



SAW Components

SAW Duplexer

LTE Band 20

Series/type:	B7679
Ordering code:	B39851B7679A710
Date:	December 14, 2010
Version:	2.0



SAW Components

B7679

SAW Duplexer

847.0 / 806.0 MHz

Data sheet



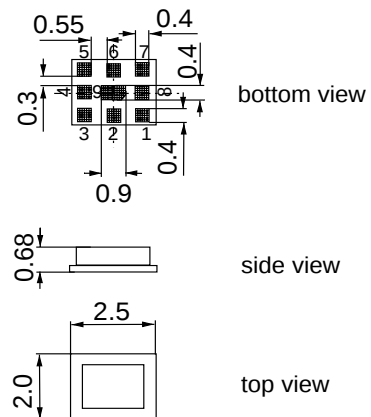
Application

- Low-loss SAW duplexer for LTE Band 20 systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 30 MHz
- Single-ended to balanced transformation in Antenna-Rx path
- Impedance transformation 50 Ω to 100 Ω in Antenna-Rx path
- Very small size and low height



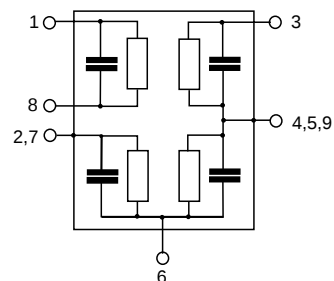
Features

- Package size 2.5 * 2.0 * 0.68 mm³
- RoHS compatible
- Approximate weight 0.013 g
- Package for **Surface Mount Technology (SMT)**
- Ni, Au-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- Moisture Sensitivity Level 3



Pin configuration

- 3 Tx input
- 1, 8 Rx output (balanced)
- 6 Antenna
- 2, 4, 5, 7, 9 To be grounded





SAW Components

B7679

SAW Duplexer

847.0 / 806.0 MHz

Data sheet



Characteristics

Temperature range for specification:

$T = -30\text{ °C to }+85\text{ °C}$

TX terminating impedance:

$Z_{Tx} = 50\ \Omega$

ANT terminating impedance:

$Z_{Ant} = 50\ \Omega \parallel 8.2\text{ nH}$

RX terminating impedance:

$Z_{Rx} = 100\ \Omega\text{ (balanced)} \parallel 56\text{ nH}$

Characteristics Tx-Antenna

		min.	typ. @ 25 °C	max.	
Center frequency	f_c		847.0		MHz
Maximum insertion attenuation	α				CTQ
832.1 ... 861.9 MHz ¹⁾			2.7	3.0	dB
836.1 ... 857.9 MHz			2.2	2.9	dB
832.1 ... 861.9 MHz			2.7	3.4	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
832.1 ... 861.9 MHz ²⁾			1.4	1.8	dB
832.1 ... 861.9 MHz			1.4	2.2	dB
Error Vector Magnitude	EVM				
5 MHz Channel @ $f_{Carrier}$ 834.6...859.4MHz ³⁾			2.6	6.0	%
20 MHz Channel @ $f_{Carrier}$ 842.1...851.9MHz ⁴⁾			10	16	%
Input VSWR (Tx port)					
832.0 ... 862.0 MHz			1.8	2.1	
Output VSWR (Ant Port)					
832.0 ... 862.0 MHz			1.9	2.1	

¹⁾ in 0C-60C temperature range

²⁾ in 0C-60C temperature range

³⁾ Computed with 4 MHz square signal

⁴⁾ Computed with 18 MHz square signal



SAW Components	B7679
SAW Duplexer	847.0 / 806.0 MHz

Data sheet



Characteristics Tx-Antenna					min.	typ. @ 25 °C	max.	
Absolute attenuation								
				α				
0.3	...	791.0	MHz		35	38		dB
791.1	...	820.0	MHz		45	52		dB
820.0	...	820.9	MHz		43	60		dB
873.0	...	875.0	MHz		15	45		dB
875.0	...	903.0	MHz		35	50		dB
1560.0	...	1590.0	MHz		30	55		dB
1654.0	...	1734.0	MHz		35	55		dB
2400.0	...	2483.0	MHz		30	40		dB
2476.0	...	2606.0	MHz		30	40		dB
3298.0	...	3478.0	MHz		30	38		dB
4000.0	...	4500.0	MHz		20	30		dB
4500.0	...	5000.0	MHz		10	20		dB
5000.0	...	6000.0	MHz		5	12		dB



SAW Components	B7679
SAW Duplexer	847.0 / 806.0 MHz

Data sheet



Characteristics

Temperature range for specification:	T = -30 °C to +85 °C
TX terminating impedance:	Z _{Tx} = 50 Ω
ANT terminating impedance:	Z _{Ant} = 50 Ω 8.2 nH
RX terminating impedance:	Z _{Rx} = 100 Ω (balanced) 56 nH

Characteristics Antenna-Rx		min.	typ. @ 25 °C	max.	
Center frequency	f _c		806.0		MHz
Maximum insertion attenuation	α				CTQ
791.1 ... 793.0 MHz ¹⁾			2.6	4.0	dB
793.0 ... 820.9 MHz ²⁾			2.6	3.5	dB
791.1 ... 820.9 MHz			2.6	4.0	dB
Amplitude ripple	α				
791.1 ... 820.9 MHz ³⁾			1.4	2.7	dB
791.1 ... 820.9 MHz			1.4	2.7	dB
Error Vector Magnitude					
5 MHz Channel @ f _{Carrier}			3.1	8	%
793.6 ... 818.4 MHz ⁴⁾					
20 MHz Channel @ f _{Carrier}			6.2	16	%
801.1 ... 810.9 MHz ⁵⁾					
Input VSWR (Ant port)					
791.0 ... 821.0 MHz			1.7	2.1	
Output VSWR (Rx Port)					
791.0 ... 821.0 MHz			1.8	2.1	
Common mode rejection ratio					
791.0 ... 821.0 MHz		23	25		dB

¹⁾ in 0C-60C temperature range

²⁾ in 0C-60C temperature range

³⁾ in 0C-60C temperature range

⁴⁾ Computed with 5 MHz square signal

⁵⁾ Computed with 18 MHz square signal



SAW Components	B7679
SAW Duplexer	847.0 / 806.0 MHz

Data sheet



Characteristics Antenna-Rx					min.	typ. @ 25 °C	max.	
Absolute attenuation								
				α				
	0.3	...	750.0	MHz	40	53		dB
	832.1	...	833.0	MHz	41	50		dB
	833.0	...	862.0	MHz	47	51		dB
	873.0	...	903.0	MHz	41	48		dB
	1000.0	...	3000.0	MHz	40	50		dB
	3000.0	...	6000.0	MHz	30	45		dB

Characteristics Tx-Rx					min.	typ. @ 25 °C	max.	
Differential mode isolation								
				α				
	791.1	...	820.0	MHz	48	54		dB
	820.0	...	820.9	MHz	46	58		dB
	832.1	...	833.0	MHz	47	55		dB
	833.0	...	861.9	MHz	49	55		dB
Common mode isolation								
				α				
	832.1	...	861.9	MHz	53	63		dB



SAW Components

B7679

SAW Duplexer

847.0 / 806.0 MHz

Data sheet



Maximum Ratings

Storage temperature range	T_{stg}	-40/+85	°C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	500 ¹⁾	V	CD model, 3 pulses
ESD voltage	V_{ESD}	250 ²⁾	V	HB model, 1 pulse
ESD voltage	V_{ESD}	100 ³⁾	V	M model, 1 pulse
Input power at Tx Port				
834.5 ...859.5 MHz	P_{in}	28	dBm	} LTE uplink signal 55 °C, 50000h
elsewhere	P_{in}	10	dBm	

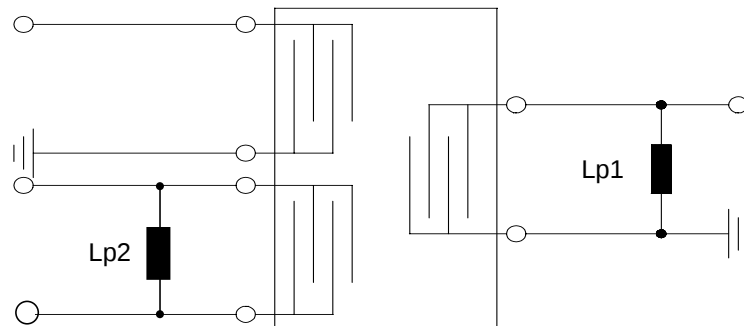
¹⁾ According to JESD22-C101 (Charged Device model), 3 negative and 3 positive pulses.

²⁾ According to JESD22-A114E (Human Body model), 1 negative and 1 positive pulses.

³⁾ According to JESD22-A115A (Machine model), 1 negative and 1 positive pulses.

Matching network (element values depend on PCB layout)

$L_{p1} = 8.2 \text{ nH}$, $L_{p2} = 56 \text{ nH}$





SAW Components

B7679

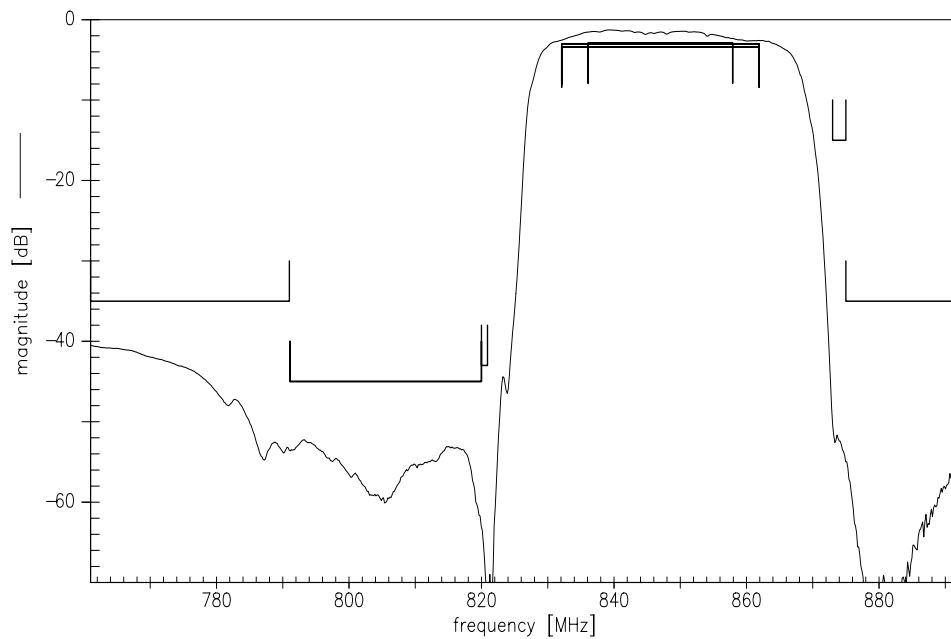
SAW Duplexer

847.0 / 806.0 MHz

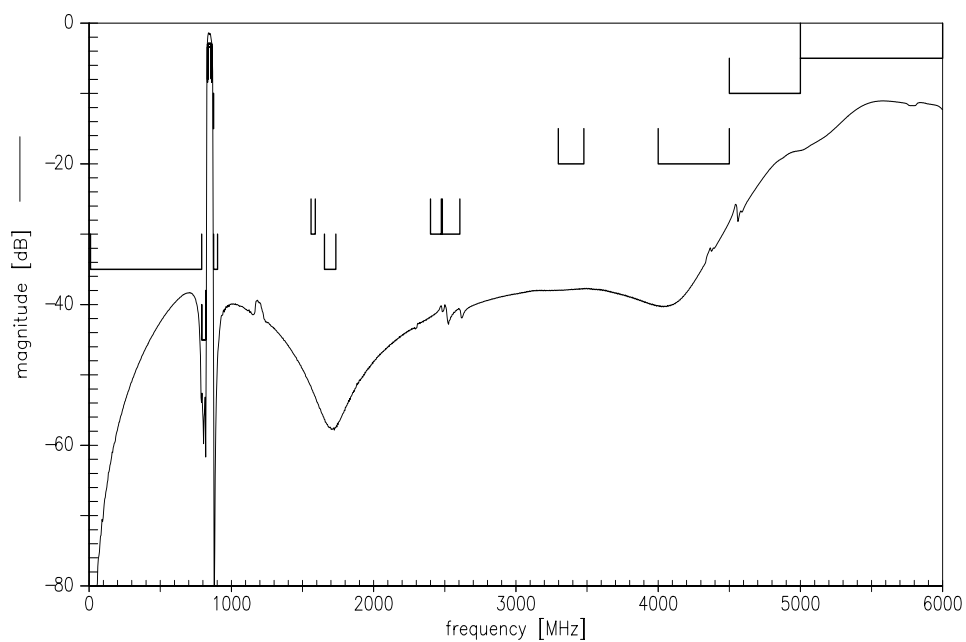
Data sheet



Frequency Response TX-ANT



Frequency Response TX-ANT



Please read *cautions and warnings* and *important notes* at the end of this document.



SAW Components

B7679

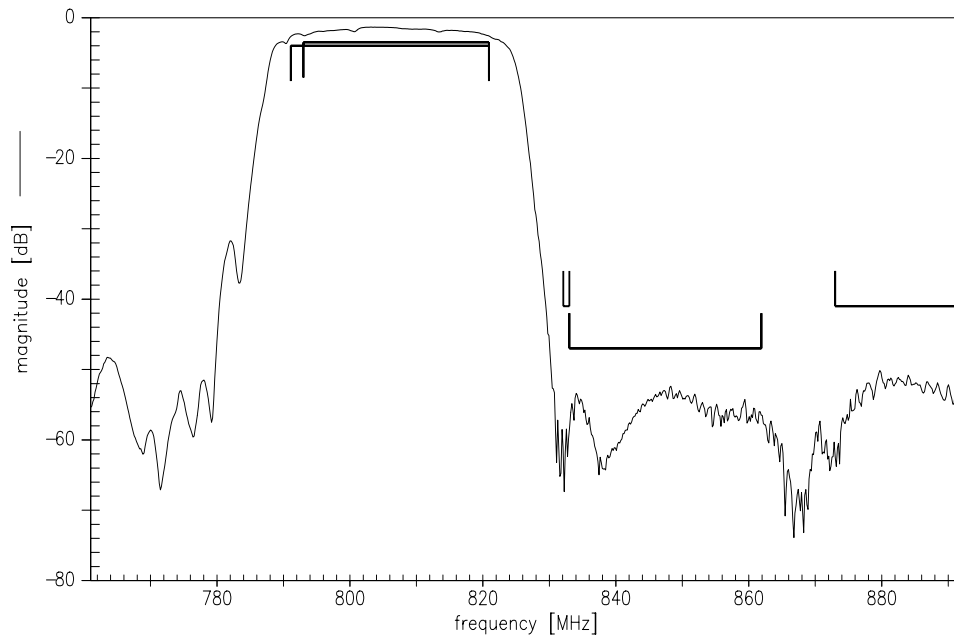
SAW Duplexer

847.0 / 806.0 MHz

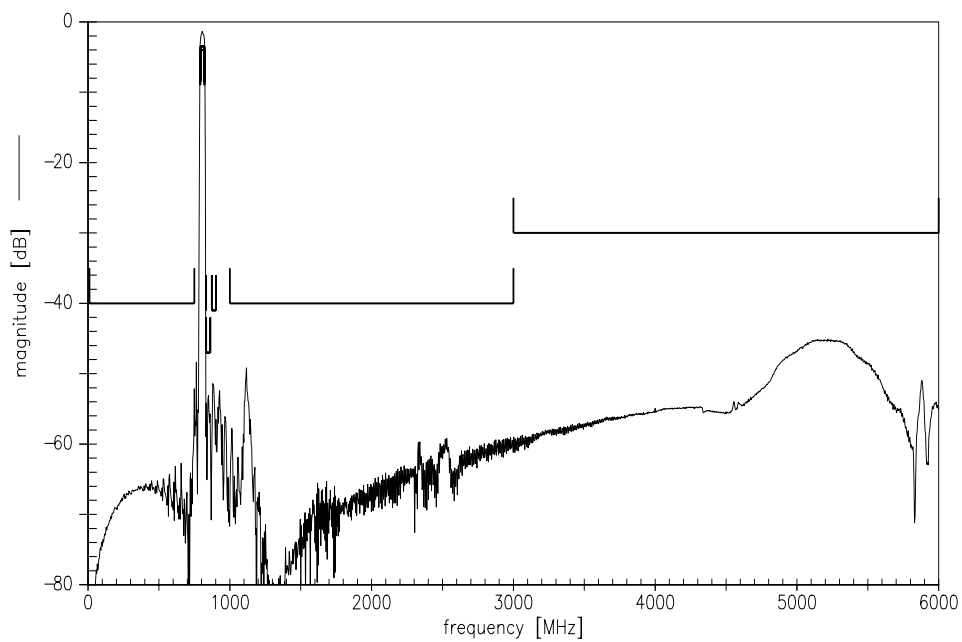
Data sheet



Frequency Response ANT-RX



Frequency Response ANT-RX



Please read *cautions and warnings* and *important notes* at the end of this document.



SAW Components

B7679

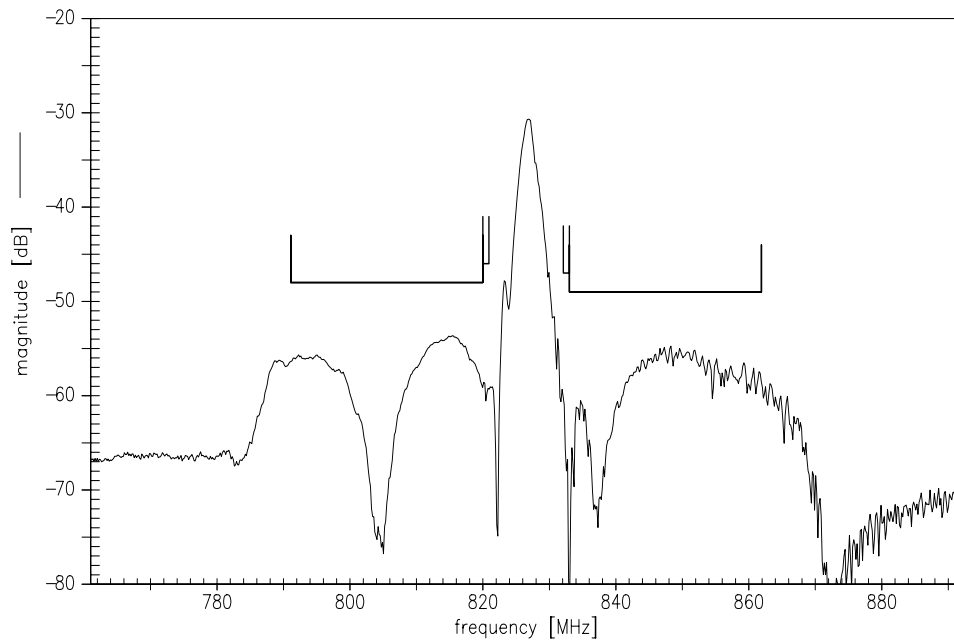
SAW Duplexer

847.0 / 806.0 MHz

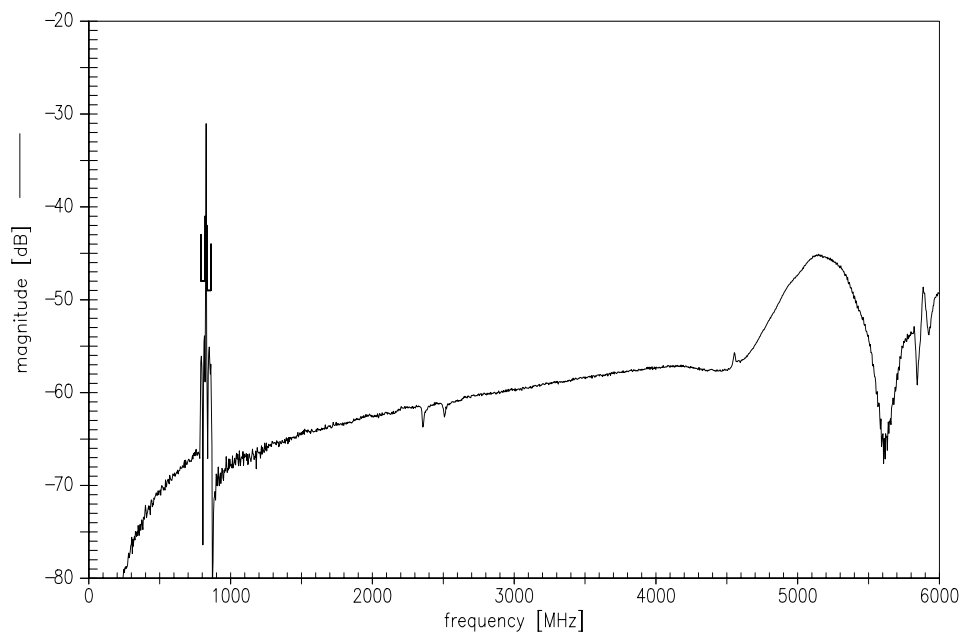
Data sheet



Frequency Response TX-RX



Frequency Response TX-RX



Please read *cautions and warnings* and *important notes* at the end of this document.



SAW Components

B7679

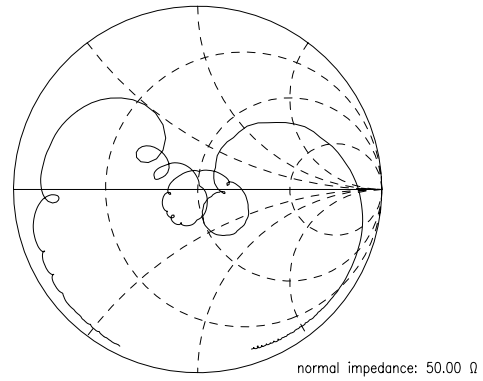
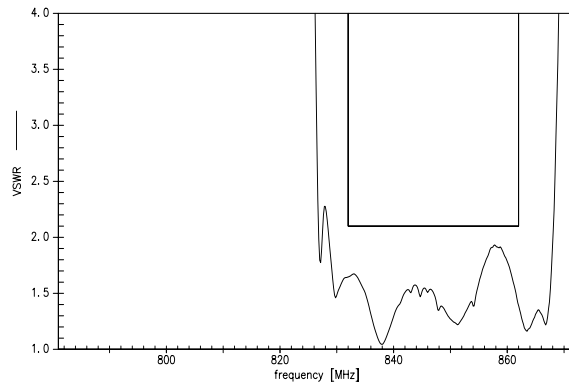
SAW Duplexer

847.0 / 806.0 MHz

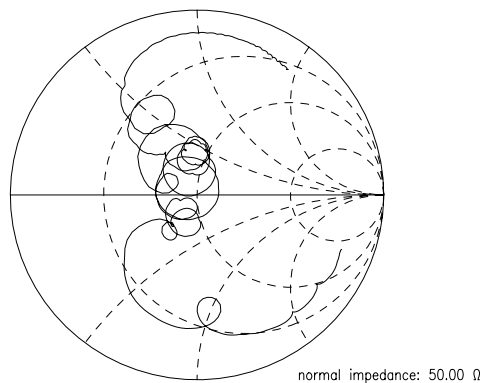
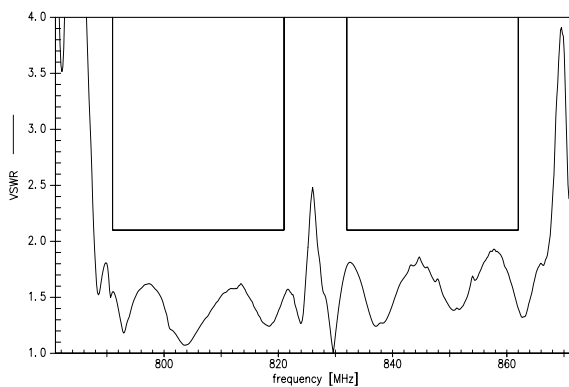
Data sheet



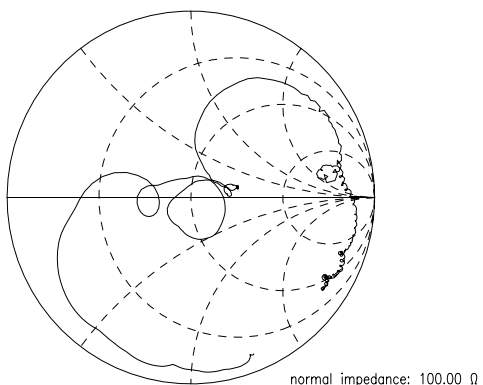
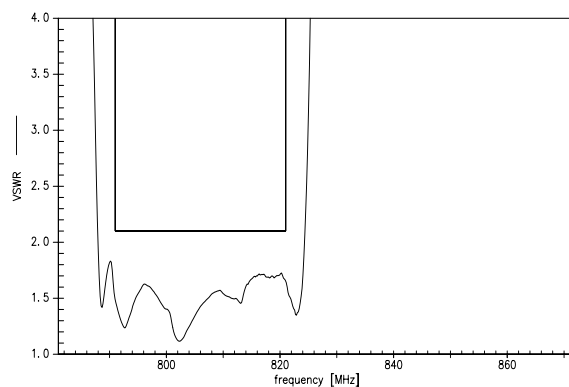
S11 VSWR (TX)



S22 VSWR (ANT)



S33 VSWR (RX)



Please read *cautions and warnings* and *important notes* at the end of this document.

**SAW Components****B7679****SAW Duplexer****847.0 / 806.0 MHz**

Data sheet



References

Type	B7679
Ordering code	B39851B7679A710
Marking and package	C61157-A3-A61
Packaging	F611074-V8153-Z000
Date codes	L_1126
S-parameters	B7679_NB.S4P B7679_WB.S4P
Soldering profile	S_6001
RoHS compatible	Defined as compatible with the following documents: "DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment."
Matching coils	See 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

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

Published by EPCOS AG
Surface Acoustic Wave Components Division
P.O. Box 80 17 09, 81617 Munich, GERMANY

© EPCOS AG 2010. This brochure replaces the previous edition.

For questions on technology, prices and delivery please contact the Sales Offices of EPCOS AG or the international Representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our Sales Offices.

Please read *cautions and warnings and important notes* at the end of this document.



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, EPCOS is 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 EPCOS 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.epcos.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.
6. Unless otherwise agreed in individual contracts, **all orders are subject to the current version of the "General Terms of Delivery for Products and Services in the Electrical Industry" published by the German Electrical and Electronics Industry Association (ZVEI)**.
7. The trade names EPCOS, BAOKE, Alu-X, CeraDiode, CSMP, CSSP, CTVS, DeltaCap, DigiSiMic, DSSP, FormFit, MiniBlue, MiniCell, MKD, MKK, MLSC, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, SIP5D, SIP5K, ThermoFuse, WindCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.epcos.com/trademarks.