



RF360  
Europe GmbH

## SAW components

### SAW duplexer

Small cell & femtocell  
LTE band 28b

Series/type:	B8036
Ordering code:	B39791B8036P810
Date:	November 07, 2017
Version:	2.0

RF360 products mentioned within this document are products of RF360 Europe GmbH and other subsidiaries of RF360 Holdings Singapore Pte. Ltd. (collectively, the "RF360 Subsidiaries").

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

© 2019 RF360 Europe GmbH and/or its affiliated companies. All rights reserved.

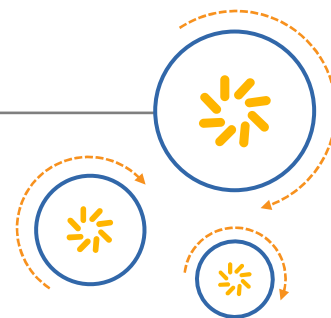
These materials, including the information contained herein, may be used only for informational purposes by the customer. The RF360 Subsidiaries assume no responsibility for errors or omissions in these materials or the information contained herein. The RF360 Subsidiaries reserve the right to make changes to the product(s) or information contained herein without notice. The materials and information are provided on an AS IS basis, and the RF360 Subsidiaries assume no liability and make no warranty or representation, either expressed or implied, with respect to the materials, or any output or results based on the use, application, or evaluation of such materials, including, without limitation, with respect to the non-infringement of trademarks, patents, copyrights or any other intellectual property rights or other rights of third parties.

No use of this documentation or any information contained herein grants any license, whether express, implied, by estoppel or otherwise, to any intellectual property rights, including, without limitation, to any patents owned by QUALCOMM Incorporated or any of its subsidiaries.

Not to be used, copied, reproduced, or modified in whole or in part, nor its contents revealed in any manner to others without the express written permission of RF360 Europe GmbH.

Qualcomm is a trademark of Qualcomm Incorporated, registered in the United States and other countries. Other product and brand names may be trademarks or registered trademarks of their respective owners.

This technical data may be subject to U.S. and international export, re-export, or transfer ("export") laws. Diversion contrary to U.S. and international law is strictly prohibited.



RF360 Europe GmbH  
A Qualcomm – TDK Joint Venture

## SAW components

### SAW duplexer

Small cell & femtocell  
LTE band 28b

Series/type:	B8036
Ordering code:	B39791B8036P810
Date:	November 07, 2017
Version:	2.0

RF360 products mentioned within this document are offered by RF360 Europe GmbH and other subsidiaries of RF360 Holdings Singapore Pte. Ltd. (collectively, the “RF360 Subsidiaries”).

RF360 Holdings Singapore Pte. Ltd. is a joint venture of Qualcomm Global Trading Pte. Ltd. and EPCOS AG.

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

© 2017 RF360 Europe GmbH and/or its affiliated companies. All rights reserved.

These materials, including the information contained herein, may be used only for informational purposes by the customer. The RF360 Subsidiaries assume no responsibility for errors or omissions in these materials or the information contained herein. The RF360 Subsidiaries reserve the right to make changes to the product(s) or information contained herein without notice. The materials and information are provided on an AS IS basis, and the RF360 Subsidiaries assume no liability and make no warranty or representation, either expressed or implied, with respect to the materials, or any output or results based on the use, application, or evaluation of such materials, including, without limitation, with respect to the non-infringement of trademarks, patents, copyrights or any other intellectual property rights or other rights of third parties.

No use of this documentation or any information contained herein grants any license, whether express, implied, by estoppel or otherwise, to any intellectual property rights, including, without limitation, to any patents owned by QUALCOMM Incorporated or any of its subsidiaries.

Not to be used, copied, reproduced, or modified in whole or in part, nor its contents revealed in any manner to others without the express written permission of RF360 Europe GmbH.

Qualcomm and Qualcomm RF360 are trademarks of Qualcomm Incorporated, registered in the United States and other countries. RF360 is a trademark of Qualcomm Incorporated. Other product and brand names may be trademarks or registered trademarks of their respective owners.

This technical data may be subject to U.S. and international export, re-export, or transfer ("export") laws. Diversion contrary to U.S. and international law is strictly prohibited.

SAW components	B8036
SAW duplexer	733 / 788 MHz

Data sheet

Table of contents

1	<a href="#">Application</a>	4
2	<a href="#">Features</a>	4
3	<a href="#">Package</a>	5
4	<a href="#">Pin configuration</a>	5
5	<a href="#">Matching circuit</a>	6
6	<a href="#">Characteristics</a>	7
7	<a href="#">Maximum ratings</a>	16
8	<a href="#">Transmission coefficients</a>	17
9	<a href="#">Reflection coefficients</a>	20
10	<a href="#">EVMS</a>	21
11	<a href="#">Packing material</a>	23
12	<a href="#">Marking</a>	27
13	<a href="#">Soldering profile</a>	28
14	<a href="#">Annotations</a>	29
15	<a href="#">Cautions and warnings</a>	30
	<a href="#">Important notes</a>	31

## SAW components

B8036

## SAW duplexer

733 / 788 MHz

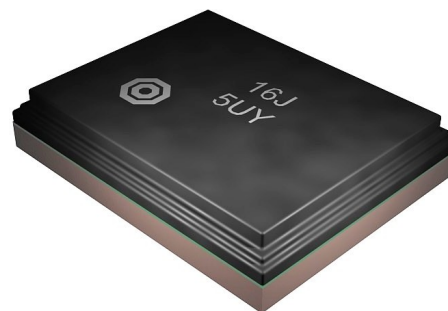
Data sheet

## 1 Application

- Low-loss SAW duplexer for 3G/LTE small cell & femtocell systems (Band 28b)
- Usable pass band: 30 MHz
- High power durability in downlink
- Rx = uplink = 718-748 MHz
- Tx = downlink = 773-803 MHz

## 2 Features

- Industrial grade qualified family
- Package size  $2.5 \pm 0.1 \text{ mm} \times 2.0 \pm 0.1 \text{ mm}$
- Package height 0.5 mm (max.)
- Approximate weight 0.01 g
- RoHS compatible
- Package for Surface Mount Technology (SMT)
- Ni/Au-plated terminals
- Electrostatic Sensitive Device (ESD)
- Moisture Sensitivity Level 2a (MSL2a)



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

SAW components

B8036

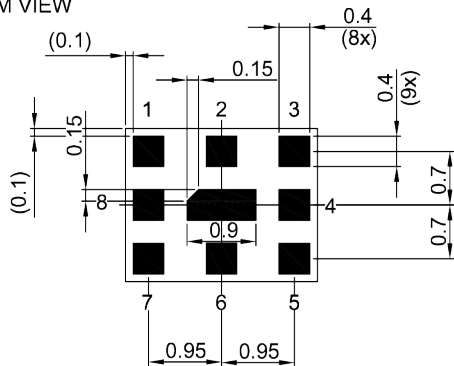
SAW duplexer

733 / 788 MHz

Data sheet

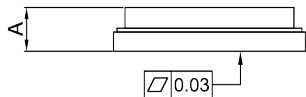
3 Package

BOTTOM VIEW

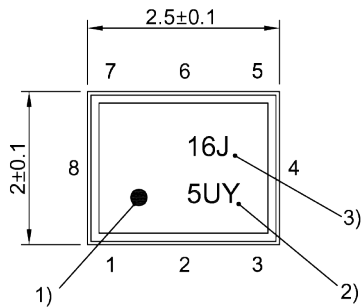


Pad and pitch tolerance ±0.05

SIDE VIEW

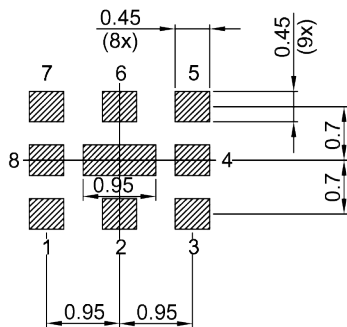


TOP VIEW



- 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 TX
- 3 RX
- 6 ANT
- 2, 4, 5, 7, 8, 9 Ground

**Figure 2:** Drawing of package with package height A = 0.5 mm (max.). See Sec. Package information (p. 30).

SAW components	B8036
SAW duplexer	733 / 788 MHz

Data sheet

5 Matching circuit

■  $L_{p6} = 8.4 \text{ nH}$

■  $L_{s3} = 7.7 \text{ nH}$

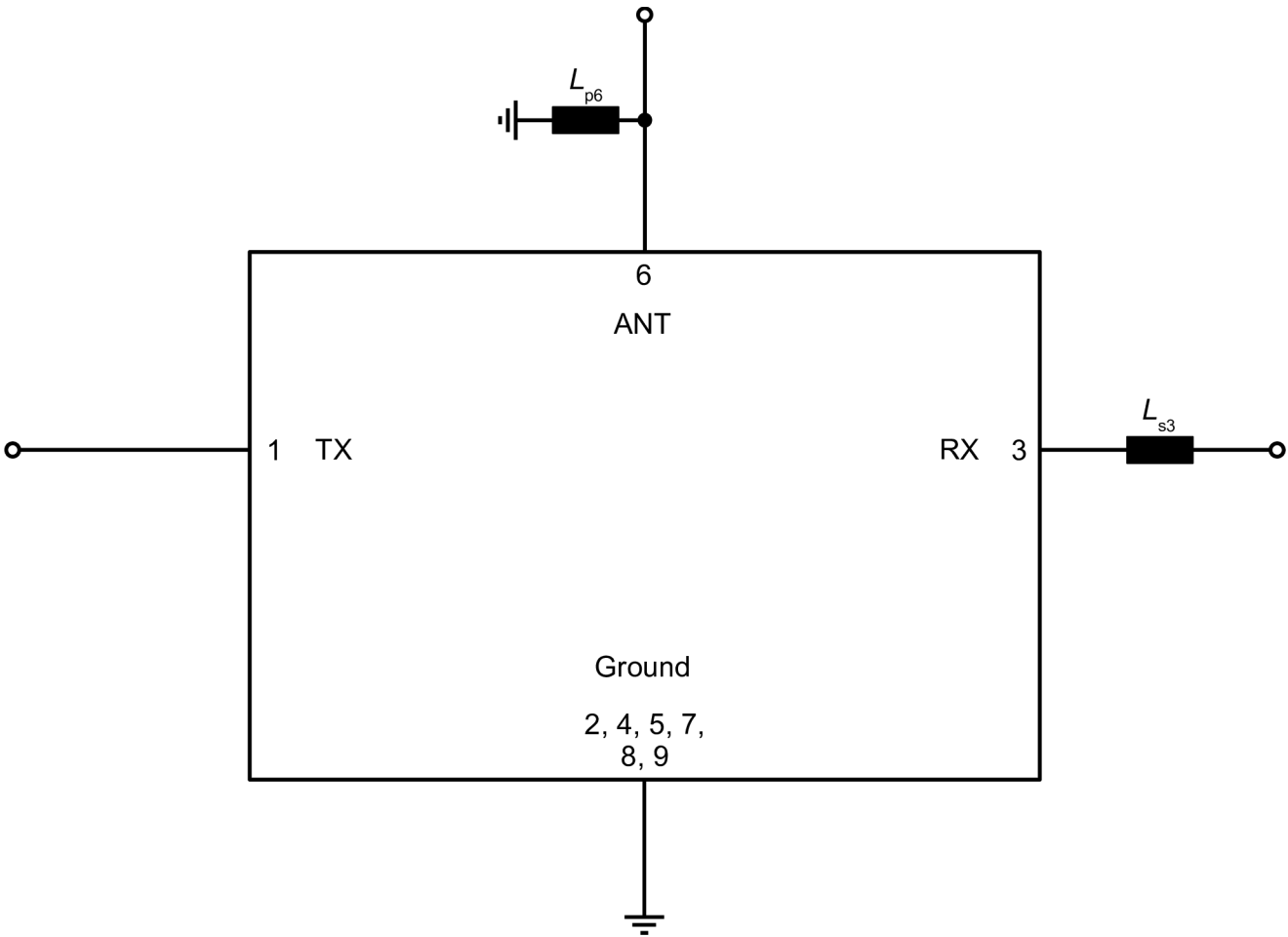


Figure 3: Schematic of matching circuit.



## SAW components

B8036

## SAW duplexer

733 / 788 MHz

## Data sheet

## 6 Characteristics

## 6.1 TX – ANT

Temperature range for specification

 $T_{\text{SPEC}} = -10\text{ °C} \dots +85\text{ °C}$ 

TX terminating impedance

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

ANT terminating impedance

 $Z_{\text{ANT}} = 50\ \Omega$  with par. 8.4 nH<sup>1)</sup>

RX terminating impedance

 $Z_{\text{RX}} = 50\ \Omega$  with ser. 7.7 nH<sup>1)</sup>

Characteristics TX – ANT			min. for $T_{\text{SPEC}}$	typ. @ +25 °C	max. for $T_{\text{SPEC}}$	
Center frequency	$f_c$		—	788	—	MHz
Average insertion attenuation	$\alpha_{\text{INT,avg}}^{2)}$					
	773... 778	MHz	—	1.5	2.5	dB
	778... 798	MHz	—	1.5	2.2	dB
	798... 803	MHz	—	1.6	2.5	dB
Maximum insertion attenuation	$\alpha_{\text{max}}$					
	773... 803	MHz	—	1.9	3.0	dB
Amplitude ripple (p-p)	$\Delta\alpha$					
	773... 803	MHz	—	0.8	1.8	dB
Maximum VSWR	$\text{VSWR}_{\text{max}}$					
@ TX port	773... 803	MHz	—	1.9	2.2	
@ ANT port	773... 803	MHz	—	1.9	2.2	
Maximum error vector magnitude	$\text{EVM}_{\text{max}}^{3)}$					
	775.4... 800.6	MHz	—	2.0	3.5	%
Average attenuation	$\alpha_{\text{INT,avg}}^{2)}$					
	718... 748	MHz	45	49	—	dB
Minimum attenuation	$\alpha_{\text{min}}$					
	50... 699	MHz	30	38	—	dB
	703... 718	MHz	40	43	—	dB
	718... 748	MHz	45	48	—	dB
	748... 763	MHz	22	28	—	dB
	814... 816	MHz	6	10	—	dB
	816... 818	MHz	10	17	—	dB
	880... 915	MHz	36	42	—	dB
	925... 960	MHz	36	42	—	dB
	1710... 1785	MHz	34	37	—	dB
	1805... 1880	MHz	33	37	—	dB
	1920... 1980	MHz	33	36	—	dB
	2110... 2170	MHz	30	36	—	dB
	2400... 2484	MHz	30	36	—	dB
	2500... 2570	MHz	30	36	—	dB

SAW components	B8036
SAW duplexer	733 / 788 MHz

Data sheet

2620 ... 2690	MHz	25	31	—	dB
5150 ... 5850	MHz	6	9	—	dB

- 1) See Sec. Matching circuit (p. 6).
- 2) Integrated attenuation  $\alpha_{INT}$ : Averaged power  $|S_{ij}|^2$  over the center 4.5 MHz of LTE 5 MHz (25 RB) channels.
- 3) Error Vector Magnitude (EVM) based on definition in 3GPP TS 25.141.

## SAW components

B8036

## SAW duplexer

733 / 788 MHz

## Data sheet

Temperature range for specification	$T_{\text{SPEC}}$	= -40 °C ... +95 °C
TX terminating impedance	$Z_{\text{TX}}$	= 50 $\Omega$
ANT terminating impedance	$Z_{\text{ANT}}$	= 50 $\Omega$ with par. 8.4 nH <sup>1)</sup>
RX terminating impedance	$Z_{\text{RX}}$	= 50 $\Omega$ with ser. 7.7 nH <sup>1)</sup>

Characteristics TX – ANT			min. for $T_{\text{SPEC}}$	typ. @ +25 °C	max. for $T_{\text{SPEC}}$	
Center frequency	$f_{\text{C}}$		—	788	—	MHz
Average insertion attenuation	$\alpha_{\text{INT,avg}}$ <sup>2)</sup>					
	773... 778	MHz	—	1.5	2.5	dB
	778... 798	MHz	—	1.5	2.2	dB
	798... 803	MHz	—	1.6	2.5	dB
Maximum insertion attenuation	$\alpha_{\text{max}}$					
	773... 803	MHz	—	1.9	3.3	dB
Amplitude ripple (p-p)	$\Delta\alpha$					
	773... 803	MHz	—	0.8	2.1	dB
Maximum VSWR	$\text{VSWR}_{\text{max}}$					
@ TX port	773... 803	MHz	—	1.9	2.2	
@ ANT port	773... 803	MHz	—	1.9	2.2	
Maximum error vector magnitude	$\text{EVM}_{\text{max}}$ <sup>3)</sup>					
	775.4... 800.6	MHz	—	2.0	4.5	%
Average attenuation	$\alpha_{\text{INT,avg}}$ <sup>2)</sup>					
	718... 748	MHz	45	49	—	dB
Minimum attenuation	$\alpha_{\text{min}}$					
	50... 699	MHz	30	38	—	dB
	703... 718	MHz	40	43	—	dB
	718... 748	MHz	45	48	—	dB
	748... 763	MHz	22	28	—	dB
	814... 816	MHz	4	10	—	dB
	816... 818	MHz	8	17	—	dB
	880... 915	MHz	36	42	—	dB
	925... 960	MHz	36	42	—	dB
	1710... 1785	MHz	34	37	—	dB
	1805... 1880	MHz	33	37	—	dB
	1920... 1980	MHz	33	36	—	dB
	2110... 2170	MHz	30	36	—	dB
	2400... 2484	MHz	30	36	—	dB
	2500... 2570	MHz	30	36	—	dB
	2620... 2690	MHz	24	31	—	dB
	5150... 5850	MHz	6	9	—	dB

SAW components	B8036
SAW duplexer	733 / 788 MHz

Data sheet

- 1) See Sec. Matching circuit (p. 6).
- 2) Integrated attenuation  $\alpha_{INT}$ : Averaged power  $|S_{ij}|^2$  over the center 4.5 MHz of LTE 5 MHz (25 RB) channels.
- 3) Error Vector Magnitude (EVM) based on definition in 3GPP TS 25.141.

## SAW components

B8036

## SAW duplexer

733 / 788 MHz

## Data sheet

## 6.2 ANT – RX

Temperature range for specification

$$T_{\text{SPEC}} = -10\text{ °C} \dots +85\text{ °C}$$

TX terminating impedance

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

ANT terminating impedance

$$Z_{\text{ANT}} = 50\ \Omega \text{ with par. } 8.4\text{ nH}^{1)}$$

RX terminating impedance

$$Z_{\text{RX}} = 50\ \Omega \text{ with ser. } 7.7\text{ nH}^{1)}$$

## Characteristics ANT – RX

			min. for $T_{\text{SPEC}}$	typ. @ +25 °C	max. for $T_{\text{SPEC}}$	
Center frequency		$f_{\text{C}}$	—	733	—	MHz
Average insertion attenuation		$\alpha_{\text{INT,avg}}^{2)}$				
	718... 723	MHz	—	1.4	3.0	dB
	723... 743	MHz	—	1.8	2.8	dB
	743... 748	MHz	—	1.8	3.0	dB
Maximum insertion attenuation		$\alpha_{\text{max}}$				
	718... 748	MHz	—	2.8	3.6	dB
Amplitude ripple (p-p)		$\Delta\alpha$				
	718... 748	MHz	—	1.6	2.5	dB
Maximum VSWR		VSWR <sub>max</sub>				
@ ANT port	718... 748	MHz	—	1.6	2.2	
@ RX port	718... 748	MHz	—	1.8	2.3	
Maximum error vector magnitude		EVM <sub>max</sub> <sup>3)</sup>				
	720.4... 745.6	MHz	—	3.3	6.0	%
Average attenuation		$\alpha_{\text{INT,avg}}^{2)}$				
	773... 803	MHz	48	56	—	dB
Minimum attenuation		$\alpha_{\text{min}}$				
	50... 698	MHz	28	42	—	dB
	698... 710	MHz	26	31	—	dB
	758... 773	MHz	11	26	—	dB
	773... 803	MHz	47	53	—	dB
	791... 821	MHz	45	56	—	dB
	869... 894	MHz	50	62	—	dB
	925... 960	MHz	50	63	—	dB
	1805... 1880	MHz	50	63	—	dB
	1930... 1995	MHz	50	63	—	dB
	2110... 2170	MHz	50	60	—	dB
	2400... 2484	MHz	50	62	—	dB
	2620... 2690	MHz	50	62	—	dB
	5150... 5850	MHz	45	58	—	dB

<sup>1)</sup> See Sec. Matching circuit (p. 6).

<sup>2)</sup> Integrated attenuation  $\alpha_{\text{INT}}$ : Averaged power  $|S_{ij}|^2$  over the center 4.5 MHz of LTE 5 MHz (25 RB) channels.

SAW components	B8036
SAW duplexer	733 / 788 MHz

Data sheet

<sup>3)</sup> Error Vector Magnitude (EVM) based on definition in 3GPP TS 25.141.

## SAW components

B8036

## SAW duplexer

733 / 788 MHz

## Data sheet

Temperature range for specification	$T_{\text{SPEC}}$	= -40 °C ... +95 °C
TX terminating impedance	$Z_{\text{TX}}$	= 50 $\Omega$
ANT terminating impedance	$Z_{\text{ANT}}$	= 50 $\Omega$ with par. 8.4 nH <sup>1)</sup>
RX terminating impedance	$Z_{\text{RX}}$	= 50 $\Omega$ with ser. 7.7 nH <sup>1)</sup>

Characteristics ANT – RX			min. for $T_{\text{SPEC}}$	typ. @ +25 °C	max. for $T_{\text{SPEC}}$	
Center frequency	$f_{\text{C}}$		—	733	—	MHz
Average insertion attenuation	$\alpha_{\text{INT,avg}}$ <sup>2)</sup>					
	718... 723	MHz	—	1.4	3.0	dB
	723... 743	MHz	—	1.8	2.8	dB
	743... 748	MHz	—	1.8	3.0	dB
Maximum insertion attenuation	$\alpha_{\text{max}}$					
	718... 748	MHz	—	2.8	4.3	dB
Amplitude ripple (p-p)	$\Delta\alpha$					
	718... 748	MHz	—	1.6	3.2	dB
Maximum VSWR	$\text{VSWR}_{\text{max}}$					
@ ANT port	718... 748	MHz	—	1.6	2.5	
@ RX port	718... 748	MHz	—	1.8	2.8	
Maximum error vector magnitude	$\text{EVM}_{\text{max}}$ <sup>3)</sup>					
	720.4... 745.6	MHz	—	3.2	8.0	%
Average attenuation	$\alpha_{\text{INT,avg}}$ <sup>2)</sup>					
	773... 803	MHz	48	56	—	dB
Minimum attenuation	$\alpha_{\text{min}}$					
	50... 698	MHz	28	42	—	dB
	698... 710	MHz	26	31	—	dB
	758... 773	MHz	7	26	—	dB
	773... 803	MHz	47	53	—	dB
	791... 821	MHz	45	56	—	dB
	869... 894	MHz	50	62	—	dB
	925... 960	MHz	50	63	—	dB
	1805... 1880	MHz	50	63	—	dB
	1930... 1995	MHz	50	63	—	dB
	2110... 2170	MHz	50	60	—	dB
	2400... 2484	MHz	50	62	—	dB
	2620... 2690	MHz	50	62	—	dB
	5150... 5850	MHz	45	58	—	dB

<sup>1)</sup> See Sec. Matching circuit (p. 6).

<sup>2)</sup> Integrated attenuation  $\alpha_{\text{INT}}$ : Averaged power  $|S_{ij}|^2$  over the center 4.5 MHz of LTE 5 MHz (25 RB) channels.

<sup>3)</sup> Error Vector Magnitude (EVM) based on definition in 3GPP TS 25.141.

SAW components	B8036
SAW duplexer	733 / 788 MHz

Data sheet

6.3 TX – RX

Temperature range for specification	$T_{SPEC}$	= -10 °C ... +85 °C
TX terminating impedance	$Z_{TX}$	= 50 Ω
ANT terminating impedance	$Z_{ANT}$	= 50 Ω with par. 8.4 nH <sup>1)</sup>
RX terminating impedance	$Z_{RX}$	= 50 Ω with ser. 7.7 nH <sup>1)</sup>

Characteristics TX – RX			min. for $T_{SPEC}$	typ. @ +25 °C	max. for $T_{SPEC}$	
Average isolation	$\alpha_{INT,avg}$ <sup>2)</sup>					
	718... 748	MHz	49	51	—	dB
	773... 803	MHz	51	55	—	dB
Minimum isolation	$\alpha_{min}$					
	718... 748	MHz	49	51	—	dB
	773... 803	MHz	50	53	—	dB

1) See Sec. Matching circuit (p. 6).  
2) Integrated attenuation  $\alpha_{INT}$ : Averaged power  $|S_{ij}|^2$  over the center 4.5 MHz of LTE 5 MHz (25 RB) channels.



SAW componentsB8036

SAW duplexer733 / 788 MHz

Data sheet

Temperature range for specification	$T_{SPEC}$	= -40 °C ... +95 °C
TX terminating impedance	$Z_{TX}$	= 50 $\Omega$
ANT terminating impedance	$Z_{ANT}$	= 50 $\Omega$ with par. 8.4 nH <sup>1)</sup>
RX terminating impedance	$Z_{RX}$	= 50 $\Omega$ with ser. 7.7 nH <sup>1)</sup>

Characteristics TX – RX			min. for $T_{SPEC}$	typ. @ +25 °C	max. for $T_{SPEC}$	
Average isolation		$\alpha_{INT,avg}$ <sup>2)</sup>				
	718... 748	MHz	49	51	—	dB
	773... 803	MHz	51	55	—	dB
Minimum isolation		$\alpha_{min}$				
	718... 748	MHz	49	51	—	dB
	773... 803	MHz	50	53	—	dB

1) See Sec. Matching circuit (p. 6).  
2) Integrated attenuation  $\alpha_{INT}$ : Averaged power  $|S_{ij}|^2$  over the center 4.5 MHz of LTE 5 MHz (25 RB) channels.

## SAW components

B8036

## SAW duplexer

733 / 788 MHz

## Data sheet

## 7 Maximum ratings

Operable temperature	$T_{OP} = -40\text{ °C} \dots +95\text{ °C}$	
Storage temperature	$T_{STG}^{1)} = -40\text{ °C} \dots +95\text{ °C}$	
DC voltage	$ V_{DC} ^{2)} = 0\text{ V (max.)}$	
ESD voltage		
	$V_{ESD}^{3)} = 100\text{ V (max.)}$	Machine model.
	$V_{ESD}^{4)} = 225\text{ V (max.)}$	Human body model.
Input power	$P_{IN}$	
@ TX port: 773 ... 803 MHz	30 dBm <sup>5), 6)</sup>	5 MHz LTE downlink signal (25 RB) for 100000 h @ 55 °C. $P_{IN}$ average – 41 dBm peak. Source and load impedance 50Ω.
@ RX port: 718 ... 748 MHz	27 dBm <sup>5)</sup>	5 MHz LTE uplink signal (25 RB) for 5000 h @ 55 °C. $P_{IN}$ average – 38 dBm peak. Source and load impedance 50Ω.
Operating lifetime with output power at antenna 773 ... 803 MHz	$P_{OUT}^{7)} = 24\text{ dBm}$	Continuous wave for 100000 h @ 55 °C. Source and load impedance 50Ω.

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

<sup>2)</sup> In case of applied DC voltage blocking capacitors are mandatory.

<sup>3)</sup> According to JESD22-A115B (MM – Machine Model), 10 negative & 10 positive pulses.

<sup>4)</sup> According to JESD22-A114F (HBM – Human Body Model), 1 negative & 1 positive pulse.

<sup>5)</sup> Expected lifetime according to accelerated power durability test and wear out models.

<sup>6)</sup>  $T_{SPEC}$  is the ambient temperature of the PCB at component position. Specified min./max values from section 6 "characteristics" for maximum input power 30dBm are valid for temperature up to 56.5°C.

<sup>7)</sup> According to accelerated high temperature operating life (HTOL) test.

SAW components	B8036
SAW duplexer	733 / 788 MHz

Data sheet

8 Transmission coefficients

8.1 TX – ANT

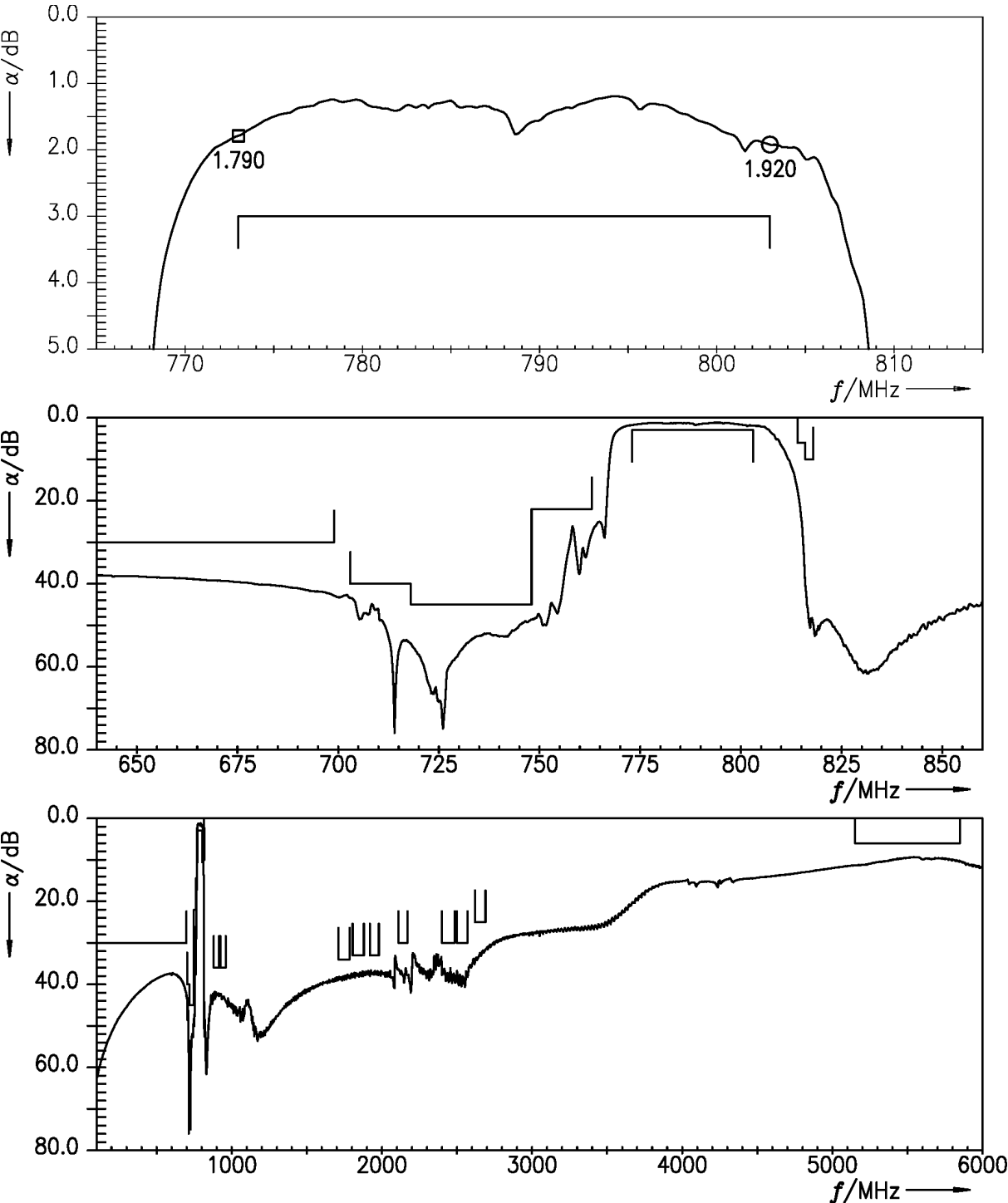


Figure 4: Attenuation TX – ANT.

## Data sheet

## 8.2 ANT – RX

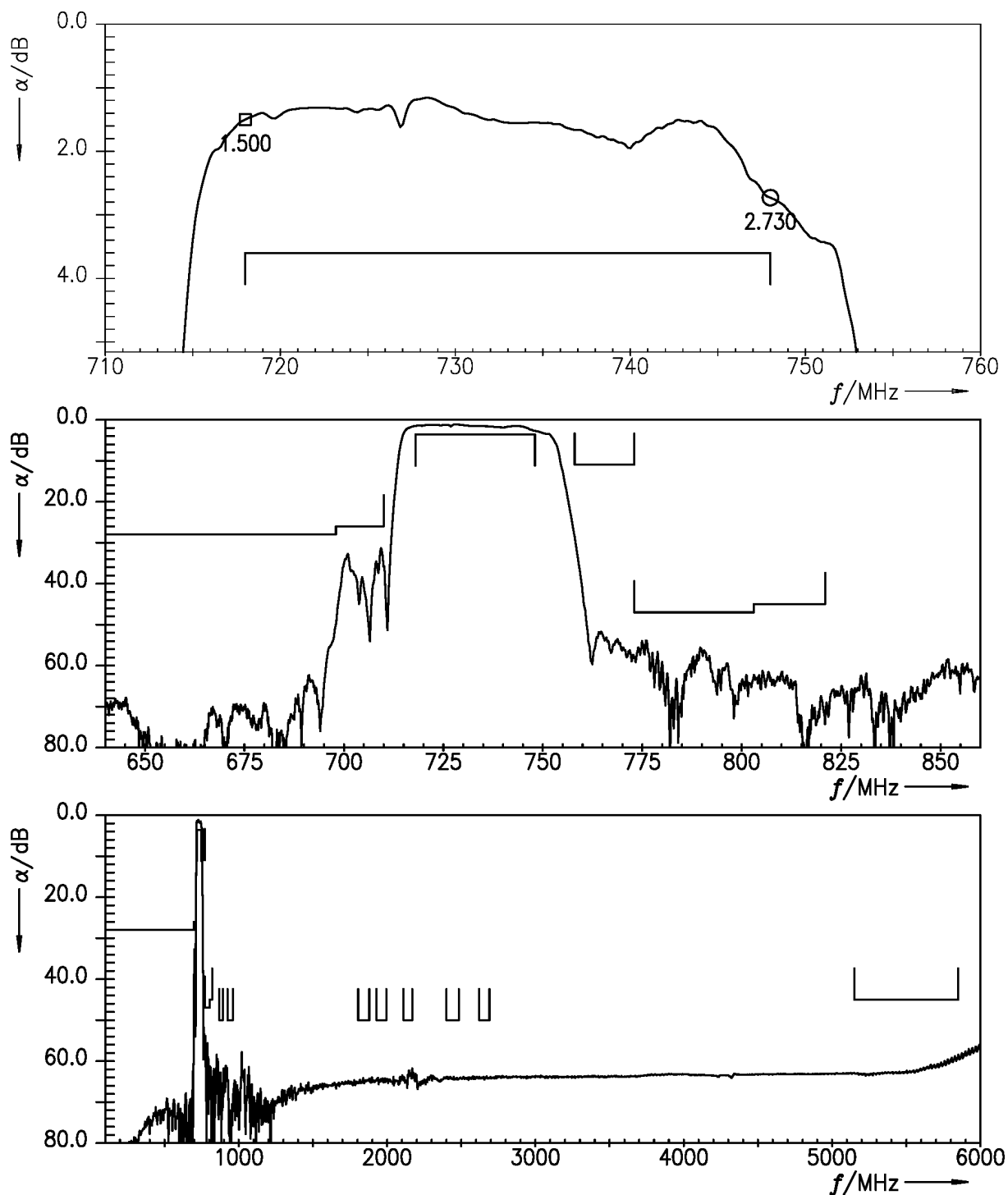


Figure 5: Attenuation ANT – RX.

Data sheet

8.3 TX – RX

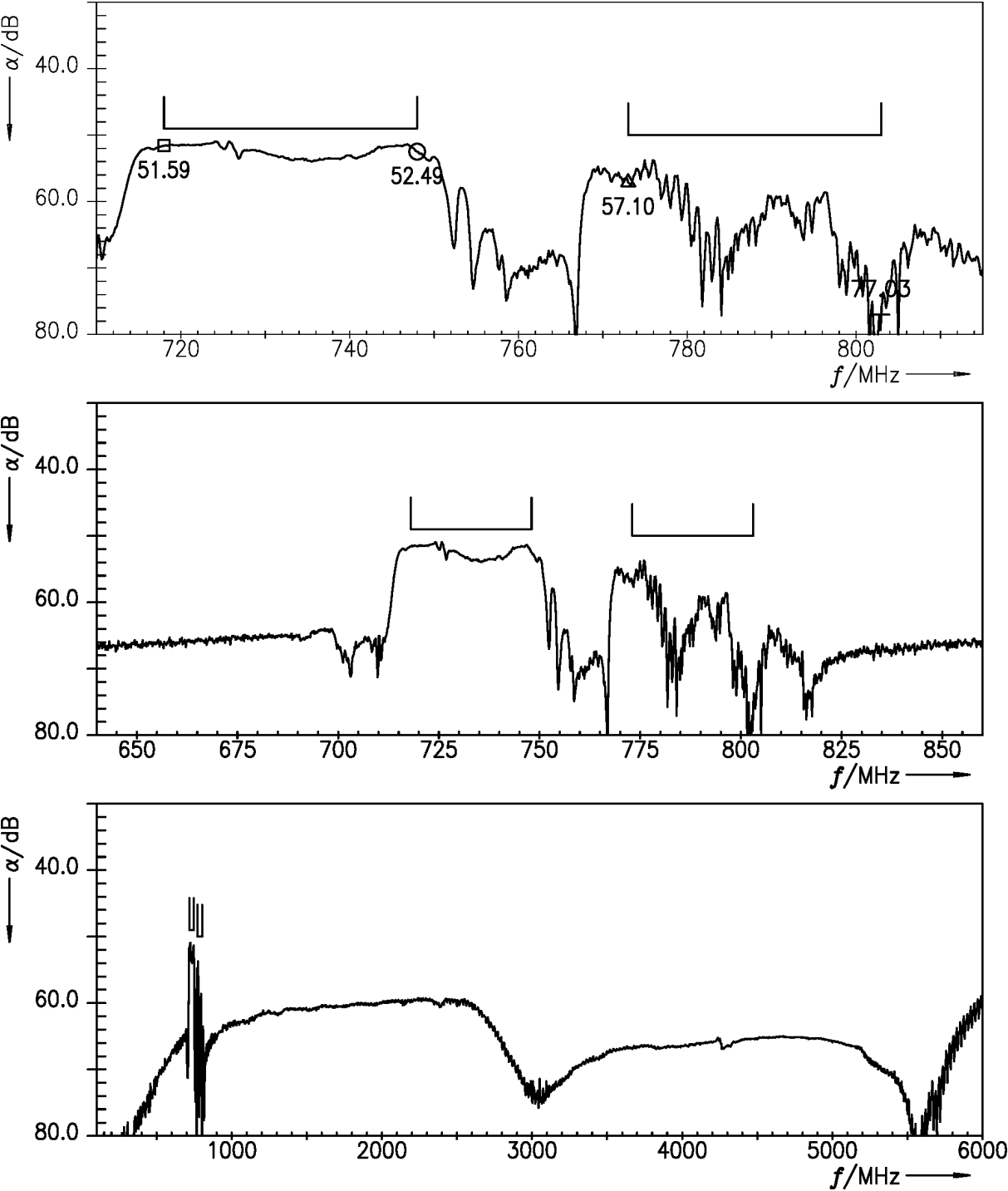


Figure 6: Isolation TX – RX.

Data sheet

9 Reflection coefficients

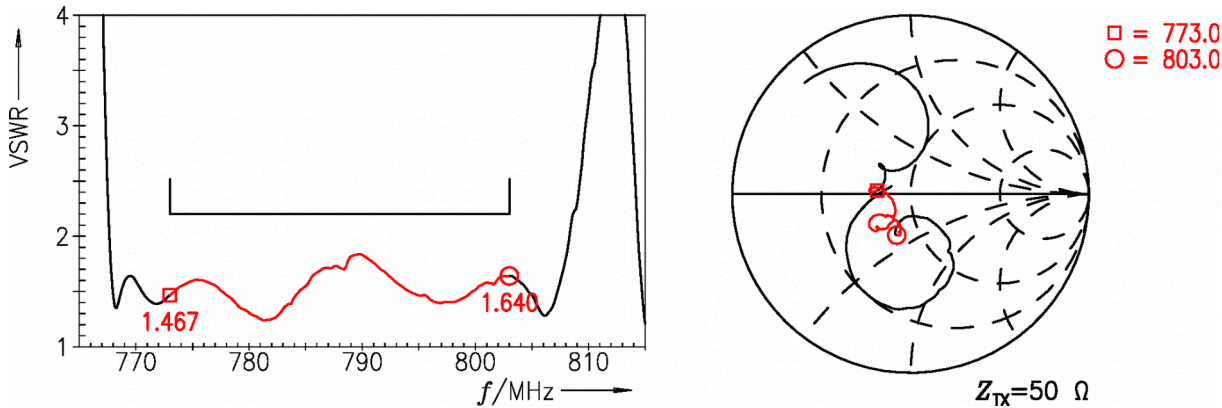


Figure 7: Reflection coefficient at TX port.

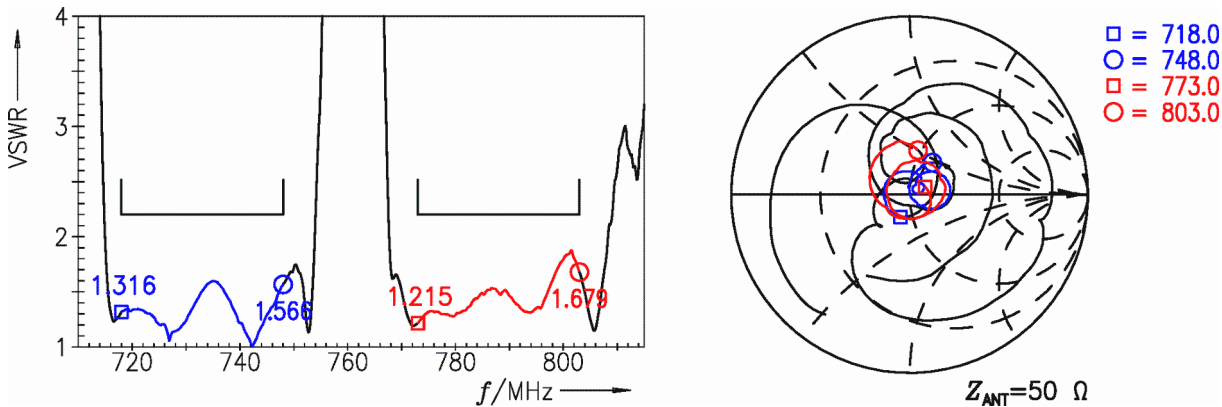


Figure 8: Reflection coefficient at ANT port.

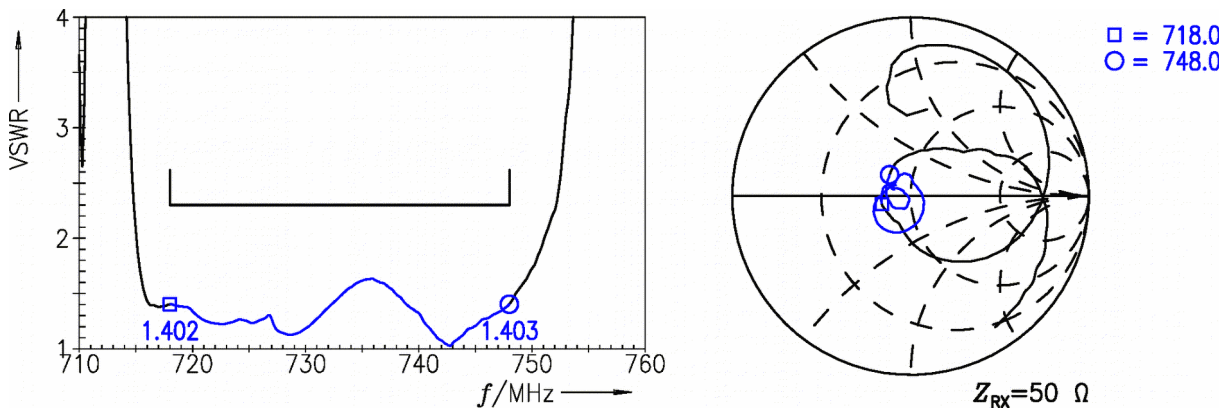


Figure 9: Reflection coefficient at RX port.

SAW components	B8036
SAW duplexer	733 / 788 MHz

Data sheet

10 EVMs

10.1 TX – ANT

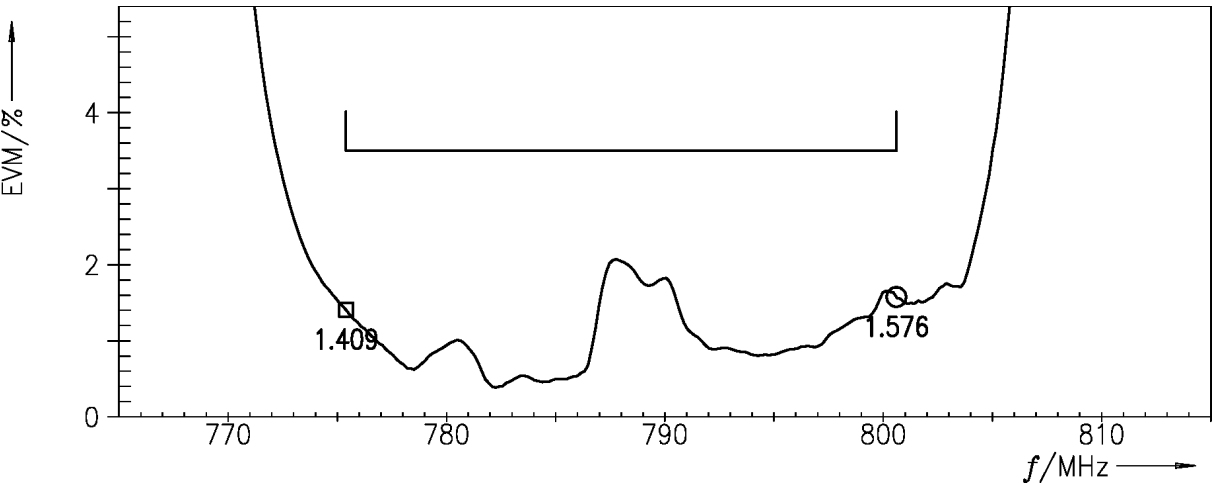


Figure 10: Error vector magnitude TX – ANT.

SAW components	B8036
SAW duplexer	733 / 788 MHz

Data sheet

10.2 ANT – RX

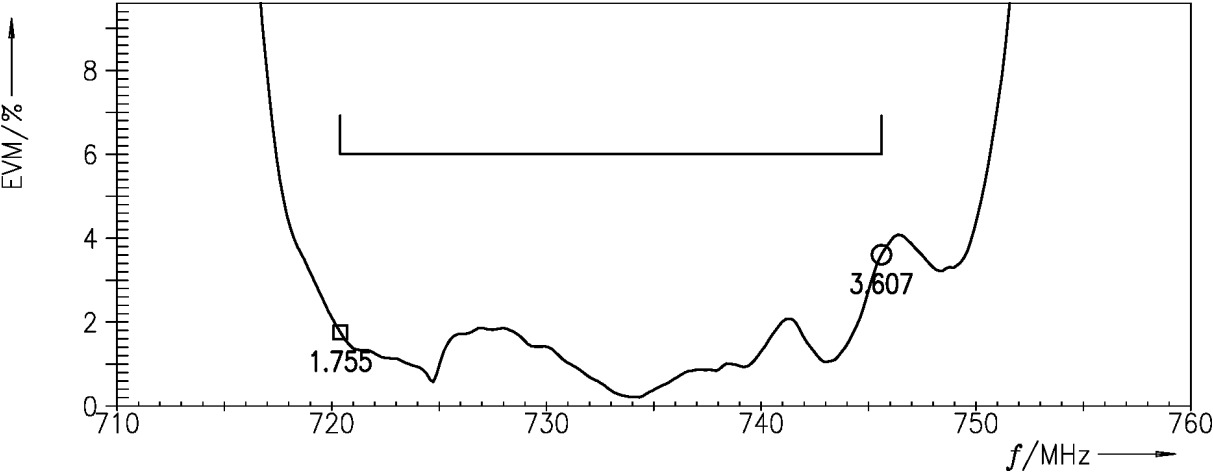


Figure 11: Error vector magnitude ANT – RX.



Data sheet

11 Packing material

11.1 Tape

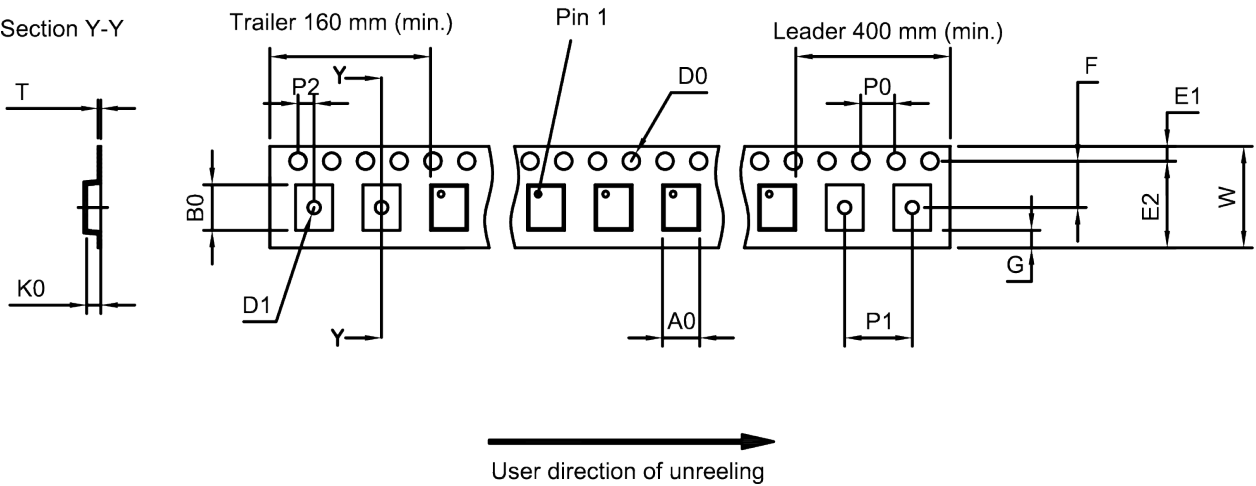


Figure 12: Drawing of tape (first-angle projection) with tape dimensions according to Table 1.

A <sub>0</sub>	2.25±0.05 mm	E <sub>2</sub>	6.25 mm (min.)	P <sub>1</sub>	4.0±0.1 mm
B <sub>0</sub>	2.75±0.05 mm	F	3.5±0.05 mm	P <sub>2</sub>	2.0±0.05 mm
D <sub>0</sub>	1.5+0.1/-0 mm	G	0.75 mm (min.)	T	0.25±0.03 mm
D <sub>1</sub>	1.0 mm (min.)	K <sub>0</sub>	0.6±0.05 mm	W	8.0+0.3/-0.1 mm
E <sub>1</sub>	1.75±0.1 mm	P <sub>0</sub>	4.0±0.1 mm		

Table 1: Tape dimensions.

SAW components	B8036
SAW duplexer	733 / 788 MHz

Data sheet

11.2 Reel with diameter of 180 mm

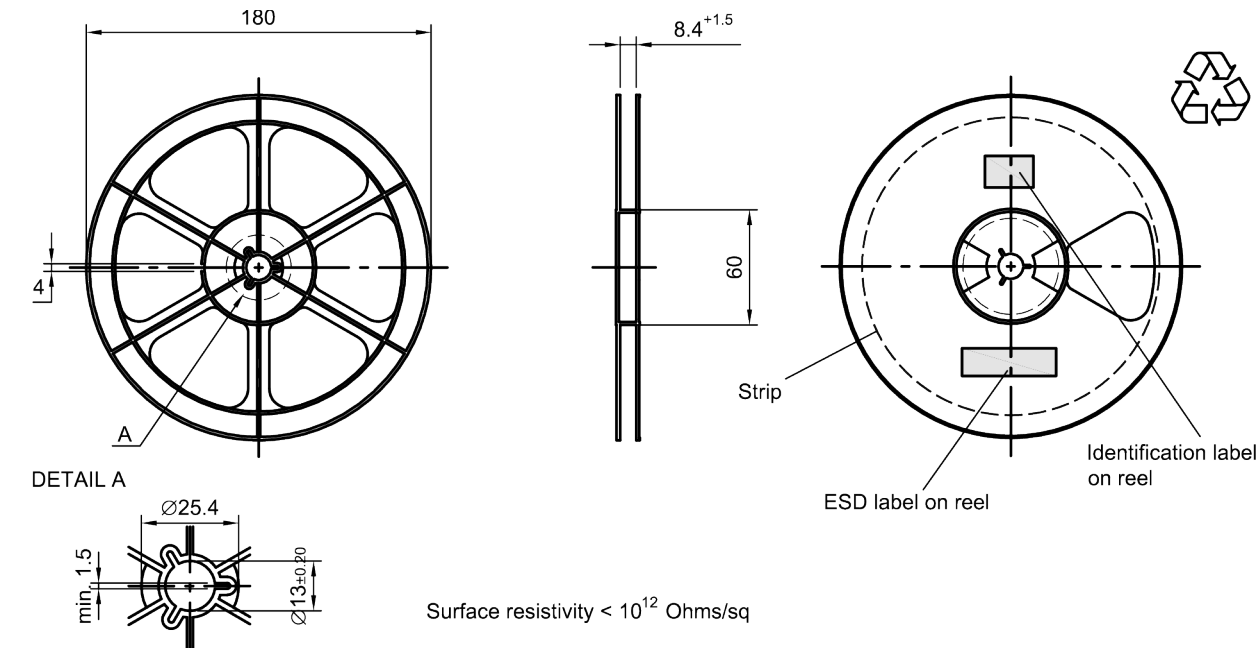


Figure 13: Drawing of reel (first-angle projection) with diameter of 180 mm.

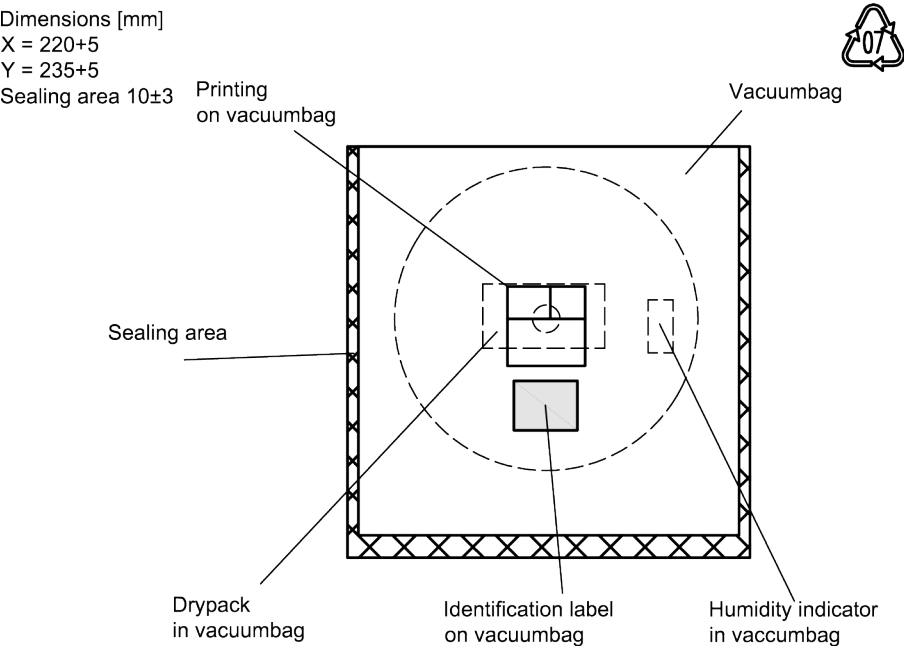


Figure 14: Drawing of moisture barrier bag (MBB) for reel with diameter of 180 mm.

## SAW components

B8036

## SAW duplexer

733 / 788 MHz

## Data sheet

Dimensions [mm]

L = 188

B = 188

H = 30

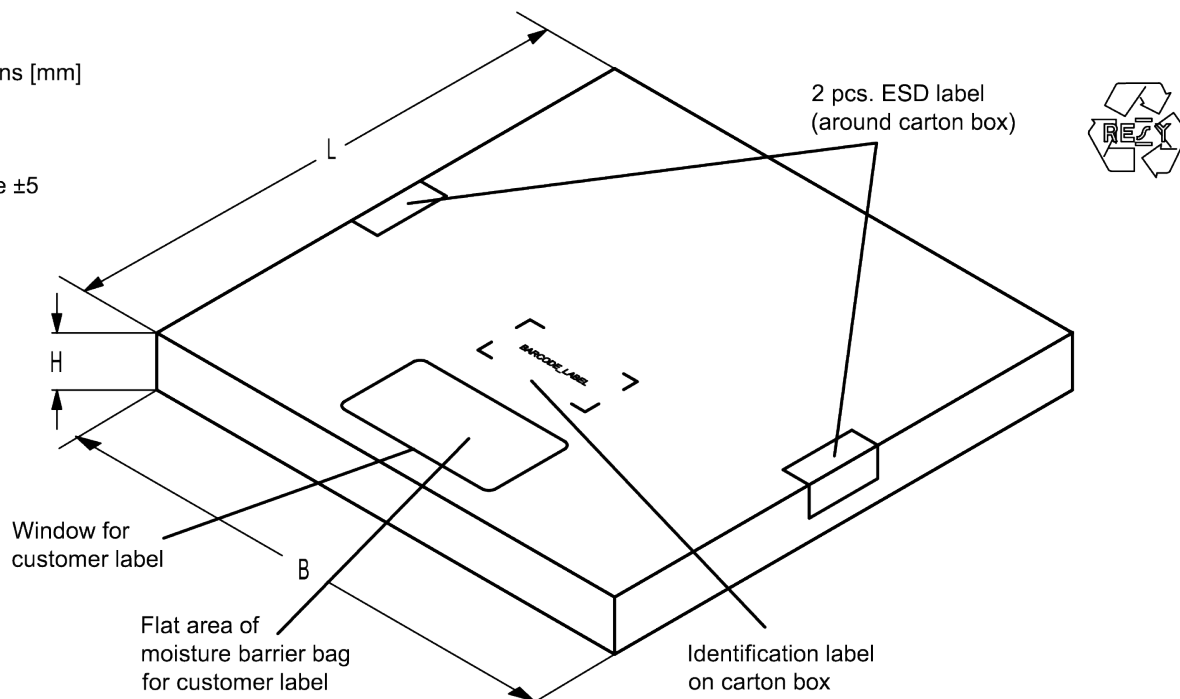
Tolerance  $\pm 5$ 

Figure 15: Drawing of folding box for reel with diameter of 180 mm.

## 11.3 Reel with diameter of 330 mm

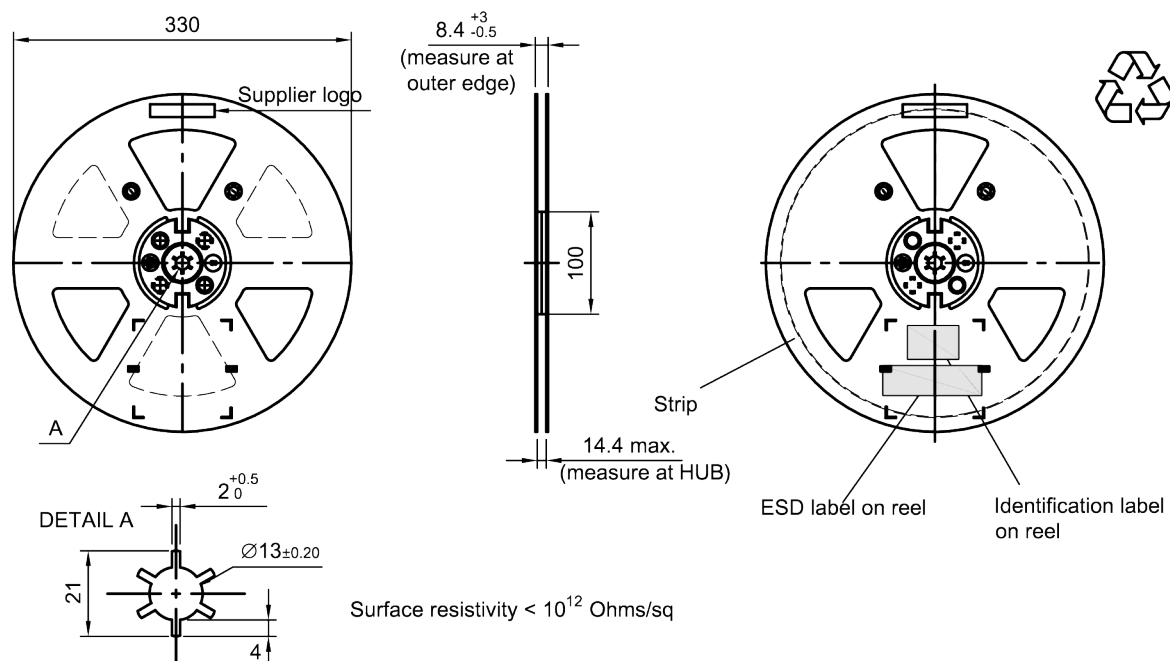


Figure 16: Drawing of reel (first-angle projection) with diameter of 330 mm.

## SAW components

B8036

## SAW duplexer

733 / 788 MHz

## Data sheet

Dimensions [mm]

X = 400±5

Y = 418±5

Sealing area 10±3

Printing  
on vacuumbag

Sealing area

Drypack  
in vacuumbagIdentification label  
on vacuumbag

Vacuumbag

Humidity indicator  
in vacuumbag

**Figure 17:** Drawing of moisture barrier bag (MBB) for reel with diameter of 330 mm.

Dimensions [mm]

L = 335

B = 338

H = 36 ( for 8 mm tape width)

40 ( for 12 mm tape width)

Tolerance ±5

2 pcs. ESD label  
(around carton box)Window for  
customer labelFlat area of  
moisture barrier bag  
for customer labelIdentification label  
on carton box

In case of modules with  
additional printing  
for badge number  
on the upper right side  
on the top of the carton box.

**Figure 18:** Drawing of folding box for reel with diameter of 330 mm.

## SAW components

B8036

## SAW duplexer

733 / 788 MHz

## Data sheet

## 12 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.
<b>16J</b>	<b>=&gt;</b>	<b>1234</b>
$1 \times 32^2 + 6 \times 32^1 + 18 (=J) \times 32^0$	<b>=</b>	<b>1234</b>

The BASE32 code for product type B8036 is 7V4.

## ■ 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.
<b>5UY</b>	<b>=&gt;</b>	<b>12345</b>
$5 \times 47^2 + 27 (=U) \times 47^1 + 31 (=Y) \times 47^0$	<b>=</b>	<b>12345</b>

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.

SAW components	B8036
SAW duplexer	733 / 788 MHz

Data sheet

13 Soldering profile

The recommended soldering process is in accordance with IEC 60068-2-58 – 3<sup>rd</sup> 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 <sub>peak</sub>	250 °C +0/-5 °C
wetting temperature T <sub>min</sub>	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).

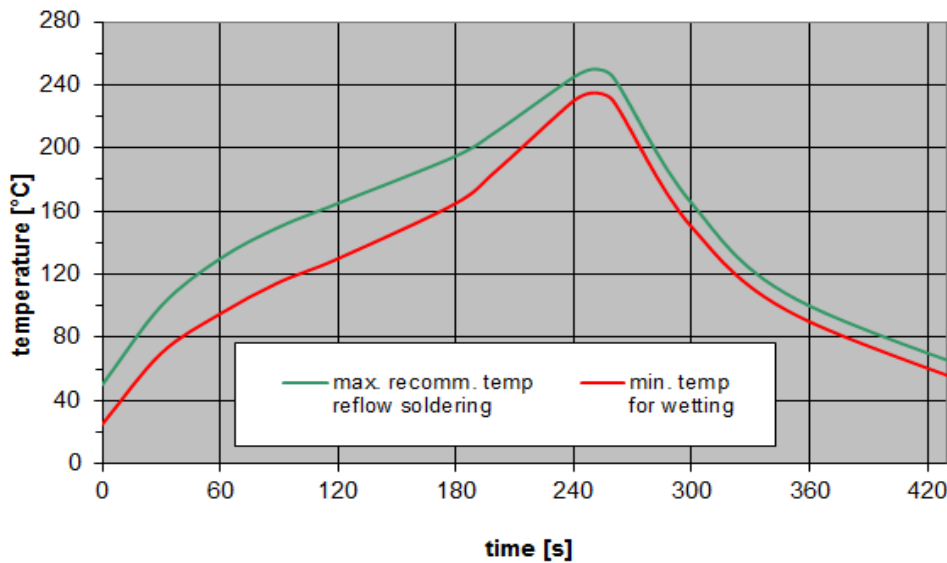


Figure 19: Recommended reflow profile for convection and infrared soldering – lead-free solder.

**SAW components****B8036****SAW duplexer****733 / 788 MHz**

Data sheet

**14 Annotations****14.1 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>.

**14.2 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.

**14.3 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.

**14.4 Ordering codes and packing units**

Ordering code	Packing unit
B39791B8036P810	5000 pcs

**Table 4:** Ordering codes and packing units.

Data sheet

## 15 Cautions and warnings

### 15.1 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](http://www.rf360jv.com/orderingcodes).

### 15.2 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.

### 15.3 Moldability

Before using in overmolding environment, please contact your local RF360 sales office.

### 15.4 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).

Dimensions do not include burrs.

#### Projection method

Unless otherwise specified first-angle projection is applied.



## Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule, RF360 Europe GmbH and its affiliates are either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an RF360 product with the properties described in the product specification is suitable for use in a particular customer application.
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.**
4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as hazardous)**. Useful information on this will be found in our Material Data Sheets on the Internet ([www.rf360jv.com/material](http://www.rf360jv.com/material)). Should you have any more detailed questions, please contact our sales offices.
5. We constantly strive to improve our products. Consequently, **the products described in this publication may change from time to time**. The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order. We also **reserve the right to discontinue production and delivery of products**. Consequently, we cannot guarantee that all products named in this publication will always be available.  
The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.