

Data Sheet B4233





## **Low-Loss Dual Band Filter for Mobile Communication**

390,0 / 420,0 MHz

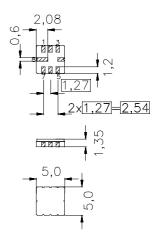
**Data Sheet** 



### Ceramic package QCC8C

#### **Features**

- Low-loss filter for TETRA
- Usable passband: 20 MHz
- Ceramic package for Surface Mounted Technology (SMT)
- RoHS compliant



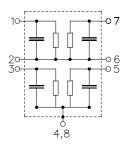
#### **Terminals**

■ Ni, gold-plated

Dimensions in mm, approx. weight 0,10 g

### Pin configuration

1	Input [Filter 1]
3	Input [Filter 2]
5	Output [Filter 2]
7	Output [Filter 1]
2, 6	To be grounded
4, 8	Case ground



Туре	Ordering code	Marking and Package according to	Packing according to
B4233	B39421-B4233-U310	C61157-A7-A56	F61074-V8070-Z000

### Electrostatic Sensitive Device (ESD)

## **Maximum ratings**

Operable temperature range	Τ	- 30 / + 85	°C	
Storage temperature range	$T_{\rm stg}$	<b>- 40 / + 85</b>	°C	
DC voltage	$V_{\rm DC}$	3	V	
ESD voltage	$V^*_{ESD}$	100*	V	Machine Model, 10 pulses
Source power (CW)	$P_{S}$	12	dBm	

<sup>\*-</sup>acc. to JESD22-A115A (Machine Model), 10 negative & 10 positive pulses



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### **Characteristics Filter 1**

Operating temperature range:  $T = +25^{\circ}\text{C}$ Terminating source impedance:  $Z_{\text{S}} = 50 \ \Omega$ Terminating load impedance:  $Z_{\text{L}} = 50 \ \Omega$ 

		min.	typ.	max.	
Center frequency	f <sub>c</sub>	_	390,0	_	MHz
Maximum insertion attenuation	$\alpha_{max}$				
380,0 400,0 N	ЛHz	_	1,9	2,2	dB
A 16 1 1 1 ( )					
Amplitude ripple (p-p)	Δα		0.7	4.4	40
380,0 400,0 N	ИHz	_	0,7	1,1	dB
Input return loss					
	ЛHz	10,0	11,0	_	dB
,		,	,		
Output return loss					
380,0 400,0 N	ЛHz	10,0	12,0	_	dB
Attenuation	$lpha_{\sf abs}$				
,	ЛHz	35,0	42,0	_	dB
	ЛHz	30,0	41,0	_	dB
,	ЛHz	30,0	41,0	_	dB
	ЛHz	30,0	39,0	_	dB
·	ЛHz	33,0	37,0	_	dB
304,0 320,0 N	ЛHz	30,0	34,0	_	dB
320,0 335,0 N	ЛHz	30,0	33,0	_	dB
342,0 360,0 N	ЛHz	20,0	25,0	_	dB
418,0 440,0 N	ЛHz	20,0	22,0	_	dB
442,0 455,0 N	ЛHz	25,0	31,0	_	dB
456,0 480,0 N	ЛHz	30,0	39,0	_	dB
492,0 531,0 N	ЛHz	30,0	42,0	_	dB
532,0 560,0 N	ЛHz	33,0	39,0	_	dB
570,0 600,0 N	ЛHz	25,0	35,0	_	dB
632,0 668,0 N	ЛHz	35,0	46,0	_	dB
684,01000,0 N	ЛHz	27,0	34,0	_	dB



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### **Characteristics Filter 1**

Operating temperature range:  $T = -30 \text{ to } +60^{\circ}\text{C}$ 

		min.	typ.	max.	
Center frequency	f <sub>c</sub>	_	390,0	_	MHz
Maximum insertion attenuation	$\alpha_{max}$				
380,0 400,0 M	ИHz	_	2,6	3,3	dB
Amenditude visule (s. n.)	A				
<b>Amplitude ripple</b> (p-p) 380,0 400,0 M	Δα ⁄IHz		1,4	2,3	dB
300,0 400,0 10	/11 12	_	1,4	2,5	ub
Input return loss					
	ИHz	10,0	11,0	_	dB
Output return loss					
380,0 400,0 M	ИHz	10,0	12,0	_	dB
A.,					
Attenuation 0.1 150.0 N	α <sub>abs</sub>	25.0	42.0		4D
·	/IHz	35,0	42,0	_	dB
•	/IHz	30,0	41,0	_	dB
•	/IHz	30,0	41,0	_	dB
•	/IHz	30,0	39,0	_	dB
•	/IHz	33,0	37,0	_	dB
•	/IHz	30,0	33,0	_	dB
•	/IHz	30,0	33,0	_	dB
•	/IHz	20,0	25,0	_	dB
•	/IHz	20,0	21,0	_	dB
•	/IHz	25,0	31,0	_	dB
•	/IHz	30,0	39,0	_	dB
•	/IHz	30,0	42,0	_	dB
•	/IHz	33,0	39,0	_	dB
•	/IHz	25,0	35,0	_	dB
•	/IHz	35,0	46,0	_	dB
684,01000,0 M	/IHz	27,0	34,0	_	dB



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### **Characteristics Filter 1**

Operating temperature range:  $T = -30 \text{ to } +85^{\circ}\text{C}$ 

		min.	typ.	max.	
Center frequency	f <sub>C</sub>	_	390,0	_	MHz
Manadana da antina attanzation					
Maximum insertion attenuation 380,0 400,0	$\begin{array}{c} \alpha_{\text{max}} \\ \text{MHz} \end{array}$		2.7	2.2	dB
380,0 400,0	IVIIIZ	_	2,7	3,3	uБ
Amplitude ripple (p-p)	Δα				
380,0 400,0	MHz	_	1,5	2,3	dB
·			,	,	
Input return loss					
380,0 400,0	MHz	10,0	11,0	_	dB
Output return loss	NAL I—	40.0	40.0		-ID
380,0 400,0	MHz	10,0	12,0	_	dB
Attenuation	$\alpha_{abs}$				
0,1 150,0	MHz	35,0	42,0	_	dB
190,0 200,0	MHz	30,0	41,0	_	dB
228,0 250,0	MHz	30,0	41,0	_	dB
252,0 275,0	MHz	30,0	39,0	_	dB
275,0 287,0	MHz	33,0	37,0	_	dB
304,0 320,0	MHz	30,0	33,0	_	dB
320,0 335,0	MHz	30,0	33,0	_	dB
342,0 360,0	MHz	20,0	25,0	_	dB
418,0 440,0	MHz	20,0	21,0	_	dB
442,0 455,0	MHz	25,0	31,0	_	dB
456,0 480,0	MHz	30,0	39,0	_	dB
492,0 531,0	MHz	30,0	42,0	_	dB
532,0 560,0	MHz	33,0	39,0	_	dB
570,0 600,0	MHz M⊔z	25,0	35,0	_	dB dB
632,0 668,0 684,01000,0	MHz MHz	35,0 27,0	46,0 34,0	_	dВ
004,01000,0	IVI□∠	21,0	34,0	_	ub



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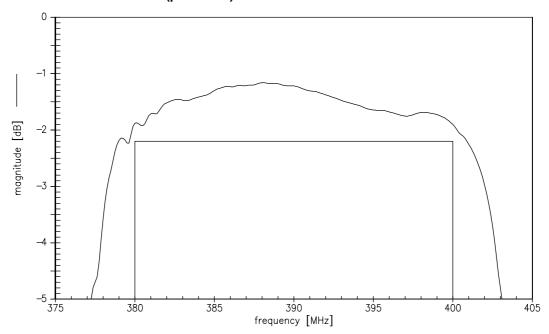
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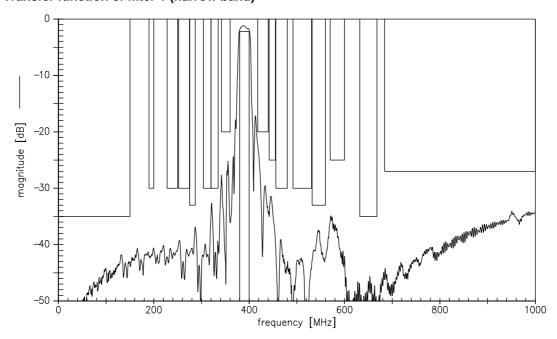
**Data Sheet** 



# Transfer function of filter 1 (passband)



# Transfer function of filter 1 (narrow band)





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**Low-Loss Dual Band Filter for Mobile Communication** 

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**Data Sheet** 



### **Characteristics Filter 2**

 $\begin{array}{lll} \mbox{Operating temperature range:} & T = +25\,^{\circ}\mbox{C} \\ \mbox{Terminating source impedance:} & Z_{\rm S} = 50\,\Omega \\ \mbox{Terminating load impedance:} & Z_{\rm L} = 50\,\Omega \end{array}$ 

		min.	typ.	max.	
Center frequency	$f_{\rm C}$	_	420,0	_	MHz
Maximum insertion attenuation	O.				
410,0 430,0 MHz	$\alpha_{max}$		1,9	2,2	dB
410,0 400,0 WHZ			1,5	2,2	uD
Amplitude ripple (p-p)	$\Delta \alpha$				
410,0 430,0 MHz		_	0,6	1,0	dB
Input return loss					
410,0 430,0 MHz		10,0	11,5	_	dB
Output return loss					
410,0 430,0 MHz		10,0	13,5	_	dB
410,0 400,0 WHZ		10,0	10,0		GD .
Attenuation	$\alpha_{abs}$				
0,1 150,0 MHz	0.00	35,0	42,0	_	dB
204,0 216,0 MHz		30,0	41,0	_	dB
246,0 270,0 MHz		30,0	41,0	_	dB
272,0 301,0 MHz		35,0	41,0	_	dB
328,0 344,0 MHz		30,0	42,0	_	dB
345,0 360,0 MHz		25,0	31,0	_	dB
369,0 387,0 MHz		18,0	23,0	_	dB
451,0 473,0 MHz 477,0 491,0 MHz		20,0 25,0	23,0 35,0	_	dB dB
477,0 491,0 MHz 492,0 516,0 MHz		30,0	39,0		dВ
532,0 573,0 MHz		30,0	38,0		dB
574,0 602,0 MHz		33,0	39,0	_	dB
602,01000,0 MHz		27,0	34,0	_	dB



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**Data Sheet** 

 $\equiv$ MD

## **Characteristics Filter 2**

Operating temperature range:  $T = -30 \text{ to } +60^{\circ}\text{C}$ 

					min.	typ.	max.	
Center frequency				f <sub>C</sub>	_	420,0	_	MHz
Maximum insertion atte	nuatio	on		$\alpha_{max}$				
4	110,0	430,0	MHz		_	2,4	3,3	dB
Amplitude ripple (p-p)				Δα				
4	110,0	430,0	MHz			1,1	2,2	dB
Input return loss								
4	110,0	430,0	MHz		10,0	11,5	<u> </u>	dB
Output return loss								
4	110,0	430,0	MHz		10,0	13,5	_	dB
Attenuation				$\alpha_{\sf abs}$				
	0,1	150,0	MHz	400	35,0	42,0	_	dB
2	204,0	216,0	MHz		30,0	41,0	_	dB
2	246,0	270,0	MHz		30,0	41,0	_	dB
2	272,0	301,0	MHz		35,0	41,0	_	dB
3	328,0	344,0	MHz		30,0	35,0	_	dB
3	345,0	360,0	MHz		25,0	31,0	_	dB
3	369,0	387,0	MHz		18,0	23,0	_	dB
4	151,0	473,0	MHz		20,0	21,0	_	dB
	177,0	491,0	MHz		25,0	35,0	_	dB
		516,0	MHz		30,0	39,0	_	dB
		573,0	MHz		30,0	38,0	_	dB
		602,0	MHz		33,0	39,0	_	dB
6	502,0	1000,0	MHz		27,0	34,0	_	dB



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**Characteristics Filter 2** 

Operating temperature range:  $T = -30 \text{ to } +85^{\circ}\text{C}$ 

					min.	typ.	max.	
Center frequency				f <sub>C</sub>	_	420,0	_	MHz
Maximum insertion at				$\alpha_{\text{max}}$				
	410,0	430,0	MHz		<del></del>	2,5	3,3	dB
Amplitude ripple (p-p)				Δα				
тра. т.рр. (р р)	410,0	430,0	MHz		_	1,2	2,2	dB
						ŕ	,	
Input return loss								
	410,0	430,0	MHz		10,0	11,5	_	dB
• • • • •								
Output return loss	440.0	420.0	MHz		10.0	10.5		4D
	410,0	430,0	IVI□Z		10,0	13,5	_	dB
Attenuation				$\alpha_{abs}$				
	0,1	150,0	MHz	* aus	35,0	42,0	_	dB
	204,0	216,0	MHz		30,0	41,0		dB
	246,0	270,0	MHz		30,0	41,0	_	dB
	272,0	301,0	MHz		35,0	41,0	_	dB
	328,0	344,0	MHz		30,0	35,0		dB
	345,0	360,0	MHz		25,0	31,0	_	dB
	369,0	387,0	MHz		18,0	23,0	_	dB
	451,0	473,0	MHz		20,0	21,0	_	dB
	477,0	491,0	MHz		25,0	35,0	_	dB
	492,0	•	MHz		30,0	39,0	_	dB
	532,0	573,0	MHz		30,0	38,0	_	dB
	574,0	602,0	MHz		33,0	39,0	_	dB
	602,0	1000,0	MHz		27,0	34,0	_	dB



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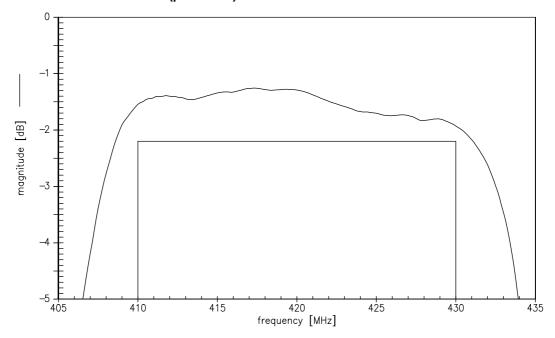
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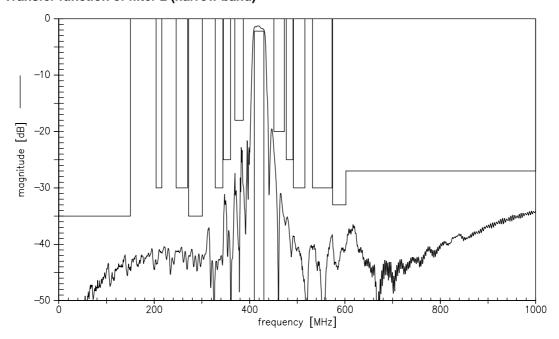
**Data Sheet** 



# Transfer function of filter 2 (passband)



# Transfer function of filter 2 (narrow band)





**SAW Components** 

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**Data Sheet** 

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