



SAW Components

SAW Duplexer

LTE Band 17 (lower 700MHz band, blocks B and C)

Series/type: B8523
Ordering code: B39741B8523P810

Date: June 01, 2016
Version: 2.1

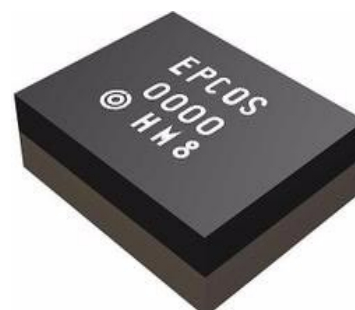
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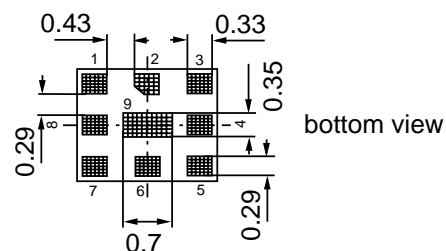
Data sheet


Application

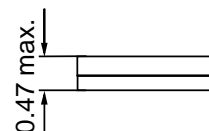
- SAW duplexer for mobile telephone LTE band 17 (lower 700 MHz band, blocks B and C) systems
- Low insertion attenuation
- Low amplitude ripple
- Single ended to balanced transformation in Antenna - Rx path
- Impedance transformation 50 Ω to 100 Ω in Antenna - Rx path


Features

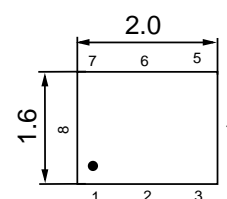
- Package size 2.0 x 1.6 mm²
- Max. package height 0.47 mm
- RoHS compatible
- Approx. weight 0.006g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- **Moisture Sensitive Level 3**



bottom view



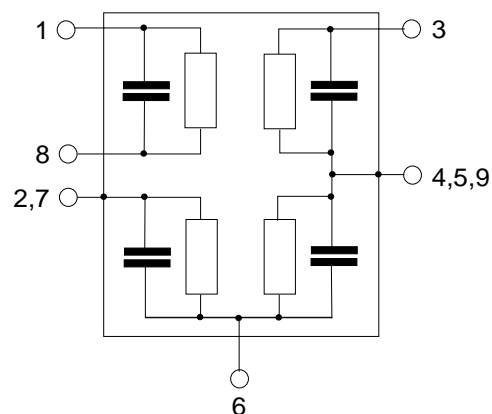
side view



top view

Pin configuration

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



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Characteristics

Temperature range for specification:	T = -30 °C to +90 °C
Antenna terminating impedance:	Z _{ANT} = 50 Ω 13.0 nH
RX terminating impedance:	Z _{RX} = 100 Ω
TX terminating impedance:	Z _{TX} = 50 Ω

Characteristics TX - ANT		min.	typ. @ 25 °C	max.	
Center frequency	f _C	—	710.0	—	MHz
Maximum insertion attenuation	α _{max}	—	1.5	2.3	dB
704.0 ... 716.0 MHz					
Amplitude ripple (p-p)	Δα	—	0.5	1.3	dB
704.0 ... 716.0 MHz					
Error Vector Magnitude		—	1.7	3.0	%
@f _{carrier} 706.4 ... 713.6 MHz	EVM ¹⁾				
Input VSWR (TX port)		—	1.5	2.0	
704.0 ... 716.0 MHz					
Output VSWR (ANT port)		—	1.5	2.0	
704.0 ... 716.0 MHz					

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

Data sheet


Characteristics

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Antenna terminating impedance:	Z _{ANT} = 50 Ω 13.0nH
RX terminating impedance:	Z _{RX} = 100 Ω
TX terminating impedance:	Z _{TX} = 50 Ω

Characterisitcs TX - ANT				min.	typ. @ 25 °C	max.	
Attenuation			α				
	10.0 ... 690.0		MHz	30	35	—	dB
	690.0 ... 698.0		MHz	4	12	—	dB
	722.0 ... 728.0		MHz	2	7	—	dB
	729.0 ... 734.0		MHz	25	49	—	dB
	734.0 ... 746.0		MHz	45	60	—	dB
	746.0 ... 768.0		MHz	30	43	—	dB
	768.0 ... 805.0		MHz	25	42	—	dB
	869.0 ... 894.0		MHz	30	40	—	dB
	1408.0 ... 1432.0		MHz	35	44	—	dB
	1565.4 ... 1573.4		MHz	42	45	—	dB
	1573.4 ... 1577.5		MHz	42	45	—	dB
	1577.5 ... 1585.5		MHz	42	46	—	dB
	1597.5 ... 1605.9		MHz	42	46	—	dB
	1805.0 ... 1880.0		MHz	35	47	—	dB
	1930.0 ... 1990.0		MHz	38	49	—	dB
	2110.0 ... 2155.0		MHz	47	50	—	dB
	2155.0 ... 2170.0		MHz	40	49	—	dB
	2400.0 ... 2484.0		MHz	35	49	—	dB
	2816.0 ... 2864.0		MHz	25	43	—	dB

Data sheet


Characteristics

Temperature range for specification:	T = -30 °C to +90 °C
Antenna terminating impedance:	Z _{ANT} = 50 Ω 13.0 nH
RX terminating impedance:	Z _{RX} = 100 Ω
TX terminating impedance:	Z _{TX} = 50 Ω

Characteristics ANT - RX		min.	typ. @ 25 °C	max.	
Center frequency	f _C	—	740.0	—	MHz
Maximum insertion attenuation	α _{max}	—	1.8	2.5	dB
734.0 ... 746.0 MHz					
Amplitude ripple (p-p)	Δα	—	0.5	1.2	dB
734.0 ... 746.0 MHz					
Input VSWR (ANT port)		—	1.4	2.0	
734.0 ... 746.0 MHz					
Output VSWR (RX port)		—	1.4	2.0	
734.0 ... 746.0 MHz					
Common Mode Rejection Ratio	CMRR	28	33	—	dB
734.0 ... 746.0 MHz					

Data sheet


Characteristics

Temperature range for specification:	T = -30 °C to +90 °C
Antenna terminating impedance:	Z _{ANT} = 50 Ω 13.0 nH
RX terminating impedance:	Z _{RX} = 100 Ω
TX terminating impedance:	Z _{TX} = 50 Ω

Characterisitcs ANT - RX				min.	typ. @ 25 °C	max.	
Attenuation			α				
	10.0 ...	704.0	MHz	35	65	—	dB
	704.0 ...	716.0	MHz	50	62	—	dB
	716.0 ...	727.0	MHz	10	19	—	dB
	727.0 ...	728.0	MHz	5	15	—	dB
	776.0 ...	793.0	MHz	35	38	—	dB
	793.0 ...	805.0	MHz	40	48	—	dB
	805.0 ...	6000.0	MHz	45	56	—	dB
IMD Product Level Limits¹⁾							
at f_{TX}=710.0 MHz, f_{RX}=740.0 MHz							
Blocker 1		30.0	MHz	—	-128	-106	dBm
Blocker 2	674.0 ...	686.0	MHz	—	-107	-97	dBm
Blocker 3	1438.0 ...	1462.0	MHz	—	-107	-97	dBm
Blocker 4	2142.0 ...	2178.0	MHz	—	-125	-109	dBm

¹⁾ IMD product level limits for power levels P_{TX}=21.5dBm (antenna port output power) and P_{Blocker}=-15dBm (antenna port input power)

Data sheet


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Antenna terminating impedance:	Z _{ANT} = 50 Ω 13.0 nH
RX terminating impedance:	Z _{RX} = 100 Ω
TX terminating impedance:	Z _{TX} = 50 Ω

Characterisitcs TX - RX				min.	typ. @ 25 °C	max.	
Differential mode isolation							
			α				
	704.0 ... 716.0		MHz	60	65	—	dB
	734.0 ... 738.0		MHz	58	66	—	dB
	738.0 ... 742.0		MHz	55	64	—	dB
	742.0 ... 746.0		MHz	55	62	—	dB
	1408.0 ... 1432.0		MHz	30	73	—	dB
	2112.0 ... 2148.0		MHz	30	66	—	dB
	2816.0 ... 2864.0		MHz	30	62	—	dB
Common mode isolation							
			α				
	704.0 ... 716.0		MHz	55	57	—	dB


Maximum ratings

Storage temperature range	T_{stg}	-40/+85	°C	Machine Model } LTE uplink 5MHz $T = 55^{\circ}\text{C}$, 5000 hrs
DC voltage	V_{DC}	5 ¹⁾	V	
ESD voltage	V_{ESD}	100 ²⁾	V	
Input power at 706.5 ... 713.5 MHz	P_{IN}	29	dBm	
elsewhere		10	dBm	

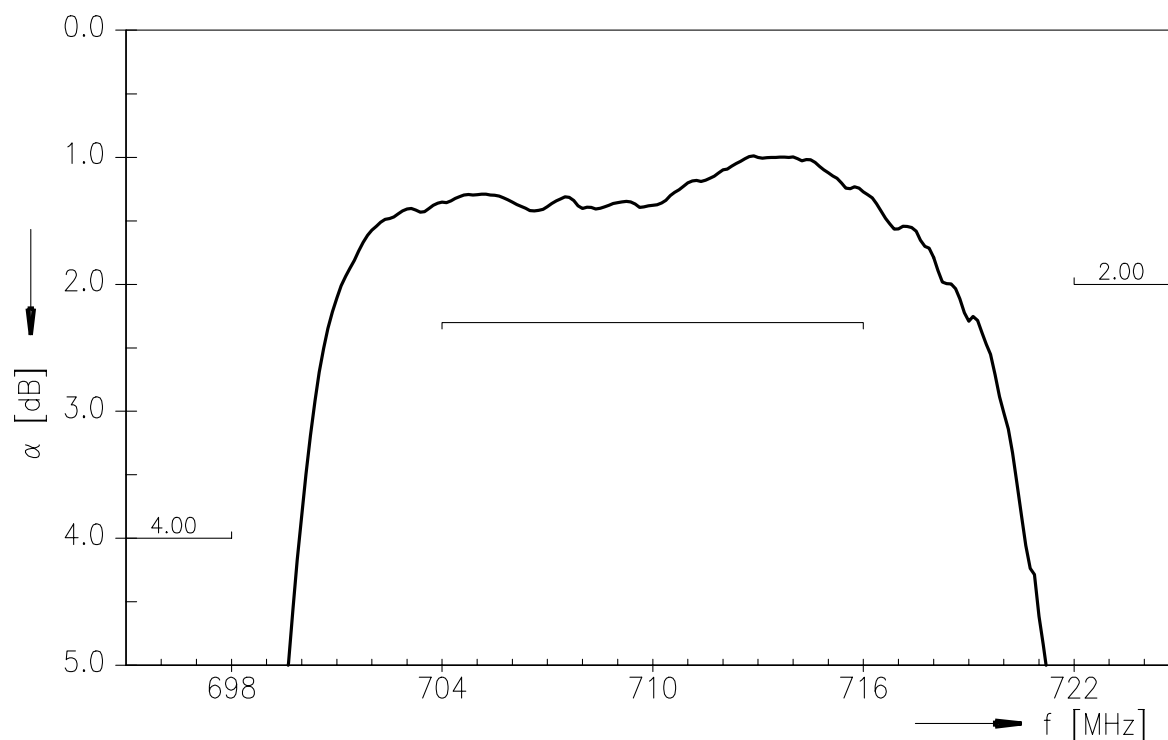
1) 168h Damp Heat Steady State acc. to IEC 60068-2-67 Cy

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

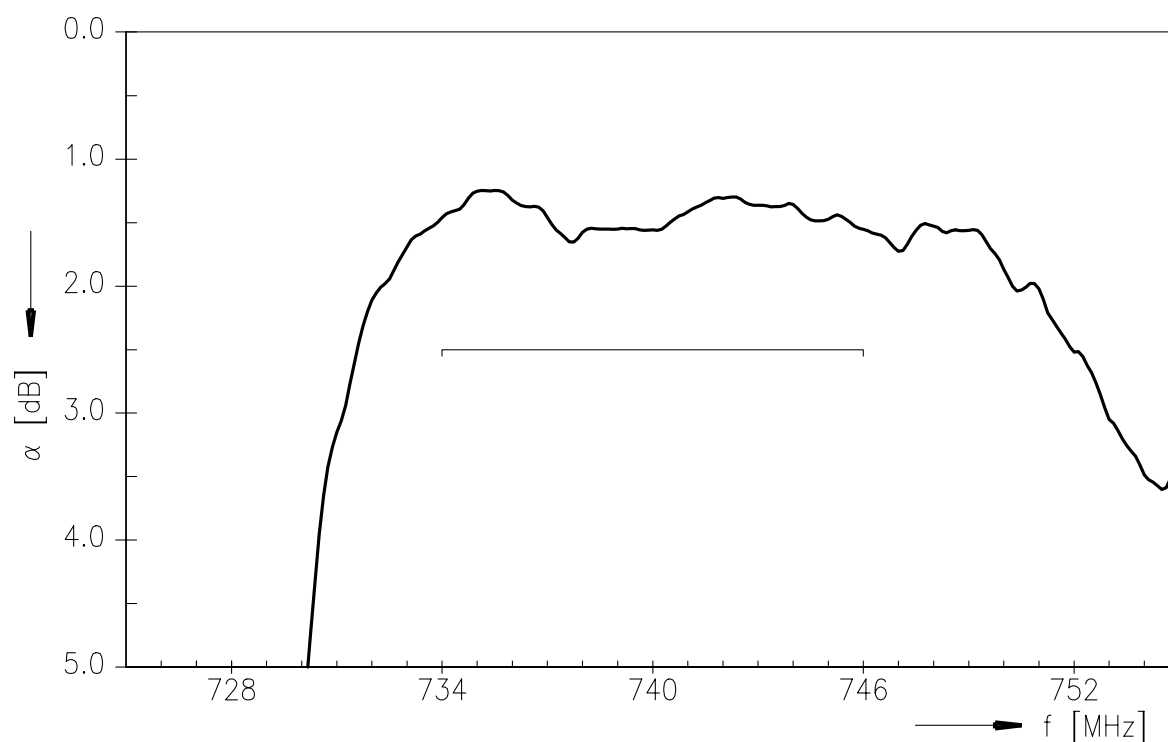
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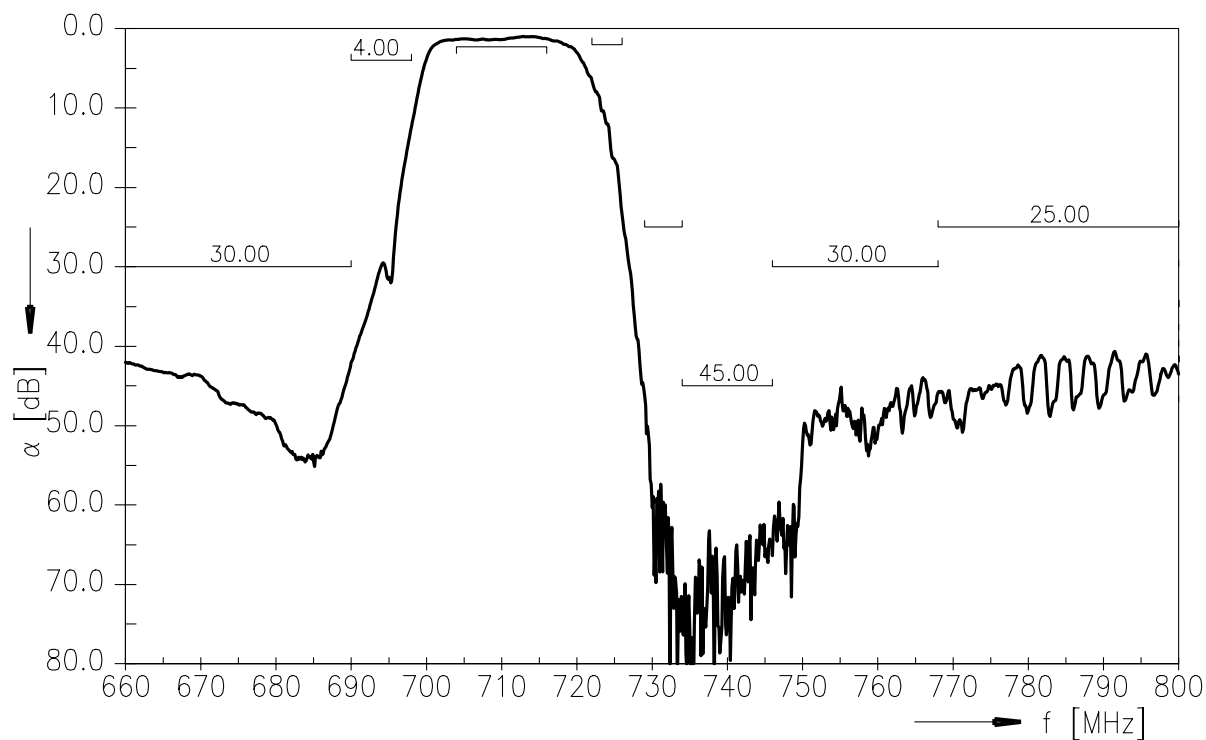
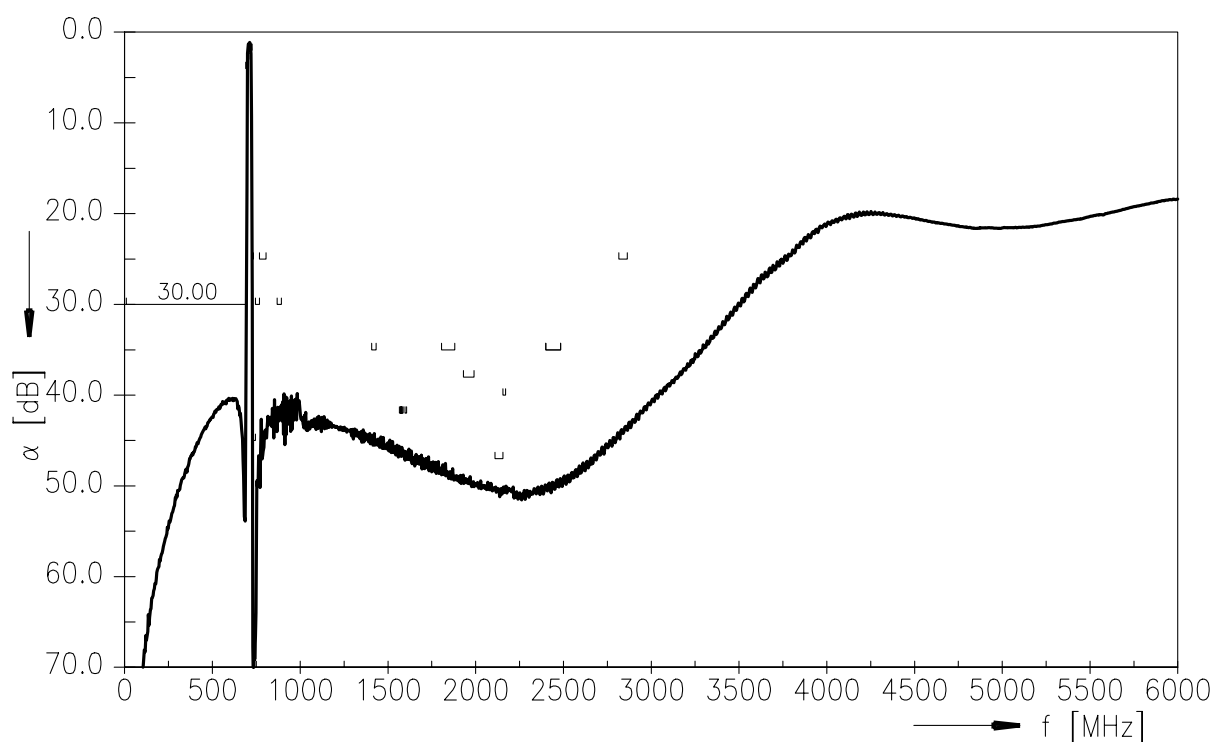
Frequency Response TX-ANT



Frequency Response RX-ANT



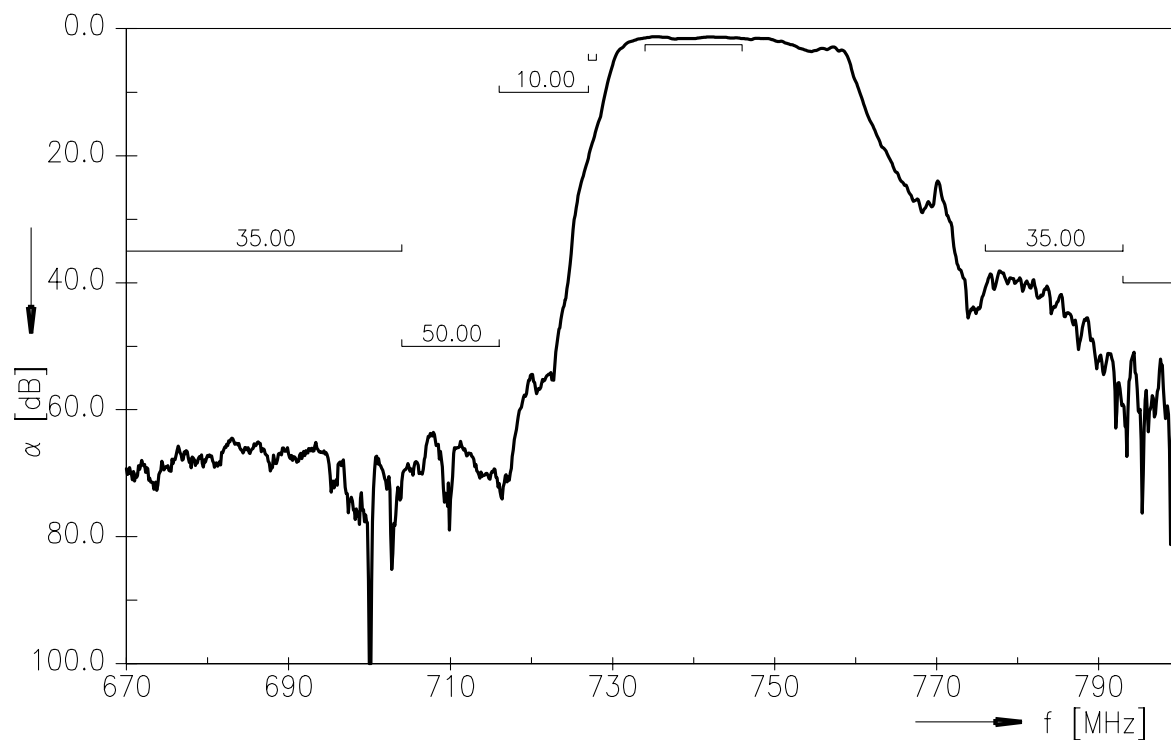
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Frequency Response TX-ANT

Frequency Response TX-ANT (wideband)


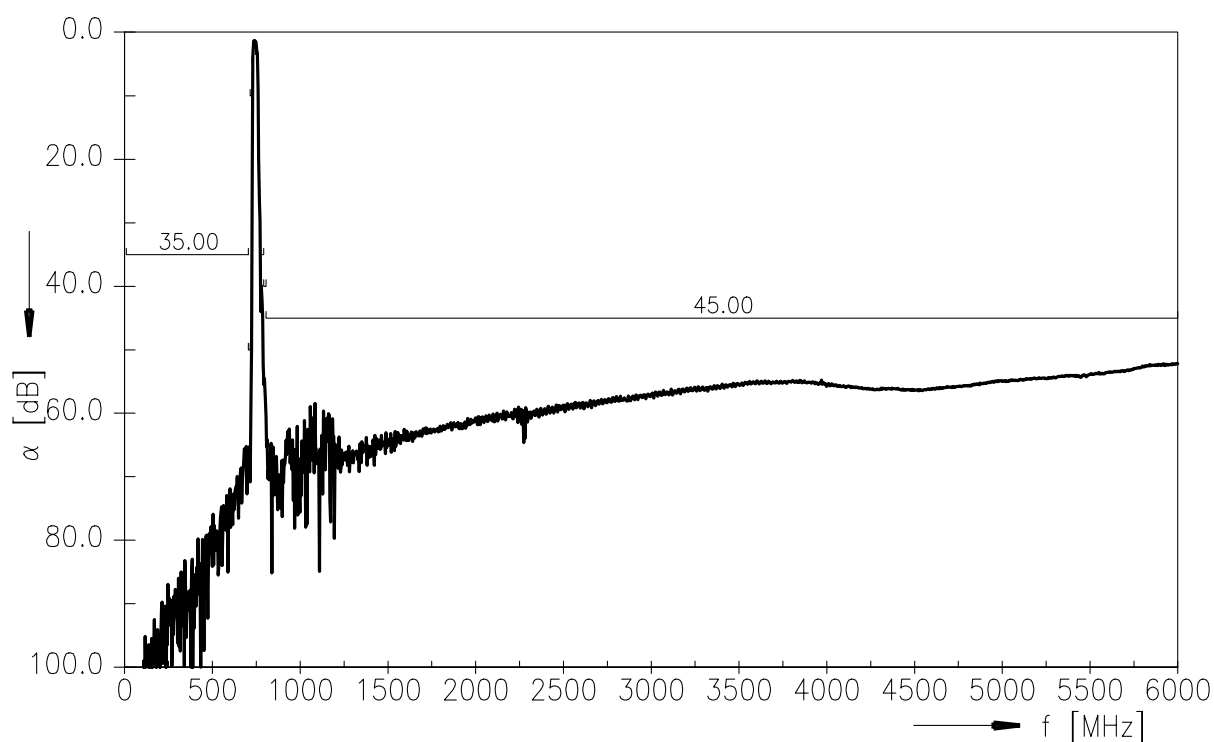
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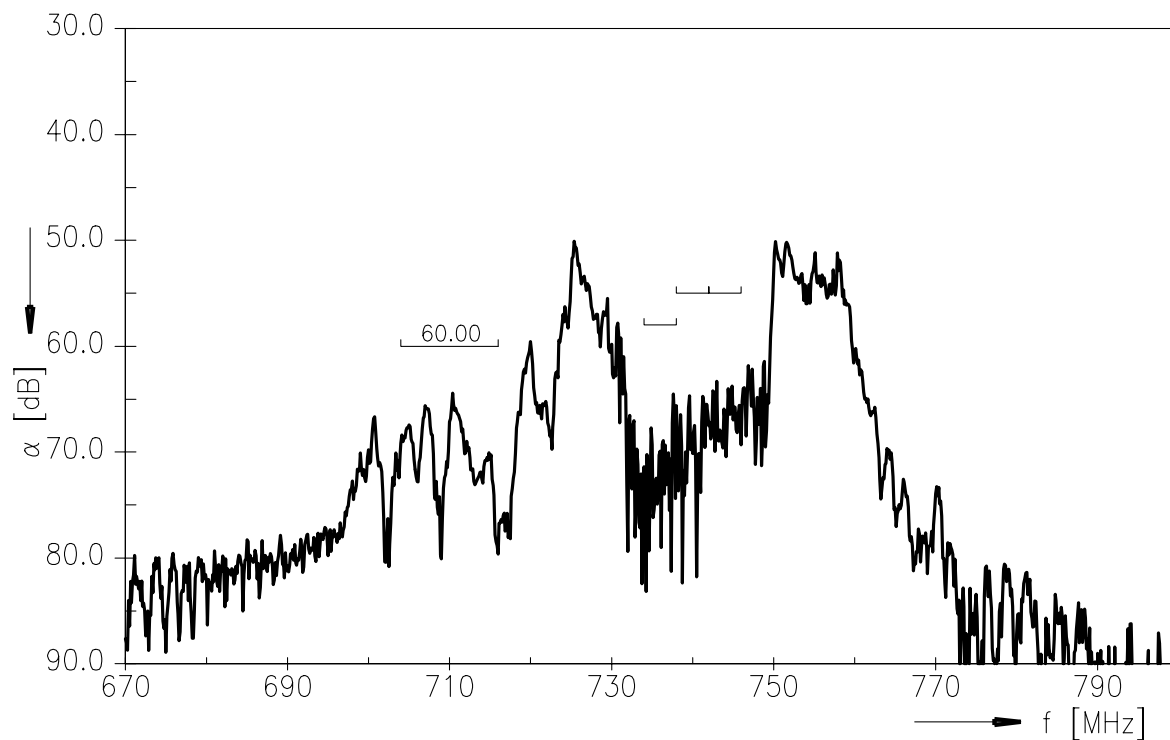
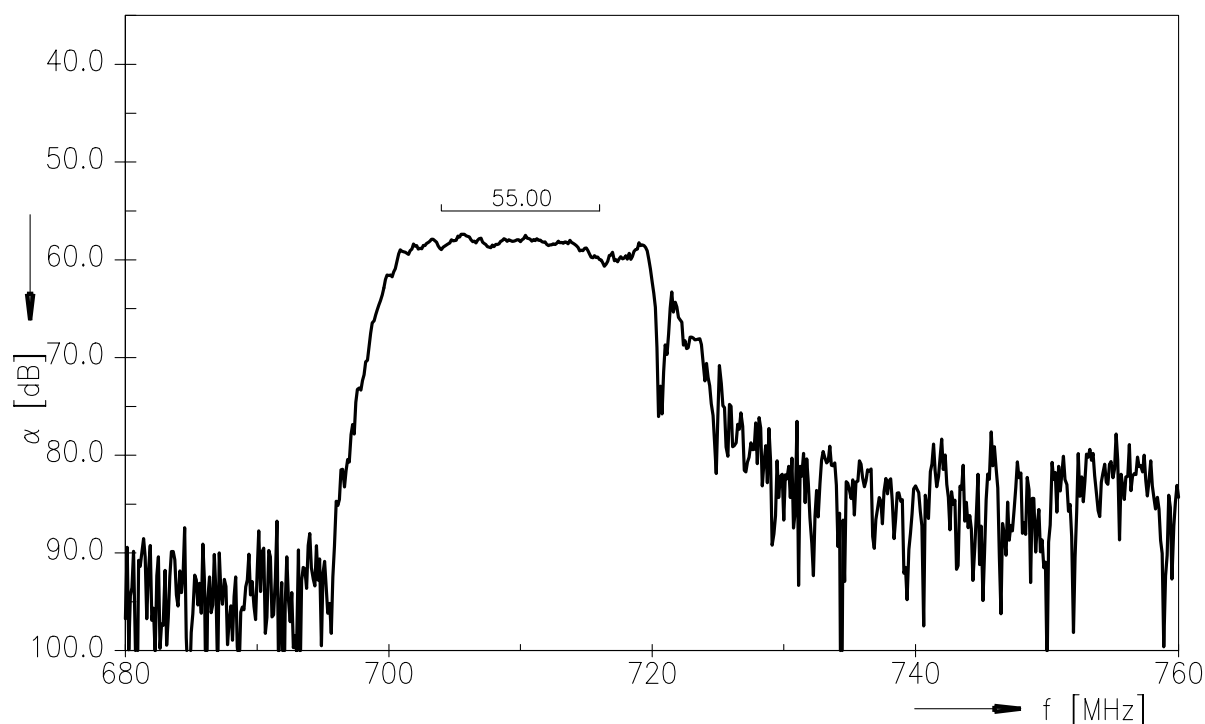
Frequency Response RX-ANT



Frequency Response RX-ANT (wideband)



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Frequency Response TX-RX : Differential mode isolation

Frequency Response TX-RX : Common mode isolation


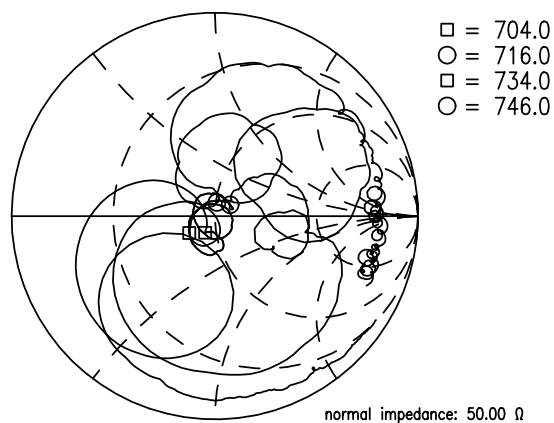
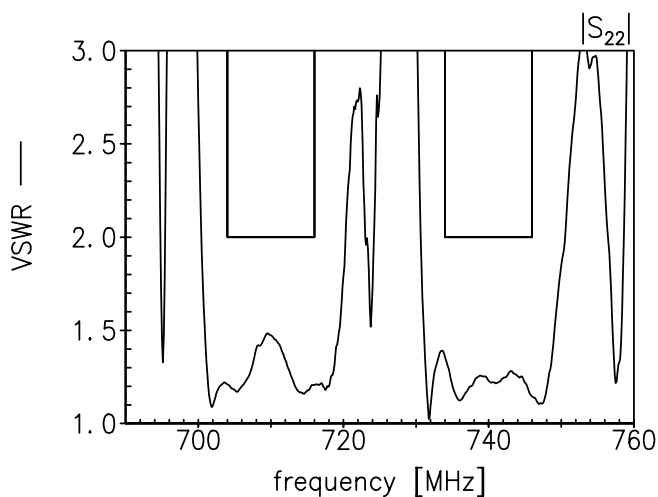
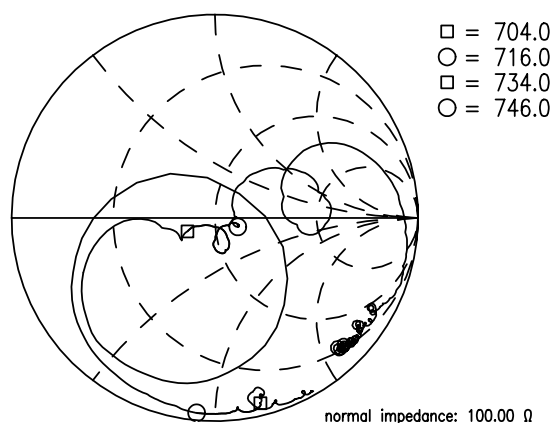
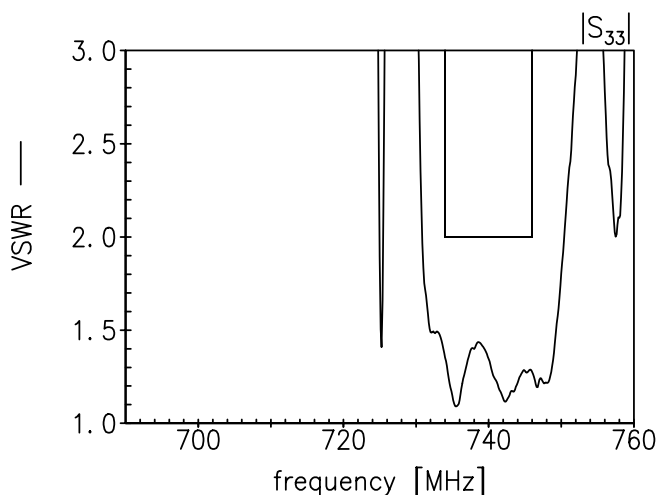
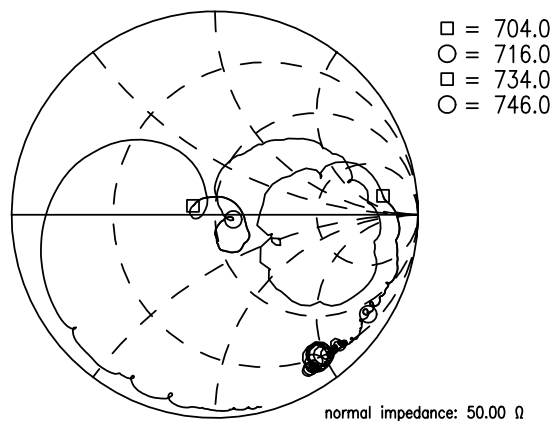
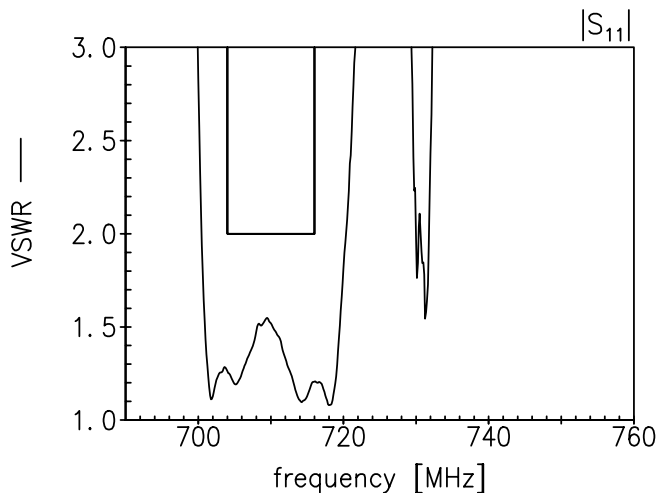
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VSWR S_{11} TX-port

S_{22} ANT-port

S_{33} RX-port



Data sheet



References

Type	B8523
Ordering code	B39741B8523P810
Marking and package	C61157-A8-A38
Packaging	F61074-V8247-Z000
Date codes	L_1126
S-parameters	B8523_NB_UN.s4p, B8523_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.
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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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