



SAW Components

BAW/SAW Duplexer

WCDMA/E-UTRA Band VII

Series/type:	B8089
Ordering Code:	B39272B8089P810
Date:	January 23, 2013
Version:	2.0



Data Sheet



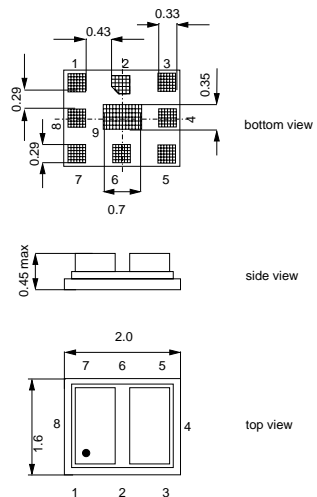
Application

- Low-loss BAW/SAW duplexer for mobile telephone WCDMA/E-UTRA Band VII systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 70 MHz
- Single ended to balanced transformation in Antenna - Rx path
- Impedance transformation 50Ω to 100Ω in Antenna - Rx path



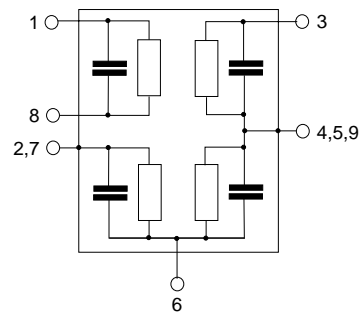
Features

- Package size 2.0 x 1.6 mm², max. height 0.45 mm
- RoHS compatible
- Approx. weight 0.006 g
- Package for Surface Mount Technology (SMT)
- Ni, gold-plated terminals
- Electrostatic Sensitive Device (ESD)
- Moisture Sensitive Level 3



Pin configuration

- 3 TX Input
- 1, 8 RX Output (balanced)
- 6 Antenna
- 2, 4, 5 To be grounded
- 7, 9 To be grounded





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Characteristics

Temperature range for specification: T = -20 °C to +85 °C
 Antenna terminating impedance: Z_{ANT} = 50 Ω
 RX terminating impedance: Z_{RX} = 100 Ω || 6.8nH (balanced)
 TX terminating impedance: Z_{TX} = 50 Ω || 7.5nH

Characteristics TX - ANT		min.	typ. @ 25 °C	max.	
Center frequency	f _C		2535		MHz
Maximum insertion attenuation	α				
2500.34 ... 2569.66 MHz		—	3.4	4.3 ¹⁾	dB
2500.34 ... 2569.66 MHz		—	3.4	4.7	dB
2504.0 ... 2566.0 MHz		—	2.9	3.6	dB
Amplitude ripple (p-p)	Δα				
2500.34 ... 2569.66 MHz		—	1.7	3.0	dB
Amplitude ripple (p-p) over any 5 MHz within passband	Δα _{ch}				
2500.34 ... 2569.66 MHz		—	0.4	1.3	dB
Amplitude ripple (p-p) over any 10 MHz within passband	Δα _{ch}				
2500.34 ... 2569.66 MHz		—	0.8	1.9	dB
Error Vector Magnitude	EVM ²⁾				
2502.4 ... 2567.6 MHz		—	1.5	4.0 ¹⁾	%
2502.4 ... 2567.6 MHz		—	1.5	5.5	%
Input VSWR (TX port)					
2500.34 ... 2569.66 MHz		—	2.0	2.5 ¹⁾	
2500.34 ... 2569.66 MHz		—	2.0	2.7	
Output VSWR (ANT port)					
2500.34 ... 2569.66 MHz		—	1.8	2.5	

¹⁾ Valid in the temperature range between 0 °C and +55 °C.

²⁾ Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.



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Temperature range for specification: T = -20 °C to +85 °C
 Antenna terminating impedance: Z_{ANT} = 50 Ω
 RX terminating impedance: Z_{RX} = 100 Ω || 6.8nH (balanced)
 TX terminating impedance: Z_{TX} = 50 Ω || 7.5nH

Characteristics TX - ANT	min.	typ. @ 25 °C	max.	
Attenuation α				
0.0 ... 87.0 MHz	40	80	—	dB
87.0 ... 108.0 MHz	40	75	—	dB
108.0 ... 1492.0 MHz	40	48	—	dB
1565.42 ... 1573.374MHz	40	55	—	dB
1573.374... 1577.466MHz	45	54	—	dB
1577.466... 1585.42 MHz	40	53	—	dB
1597.551... 1605.886MHz	45	52	—	dB
1605.886... 1610.0 MHz	40	51	—	dB
1610.0 ... 1680.0 MHz	25	48	—	dB
1805.0 ... 1880.0 MHz	30	43	—	dB
1900.0 ... 1920.0 MHz	30	41	—	dB
2010.0 ... 2025.0 MHz	30	39	—	dB
2110.0 ... 2170.0 MHz	30	36	—	dB
2360.0 ... 2400.0 MHz	28	40	—	dB
2400.0 ... 2473.0 MHz	30 ¹⁾	44	—	dB
2400.0 ... 2473.0 MHz	25	44	—	dB
2473.0 ... 2483.5 MHz	3.5	22	—	dB
2590.0 ... 2620.0 MHz	2	4	—	dB
2620.34 ... 2689.66 MHz	43	50	—	dB
3400.0 ... 3800.0 MHz	22	45	—	dB
3800.0 ... 3840.0 MHz	22	55	—	dB
3840.0 ... 3960.0 MHz	25	53	—	dB
4900.0 ... 5000.0 MHz	15	29	—	dB
5000.0 ... 5140.0 MHz	25	29	—	dB
5140.0 ... 5850.0 MHz	16	39	—	dB
5850.0 ... 6000.0 MHz	10	35	—	dB

1) Valid in the temperature range between -20 °C and +55 °C.



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 RX terminating impedance: Z_{RX} = 100 Ω || 6.8nH (balanced)
 TX terminating impedance: Z_{TX} = 50 Ω || 7.5nH

Characteristics ANT - RX		min.	typ. @ 25 °C	max.	
Center frequency	f _C		2655		MHz
Maximum insertion attenuation	α				
2620.34 ... 2689.66 MHz		—	2.9	3.5	dB
Amplitude ripple (p-p)	Δα				
2620.34 ... 2689.66 MHz		—	0.6	1.5	dB
Amplitude ripple (p-p) over any 5 MHz within passband	Δα _{ch}				
2620.34 ... 2689.66 MHz		—	0.25	0.8	dB
Amplitude ripple (p-p) over any 10 MHz within passband	Δα _{ch}				
2620.34 ... 2689.66 MHz		—	0.35	1.2	dB
Error Vector Magnitude	EVM ¹⁾				
2622.4 ... 2687.6 MHz		—	1.0	2.0	%
Common mode rejection ratio	CMRR				
2620.34 ... 2689.66 MHz		23	29	—	dB
Input VSWR (ANT port)					
2620.34 ... 2689.66 MHz		—	1.6	2.0	
Output VSWR (RX port)					
2620.34 ... 2689.66 MHz		—	1.6	2.3	
IMD Product Level Limits²⁾					
at f_{TX}=2535MHz, f_{RX}=2655MHz					
Blocker 1	120.0 MHz	—	-91	—	dBm
Blocker 2	2415.0 MHz	—	-103	—	dBm
Blocker 3	2595.0 MHz	—	-122	—	dBm
Blocker 4	5190.0 MHz	—	-85	—	dBm
Blocker 5	7725.0 MHz	—	-120	—	dBm

1) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.
 2) IMD product level limits for power levels P_{TX}=21.5 dBm (antenna port output power) and P_{Blocker}= -15 dBm (antenna port input power)



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 TX terminating impedance: Z_{TX} = 50 Ω || 7.5nH

Characteristics ANT - RX				min.	typ. @ 25 °C	max.	
Attenuation α							
	0.0	...	120.0 MHz	50	80	—	dB
	120.0	...	2380.0 MHz	40	50	—	dB
	2380.0	...	2400.0 MHz	45	75	—	dB
	2400.0	...	2450.0 MHz	50	63	—	dB
	2450.0	...	2470.0 MHz	50	60	—	dB
	2470.0	...	2484.0 MHz	35	60	—	dB
	2484.0	...	2500.0 MHz	30	56	—	dB
	2500.34	...	2569.66 MHz	50	57	—	dB
	2570.0	...	2605.0 MHz	3	6	—	dB
	2775.0	...	3400.0 MHz	20	40	—	dB
	3400.0	...	4900.0 MHz	30	58	—	dB
	4900.0	...	5120.0 MHz	33	63	—	dB
	5120.0	...	5260.0 MHz	45	60	—	dB
	5260.0	...	5825.0 MHz	33	60	—	dB
	5825.0	...	6000.0 MHz	30	60	—	dB

Characteristics TX - RX				min.	typ. @ 25 °C	max.	
Isolation α							
	1574.0	...	1577.0 MHz	30	82	—	dB
	2500.34	...	2569.66 MHz	55	58	—	dB
	2620.34	...	2689.66 MHz	47	51	—	dB
	5000.0	...	5140.0 MHz	30	55	—	dB
Common Mode Isolation α							
	2500.34	...	2569.66 MHz	48	53	—	dB



SAW Components **B8089**

BAW/SAW Duplexer **2535.0 / 2655.0 MHz**

Data Sheet



Maximum ratings

Operable temperature range ¹⁾	T	-25/+85	°C	
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	5	V	
ESD voltage	V _{ESD}	50	V	MM, 10 pulses ²⁾
	V _{ESD}	600	V	CDM, 3 pulses ³⁾
	V _{ESD}	150	V	HBM, 5 pulses ⁴⁾
Input power at	P _{IN}			source and load impedance 50 Ω
2500.0 ... 2570.0 MHz		26	dBm	} continuous wave T = 50°C, 5000 h
elsewhere		10	dBm	

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

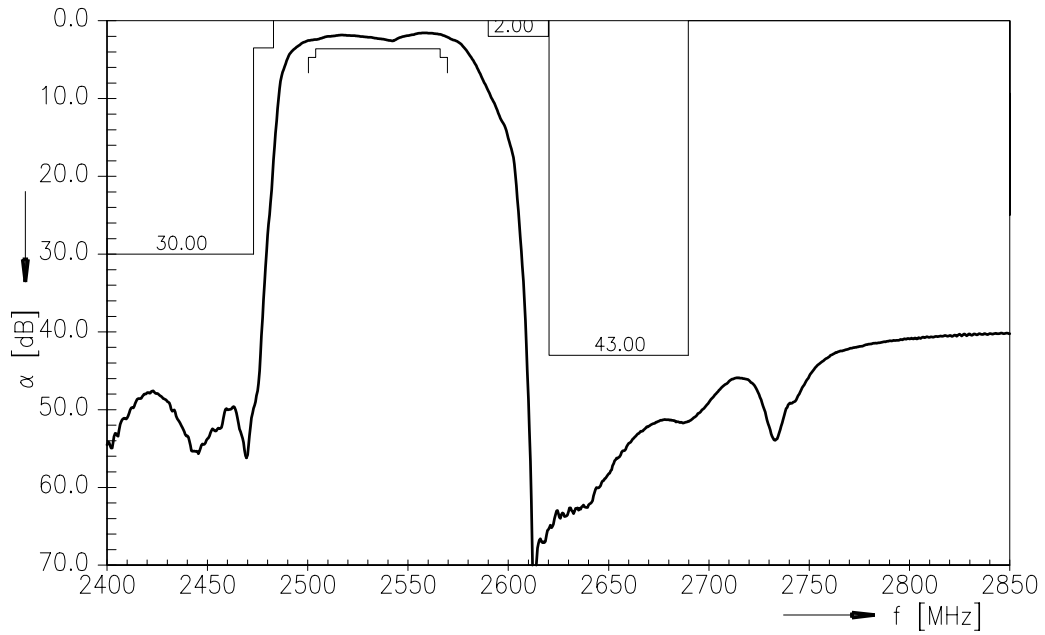
2) acc. to JESD22-A115B (MM - machine model), 10 negative & 10 positive pulses.

3) acc. to JESD22-C101C (CDM - charged device model), 3 negative & 3 positive pulses.

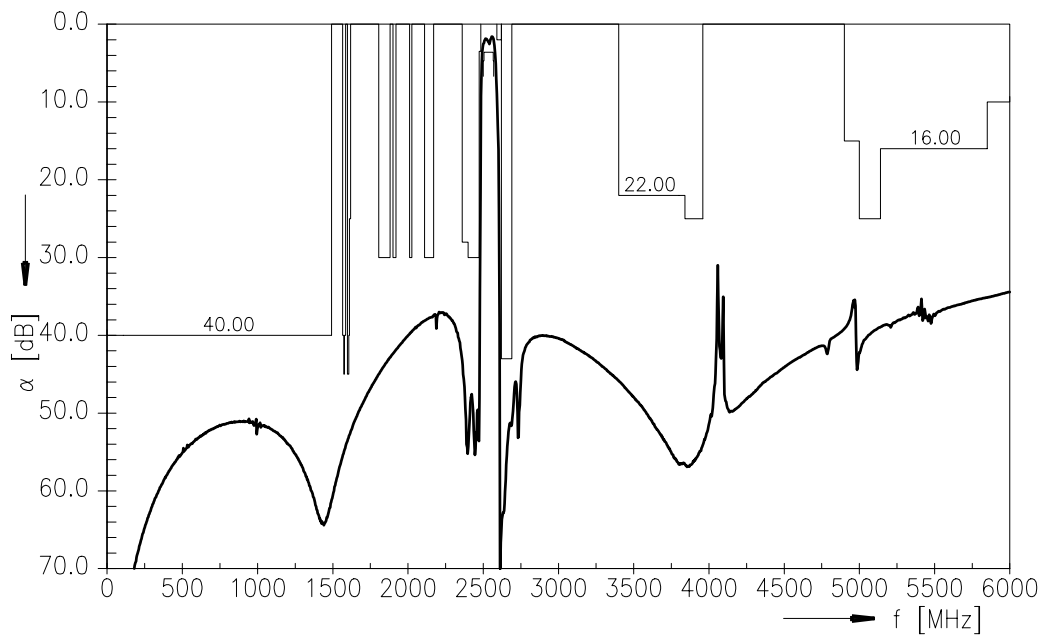
4) acc. to JESD22-A114F (HBM - human body model), 5 positive & 5 negative pulses.



Frequency Response TX-ANT



Frequency Response TX-ANT (wideband)





SAW Components

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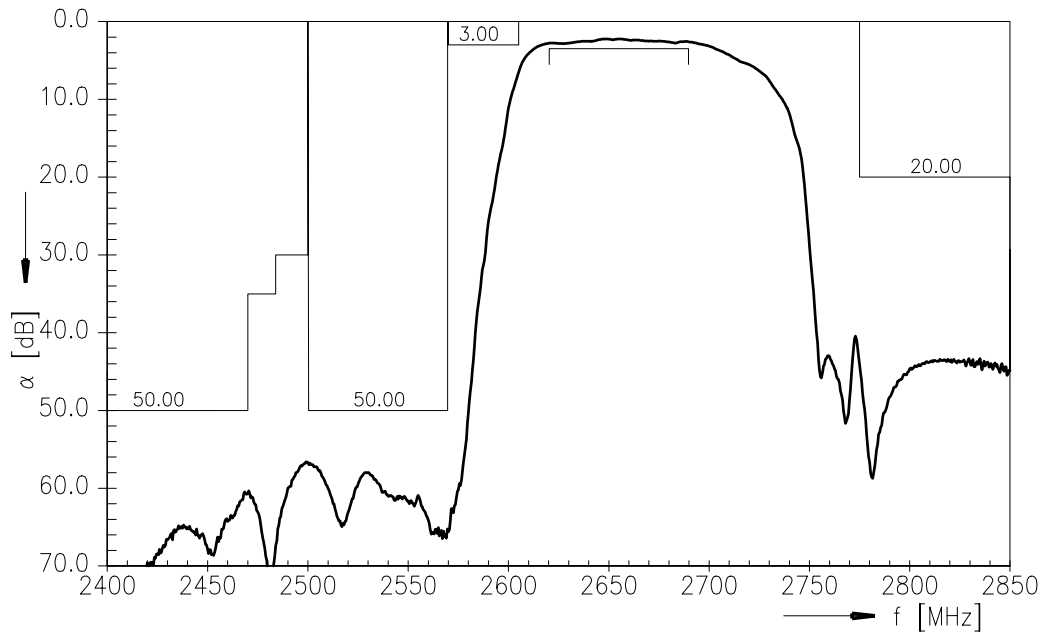
BAW/SAW Duplexer

2535.0 / 2655.0 MHz

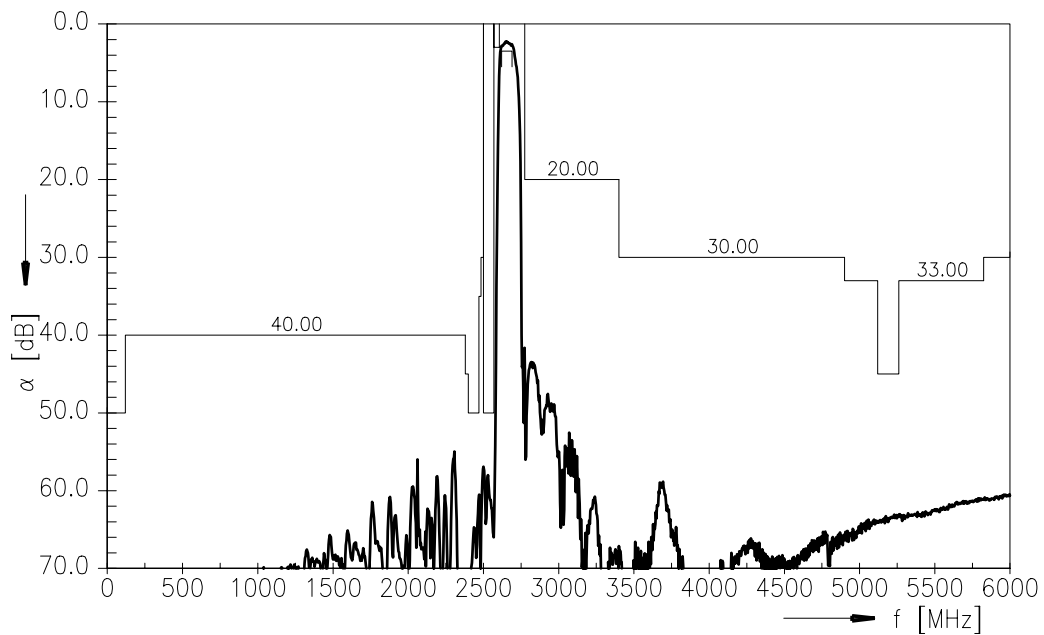
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Frequency Response ANT-RX



Frequency Response ANT-RX (wideband)



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



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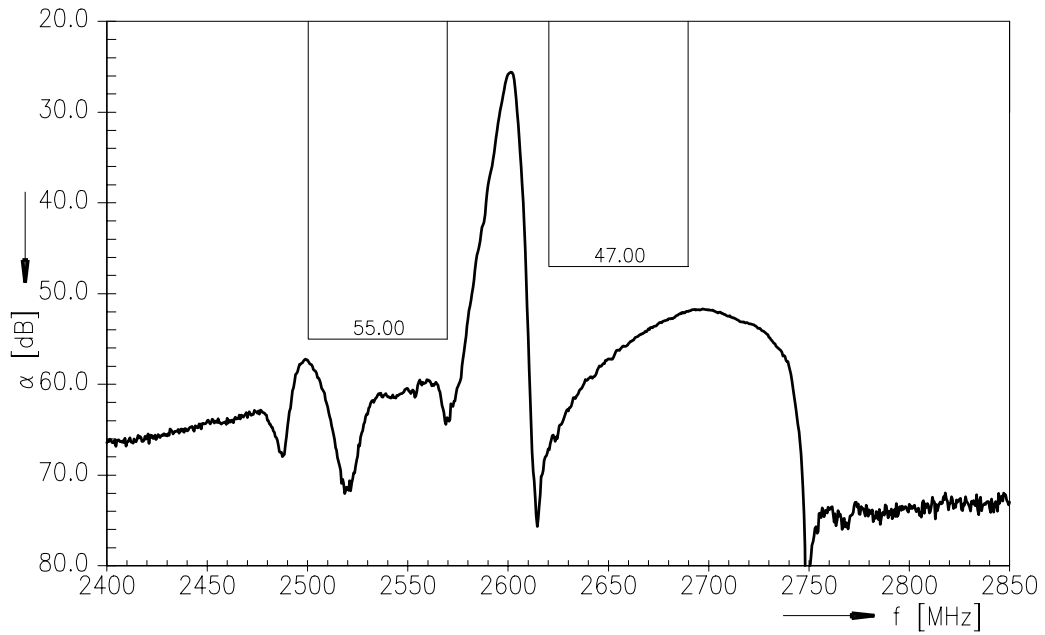
BAW/SAW Duplexer

2535.0 / 2655.0 MHz

Data Sheet



Frequency Response TX-RX



**SAW Components****B8089****BAW/SAW Duplexer****2535.0 / 2655.0 MHz**

Data Sheet

**References**

Type	B8089
Ordering code	B39272B8089P810
Marking and package	C61157-A8-A62
Packaging	F61074-V8247-Z000
Date codes	L_1126
S-parameters	B8089_NB_UN.s4p, B8089_WB_UN.s4p see file header for port/pin assignment table
Soldering profile	S_6001
RoHS compatible	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 8 th , 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.
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 a large variety of matching coils.

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