Qualcomm

RF360
Europe GmbH

SAW components

SAW diplexer

Automotive telematics
TD-SCDMA bands 34 & 39

Series/type:	B4384
Ordering code:	B39202B4384P810
Date:	March 07, 2016
Version:	2.0

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1 Application

- Low-loss 2in1 RF filter for TD-SCDMA band 34 and TD-SCDMA band 39 systems
- TD-SCDMA B34: 15MHz
- TD-SCDMA B39: 40MHz
- Low amplitude ripple

2 Features

- Package size 1.5±0.1 mm × 1.1±0.1 mm
- Package height 0.45 mm (max.)
- Package code QCS10W
- Approximate weight 3 mg
- RoHS compatible
- Package for Surface Mount Technology (SMT)
- Ni/Au-plated terminals
- Filter surface passivated
- AEC-Q200 qualified component family (operable temperature range −40 °C to +85 °C)
- Electrostatic Sensitive Device (ESD)

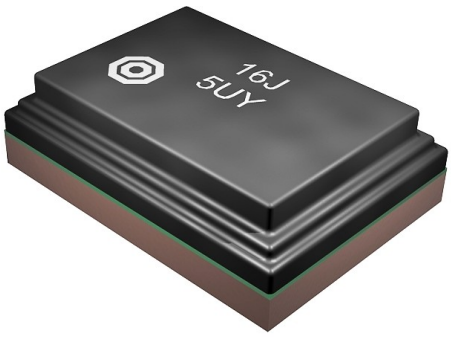

Figure 1: Picture of component with example of product marking.

3 Package

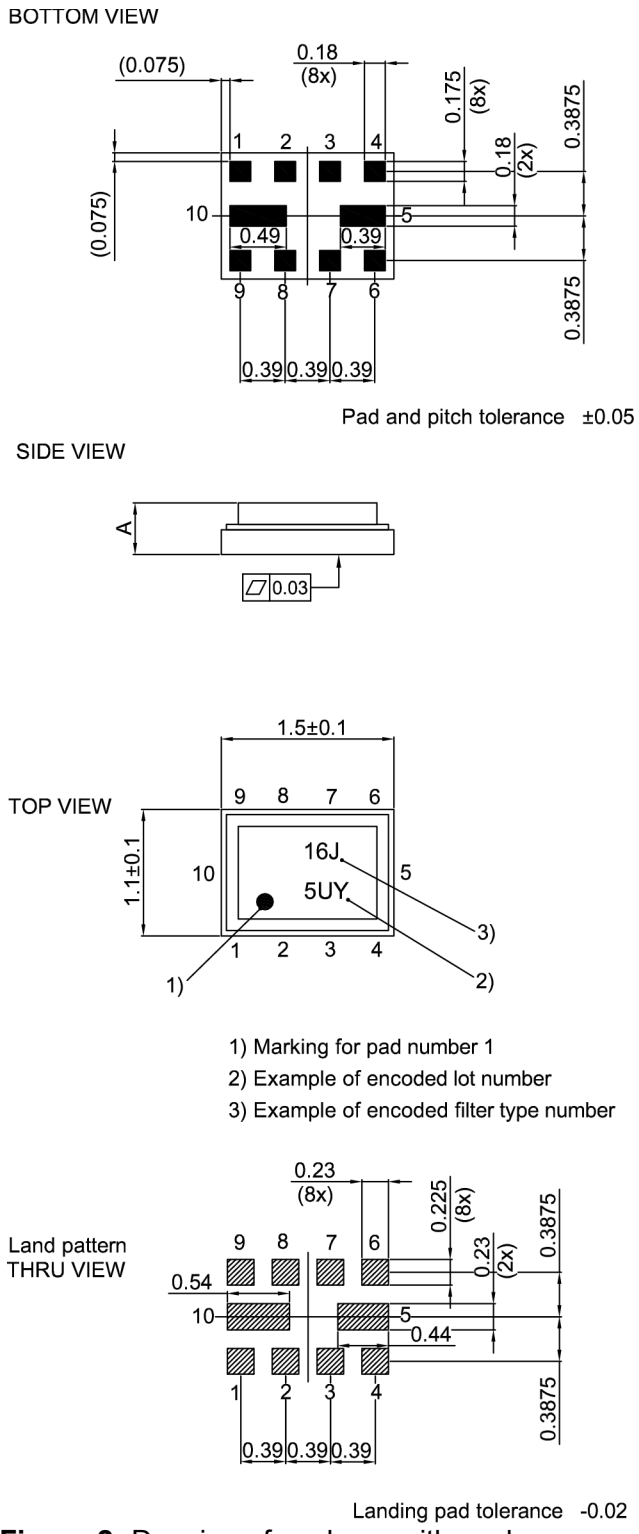

Figure 2: Drawing of package with package height A = 0.45 mm (max.). See Simplified drawings (p. 18).

4 Pin configuration

- 1 Input (B34 & B39)
- 6 Output (B34)
- 9 Output (B39)
- 2, 3, 4, 5, 7, 8, 10 Ground

5 Matching circuit

■ L_{p1} = 4.6 nH

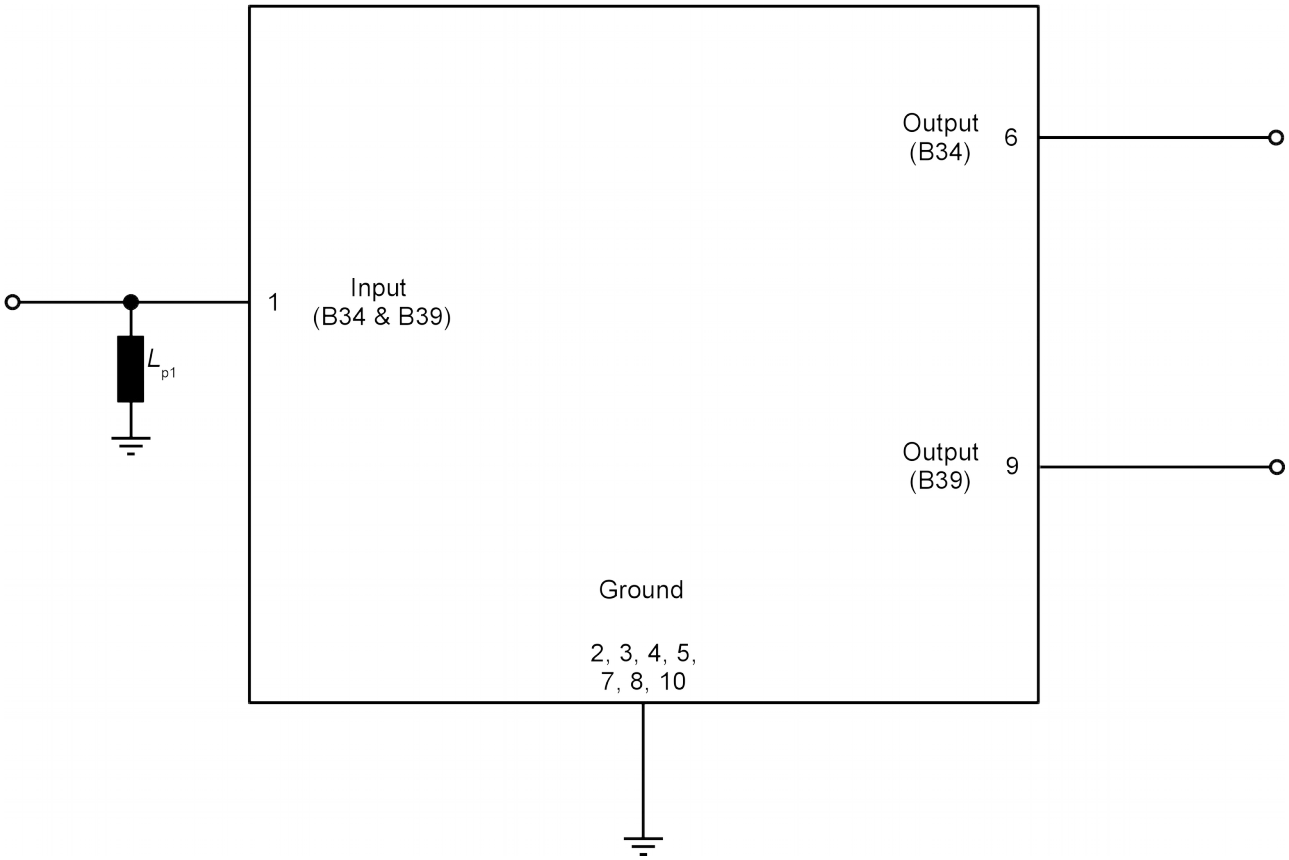

Figure 3: Schematic of matching circuit.

6 Characteristics TD-SCDMA B34

Temperature range for specification T_{SPEC} = −30 °C ... +85 °C
B34 B39 input terminating impedance $Z_{B34\ B39\ IN}$ = 50 Ω with par. 4.6 nH[1)]
B34 output terminating impedance $Z_{B34\ OUT}$ = 50 Ω
B39 output terminating impedance $Z_{B39\ OUT}$ = 50 Ω

Characteristics TD-SCDMA B34				**min.** for T_{SPEC}	**typ.** @+25 °C	**max.** for T_{SPEC}	
Center frequency			f_C	—	2017.5	—	MHz
Maximum insertion attenuation			α_{max}				
	2010... 2025	MHz		—	1.7	2.3	dB
Amplitude ripple (p-p)			Δα				
	2010... 2025	MHz		—	0.4	0.9	dB
Maximum VSWR			$VSWR_{max}$				
@ B34 B39 input port	2010... 2025	MHz		—	1.4	1.9	
@ B34 output port	2010... 2025	MHz		—	1.4	1.9	
Minimum attenuation			α_{min}				
	50... 1000	MHz		35	38	—	dB
	1000... 1850	MHz		30	34	—	dB
	1850... 1930	MHz		33	38	—	dB
	1930... 1950	MHz		30	35	—	dB
	1950... 1980	MHz		7	18	—	dB
	2050... 2075	MHz		2.8	10	—	dB
	2075... 2100	MHz		27	33	—	dB
	2100... 2800	MHz		33	38	—	dB
	2800... 4100	MHz		35	40	—	dB
	4100... 4900	MHz		29	36	—	dB
	4900... 6000	MHz		23	30	—	dB

[1)] See Matching circuit (p. 5).

7 Characteristics TD-SCDMA B39

Temperature range for specification T_{SPEC} = −30 °C ... +85 °C
B34 B39 input terminating impedance $Z_{B34\ B39\ IN}$ = 50 Ω with par. 4.6 nH[1)]
B34 output terminating impedance $Z_{B34\ OUT}$ = 50 Ω
B39 output terminating impedance $Z_{B39\ OUT}$ = 50 Ω

Characteristics TD-SCDMA B39				**min.** for T_{SPEC}	**typ.** @+25 °C	**max.** for T_{SPEC}	
Center frequency			f_C	—	1900	—	MHz
Maximum insertion attenuation			α_{max}				
	1880... 1920	MHz		—	1.9	2.4	dB
Amplitude ripple (p-p)			$\Delta\alpha$				
	1880... 1920	MHz		—	0.6	1.2	dB
Maximum VSWR			$VSWR_{max}$				
@ B34 B39 input port	1880... 1920	MHz		—	1.6	2.0	
@ B39 output port	1880... 1920	MHz		—	1.7	2.0	
Minimum attenuation			α_{min}				
	50... 925	MHz		31	34	—	dB
	925... 960	MHz		31	34	—	dB
	960... 1805	MHz		25	29	—	dB
	1805... 1840	MHz		27	35	—	dB
	1840... 1850	MHz		26	34	—	dB
	1982... 2005	MHz		28	32	—	dB
	2005... 2800	MHz		28	33	—	dB
	2800... 3700	MHz		32	38	—	dB
	3700... 5400	MHz		20	27	—	dB
	5400... 6000	MHz		16	24	—	dB

1) See Matching circuit (p. 5).

8 Maximum ratings

Operable temperature	T_{OP} = −40 °C ... +85 °C	
Storage temperature	T_{STG} = −40 °C ... +85 °C	
DC voltage	V_{DC} = 0 V	
Input power	P_{IN}	
@ B34 B39 input port: 1880 ... 1920 MHz	10 dBm	Continuous wave for 100000 h @ 85 °C.
@ B34 B39 input port: 2010 ... 2025 MHz	10 dBm	Continuous wave for 100000 h @ 85 °C.

9 Transmission coefficient TD-SCDMA B34

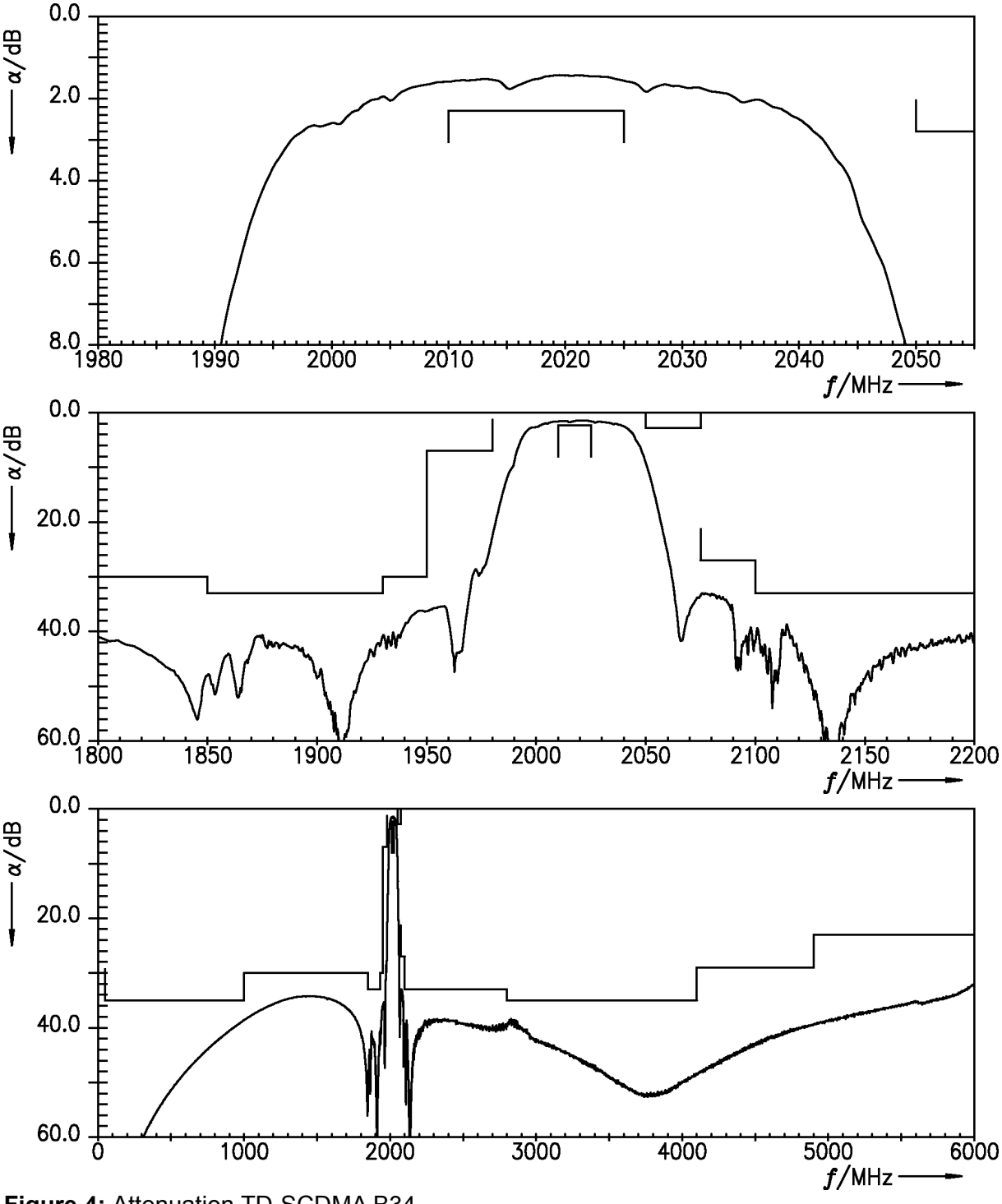

Figure 4: Attenuation TD-SCDMA B34.

10 Reflection coefficients TD-SCDMA B34

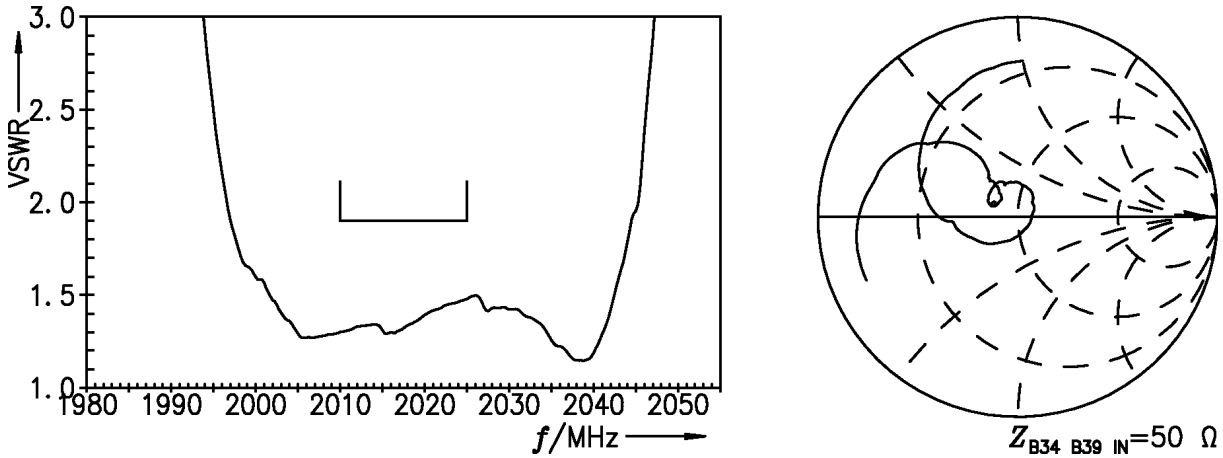

Figure 5: Reflection coefficient TD-SCDMA B34 at IN port.

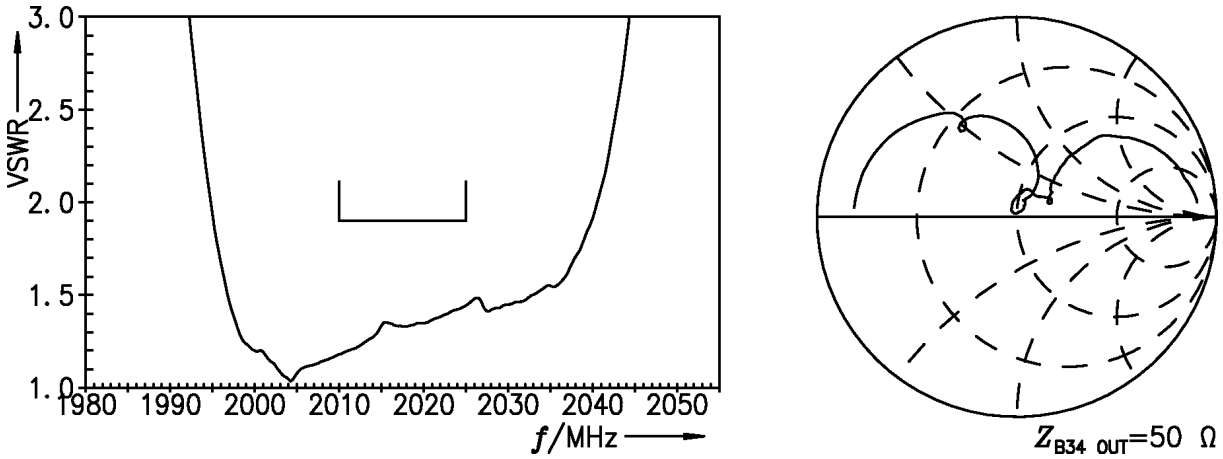

Figure 6: Reflection coefficient TD-SCDMA B34 at OUT port.

11 Transmission coefficient TD-SCDMA B39

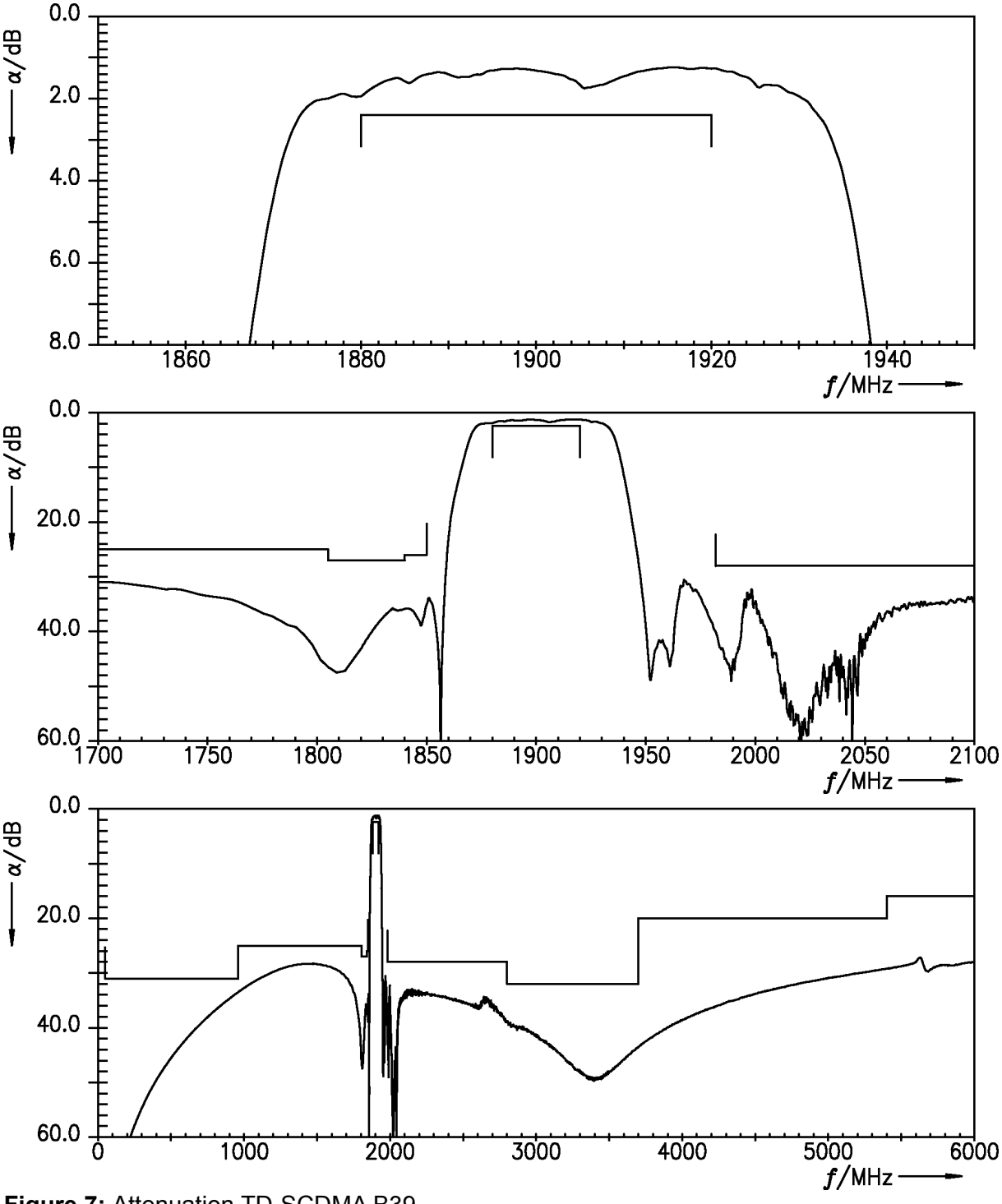

Figure 7: Attenuation TD-SCDMA B39.

12 Reflection coefficients TD-SCDMA B39

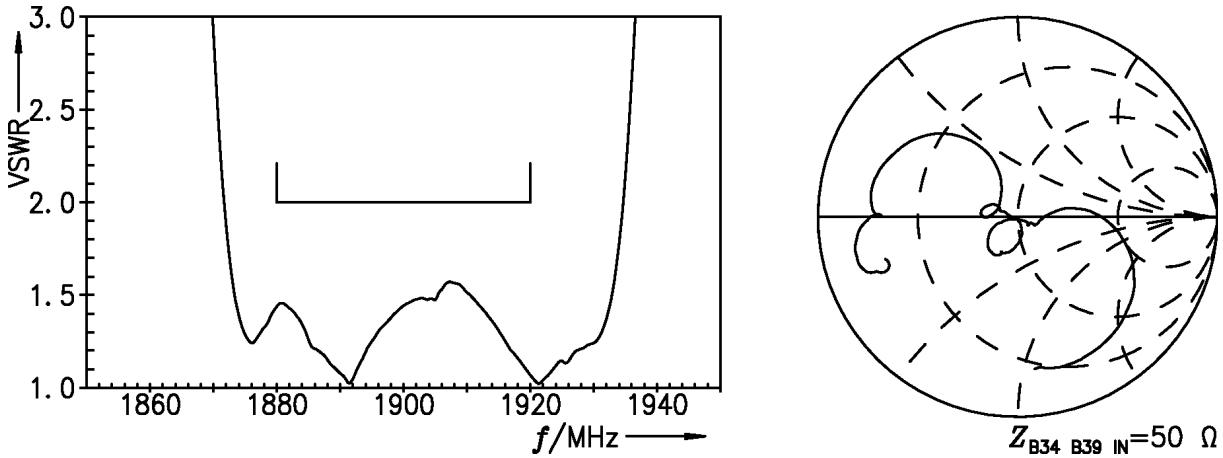

Figure 8: Reflection coefficient TD-SCDMA B39 at IN port.

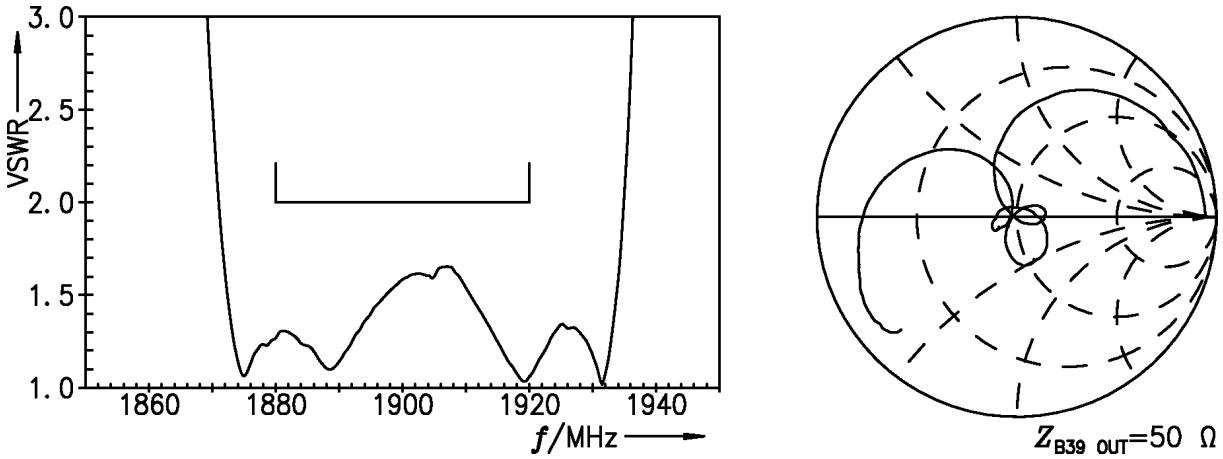

Figure 9: Reflection coefficient TD-SCDMA B39 at OUT port.

13 Packing material

13.1 Tape

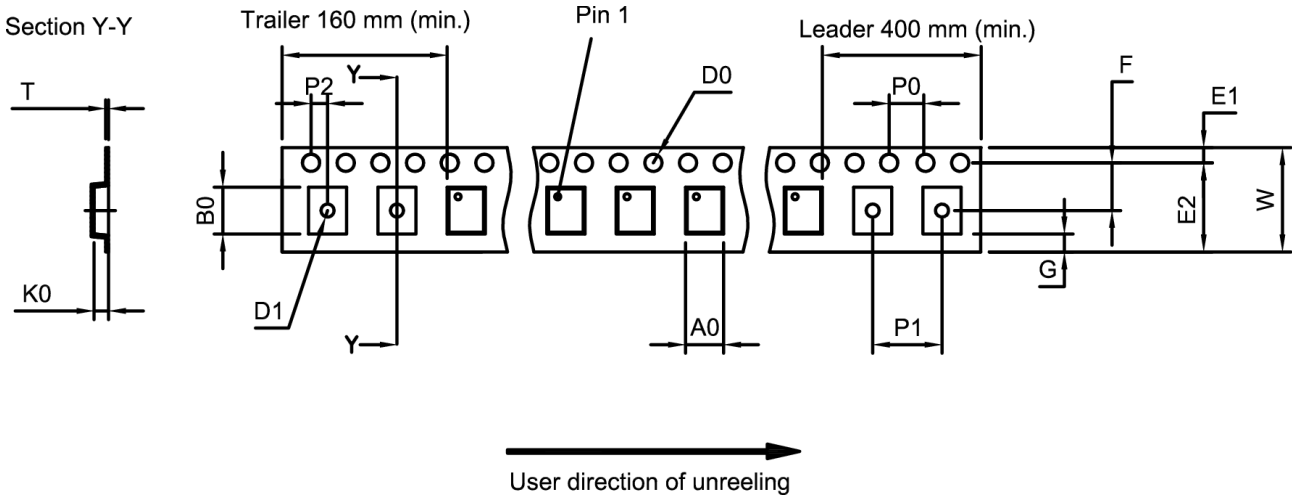

Figure 10: Drawing of tape (first-angle projection) with tape dimensions according to Table 1.

A_0	$1.27_{\pm 0.05}$ mm
B_0	$1.67_{\pm 0.05}$ mm
D_0	$1.5_{+0.1/-0}$ mm
D_1	$0.5_{+0.1/-0}$ mm
E_1	$1.75_{\pm 0.1}$ mm

E_2	6.25 mm (min.)
F	$3.5_{\pm 0.05}$ mm
G	0.75 mm (min.)
K_0	$0.55_{\pm 0.05}$ mm
P_0	$4.0_{\pm 0.1}$ mm

P_1	$4.0_{\pm 0.1}$ 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.

13.2 Reel with diameter of 180 mm

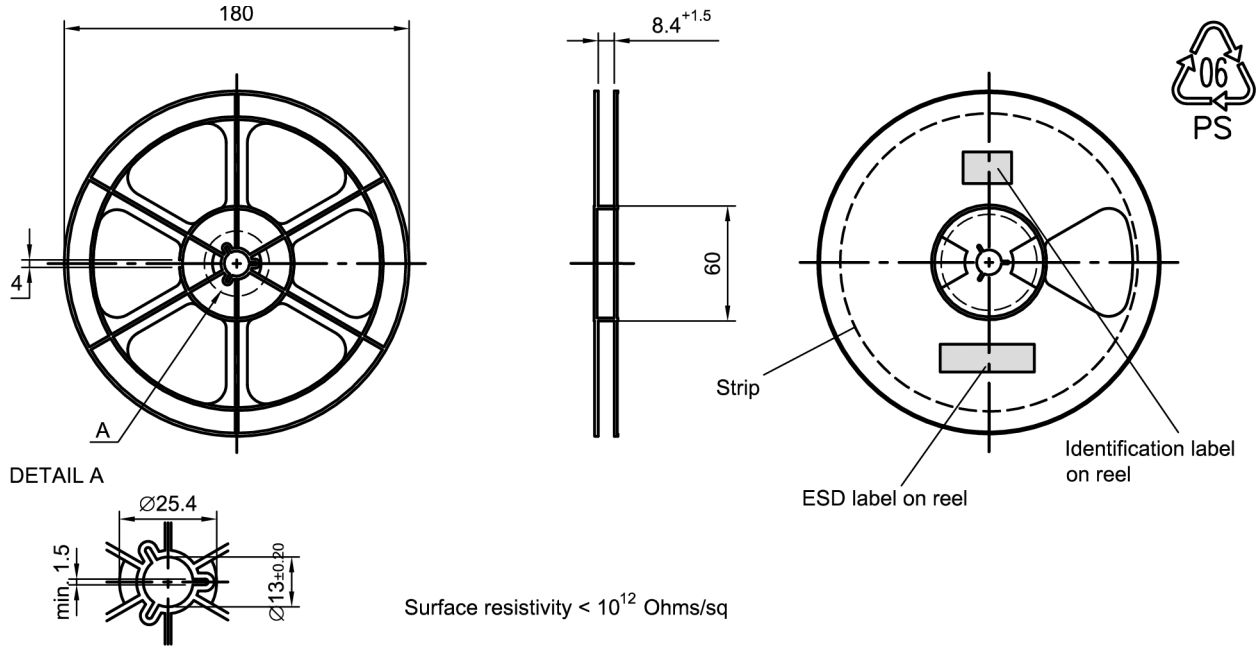

Figure 11: Drawing of reel (first-angle projection) with diameter of 180 mm.

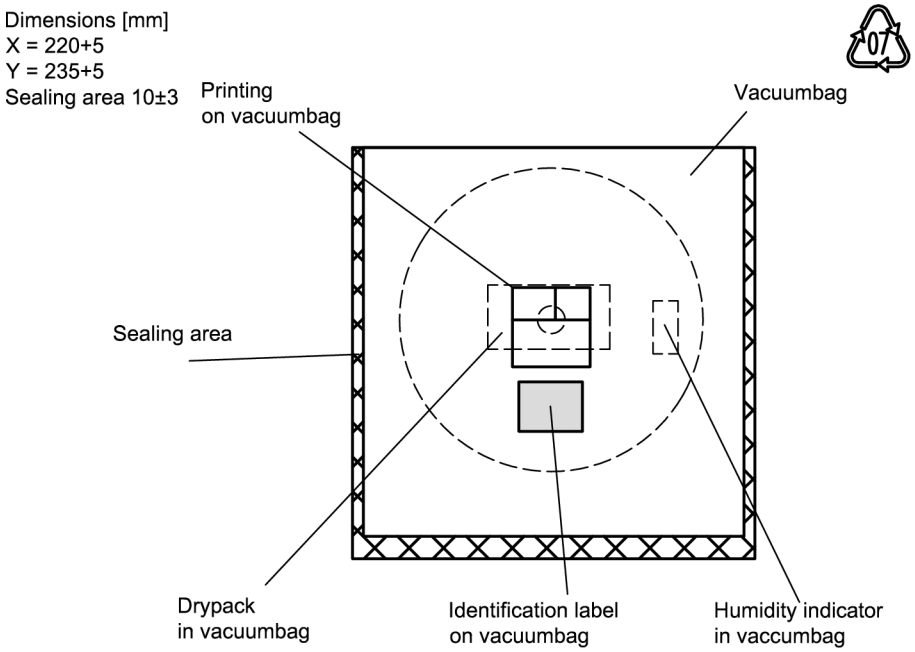

Figure 12: Drawing of moisture barrier bag (MBB) for reel with diameter of 180 mm.

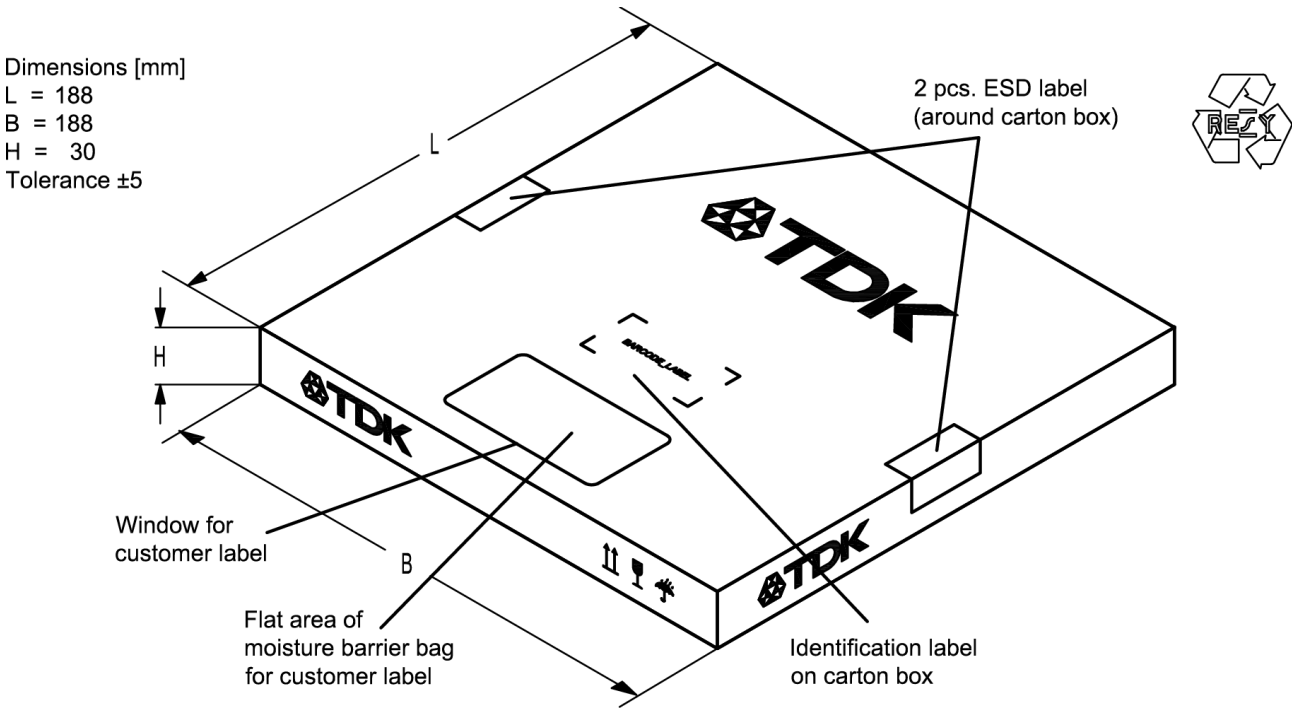

Figure 13: Drawing of folding box for reel with diameter of 180 mm.

14 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 B4384 is 490.

■ 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.

15 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).

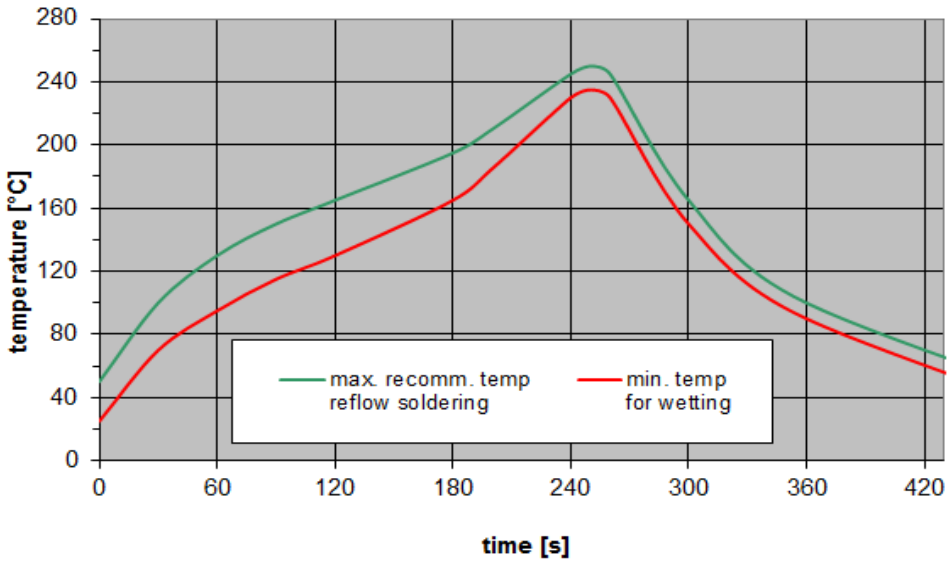

Figure 14: Recommended reflow profile for convection and infrared soldering – lead-free solder.

16 Annotations

16.1 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.

16.2 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.

16.3 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.

17 Cautions and warnings

17.1 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**.

17.2 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.

17.3 Moldability

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

17.4 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).

Dimensions do not include burrs.

Projection method

Unless otherwise specified first-angle projection is applied.

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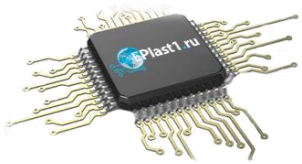
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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