



# SAW filters for mobile communications

## Series/Type: B7648

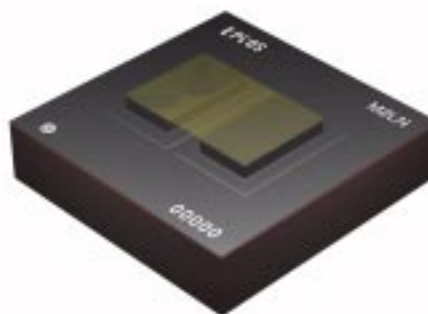
The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B39192B7648L310		2010-03-26	2010-06-30	2010-09-30

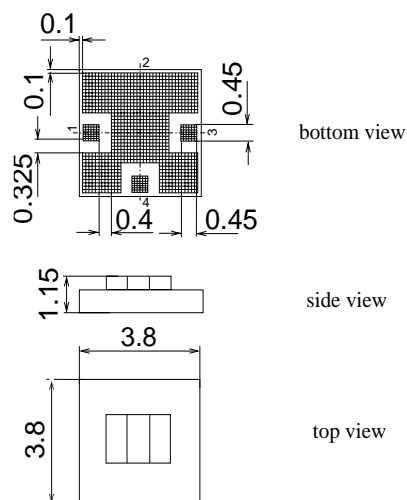
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**Application**

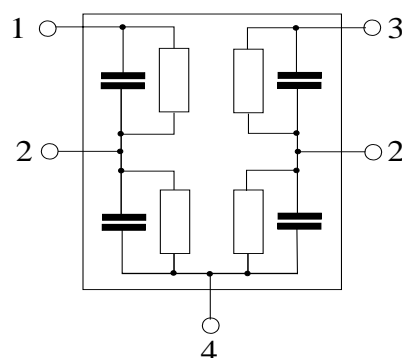
- Low-loss BAW duplexer for mobile telephone CDMA based PCS systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 60 MHz
- Usable for synchronous-GPS


**Features**

- Package size 3.8 x 3.8 mm<sup>2</sup>, package height 1.15 mm
- RoHS compliant
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**


**Pin configuration**

- 1 TX Input
- 3 RX Output
- 4 Antenna
- 2 To be grounded



**SAW Components**
**B7648**
**BAW Duplexer**
**1880.0 / 1960.0 MHz**
**Data Sheet**

**Characteristics**

Temperature range for specification:	T = -30 °C to +85 °C
Antenna terminating impedance:	Z <sub>ANT</sub> = 50 Ω
RX terminating impedance:	Z <sub>RX</sub> = 50 Ω
TX terminating impedance:	Z <sub>TX</sub> = 50 Ω

Characteristics TX - ANT				min.	typ. <sup>1)</sup> @ 25 °C	max.	
<b>Center frequency</b>	f <sub>C</sub>				1880		MHz
<b>Maximum insertion attenuation</b>	α <sub>max</sub>						
1850.6 ... 1909.4 MHz					1.8	3.0 <sup>2)</sup>	dB
1850.6 ... 1909.4 MHz						3.5	dB
<b>Amplitude ripple (p-p)</b>	Δα						
1850.6 ... 1909.4 MHz					1.0	1.7 <sup>2)</sup>	dB
1850.6 ... 1909.4 MHz						2.2	dB
<b>Group Delay Variation (p-p) per 5 MHz-channel</b>	Δτ						
1850.6 ... 1909.4 MHz					6	20	ns
<b>Input VSWR (TX port)</b>							
1850.6 ... 1909.4 MHz					1.5	2.1	
<b>Output VSWR (ANT port)</b>							
1850.6 ... 1909.4 MHz					1.55	2.2	
<b>Attenuation</b>	α						
470.0 ... 1450.0 MHz				30	35		dB
1450.0 ... 1480.0 MHz				30	35		dB
GPS 1574.4 ... 1576.5 MHz				38	44		dB
1576.5 ... 1830.0 MHz				10	24		dB
RX suppr. 1930.6 ... 1989.4 MHz				43	54		dB
1990.0 ... 2500.0 MHz				25	32		dB
2 <sup>nd</sup> harmon. 3700.0 ... 3820.0 MHz				15	22		dB
3820.0 ... 5150.0 MHz				5	11		dB
5150.0 ... 5550.0 MHz				5	15		dB
5550.0 ... 5730.0 MHz				12	17		dB
5760.0 ... 6000.0 MHz				15	24		dB

<sup>1)</sup> Typical data are average values of the parameter over the given frequency range for passband frequency ranges.

<sup>2)</sup> At 25 °C.

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**Characteristics**

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 Antenna terminating impedance:  $Z_{\text{ANT}} = 50\text{ }\Omega$   
 RX terminating impedance:  $Z_{\text{RX}} = 50\text{ }\Omega$   
 TX terminating impedance:  $Z_{\text{TX}} = 50\text{ }\Omega$

Characteristics ANT - RX				min.	typ. <sup>1)</sup> @ 25 °C	max.	
<b>Center frequency</b>	$f_C$				1960		MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\text{max}}$						
1930.6 ... 1989.4 MHz					1.9	3.5 <sup>2)</sup>	dB
1930.6 ... 1989.4 MHz						3.8 <sup>3)</sup>	dB
1930.6 ... 1989.4 MHz						4.3	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$						
1930.6 ... 1989.4 MHz					1.0	2.1 <sup>2)</sup>	dB
1930.6 ... 1989.4 MHz						2.8	dB
<b>Group Delay Variation (p-p) per 5 MHz-channel</b>	$\Delta\tau$						
1930.6 ... 1989.4 MHz					8	20	ns
<b>Input VSWR (ANT port)</b>							
1930.6 ... 1989.4 MHz					1.55	2.2	
<b>Output VSWR (RX port)</b>							
1930.6 ... 1989.4 MHz					1.5	2.2	
<b>Attenuation</b>	$\alpha$						
0.3 ... 1770.0 MHz				30	35		dB
1770.0 ... 1850.0 MHz				38	42		dB
TX suppr. 1850.6 ... 1909.4 MHz				51	55		dB
2040.0 ... 2070.0 MHz				35	60		dB
2400.0 ... 2500.0 MHz				35	50		dB
2 <sup>nd</sup> harmon. 3860.0 ... 3980.0 MHz				30	42		dB

<sup>1)</sup> Typical data are average values of the parameter over the given frequency range for passband frequency ranges.

<sup>2)</sup> at 25 °C.

<sup>3)</sup> 25 °C to 85 °C.

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**1880.0 / 1960.0 MHz**
**Data Sheet**

**Characteristics**

Temperature range for specification:	T = -30 °C to +85 °C
Antenna terminating impedance:	Z <sub>ANT</sub> = 50 Ω
RX terminating impedance:	Z <sub>RX</sub> = 50 Ω
TX terminating impedance:	Z <sub>TX</sub> = 50 Ω

IMD Product Level Limits at Rx frequencies and at Rx port and Harmonics Level Limits at Rx frequencies (1930 ... 1990 MHz): +23.5dBm ANT, -15dBm Blocker				min.	typ. @ 25 °C	max.	
Blocker 1		80.0	MHz		-110		dBm
Blocker 2	1770.0	...	1830.0	MHz	-114		dBm
Blocker 3	3780.0	...	3900.0	MHz	-86		dBm
H2 @ ANT					-32		dBm
H3 @ ANT					-73		dBm

Characteristics TX - RX				min.	typ. <sup>1)</sup> @ 25 °C	max.	
Isolation α							
	1850.6	...	1909.4	MHz	54	61	dB
	1930.6	...	1989.4	MHz	44	58	dB

<sup>1)</sup> Typical data are average values of the parameter over the given frequency range for passband frequency ranges.

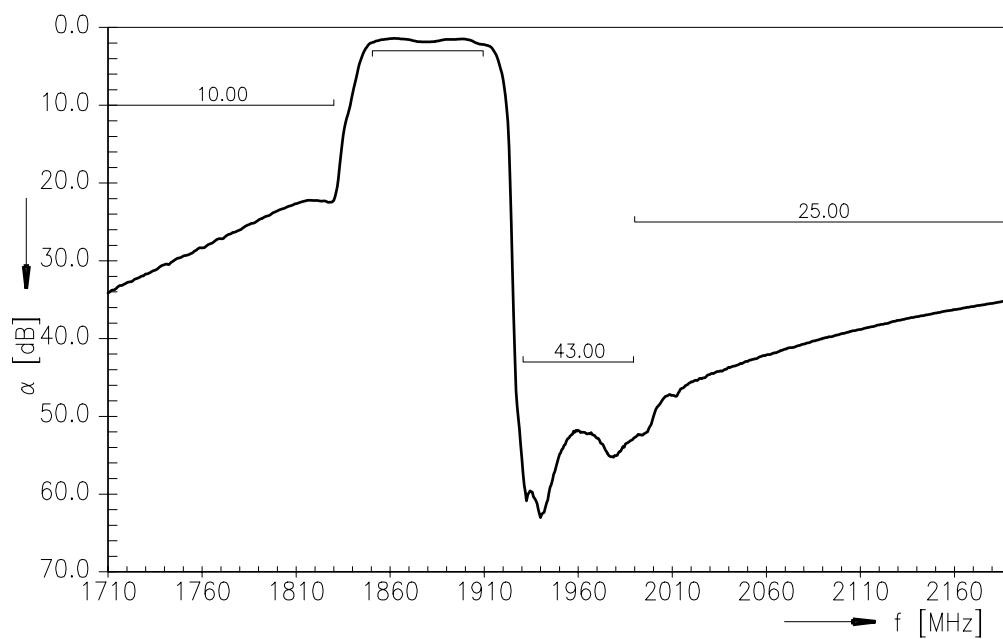
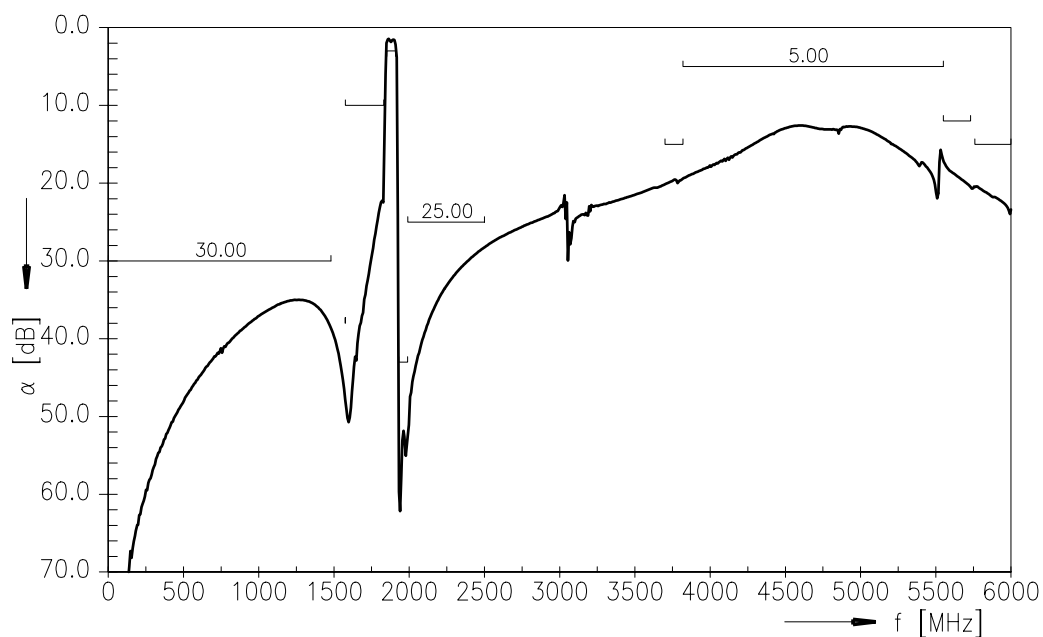
**Maximum ratings**

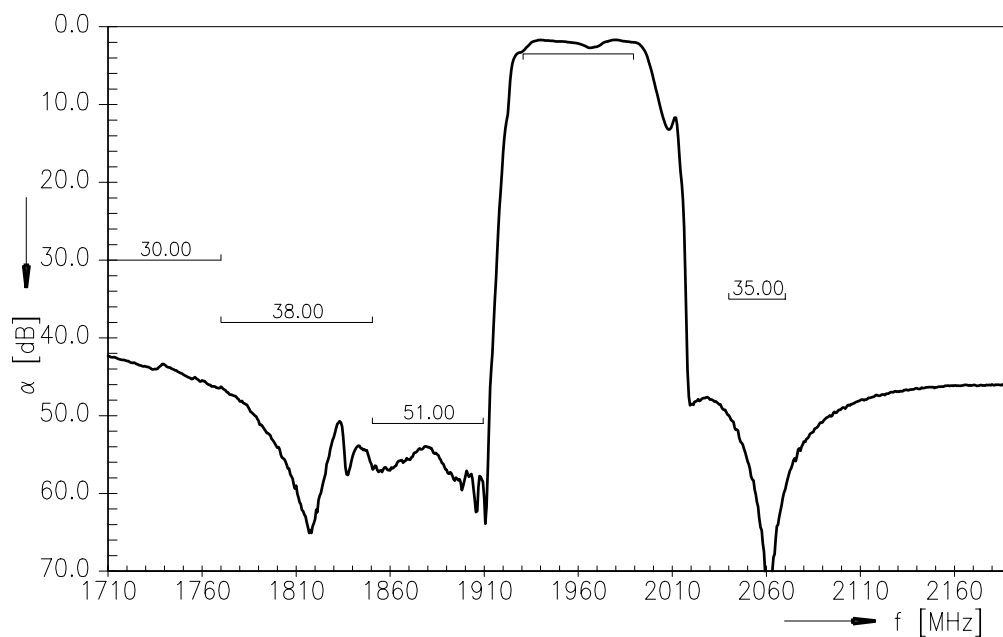
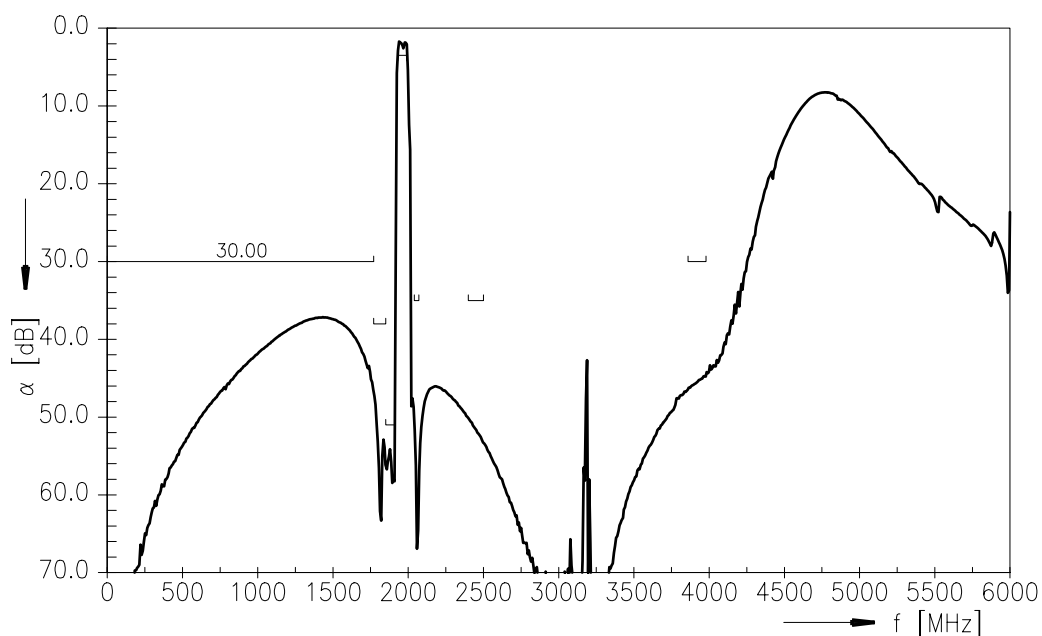
Temperature range for specification <sup>1)</sup>	T	−30/+85	°C	
Operable temperature range <sup>2)</sup>	T	−30/+85	°C	
Storage temperature range	T <sub>stg</sub>	−40/+85	°C	
DC voltage	V <sub>DC</sub>	3	V	
ESD voltage	V <sub>ESD</sub>	100 <sup>3)</sup>	V	machine model, 10 pulses
Input power at	P <sub>IN</sub>			source and load impedance 50 Ω
1850.6 ... 1909.4 MHz		29	dBm	} continuous wave T = 55°C, 50000 h
1930.6 ... 1989.4 MHz		20	dBm	
elsewhere		10	dBm	

<sup>1)</sup> Defines the temperature range in which the specification values are warranted.

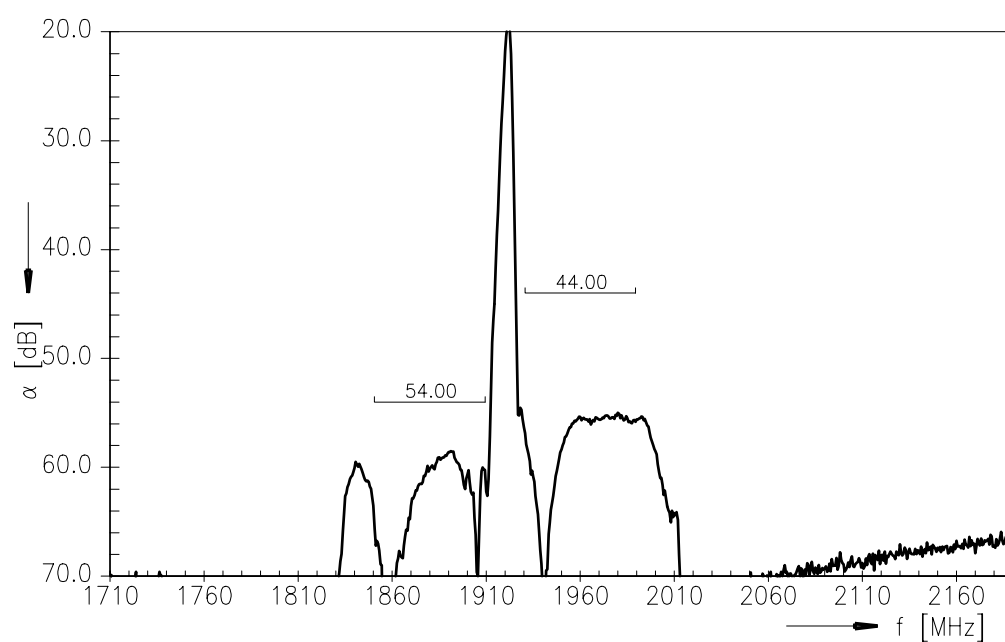
<sup>2)</sup> Defines the temperature range in which the SAW / BAW device keeps its typical characteristics, however the specification values are not guaranteed.

<sup>3)</sup> acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.

**Frequency Response TX-ANT**

**Frequency Response TX-ANT (wideband)**


**Frequency Response ANT-RX**

**Frequency Response ANT-RX (wideband)**




**Frequency Response TX-RX**


**References**

<b>Type</b>	B7648
<b>Ordering code</b>	B39192-B7648-L310
<b>Marking and package</b>	C61157-A3-A38
<b>Packaging</b>	F61074-V8194-Z000-3-27
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B7648_NB.s3p B7648_WB.s3p see file header for pin/port assignment.
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	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."

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