



SAW Components

SAW Rx 2in1 filter

GSM 1800 / GSM 1900

Series/type:	B9818
Ordering code:	B39202B9818P810
Date:	July 30, 2013
Version:	2.0

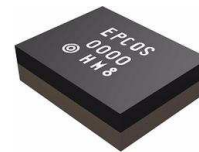
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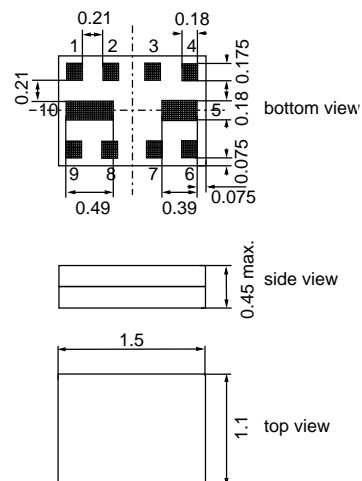
Data sheet

Application

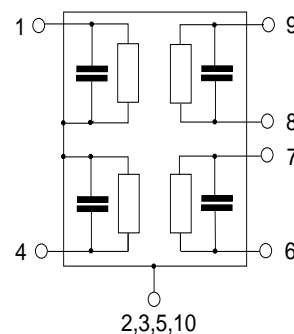
- Low-loss 2in1 RF filter for mobile telephone GSM 1800 and GSM 1900 systems, receive path (Rx)
- Usable passband:
 Filter 1 (GSM 1800): 75 MHz
 Filter 2 (GSM 1900): 60 MHz
- Unbalanced to unbalanced operation for both filters
- Low amplitude ripple
- Suitable for GPRS class 1 to 12


Features

- Package size 1.5 x 1.1 x 0.45 mm³
- Moisture Sensitive Level 3
- RoHS compatible
- Approx. weight 0.003g
- Package for Surface Mount Technology (SMT)
- Ni, gold-plated terminals
- Electrostatic Sensitive Device (ESD)


Pin configuration

- 1 Input [Filter 1]
- 4 Input [Filter 2]
- 6 Output [Filter 2]
- 9 Output [Filter 1]
- 2,3,5,7,8,10 Case ground



Data sheet


Characteristics of Filter 1 (GSM 1800)

Temperature range for specification: $T = -20\text{ °C to }+85\text{ °C}$
 Terminating source impedance: $Z_S = 50\ \Omega$
 Terminating load impedance: $Z_L = 50\ \Omega$

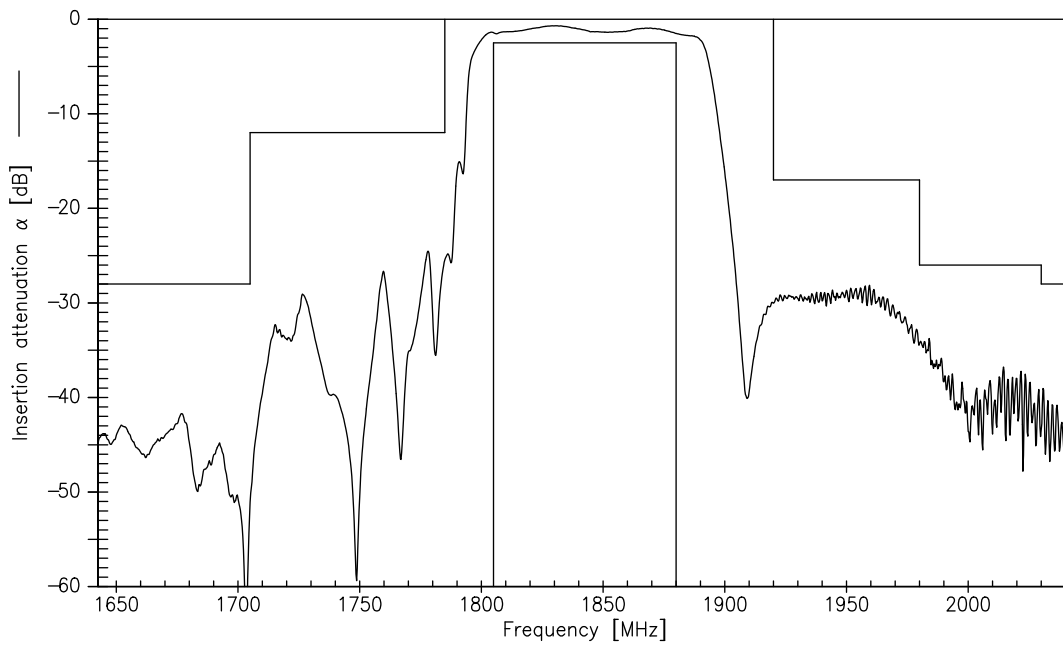
		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	1842.5	—	MHz
Maximum insertion attenuation	α_{\max}	—	1.6	2.5	dB
1805.0 ... 1880.0 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	0.9	1.9	dB
1805.0 ... 1880.0 MHz					
Input VSWR		—	2.1	2.5	
1805.0 ... 1880.0 MHz					
Output VSWR		—	2.1	2.5	
1805.0 ... 1880.0 MHz					
Attenuation	α				
10.0 ... 902.0 MHz		37	42	—	dB
902.0 ... 940.0 MHz		37	42	—	dB
940.0 ... 1705.0 MHz		28	41	—	dB
1705.0 ... 1785.0 MHz		12	24	—	dB
1920.0 ... 1980.0 MHz		17	28	—	dB
1980.0 ... 2030.0 MHz		26	33	—	dB
2030.0 ... 2400.0 MHz		28	39	—	dB
2400.0 ... 2500.0 MHz		32	41	—	dB
2500.0 ... 2775.0 MHz		28	35	—	dB
2775.0 ... 2880.0 MHz		38	52	—	dB
2880.0 ... 3610.0 MHz		28	49	—	dB
3610.0 ... 3760.0 MHz		38	47	—	dB
3760.0 ... 5415.0 MHz		28	34	—	dB
5415.0 ... 5640.0 MHz		28	32	—	dB
5640.0 ... 6000.0 MHz		28	32	—	dB

Maximum ratings of Filter 1

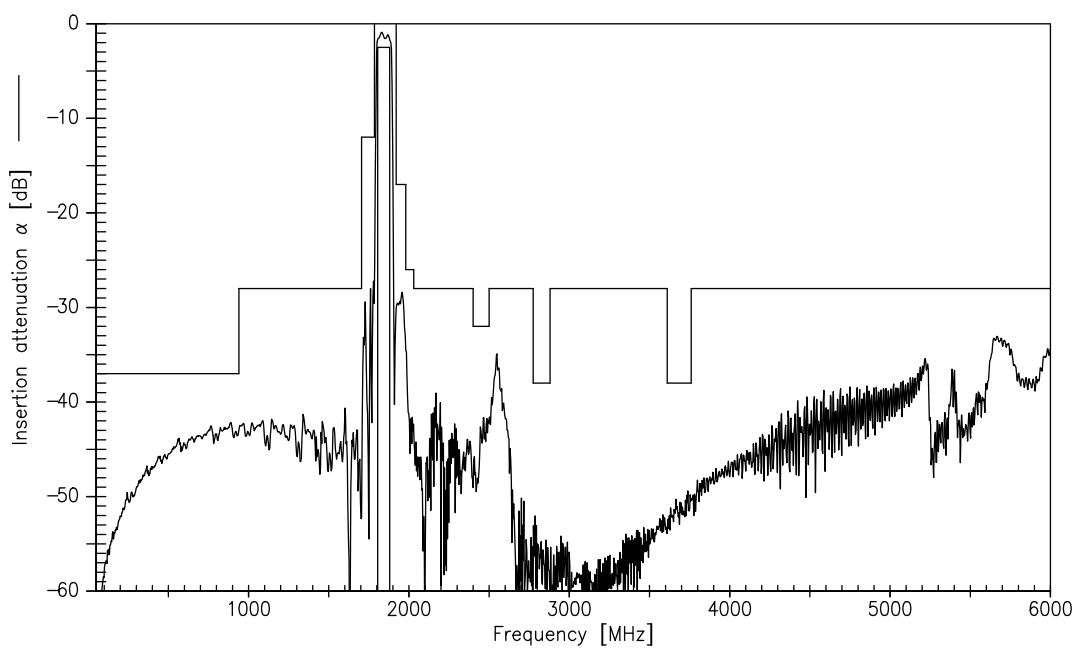
Operable temperature range	T	-40/+85	°C	
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	5	V	
ESD voltage	V _{ESD}	50 ¹⁾	V	machine model, 10 pulse
Input Power at				
GSM 850, GSM 900	P _{IN}	15	dBm	effective power in the on-state, duty cycle 4:8
GSM 1800, GSM 1900	P _{IN}	15	dBm	
Tx bands				

¹⁾ acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulse.

Transfer function Filter 1 (GSM1800)



Transfer function Filter 1 (GSM1800) - Wideband



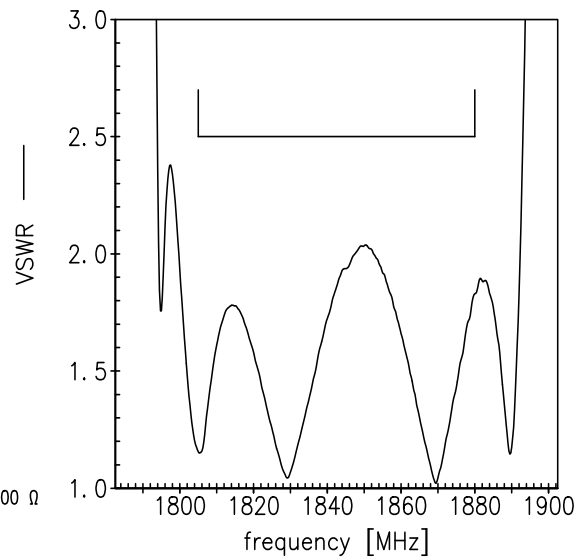
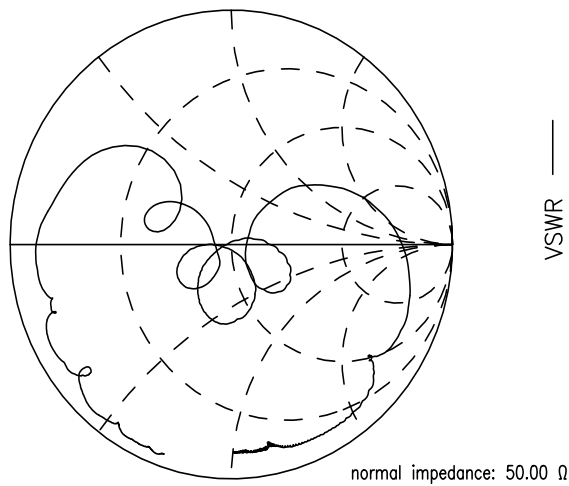
Please read *cautions and warnings* and *important notes* at the end of this document.

Data sheet

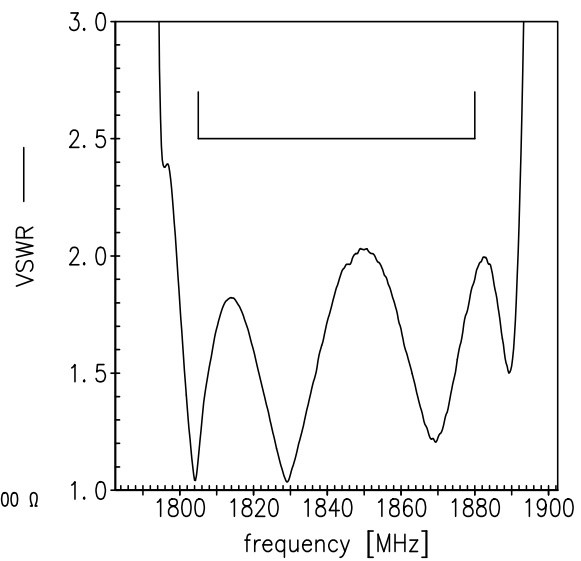
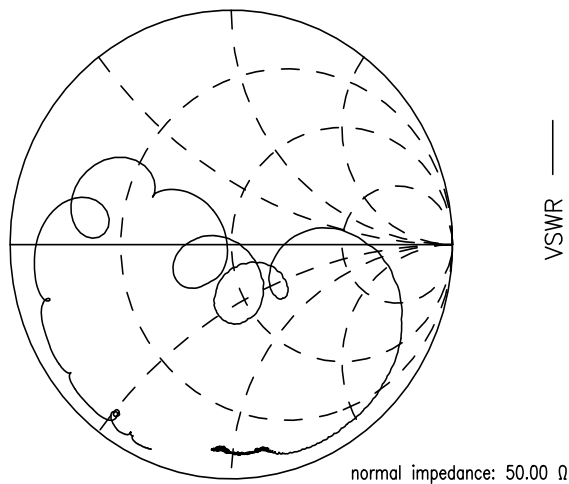


Smith charts Filter 1 (GSM1800)

S_{11} function



S_{22} function



Data sheet

Characteristics of Filter 2 (GSM 1900)

 Temperature range for specification: $T = -20\text{ °C to }+85\text{ °C}$

 Terminating source impedance: $Z_S = 50\ \Omega$

 Terminating load impedance: $Z_L = 50\ \Omega$

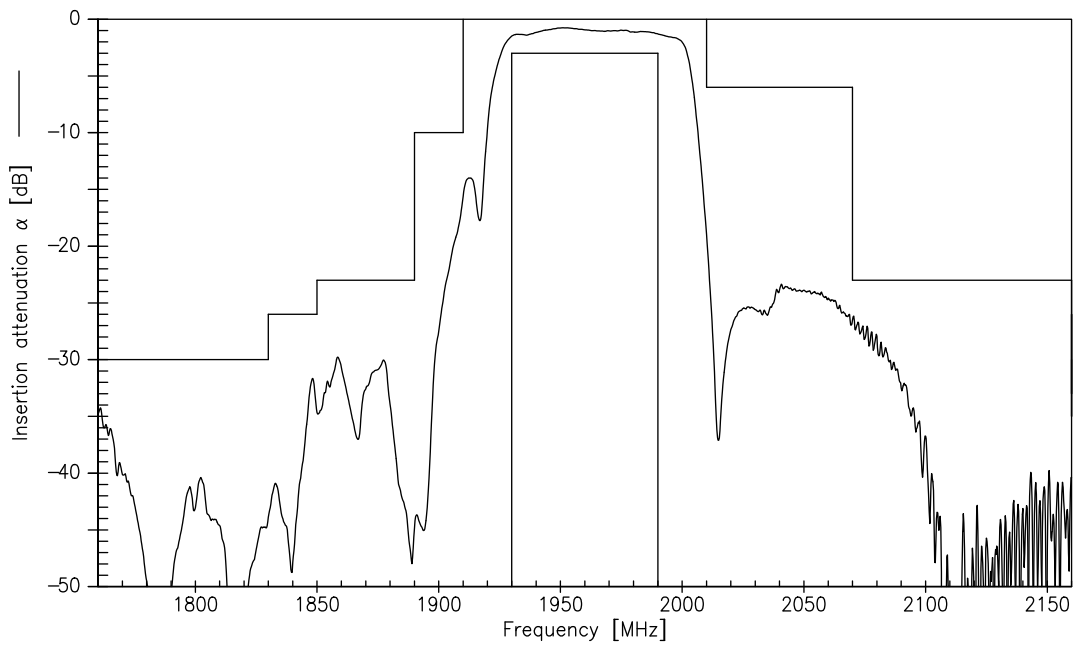
		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	1960.0	—	MHz
Maximum insertion attenuation	α_{\max}	—	1.5	3.0	dB
1930.0 ... 1990.0 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	0.7	2.3	dB
1930.0 ... 1990.0 MHz					
Input VSWR		—	1.6	2.2	
1930.0 ... 1990.0 MHz					
Output VSWR		—	1.7	2.2	
1930.0 ... 1990.0 MHz					
Attenuation	α				
10.0 ... 1200.0 MHz		35	39	—	dB
1200.0 ... 1510.0 MHz		35	39	—	
1510.0 ... 1830.0 MHz		30	35	—	
1830.0 ... 1850.0 MHz		26	31	—	
1850.0 ... 1890.0 MHz		23	29	—	
1890.0 ... 1910.0 MHz		10	14	—	
2010.0 ... 2070.0 MHz		6	23	—	
2070.0 ... 2400.0 MHz		23	27	—	
2400.0 ... 2500.0 MHz		33	38	—	
2500.0 ... 3860.0 MHz		26	31	—	
3860.0 ... 3980.0 MHz		35	48	—	
3980.0 ... 5790.0 MHz		30	44	—	
5790.0 ... 6000.0 MHz		30	41	—	

Maximum ratings of Filter 2

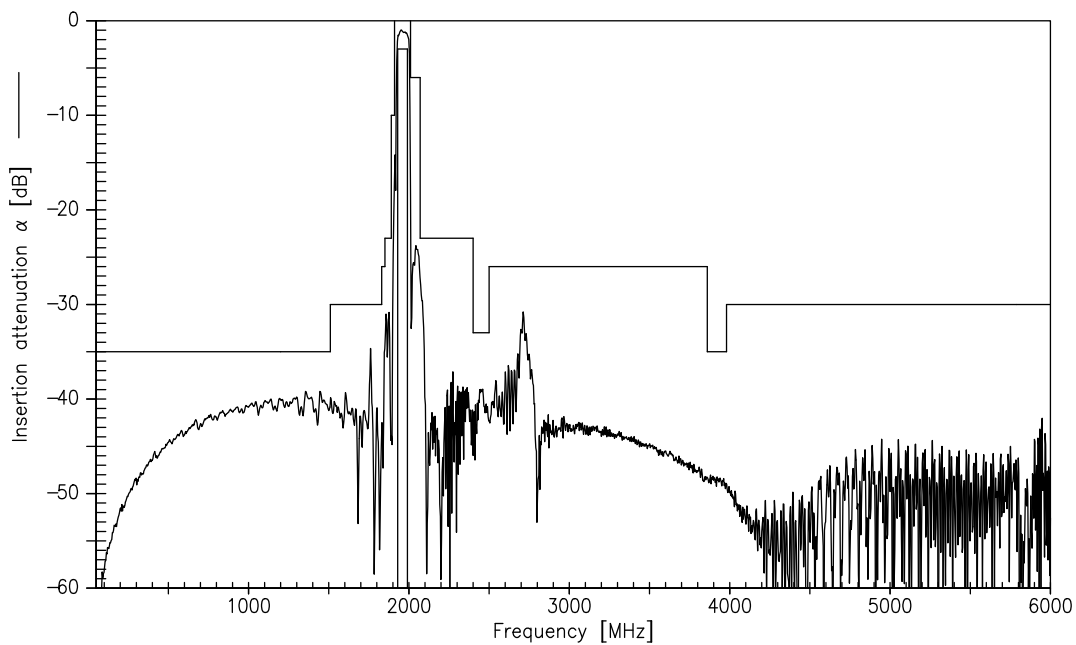
Operable temperature range	T	-40/+85	°C	
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	5	V	
ESD voltage	V _{ESD}	50 ¹⁾	V	machine model, 10 pulse
Input Power at				
GSM 850, GSM 900	P _{IN}	15	dBm	effective power in the on-state, duty cycle 4:8
GSM 1800, GSM 1900	P _{IN}	15	dBm	
Tx bands				

¹⁾ acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulse.

Transfer function Filter 2 (GSM1900)



Transfer function Filter 2 (GSM1900) - Wideband



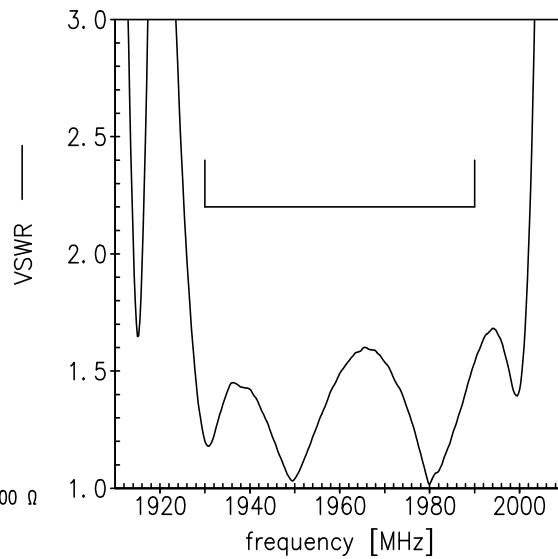
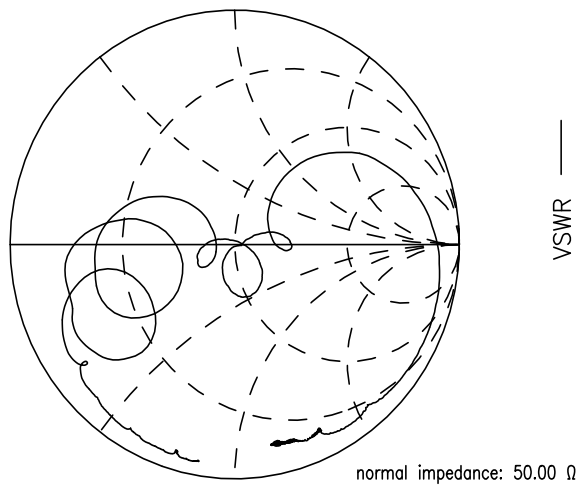
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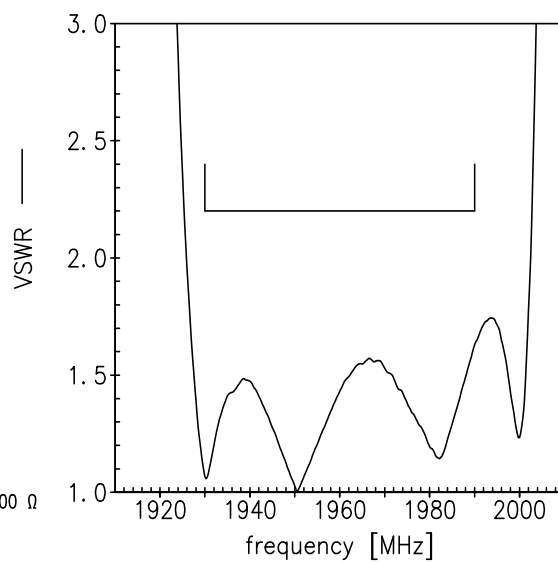
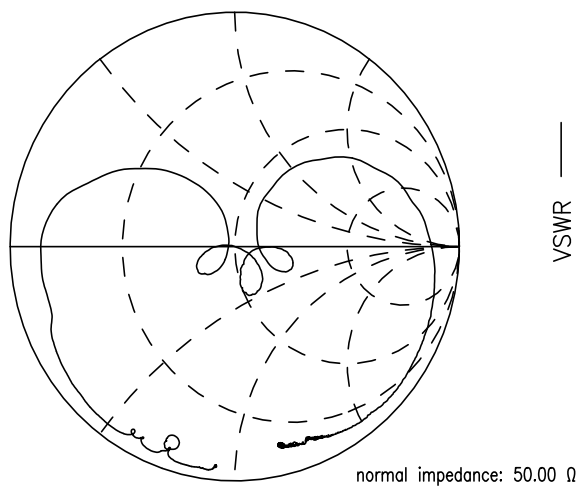


Smith charts Filter 2 (GSM1900)

S_{11} function



S_{22} function



SAW Components	B9818
SAW Rx 2in1 filter	1842.5 / 1960.0 MHz

Data sheet



References

Type	B9818
Ordering code	B39202B9818P810
Marking and package	C61157-A8-A19
Packaging	F61074-V8227-Z000
Date codes	L_1126
S-parameters	B9818_LB_NB.s2p, B9818_LB_WB.s2p B9818_UB_NB.s2p, B9818_UB_WB.s2p 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

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