



RF360 Europe GmbH

A Qualcomm – TDK Joint Venture



SAW Components

SAW Duplexer

Automotive telematics

Series/type: B4404
Ordering code: B39851B4404P810

Date: June 12, 2014
Version: 2.1

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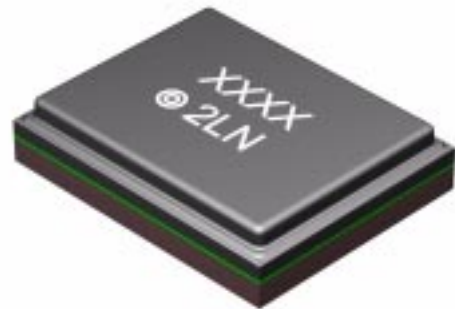
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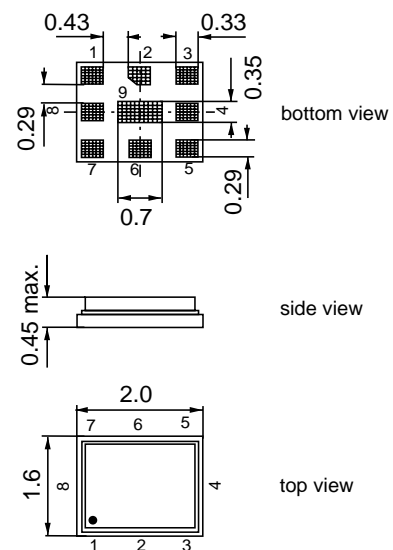
Application

- Low-loss SAW duplexer for LTE Band 20 systems
- Very high isolation
- Usable passband 30 MHz
- Single-ended to balanced transformation in Antenna-Rx path
- Impedance transformation $50\ \Omega$ to $100\ \Omega$ in Antenna-Rx path



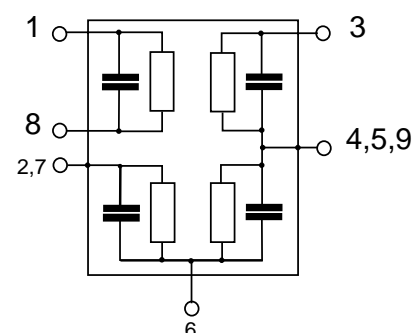
Features

- Package size $2.0 \times 1.6\ \text{mm}^2$
- Package height max. $0.45\ \text{mm}$
- RoHS compatible
- Approximate weight $0.005\ \text{g}$
- Package for **Surface Mount Technology (SMT)**
- Ni terminals, Au-plated
- **Electrostatic Sensitive Device (ESD)**
- AEC-Q200 qualified component family (operable temperature range -40°C to $+85^\circ\text{C}$)



Pin configuration

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



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B4404
SAW Duplexer
847.0 / 806.0 MHz
Data sheet

Characteristics

Temperature range for specification:	T = -15 °C to +85 °C
TX terminating impedance:	Z _{Tx} = 50 Ω
ANT terminating impedance:	Z _{Ant} = 50 Ω 9.0 nH
RX terminating impedance:	Z _{Rx} = 100 Ω (balanced) 43 nH

Characteristics Tx-Antenna					min.	typ. @ 25 °C	max.	
Center frequency f_c						847.0		MHz
Maximum insertion attenuation α								
	832.0	...	862.0	MHz	—	2.2	3.6	dB
	832.0	...	862.0	MHz	—	2.2	2.7 ¹⁾	dB
Amplitude ripple (p-p) $\Delta\alpha$								
	832.0	...	862.0	MHz	—	1.1	2.6	dB
Input VSWR (Tx port)								
	832.0	...	862.0	MHz	—	1.7	2.1	
Output VSWR (Ant Port)								
	832.0	...	862.0	MHz	—	1.7	2.0	
Absolute attenuation α								
	100.0	...	771.0	MHz	34	41	—	dB
	771.0	...	791.0	MHz	35	46	—	dB
	791.0	...	821.0	MHz	40	54	—	dB
	873.0	...	903.0	MHz	13	32	—	dB
	925.0	...	960.0	MHz	30	43	—	dB
	1565.0	...	1606.0	MHz	40	50	—	dB
	1664.0	...	2170.0	MHz	40	52	—	dB
	2400.0	...	2620.0	MHz	35	39	—	dB
	2620.0	...	2690.0	MHz	35	47	—	dB
	3328.0	...	3448.0	MHz	20	43	—	dB

¹⁾ in +25,+55 °C temperature range

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Characteristics

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TX terminating impedance:	Z _{Tx} =	50 Ω
ANT terminating impedance:	Z _{Ant} =	50 Ω 9.0 nH
RX terminating impedance:	Z _{Rx} =	100 Ω (balanced) 43 nH

Characteristics Antenna-Rx				min.	typ. @ 25 °C	max.	
Center frequency	f _c				806.0		MHz
Maximum insertion attenuation	α						
791.0 ... 821.0 MHz				—	2.6	3.9	dB
791.0 ... 821.0 MHz				—	2.6	3.3 ¹⁾	dB
Amplitude ripple (p-p)	Δα						
791.0 ... 821.0 MHz				—	1.3	2.8	dB
Input VSWR (Ant port)							
791.0 ... 821.0 MHz				—	1.8	2.2	
Output VSWR (Rx Port)							
791.0 ... 821.0 MHz				—	2.2	2.5	
Common mode rejection ratio							
791.0 ... 821.0 MHz				23	28		dB
Absolute attenuation	α						
100.0 ... 760.0 MHz				45	52	—	dB
760.0 ... 782.0 MHz				25	50	—	dB
832.0 ... 862.0 MHz				50 ²⁾	53	—	dB
832.0 ... 833.5 MHz				35	62	—	dB
833.5 ... 862.0 MHz				50	53	—	dB
873.0 ... 903.0 MHz				40	55	—	dB
1623.0 ... 1683.0 MHz				40	61	—	dB
2400.0 ... 2545.0 MHz				40	55	—	dB
2545.0 ... 4000.0 MHz				35	53	—	dB

¹⁾ In +25,+55 °C temperature range

²⁾ In +25,+85 °C temperature range

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Characteristics

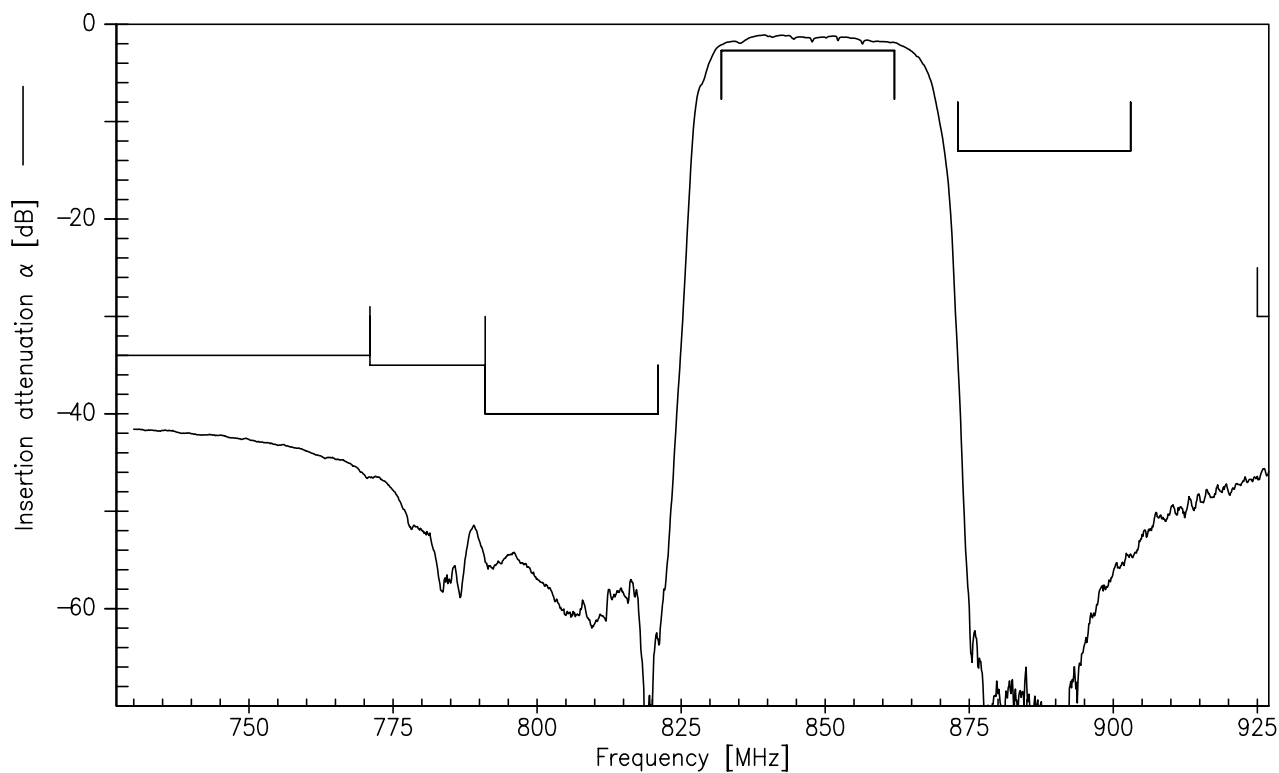
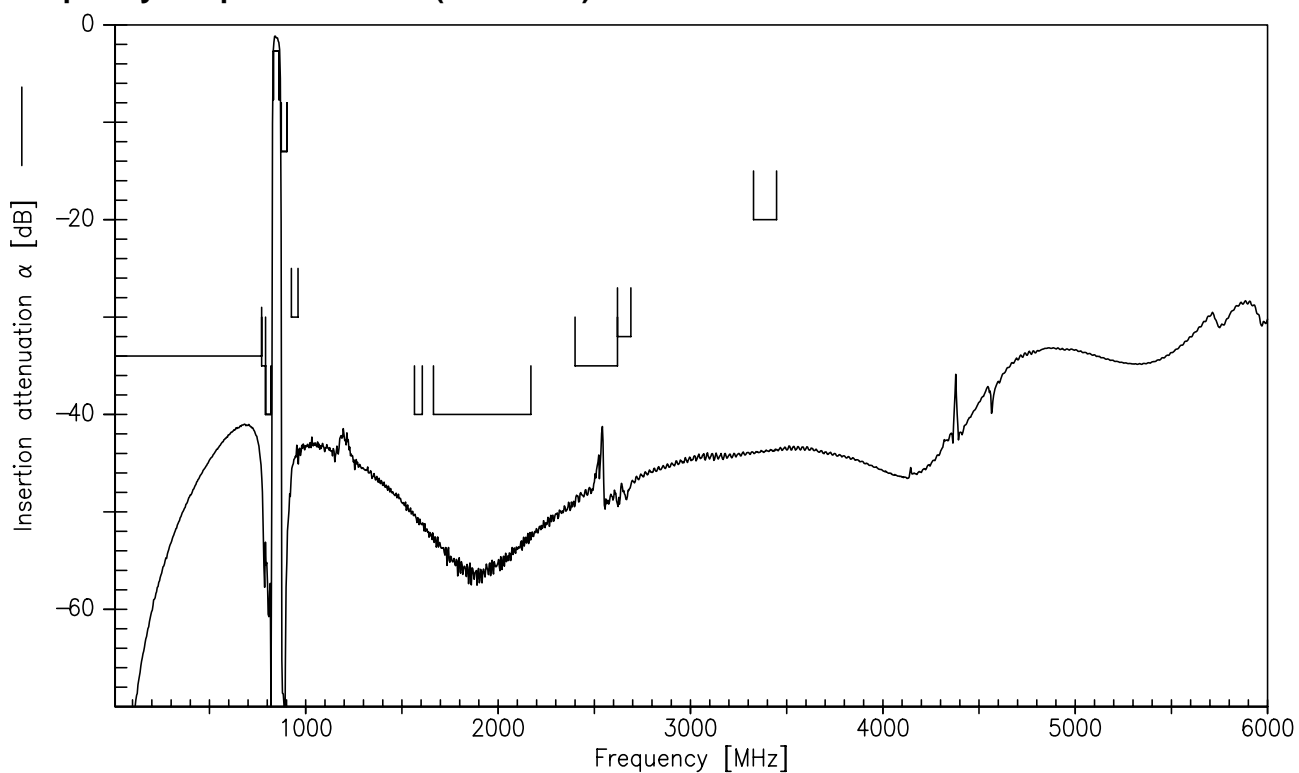
Temperature range for specification:	T =	-15 °C to +85 °C
TX terminating impedance:	Z _{Tx} =	50 Ω
ANT terminating impedance:	Z _{Ant} =	50 Ω 9.0 nH
RX terminating impedance:	Z _{Rx} =	100 Ω (balanced) 43 nH

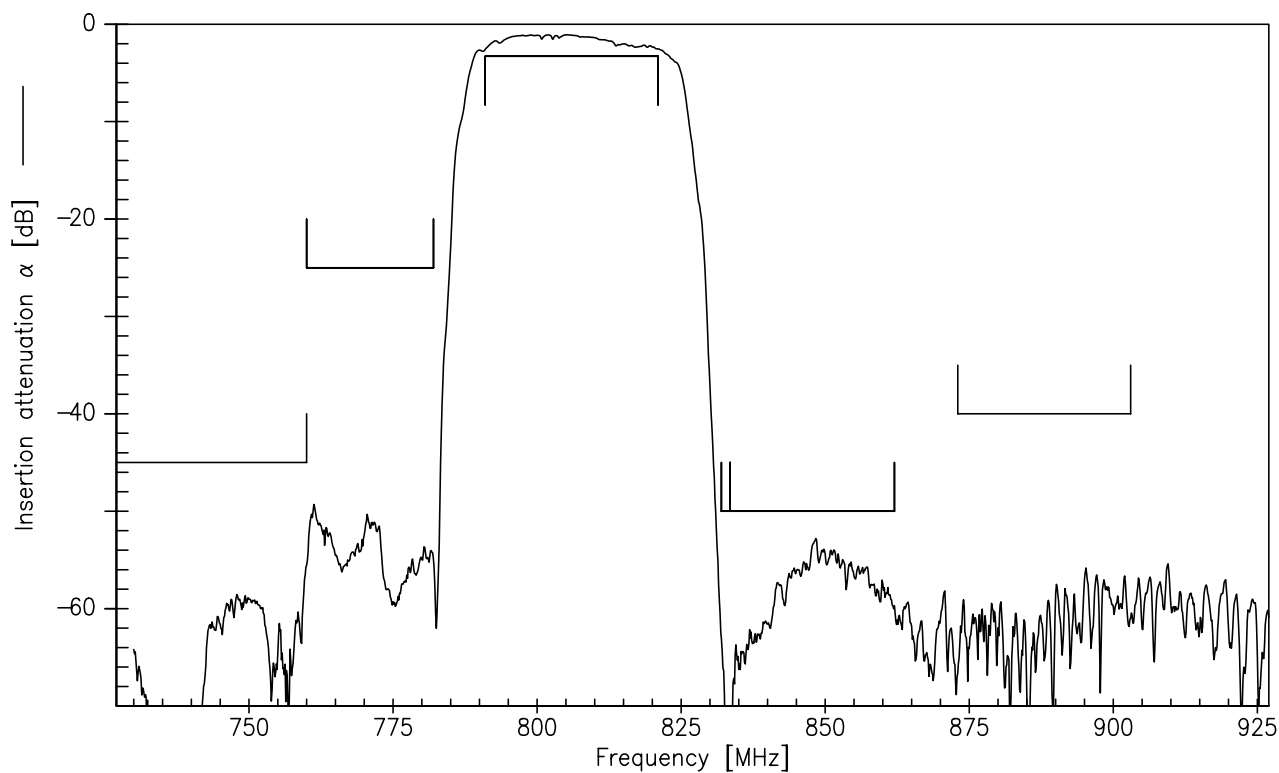
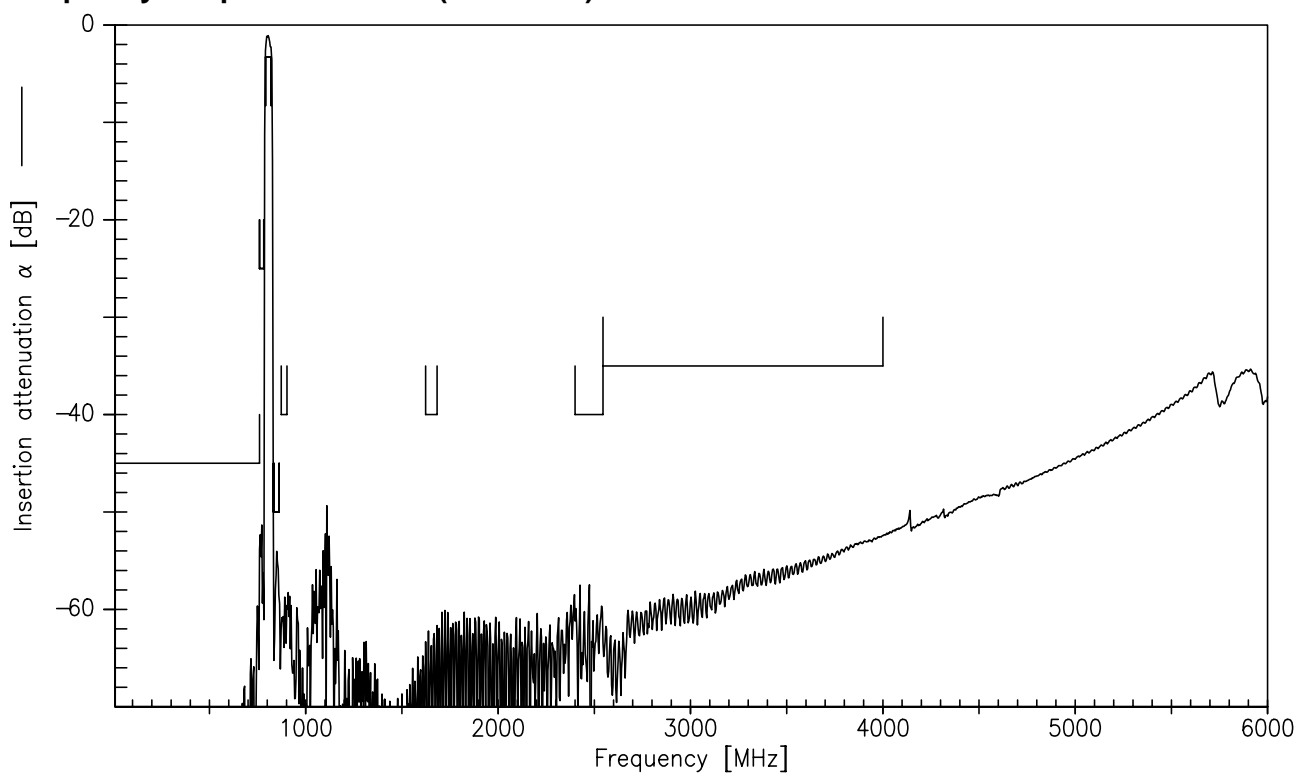
Characteristics Tx-Rx				min.	typ. @ 25 °C	max.	
Differential mode isolation							
			α				
791.0	...	820.5	MHz	51	56	—	dB
820.5	...	821.0	MHz	45	60	—	dB
832.0	...	834.0	MHz	43	63	—	dB
832.0	...	834.0	MHz	52 ¹⁾	63	—	dB
834.0	...	862.0	MHz	52	56	—	dB
1574.0	...	1577.0	MHz	40	69	—	dB
1664.0	...	1724.0	MHz	20	68	—	dB
2496.0	...	2586.0	MHz	20	63	—	dB
Common mode isolation							
			α				
832.0	...	862.0	MHz	60	64	—	dB

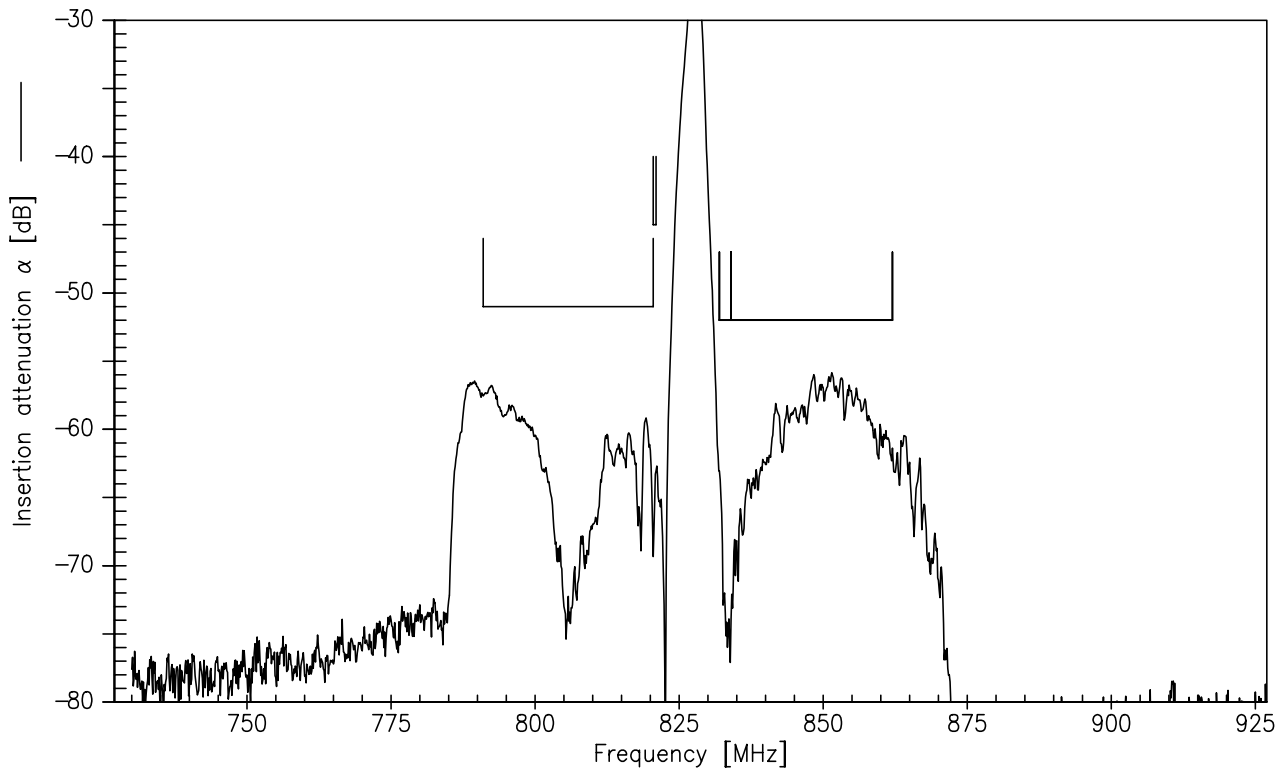
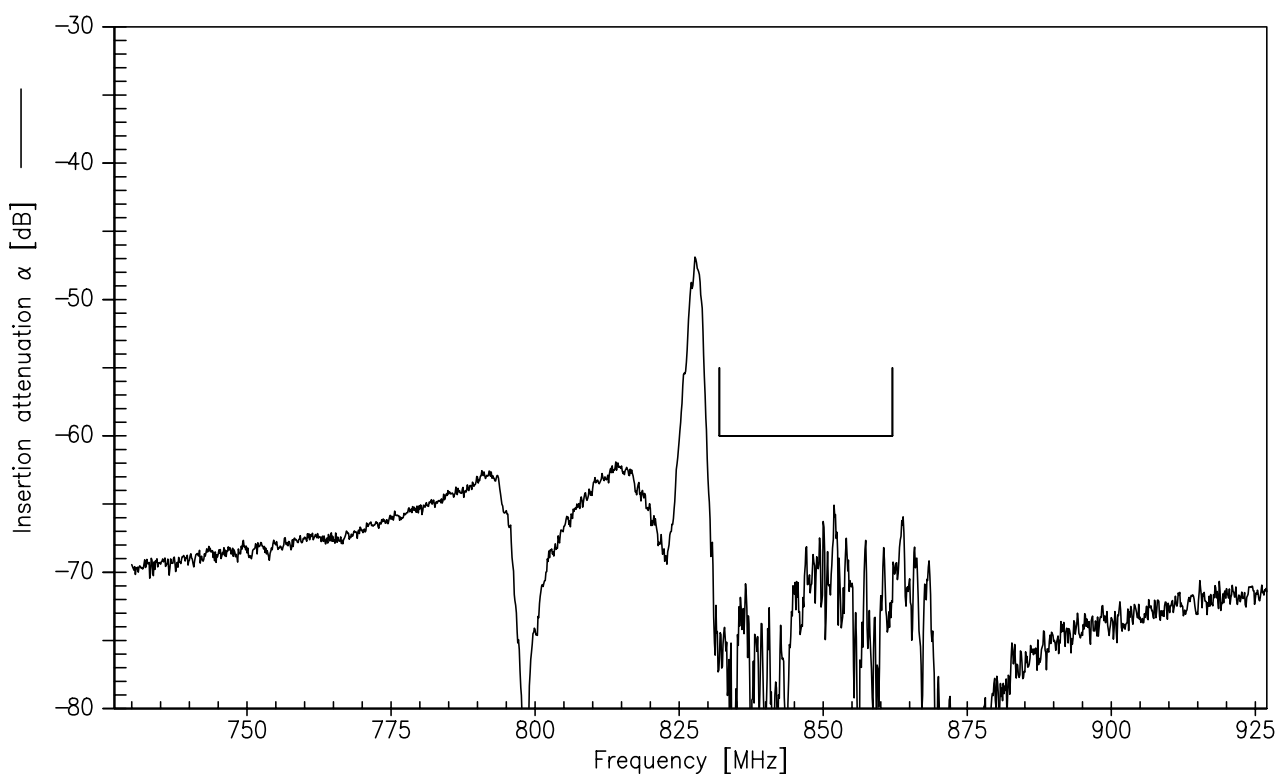
¹⁾ In +25,+85 °C temperature range

Maximum Ratings

Operable temperature range	T	-40/+85	°C	} continuous wave 50 °C, 5000h
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	0	V	
Input power at Tx Port				
832.0 ...862.0 MHz	P _{in}	28	dBm	}
elsewhere	P _{in}	10	dBm	

Frequency Response TX-ANT

Frequency Response TX-ANT (wideband)


Frequency Response RX-ANT

Frequency Response RX-ANT (wideband)



Frequency Response TX-RX

Frequency Response TX-RX (Common Mode)


SAW Components

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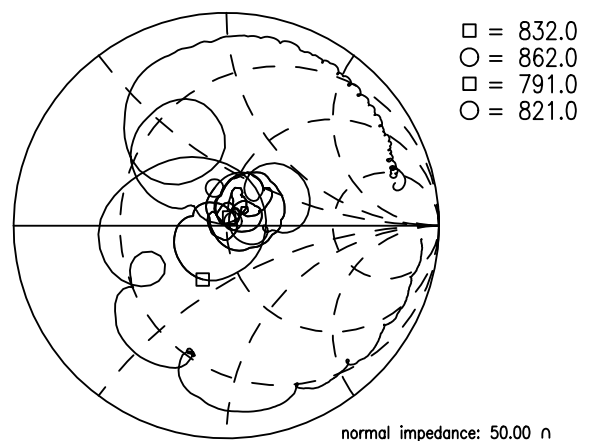
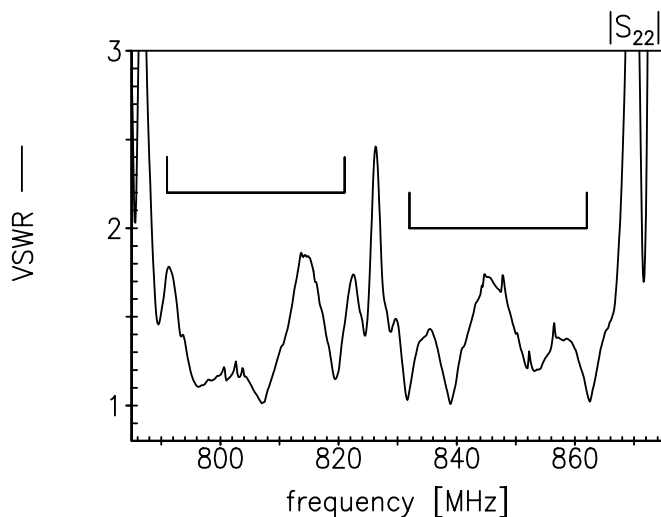
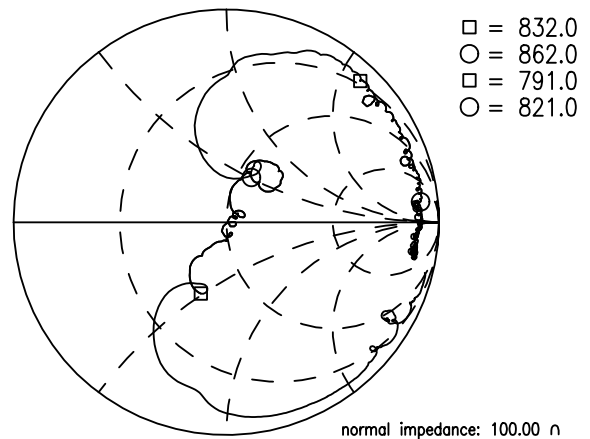
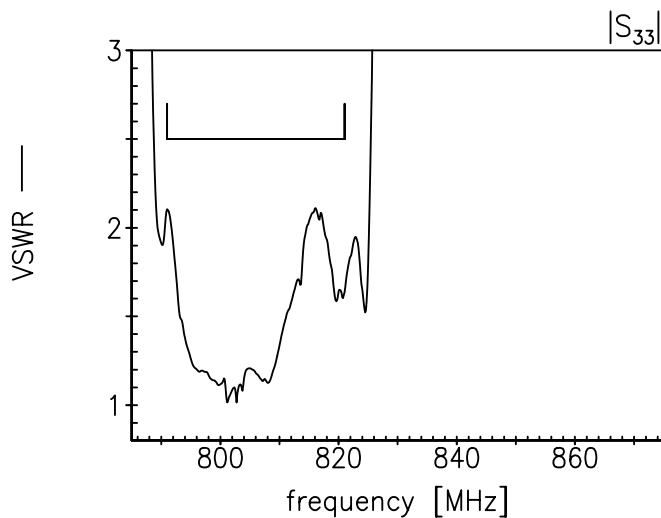
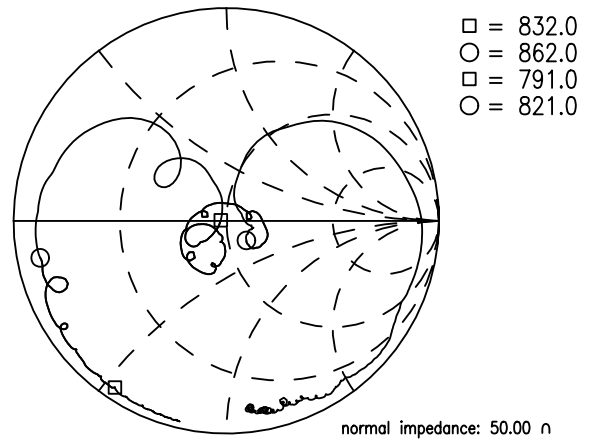
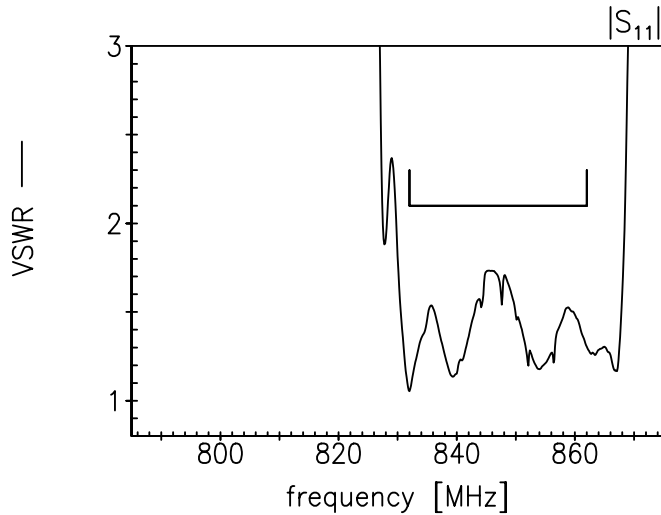
SAW Duplexer

847.0 / 806.0 MHz

Data sheet



Return Loss S_{11} TX- port S_{33} RX-port S_{22} ANT-port



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847.0 / 806.0 MHz

Data sheet



References

Type	B4404
Ordering code	B39851B4404P810
Marking and package	C61157-A8-A37
Packaging	F61074-V8247-Z000
Date codes	L_1126
S-parameters	B4404_NB_UN.s4p, B4404_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.
Moldability	Before using in overmolding environment, please contact your EPCOS sales office.
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

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