EPCOS

SAW Components

Data Sheet B7653

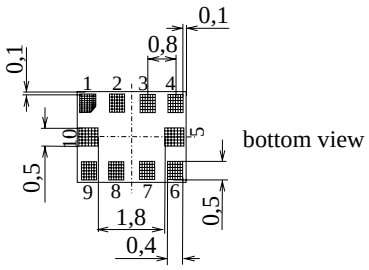
Low-Loss Dual Band Filter for Mobile Communication 881,5 & 1960,0 MHz

Data Sheet

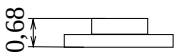
Chip Sized Saw Package **QCS10C**

Features

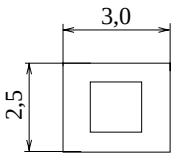
- Low-loss 2-in-1 RF filter for mobile telephone AMPS and PCS bands, receive path
- Usable passband:
  Filter 1 (AMPS): 25 MHz
  Filter 2 (PCS): 60 MHz
- Unbalanced to balanced operation for both filters
- Impedance transformation from 50 Ω to 200 Ω for AMPS filter
- Suitable for GPRS class 1 to 12
- Package for **S**urface **M**ounted **T**echnology (**SMT**)



bottom view



side view



top view

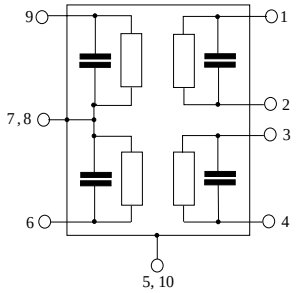
Dimensions in mm, approx. weight 0,015g

Terminals

- Ni, gold-plated

Pin configuration

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



Type	Ordering code	Marking and Package according to	Packing according to
B7653	B39202-B7653-G210	C61157-A7-A129	F6104-V8156-Z000

Electrostatic **S**ensitive **D**evice (**ESD**)

Maximum ratings

Operable temperature range	T	– 20 /+ 70	˚C	
Storage temperature range	T_{stg}	– 40 /+ 85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50	V	
Input power at GSM850, GSM900, GSM1800, GSM1900				
Tx bands:				peak power of GSM signal,
Filter 1 (AMPS-Rx)	P_{IN}	15	dBm	duty cycle 4:8
Filter 2 (PCS-Rx)	P_{IN}	13	dBm	

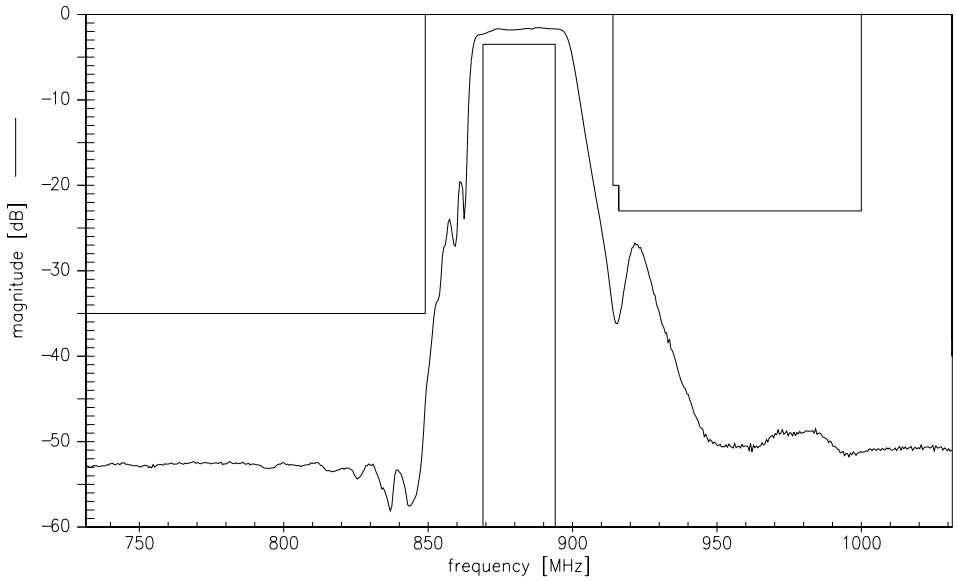
Characteristics of Filter 1 (AMPS)

Operating temperature range: T = -20 to + 70 °C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 200 Ω || 56 nH

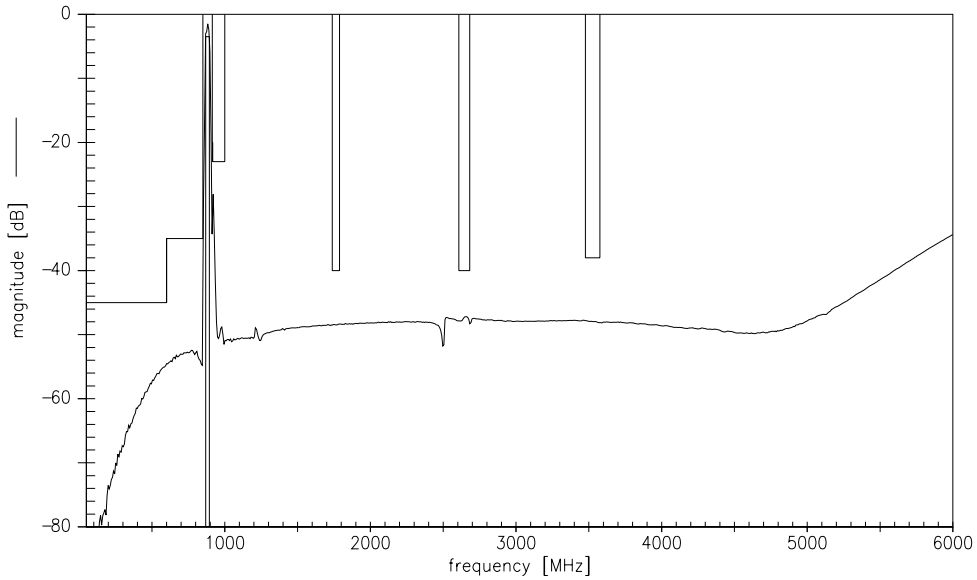
		min.	typ.	max.	
Center frequency	f_c	—	881,5	—	MHz
Maximum insertion attenuation	α_{max}				
869,0 ... 894,0 MHz		—	3,0	3,5*	dB
Amplitude ripple (p-p)					
869,0 ... 894,0 MHz	$\Delta\alpha$	—	1,5	2,0	dB
Input return loss					
869,0 ... 894,0 MHz		8,0	12,0	—	dB
Output return loss					
869,0 ... 894,0 MHz		8,0	11,0	—	dB
Output phase balance $(\phi(S_{31})-\phi(S_{21})+180°)$					
869,0 ... 894,0 MHz		-5,0	—	+10,0	°
Output amplitude balance $(\lvert S_{31}/S_{21}\rvert)$					
869,0 ... 894,0 MHz		-1,1	—	+0,7	dB
Inter-band isolation	α_{min}				
1930,0 ...1990,0 MHz		30,0	40,0	—	dB
Attenuation	α_{min}				
10,0 ... 600,0 MHz		45,0	54,0	—	dB
600,0 ... 849,0 MHz		35,0	40,0	—	dB
914,0 ... 916,0 MHz		20,0	24,0	—	dB
916,0 ...1000,0 MHz		23,0	27,0	—	dB
1738,0 ...1788,0 MHz		40,0	48,0	—	dB
2607,0 ...2682,0 MHz		40,0	48,0	—	dB
3476,0 ...3576,0 MHz		38,0	46,0	—	dB
Tx band suppression	α_{min}				
824,0 ... 849,0 MHz		35,0	—	—	dB

* 3,0 dB (2,6 dB typ.) for temperature range 25 ± 10°C

Transfer function Filter 1 (AMPS)



Transfer function Filter 1 (AMPS) - wideband



Characteristics of Filter 2 (PCS)

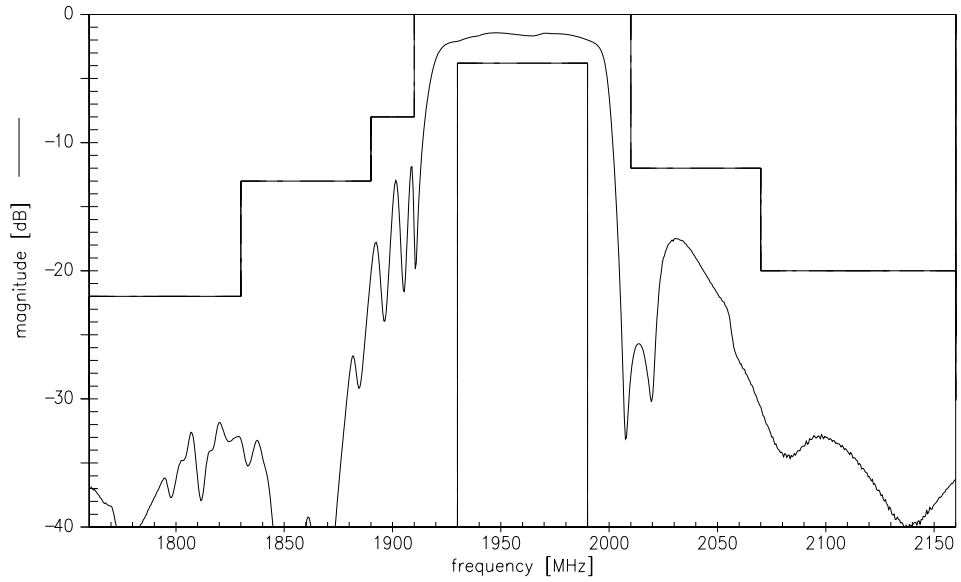
Operating temperature range: T = -20 to + 70 °C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

		min.	typ.	max.	
Center frequency	f_c	—	1960,0	—	MHz
Maximum insertion attenuation	α_{max}				
1930,0 ...1990,0 MHz		—	3,3	3,8*	dB
Amplitude ripple					
1930,0 ...1990,0 MHz		—	1,3	2,2	dB
Input return loss					
1930,0 ...1990,0 MHz		8,0	10,0	—	dB
Output return loss					
1930,0 ...1990,0 MHz		8,0	10,0	—	dB
Output phase balance $(\phi(S_{31})-\phi(S_{21})+180°)$					
1930,0 ...1990,0 MHz		-15,0	—	+15,0	°
Output amplitude balance $(\lvert S_{31}/S_{21}\rvert)$					
1930,0 ...1990,0 MHz		-2,7**	—	+2,7**	dB
Inter-band isolation	α_{min}				
869,0 ... 894,0 MHz		30,0	40,0	—	dB
Attenuation	α_{min}				
10,0 ... 995,0 MHz		30,0	36,0	—	dB
995,0 ...1830,0 MHz		22,0	30,0	—	dB
1830,0 ...1890,0 MHz		13,0	17,0	—	dB
1890,0 ...1910,0 MHz		8,0	10,0	—	dB
2010,0 ...2070,0 MHz		12,0	14,0	—	dB
2070,0 ...3000,0 MHz		20,0	28,0	—	dB
3000,0 ...5000,0 MHz		25,0	35,0	—	dB
5790,0 ...5970,0 MHz		30,0	39,0	—	dB
Tx band suppression	α_{min}				
1830,0 ...1890,0 MHz		13,0	17,0	—	dB
1890,0 ...1910,0 MHz		8,0	10,0	—	dB

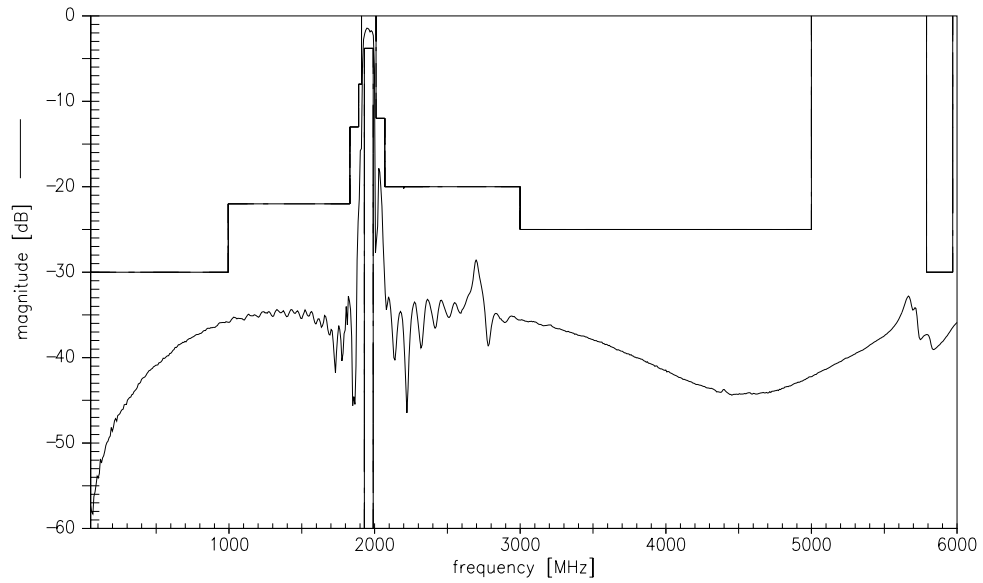
* 3,5 dB (2,9 dB typ.) for temperature range 25 ± 10°C

** -2,3 dB (min.) and 2,3 dB (max.) @ 25°C

Transfer function Filter 2 (PCS)



Transfer function Filter 2 (PCS) - wideband



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