



SAW Components

SAW Duplexer

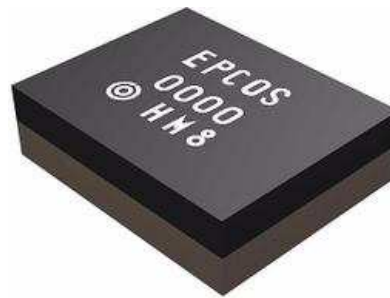
LTE Band 13

Series/type:	B8511
Ordering code:	B39781B8511P810
Date:	April 03, 2013
Version:	2.0



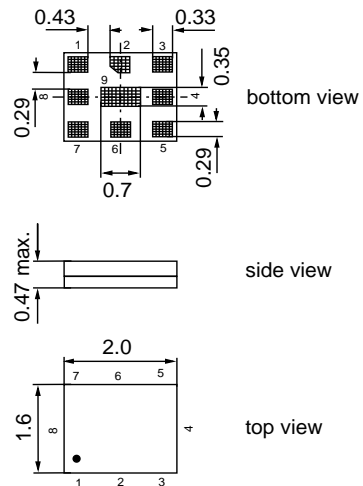
Application

- Low-loss SAW duplexer for mobile telephone LTE Band 13 systems
- Low insertion attenuation
- High isolation
- Usable passband 10 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



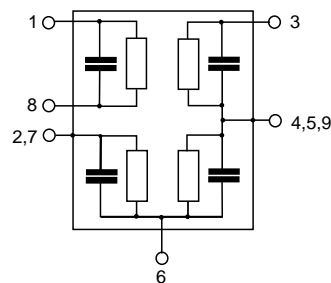
Features

- Package size 2.0 * 1.6 * 0.47 mm³
- RoHS compatible
- 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	B8511
SAW Duplexer	782.0 / 751.0 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: $Z_{Ant} = 50\ \Omega \parallel 15\text{ nH}$
 RX terminating impedance: $Z_{Rx} = 100\ \Omega$ (balanced)

Characteristics Tx-Antenna	min.	typ. @ 25 °C	max.	
Center frequency f_c	—	782.0	—	MHz
Maximum insertion attenuation α 777.0 ... 787.0 MHz	—	1.8	2.5	dB
Amplitude ripple (p-p) $\Delta\alpha$ 777.0 ... 787.0 MHz	—	0.6	1.5	dB
Error Vector Magnitude @ 25°C @ $f_{Carrier}$ 779.4 ... 784.6 MHz EVM ¹⁾	—	2.0	2.7	%
Error Vector Magnitude @ $f_{Carrier}$ 779.4 ... 784.6 MHz EVM ²⁾	—	2.0	4.0	%
Input VSWR (Tx port) 777.0 ... 787.0 MHz	—	1.4	2.0	
Output VSWR (Ant Port) 777.0 ... 787.0 MHz	—	1.5	2.0	

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



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SAW Duplexer	782.0 / 751.0 MHz

Data Sheet



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 ANT terminating impedance: Z_{Ant} = 50 Ω || 15 nH
 RX terminating impedance: Z_{Rx} = 100 Ω (balanced)

Characteristics Tx-Antenna	min.	typ. @ 25 °C	max.	
Absolute attenuation α				
10.0 ... 716.0 MHz	35	43	—	dB
716.0 ... 728.0 MHz	40	46	—	dB
728.0 ... 746.0 MHz	40	47	—	dB
746.0 ... 756.0 MHz	50	65	—	dB
758.0 ... 767.0 MHz	35	46	—	dB
767.0 ... 768.0 MHz	26	46	—	dB
768.0 ... 769.0 MHz	12	46	—	dB
769.0 ... 770.0 MHz	6	35	—	dB
770.0 ... 771.0 MHz	3	22	—	dB
771.0 ... 772.0 MHz	2.5	11	—	dB
808.0 ... 869.0 MHz	20	30	—	dB
869.0 ... 894.0 MHz	35	41	—	dB
1554.0 ... 1565.0 MHz	45	51	—	dB
1565.0 ... 1607.0 MHz	45	51	—	dB
1805.0 ... 2170.0 MHz	35	54	—	dB
2331.0 ... 2361.0 MHz	35	46	—	dB
2400.0 ... 2484.0 MHz	40	50	—	dB
3108.0 ... 3148.0 MHz	30	42	—	dB
3885.0 ... 3935.0 MHz	20	28	—	dB
4662.0 ... 4722.0 MHz	10	17	—	dB
5160.0 ... 5845.0 MHz	10	16	—	dB



SAW Components	B8511
SAW Duplexer	782.0 / 751.0 MHz

Data Sheet

SMD

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 ANT terminating impedance: Z_{Ant} = 50 Ω || 15 nH
 RX terminating impedance: Z_{Rx} = 100 Ω (balanced)

Characteristics Antenna-Rx	min.	typ. @ 25 °C	max.	
Center frequency f _c	—	751.0	—	MHz
Maximum insertion attenuation α 746.0 ... 756.0 MHz	—	1.6	2.2	dB
Amplitude ripple (p-p) Δα 746.0... 756.0 MHz	—	0.4	1.2	dB
Input VSWR (Ant port) 746.0 ... 756.0 MHz	—	1.4	2.0	
Output VSWR (Rx Port) 747.0 ... 756.0 MHz	—	1.5	2.0	
Common mode rejection ratio 746.0 ... 756.0 MHz	25	31	—	dB
Absolute attenuation α				
10.0 ... 650.0 MHz	50	66	—	dB
650.0 ... 730.0 MHz	35	44	—	dB
730.0 ... 736.0 MHz	30	43	—	dB
777.0 ... 787.0 MHz	55	61	—	dB
793.0 ... 805.0 MHz	40	53	—	dB
805.0 ... 2400.0 MHz	40	50	—	dB
2400.0 ... 2484.0 MHz	40	57	—	dB
2484.0 ... 4500.0 MHz	40	54	—	dB
4500.0 ... 6000.0 MHz	35	42	—	dB



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Characteristics

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 TX terminating impedance: $Z_{Tx} = 50\ \Omega$
 ANT terminating impedance: $Z_{Ant} = 50\ \Omega \parallel 15\text{ nH}$
 RX terminating impedance: $Z_{Rx} = 100\ \Omega$ (balanced)

Characteristics Tx-Rx	min.	typ. @ 25 °C	max.	
Attenuation α				
746.5 ... 752.0 MHz	54	59	—	dB
752.0 ... 755.5 MHz	54	59	—	dB
777.0 ... 787.0 MHz	58	63	—	dB
1552.0 ... 1574.0 MHz	30	74	—	dB
2328.0 ... 2361.0 MHz	30	67	—	dB
3104.0 ... 3148.0 MHz	30	64	—	dB
Common mode attenuation α				
777.0 ... 787.0 MHz	60	65	—	dB

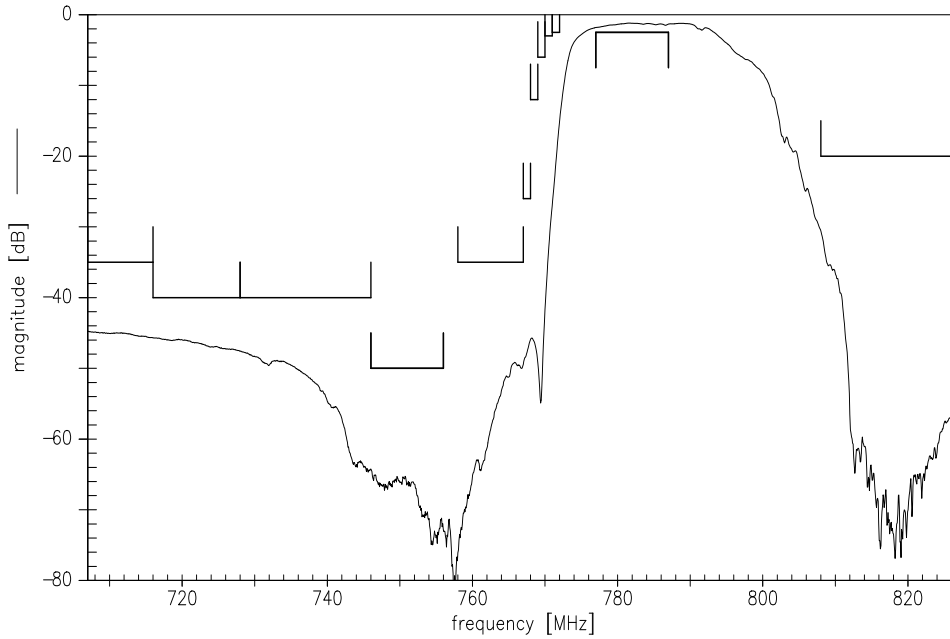
Maximum Ratings

Storage temperature range	T_{stg}	-40/+85	°C	
DC voltage	V_{DC}	5 ¹⁾	V	
ESD voltage	V_{ESD}	100 ²⁾	V	Machine Model
ESD voltage	V_{ESD}	200 ³⁾	V	Human Body Model
ESD voltage	V_{ESD}	600 ⁴⁾	V	Charged Device Model
Input power at Tx Port				
777.0 ... 787.0 MHz	P_{in}	29	dBm	} CW 50 °C, 5,000h
elsewhere	P_{in}	10	dBm	

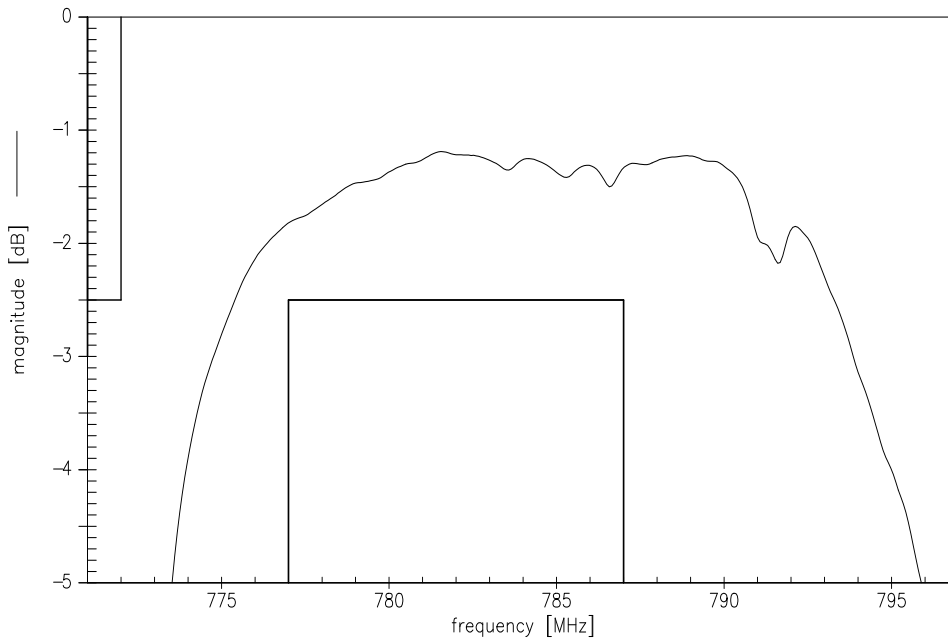
- 1) 168h Damp Heat Steady State acc. to IEC 60068-2-67 Cy.
- 2) Acc. to FESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses.
- 3) Acc. to JESD22-A114F (HBM - Human Body Level), 1 negative & 1 positive pulses.
- 4) Acc. to JESD22-C101C (CDM - Fiel Inducted Charged Device Model), 3 negative & 3 positive pulses.

Frequency Response TX-ANT

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



Frequency Response TX-ANT



Frequency Response RX-ANT

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



SAW Components

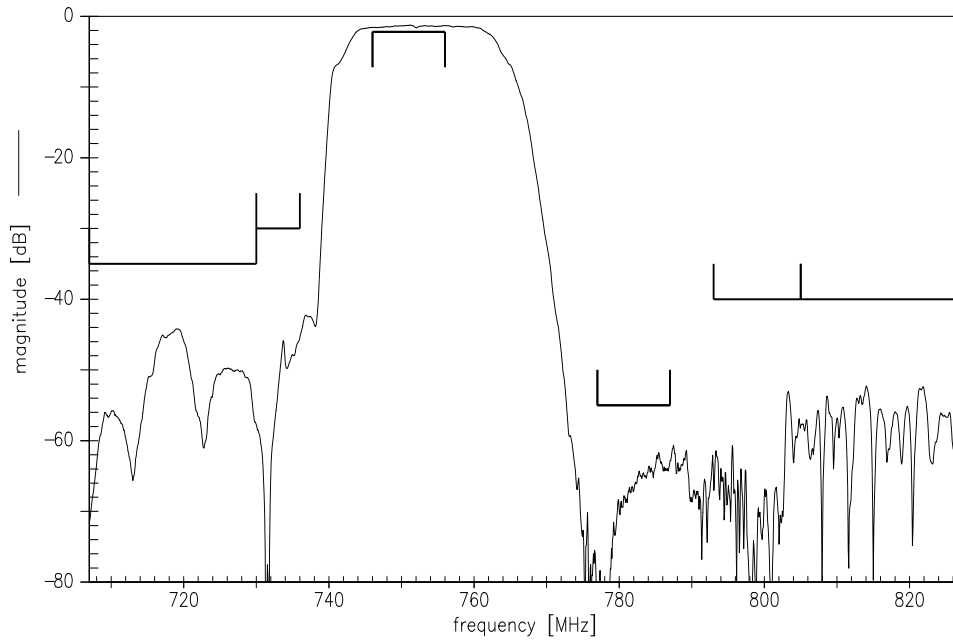
B8511

SAW Duplexer

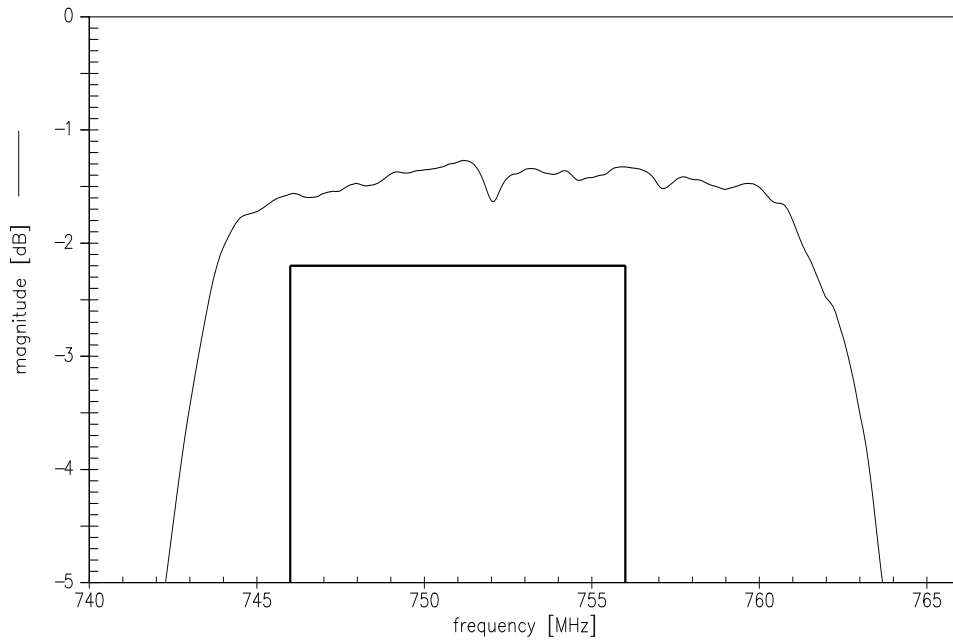
782.0 / 751.0 MHz

Data Sheet

SMD



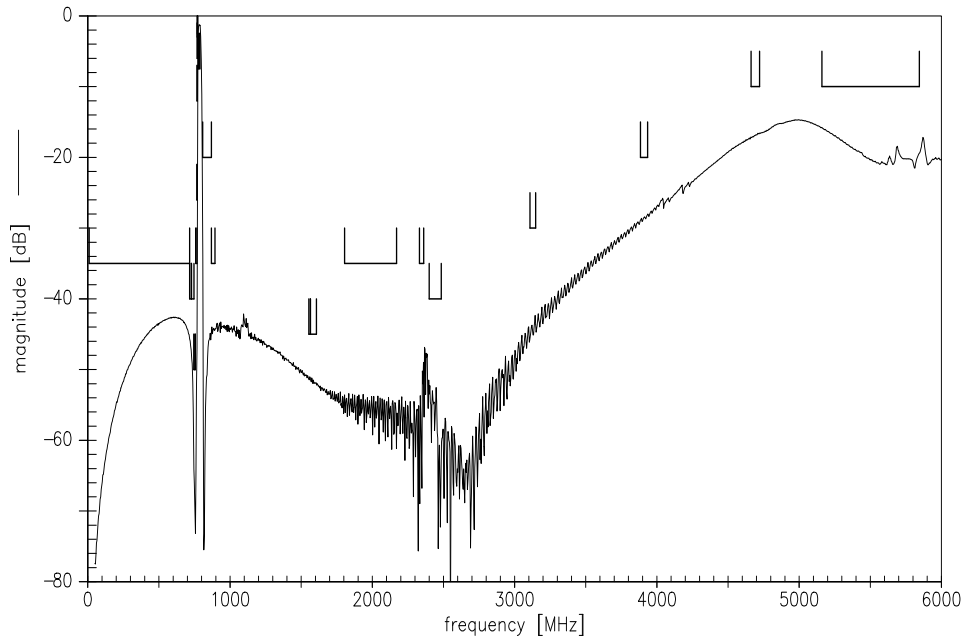
Frequency Response RX-ANT



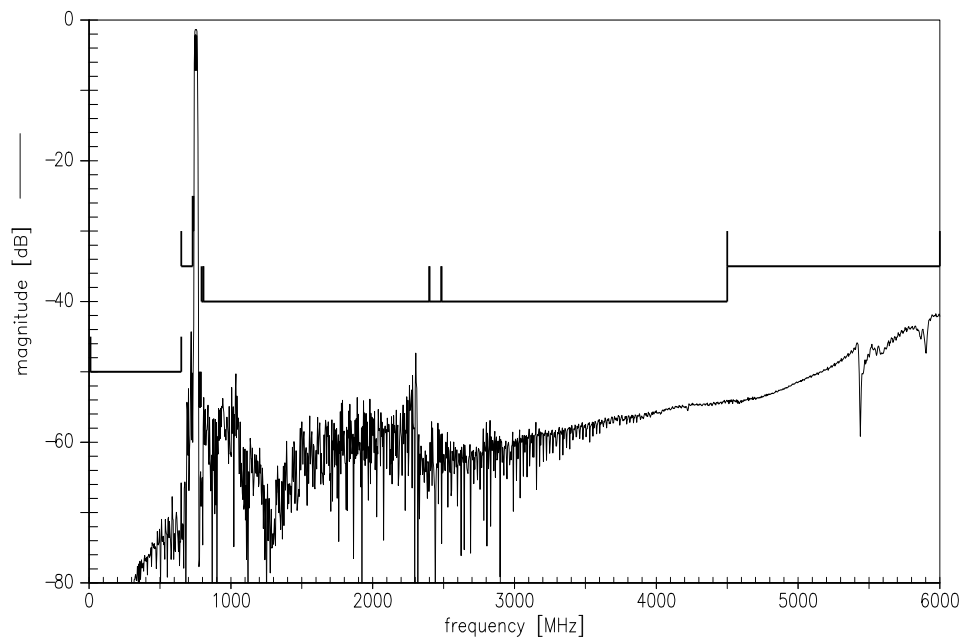
Please read *cautions and warnings* and *important notes* at the end of this document.



Frequency Response ANT-TX

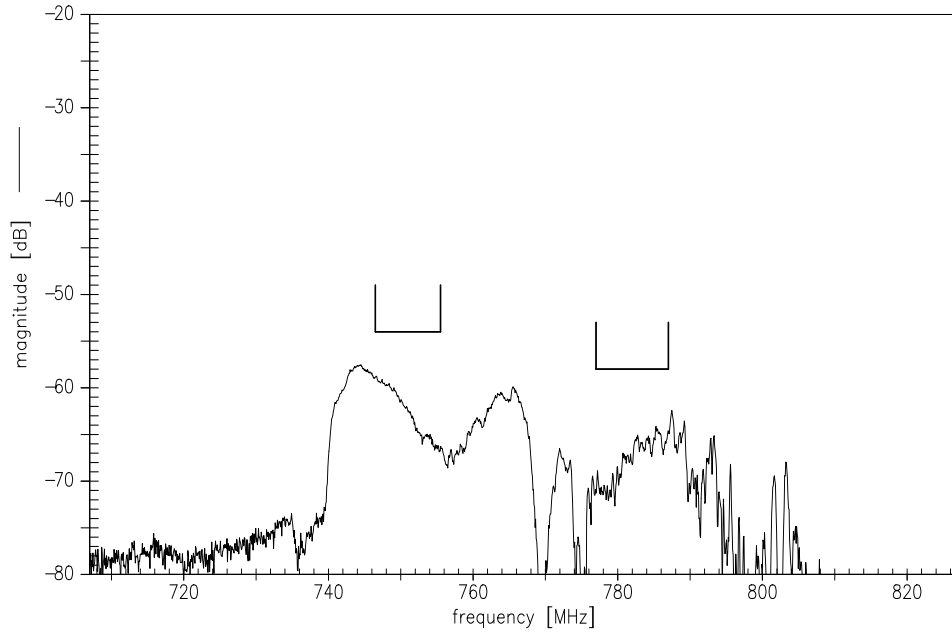


Frequency Response ANT-RX

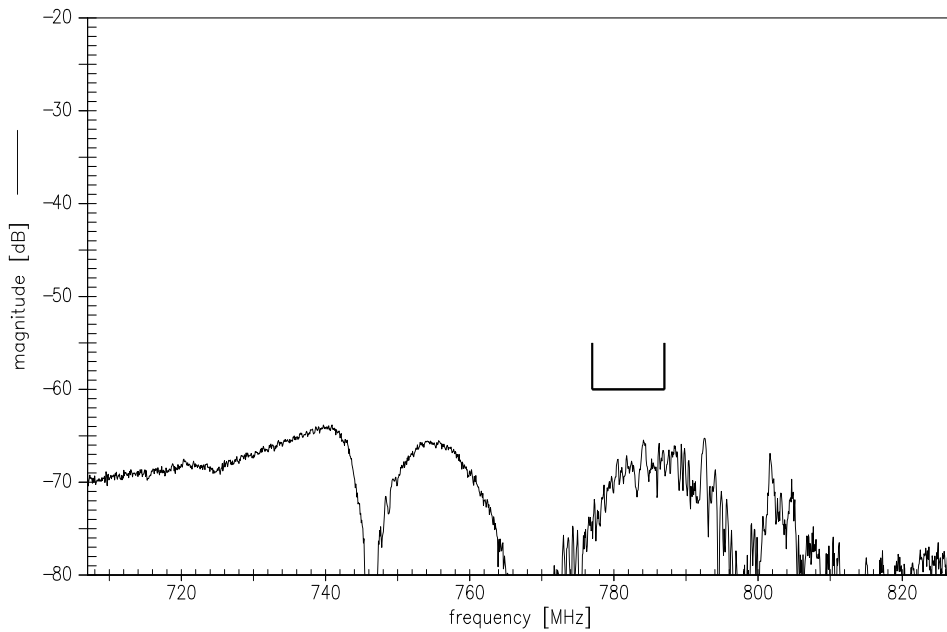




Frequency Response TX-RX (Isolation)



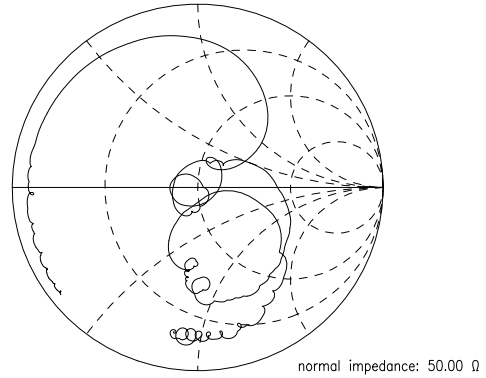
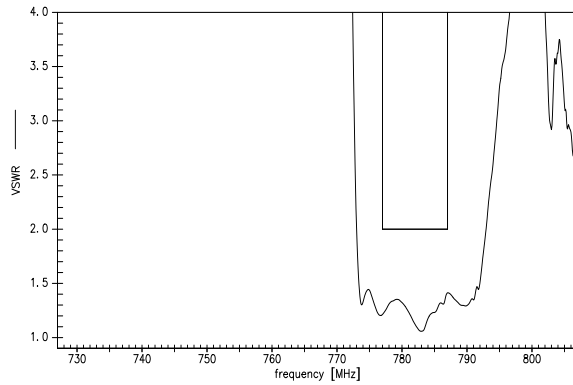
Frequency Response Common Mode Isolation



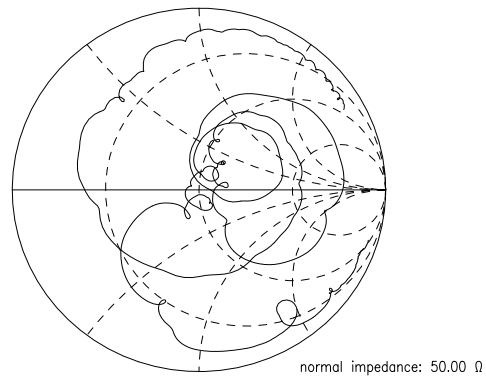
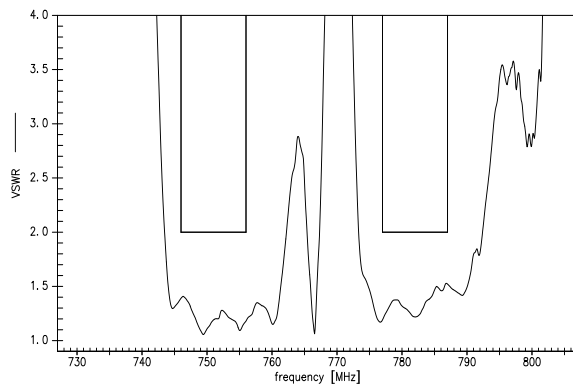
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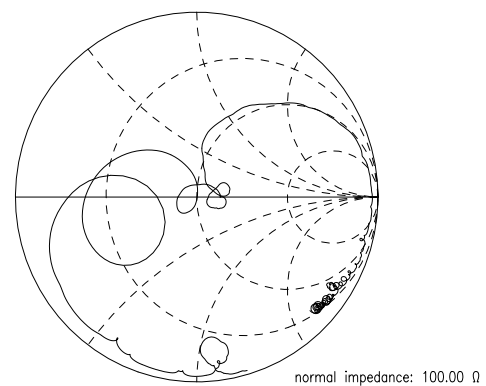
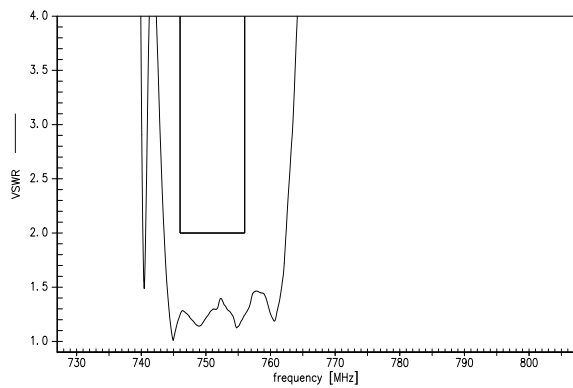
S11 VSWR (TX)



S22 VSWR (ANT)



S33 VSWR (RX)





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References

Type	B8511
Ordering code	B39781B8511P810
Marking and package	C61157-A8-A77
Packaging	F61074-V8247-Z000
Date codes	L_1126
S-parameters	B8511_NB_UN.s4p, B8511_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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Published by EPCOS AG
Systems, Acoustics, Waves Business Group
P.O. Box 80 17 09, 81617 Munich, GERMANY

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