



SAW Components

SAW Rx 2in1 filter

GSM 1900 / GSM 1800

Series/type:	B9915
Ordering code:	B39202B9915P810
Date:	September 23, 2013
Version:	2.0

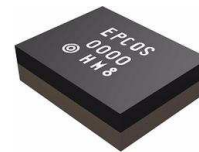
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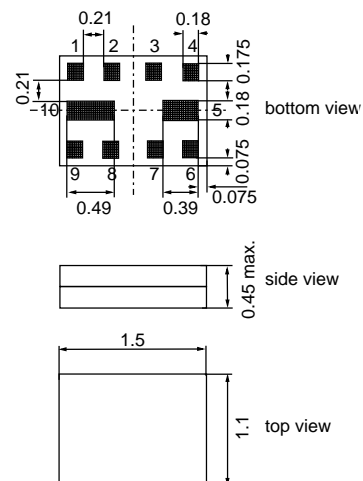
Data sheet

Application

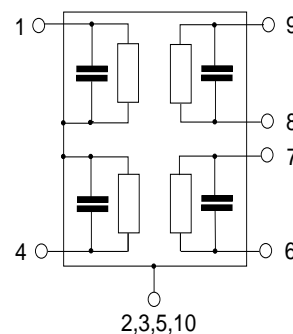
- Low-loss 2in1 RF filter for mobile telephone GSM 1900 and GSM 1800 systems, receive path (Rx)
- Usable passband:
 Filter 1 (GSM 1900): 60 MHz
 Filter 2 (GSM 1800): 75 MHz
- Unbalanced to unbalanced operation for both filters
- Low amplitude ripple
- Suitable for GPRS class 1 to 12


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 1900)

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

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

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

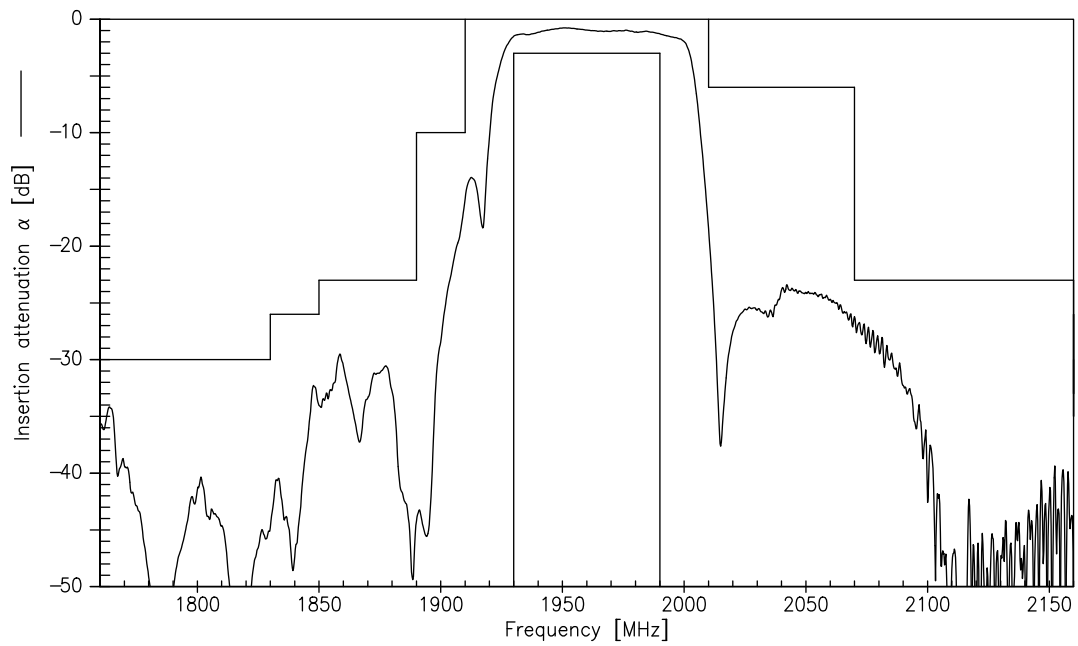
				min.	typ. @ 25 °C	max.	
Center frequency	f_C			—	1960.0	—	MHz
Maximum insertion attenuation	α_{\max}			—	1.4	3.0	dB
		1930.0 ... 1990.0	MHz				
Amplitude ripple (p-p)	$\Delta\alpha$			—	0.8	2.3	dB
		1930.0 ... 1990.0	MHz				
Input VSWR				—	1.7	2.2	
		1930.0 ... 1990.0	MHz				
Output VSWR				—	1.8	2.2	
		1930.0 ... 1990.0	MHz				
Attenuation	α						
		10.0 ... 1200.0	MHz	35	39	—	dB
		1200.0 ... 1510.0	MHz	35	39	—	dB
		1510.0 ... 1830.0	MHz	30	34	—	dB
		1830.0 ... 1850.0	MHz	26	32	—	dB
		1850.0 ... 1890.0	MHz	23	29	—	dB
		1890.0 ... 1910.0	MHz	10	15	—	dB
		2010.0 ... 2070.0	MHz	6	20	—	dB
		2070.0 ... 2400.0	MHz	23	27	—	dB
		2400.0 ... 2500.0	MHz	33	38	—	dB
		2500.0 ... 3860.0	MHz	26	31	—	dB
		3860.0 ... 3980.0	MHz	35	48	—	dB
		3980.0 ... 5790.0	MHz	30	43	—	dB
		5790.0 ... 6000.0	MHz	30	41	—	dB

Maximum ratings of Filter 1

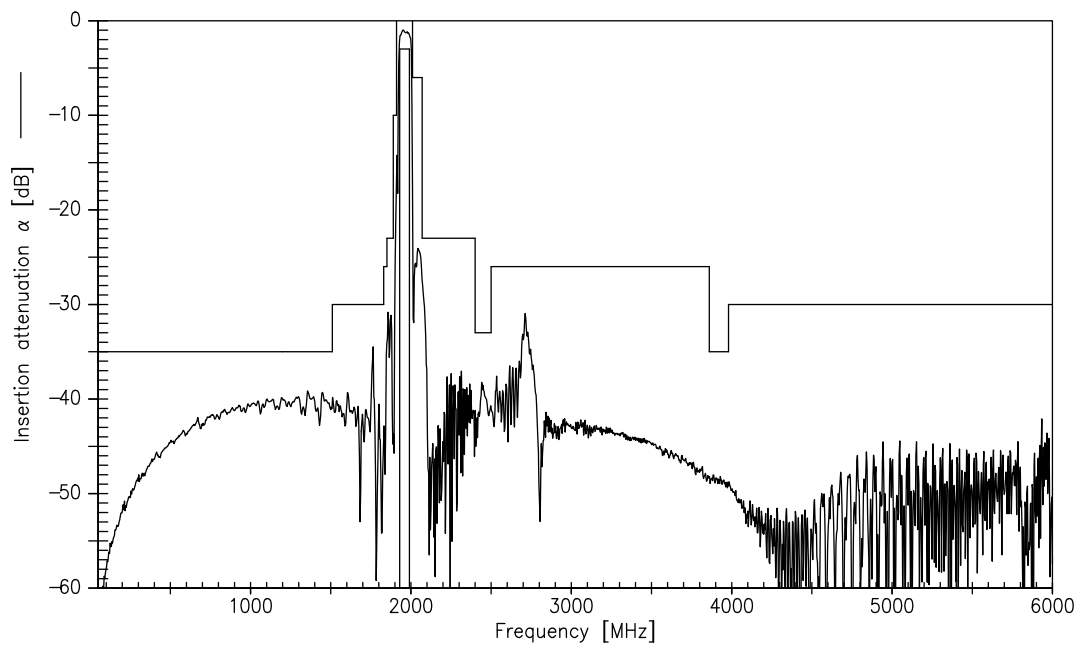
Operable temperature range	T	-40/+85	°C	
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	5	V	
ESD voltage	V _{ESD}	50 ¹⁾	V	machine model, 10 pulse
Input Power at				
GSM 850, GSM 900	P _{IN}	15	dBm	effective power in the on-state, duty cycle 4:8
GSM 1800, GSM 1900	P _{IN}	15	dBm	
Tx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

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

Transfer function Filter 1 (GSM1900)



Transfer function Filter 1 (GSM1900) - Wideband



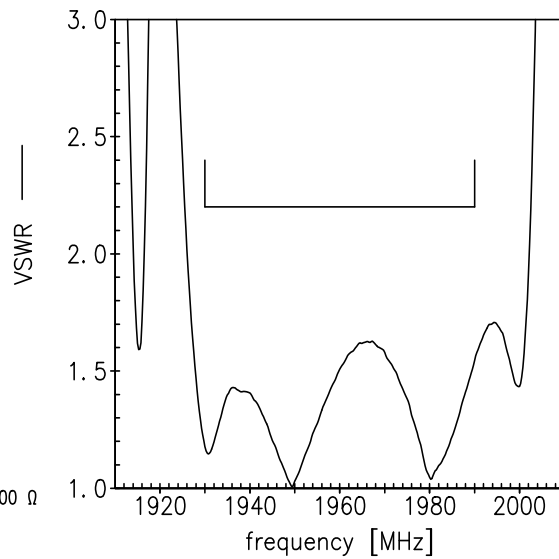
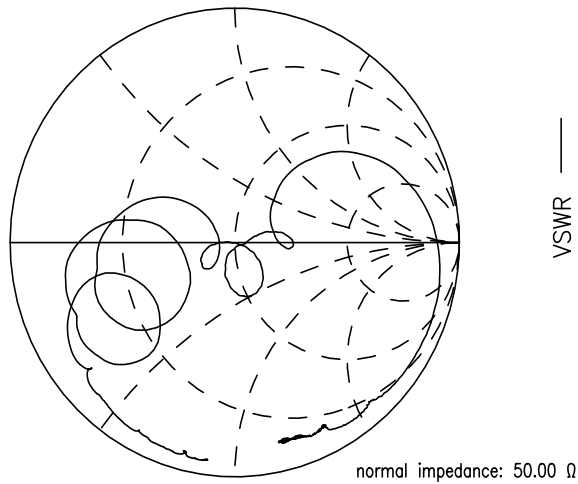
Please read *cautions and warnings* and *important notes* at the end of this document.

Data sheet

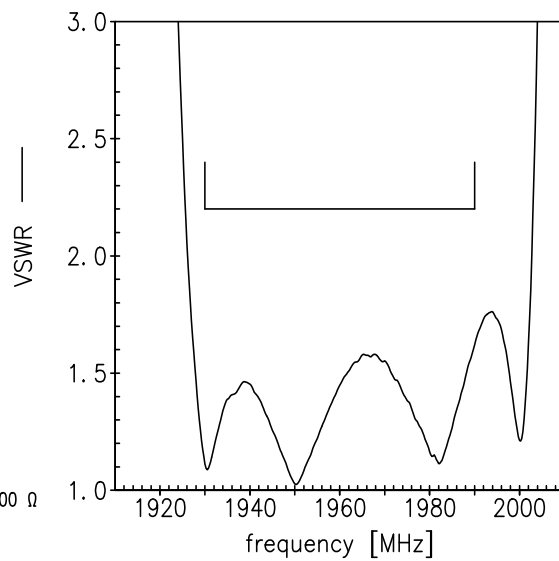
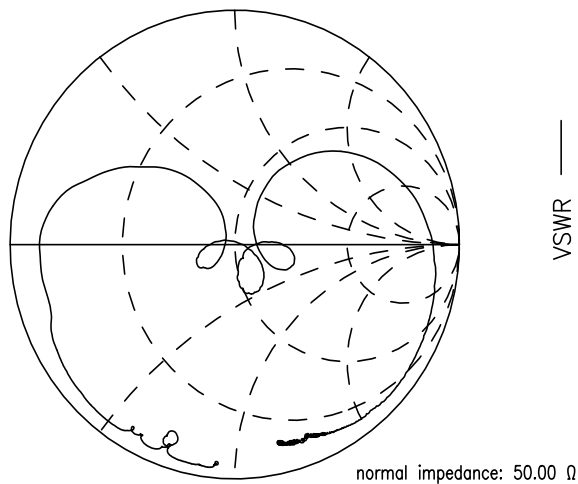


Smith charts Filter 1 (GSM1900)

S_{11} function



S_{22} function



Data sheet

Characteristics of Filter 2 (GSM 1800)

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

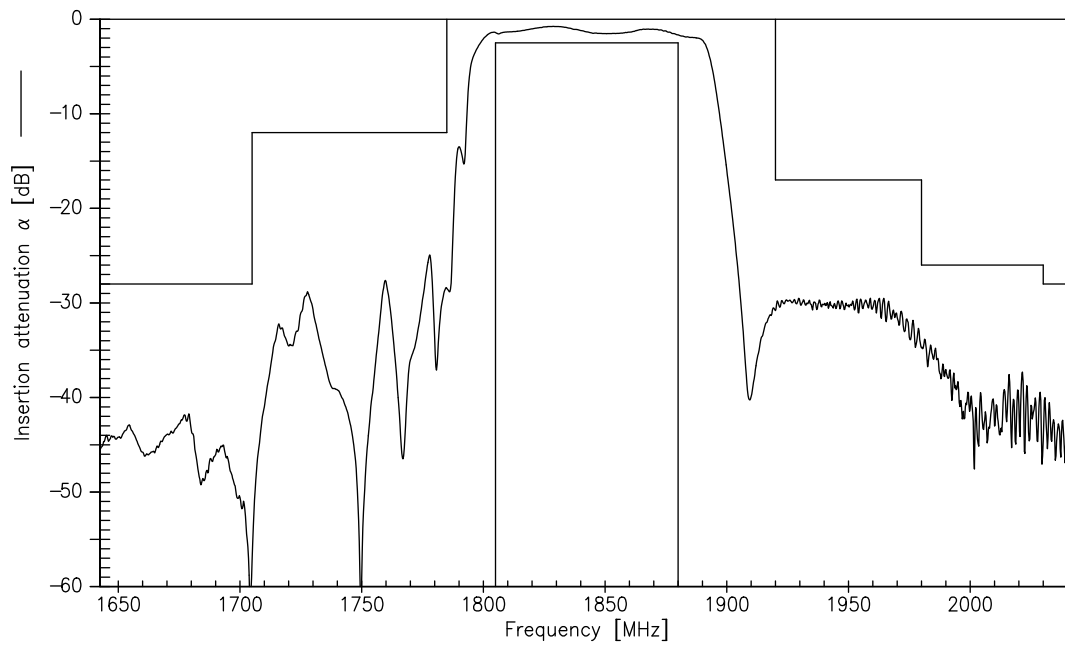
				min.	typ. @ 25 °C	max.	
Center frequency	f_C			—	1842.5	—	MHz
Maximum insertion attenuation	α_{\max}			—	1.7	2.5	dB
		1805.0 ... 1880.0	MHz				
Amplitude ripple (p-p)	$\Delta\alpha$			—	1.0	1.9	dB
		1805.0 ... 1880.0	MHz				
Input VSWR				—	2.2	2.5	
		1805.0 ... 1880.0	MHz				
Output VSWR				—	2.2	2.5	
		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	42	—	dB
		1705.0 ... 1785.0	MHz	12	25	—	dB
		1920.0 ... 1980.0	MHz	17	29	—	dB
		1980.0 ... 2030.0	MHz	26	33	—	dB
		2030.0 ... 2400.0	MHz	28	40	—	dB
		2400.0 ... 2500.0	MHz	32	41	—	dB
		2500.0 ... 2775.0	MHz	28	35	—	dB
		2775.0 ... 2880.0	MHz	38	53	—	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 2

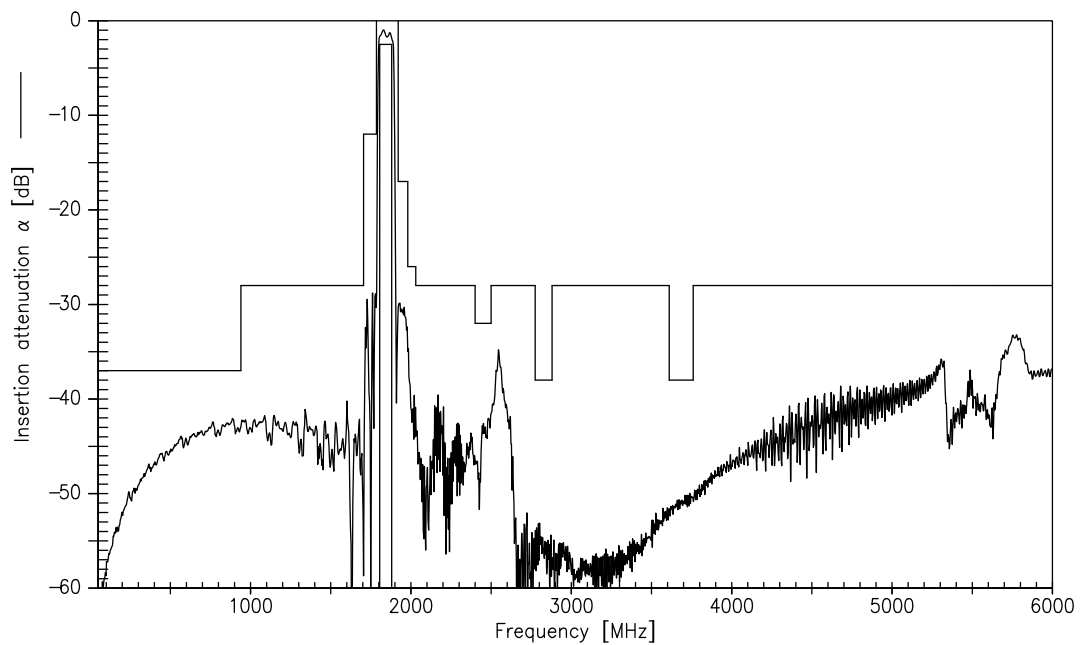
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Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	5	V	
ESD voltage	V _{ESD}	50 ¹⁾	V	machine model, 10 pulse
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GSM 1800, GSM 1900	P _{IN}	15	dBm	
Tx bands				

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

Transfer function Filter 2 (GSM1800)



Transfer function Filter 2 (GSM1800) - Wideband



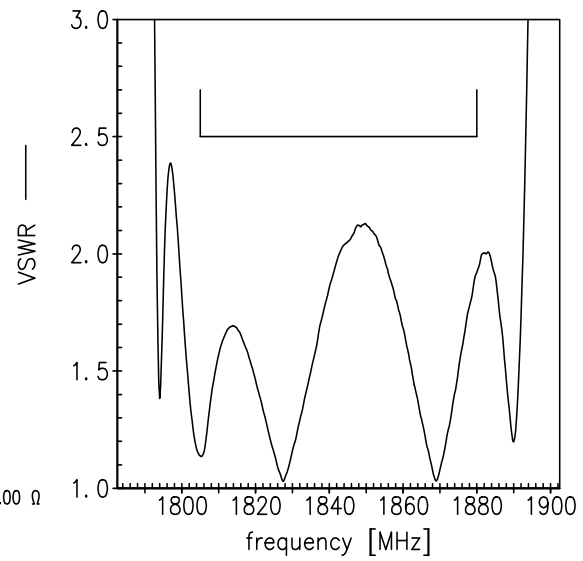
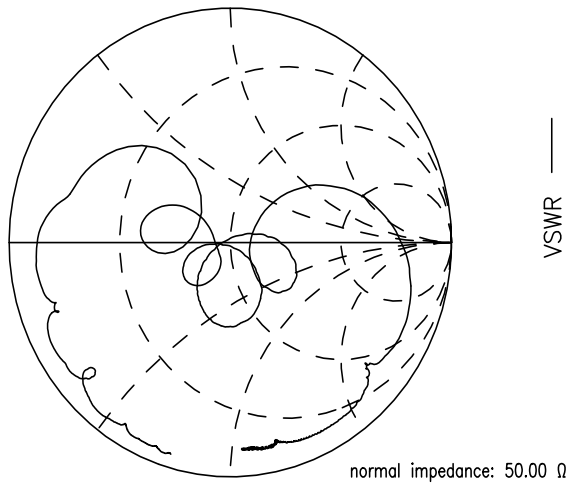
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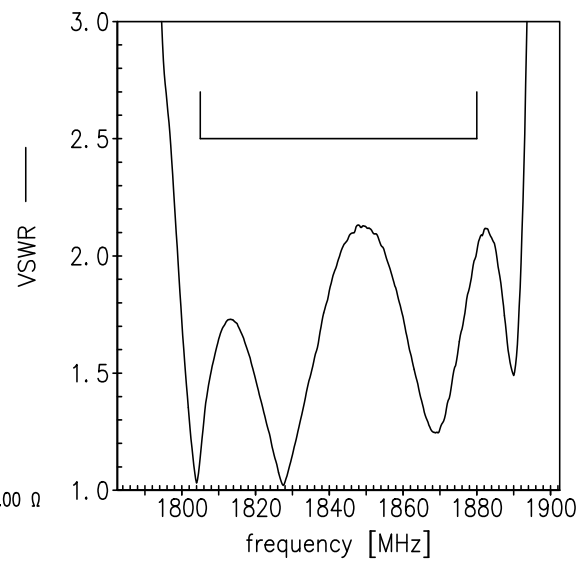
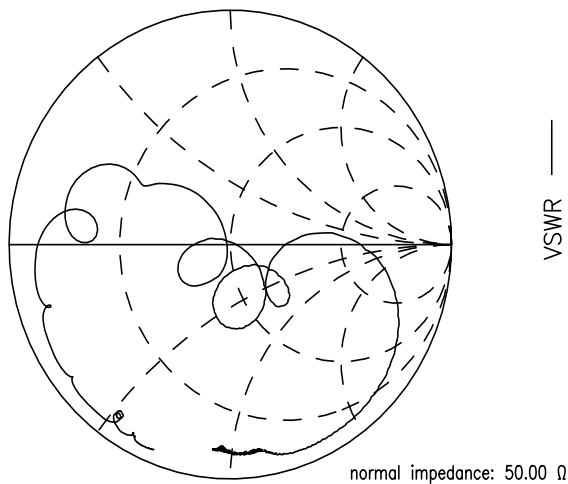


Smith charts Filter 2 (GSM1800)

S_{11} function



S_{22} function



SAW Components	B9915
SAW Rx 2in1 filter	1960.0 / 1842.5 MHz

Data sheet



References

Type	B9915
Ordering code	B39202B9915P810
Marking and package	C61157-A8-A18
Packaging	F61074-V8227-Z000
Date codes	L_1126
S-parameters	B9915_LB_NB.s2p, B9915_LB_WB.s2p B9915_UB_NB.s2p, B9915_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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Published by EPCOS AG
Systems, Acoustics, Waves Business Group
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