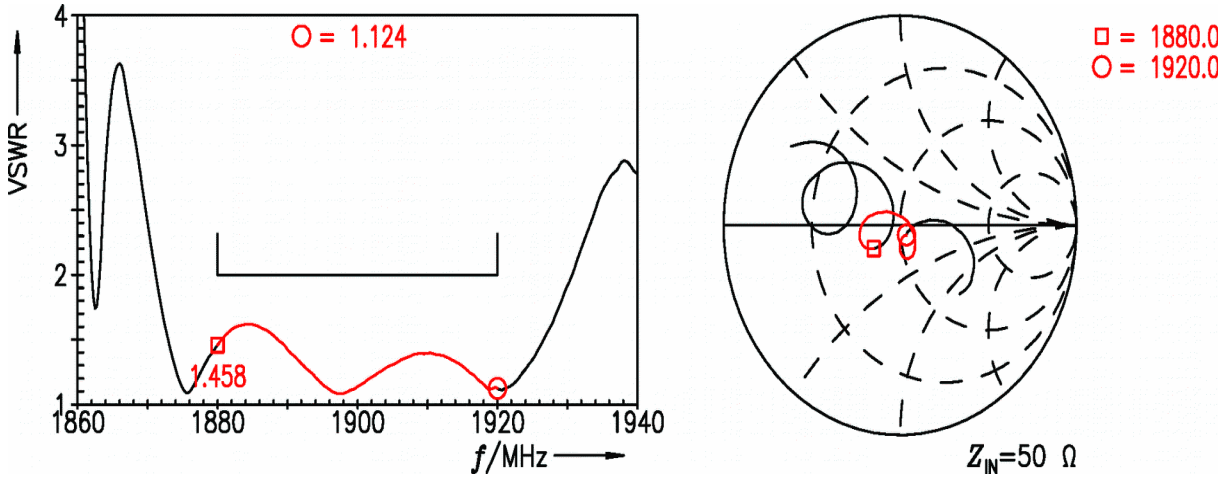

Figure 5: Reflection coefficient at IN port.

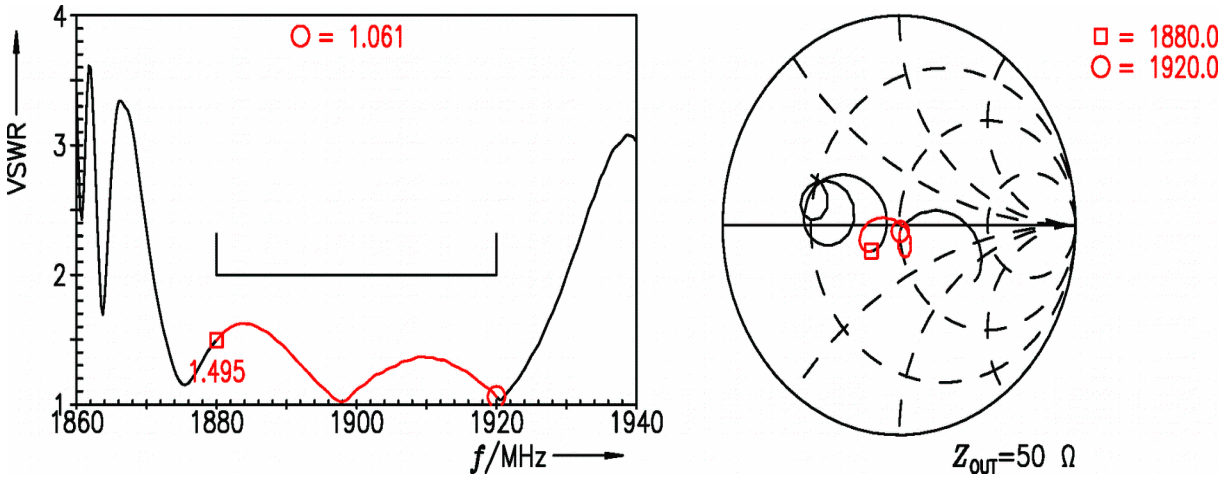

Figure 6: Reflection coefficient at OUT port.

10 Packing material

10.1 Tape

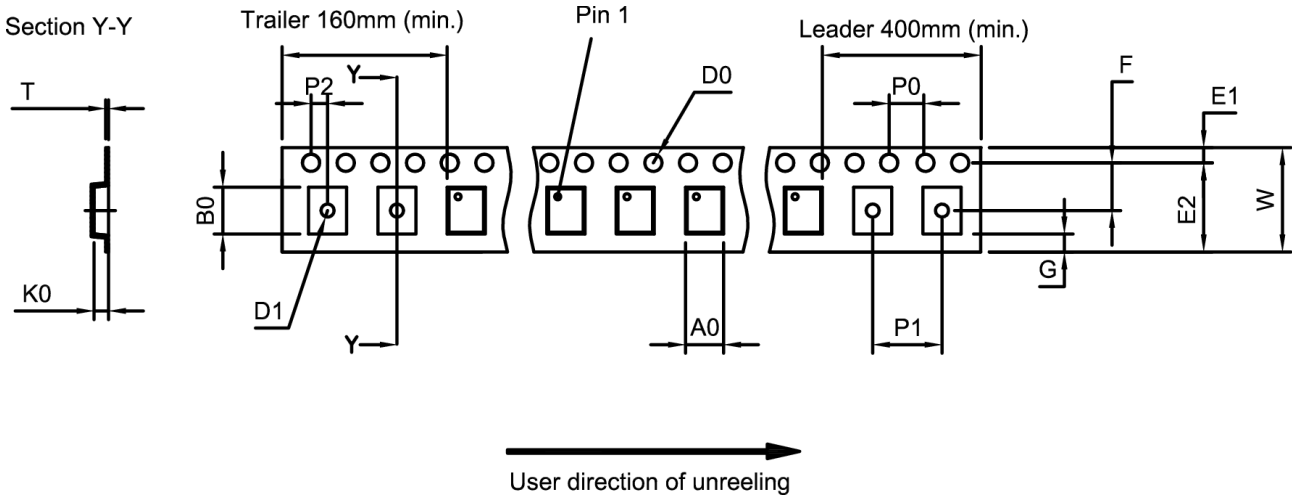

Figure 7: Drawing of tape (first-angle projection) with tape dimensions according to Table 1.

A_0	$1.02_{\pm 0.05}$ mm
B_0	$1.22_{\pm 0.05}$ mm
D_0	$1.55_{\pm 0.05}$ mm
D_1	$0.55_{\pm 0.1}$ mm
E_1	$1.75_{\pm 0.1}$ mm

E_2	6.25 mm (min.)
F	$3.5_{\pm 0.05}$ mm
G	–
K_0	$0.6_{\pm 0.05}$ mm
P_0	$4.0_{\pm 0.1}$ mm

P_1	$2.0_{\pm 0.1}$ mm
P_2	$2.0_{\pm 0.05}$ mm
T	$0.25_{\pm 0.03}$ mm
W	$8.0_{+0.3/-0.1}$ mm

Table 1: Tape dimensions.

10.2 Reel with diameter of 180 mm

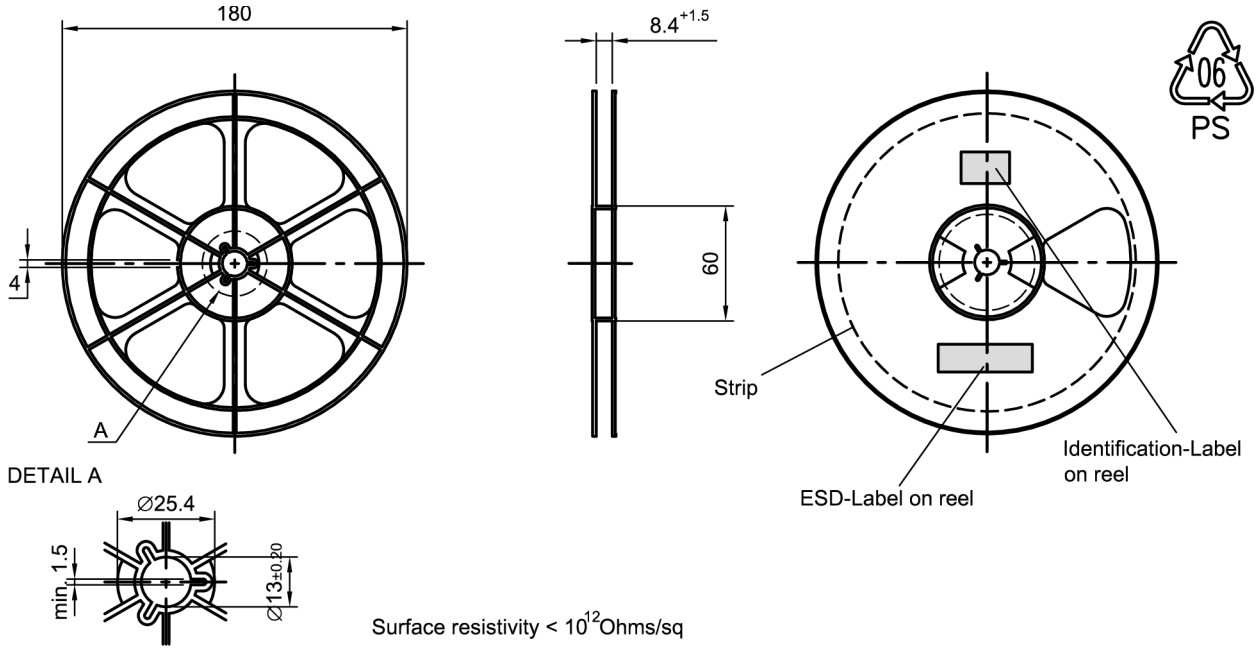

Figure 8: Drawing of reel (first-angle projection) with diameter of 180 mm.

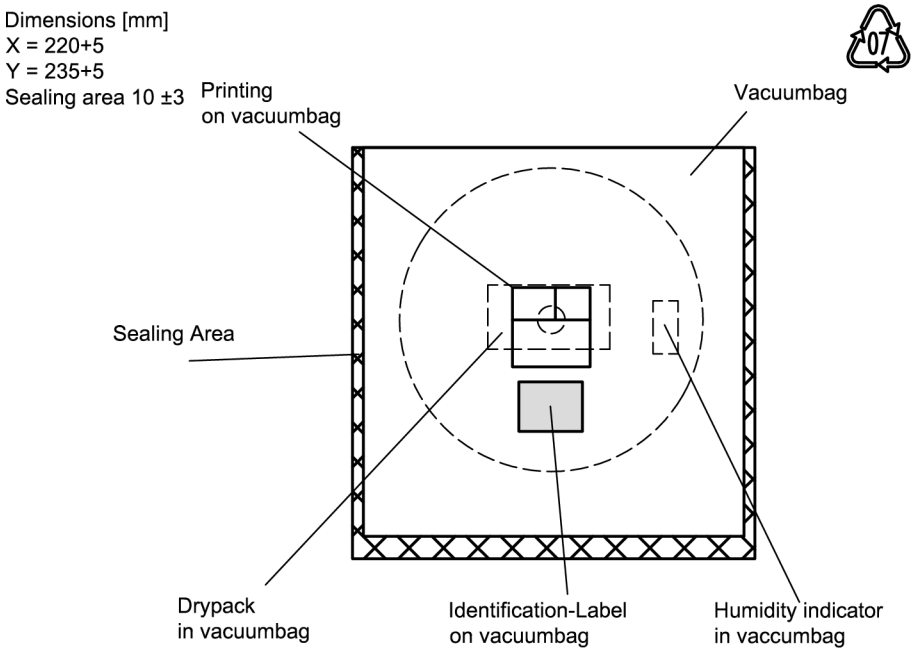

Figure 9: Drawing of moisture barrier bag (MBB) for reel with diameter of 180 mm.

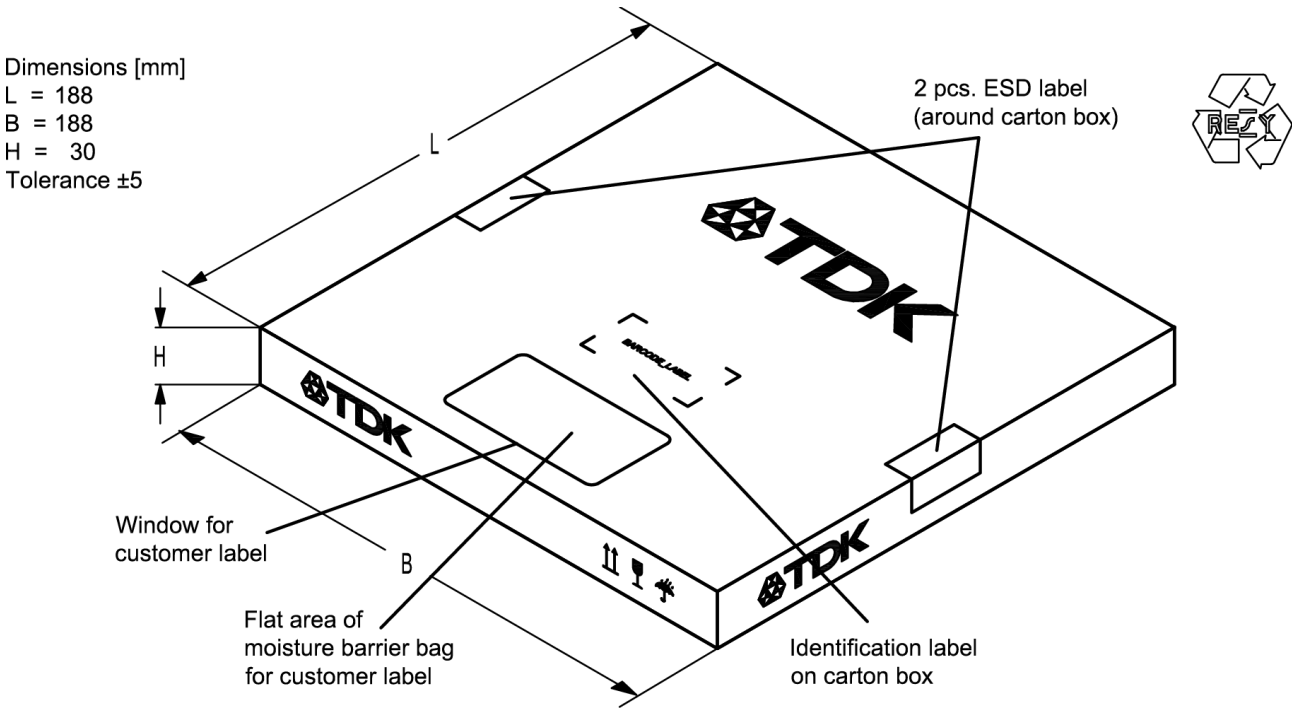

Figure 10: Drawing of folding box for reel with diameter of 180 mm.

10.3 Reel with diameter of 330 mm

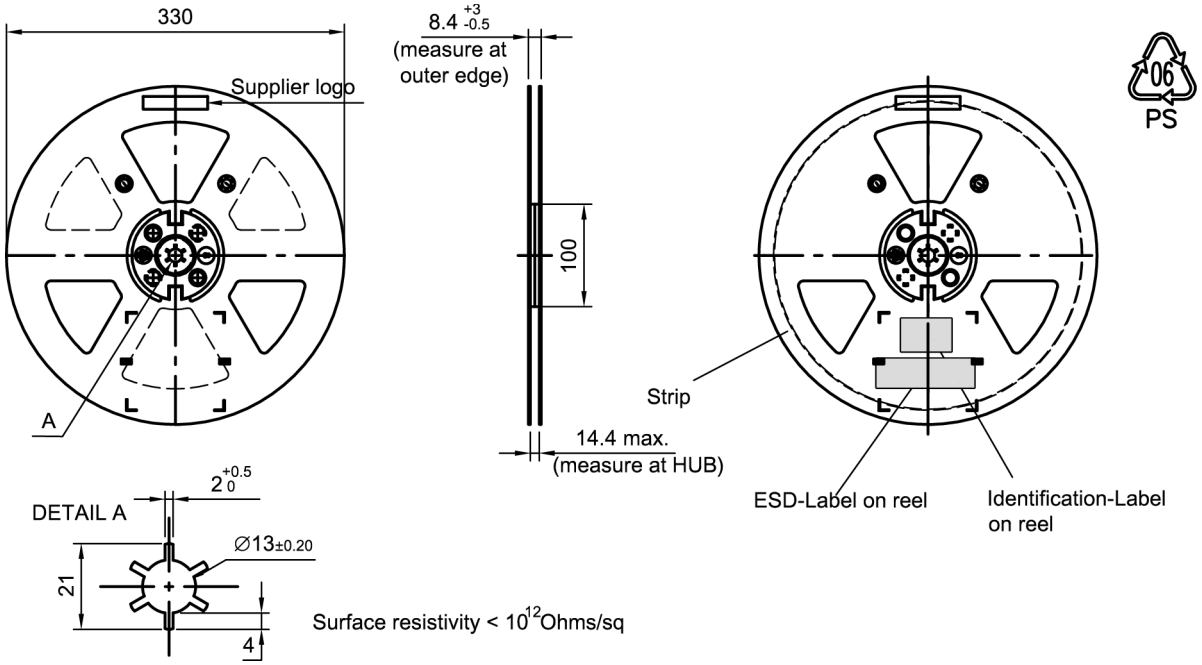

Figure 11: Drawing of reel (first-angle projection) with diameter of 330 mm.

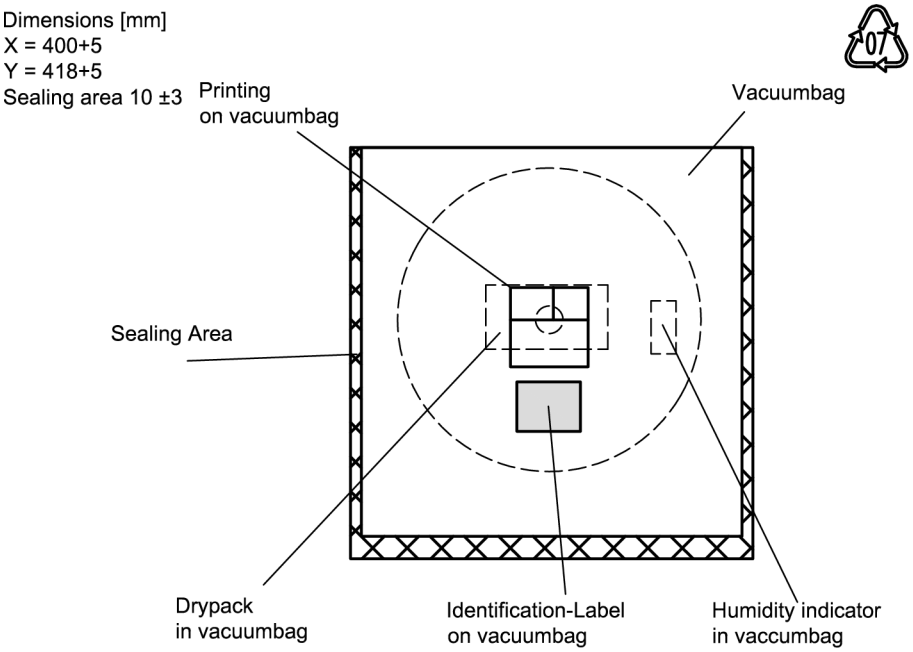

Figure 12: Drawing of moisture barrier bag (MBB) for reel with diameter of 330 mm.

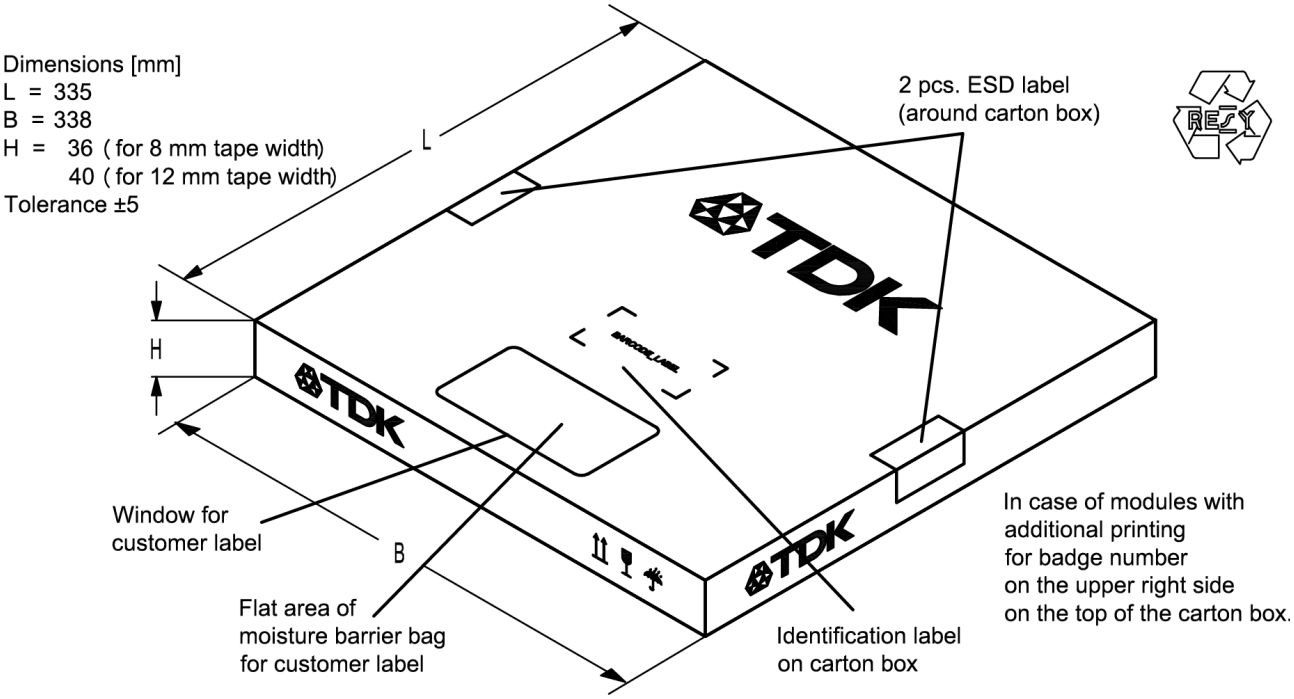

Figure 13: Drawing of folding box for reel with diameter of 330 mm.

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, e.g., B3xxxxB**1234**xxxx,
  is encoded by a special BASE32 code into a 3 digit marking.

  Example of decoding type number marking on device in decimal code.

16J	**=>**	**1234**
1 x 32^2 + **6** x 32^1 + **18 (=J)** x 32^0	**=**	**1234**

  The BASE32 code for product type B8837 is 8M5.

- Lot number:

  The last 5 digits of the lot number, e.g., **12345**,
  are encoded based on a special BASE47 code into a 3 digit marking.

  Example of decoding lot number marking on device in decimal code.

5UY	**=>**	**12345**
5 x 47^2 + **27 (=U)** x 47^1 + **31 (=Y)** x 47^0	**=**	**12345**

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.

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).

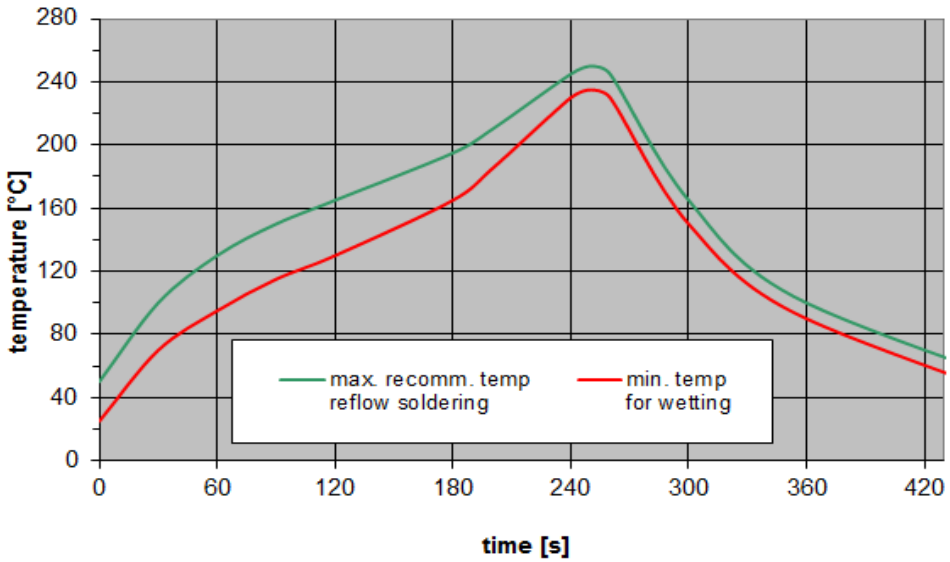

Figure 14: Recommended reflow profile for convection and infrared soldering – lead-free solder.

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 code and packing units

Ordering code	Packing units
B39192B8837P810S	15000 pcs
B39192B8837P810S 5	5000 pcs

Table 4: Ordering codes and packing units.

14 Cautions and warnings

14.1 Moldability

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

14.2 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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