



# SAW Components

Data Sheet B4233

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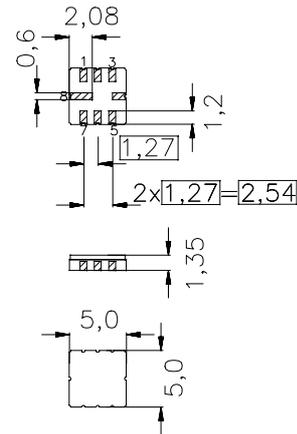
EPCOS AG is a TDK Group Company.


 Ceramic package **QCC8C**
**Features**

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

**Terminals**

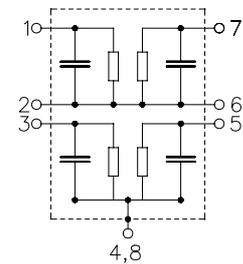
- Ni, gold-plated



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       |



Type	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	$T$	- 30 / + 85	°C	Machine Model, 10 pulses
Storage temperature range	$T_{stg}$	- 40 / + 85	°C	
DC voltage	$V_{DC}$	3	V	
ESD voltage	$V_{ESD}^*$	100*	V	
Source power (CW)	$P_S$	12	dBm	

\*-acc. to JESD22-A115A (Machine Model), 10 negative &amp; 10 positive pulses


**Characteristics Filter 1**

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

				min.	typ.	max.	
<b>Center frequency</b>	$f_c$			—	390,0	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\max}$	380,0 ... 400,0	MHz	—	1,9	2,2	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	380,0 ... 400,0	MHz	—	0,7	1,1	dB
<b>Input return loss</b>		380,0 ... 400,0	MHz	10,0	11,0	—	dB
<b>Output return loss</b>		380,0 ... 400,0	MHz	10,0	12,0	—	dB
<b>Attenuation</b>	$\alpha_{\text{abs}}$	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	34,0	—	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	22,0	—	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	25,0	35,0	—	dB
		632,0 ... 668,0	MHz	35,0	46,0	—	dB
		684,0 ... 1000,0	MHz	27,0	34,0	—	dB


**Characteristics Filter 1**

Operating temperature range:  $T = -30$  to  $+60^{\circ}\text{C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 50\ \Omega$

			<b>min.</b>	<b>typ.</b>	<b>max.</b>	
<b>Center frequency</b>	$f_c$		—	390,0	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\max}$	380,0 ... 400,0 MHz	—	2,6	3,3	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	380,0 ... 400,0 MHz	—	1,4	2,3	dB
<b>Input return loss</b>		380,0 ... 400,0 MHz	10,0	11,0	—	dB
<b>Output return loss</b>		380,0 ... 400,0 MHz	10,0	12,0	—	dB
<b>Attenuation</b>	$\alpha_{\text{abs}}$					
		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
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		684,0 ... 1000,0 MHz	27,0	34,0	—	dB

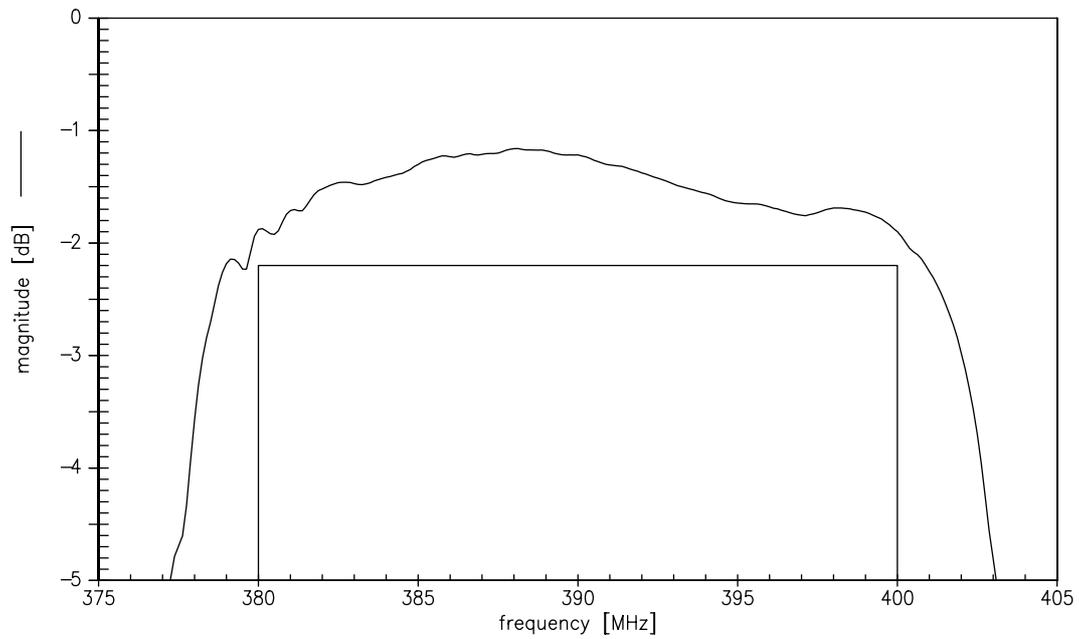

**Characteristics Filter 1**

Operating temperature range:  $T = -30$  to  $+85^{\circ}\text{C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 50\ \Omega$

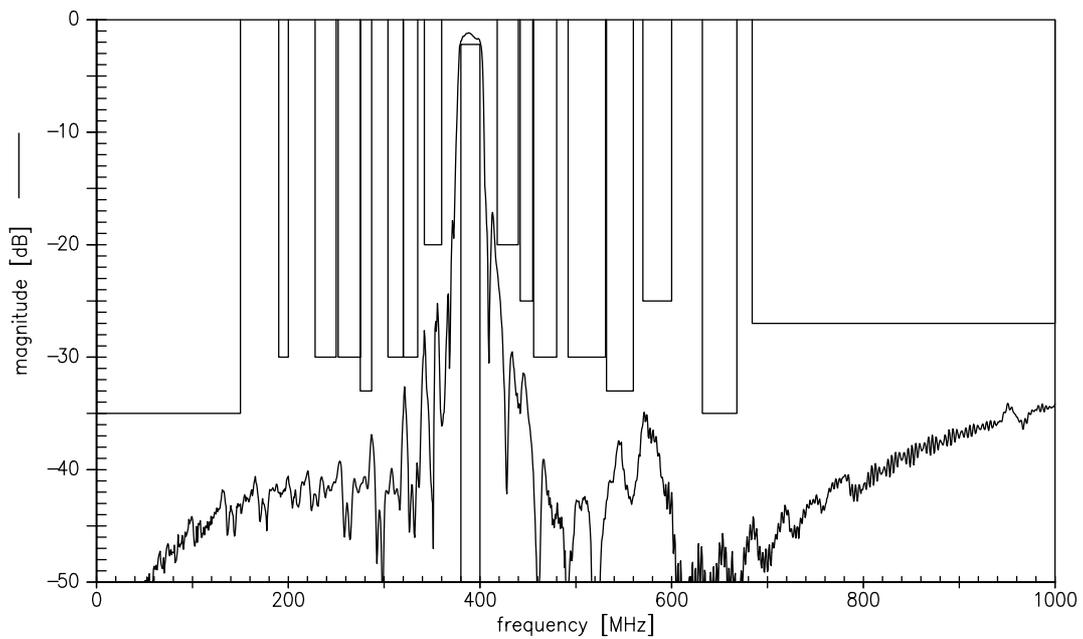
				min.	typ.	max.	
<b>Center frequency</b>			$f_c$	—	390,0	—	MHz
<b>Maximum insertion attenuation</b>	380,0 ... 400,0	MHz	$\alpha_{\max}$	—	2,7	3,3	dB
<b>Amplitude ripple (p-p)</b>	380,0 ... 400,0	MHz	$\Delta\alpha$	—	1,5	2,3	dB
<b>Input return loss</b>	380,0 ... 400,0	MHz		10,0	11,0	—	dB
<b>Output return loss</b>	380,0 ... 400,0	MHz		10,0	12,0	—	dB
<b>Attenuation</b>			$\alpha_{\text{abs}}$				
	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
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	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		25,0	35,0	—	dB
	632,0 ... 668,0	MHz		35,0	46,0	—	dB
	684,0 ... 1000,0	MHz		27,0	34,0	—	dB



Transfer function of filter 1 (passband)



Transfer function of filter 1 (narrow band)




**Characteristics Filter 2**

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

		min.	typ.	max.	
<b>Center frequency</b>	$f_c$	—	420,0	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\max}$	—	1,9	2,2	dB
410,0 ... 430,0	MHz				
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	0,6	1,0	dB
410,0 ... 430,0	MHz				
<b>Input return loss</b>		10,0	11,5	—	dB
410,0 ... 430,0	MHz				
<b>Output return loss</b>		10,0	13,5	—	dB
410,0 ... 430,0	MHz				
<b>Attenuation</b>	$\alpha_{\text{abs}}$	35,0	42,0	—	dB
0,1 ... 150,0	MHz				
204,0 ... 216,0	MHz	30,0	41,0	—	
246,0 ... 270,0	MHz	30,0	41,0	—	
272,0 ... 301,0	MHz	35,0	41,0	—	
328,0 ... 344,0	MHz	30,0	42,0	—	
345,0 ... 360,0	MHz	25,0	31,0	—	
369,0 ... 387,0	MHz	18,0	23,0	—	
451,0 ... 473,0	MHz	20,0	23,0	—	
477,0 ... 491,0	MHz	25,0	35,0	—	
492,0 ... 516,0	MHz	30,0	39,0	—	
532,0 ... 573,0	MHz	30,0	38,0	—	
574,0 ... 602,0	MHz	33,0	39,0	—	
602,0 ... 1000,0	MHz	27,0	34,0	—	

**Data Sheet**

**Characteristics Filter 2**

Operating temperature range:  $T = -30$  to  $+60^{\circ}\text{C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 50\ \Omega$

				<b>min.</b>	<b>typ.</b>	<b>max.</b>	
<b>Center frequency</b>			$f_c$	—	420,0	—	MHz
<b>Maximum insertion attenuation</b>	410,0 ... 430,0		$\alpha_{\max}$	—	2,4	3,3	dB
<b>Amplitude ripple (p-p)</b>	410,0 ... 430,0		$\Delta\alpha$	—	1,1	2,2	dB
<b>Input return loss</b>	410,0 ... 430,0			10,0	11,5	—	dB
<b>Output return loss</b>	410,0 ... 430,0			10,0	13,5	—	dB
<b>Attenuation</b>			$\alpha_{\text{abs}}$				
	0,1 ... 150,0			35,0	42,0	—	dB
	204,0 ... 216,0			30,0	41,0	—	dB
	246,0 ... 270,0			30,0	41,0	—	dB
	272,0 ... 301,0			35,0	41,0	—	dB
	328,0 ... 344,0			30,0	35,0	—	dB
	345,0 ... 360,0			25,0	31,0	—	dB
	369,0 ... 387,0			18,0	23,0	—	dB
	451,0 ... 473,0			20,0	21,0	—	dB
	477,0 ... 491,0			25,0	35,0	—	dB
	492,0 ... 516,0			30,0	39,0	—	dB
	532,0 ... 573,0			30,0	38,0	—	dB
	574,0 ... 602,0			33,0	39,0	—	dB
	602,0 ... 1000,0			27,0	34,0	—	dB

**Data Sheet**

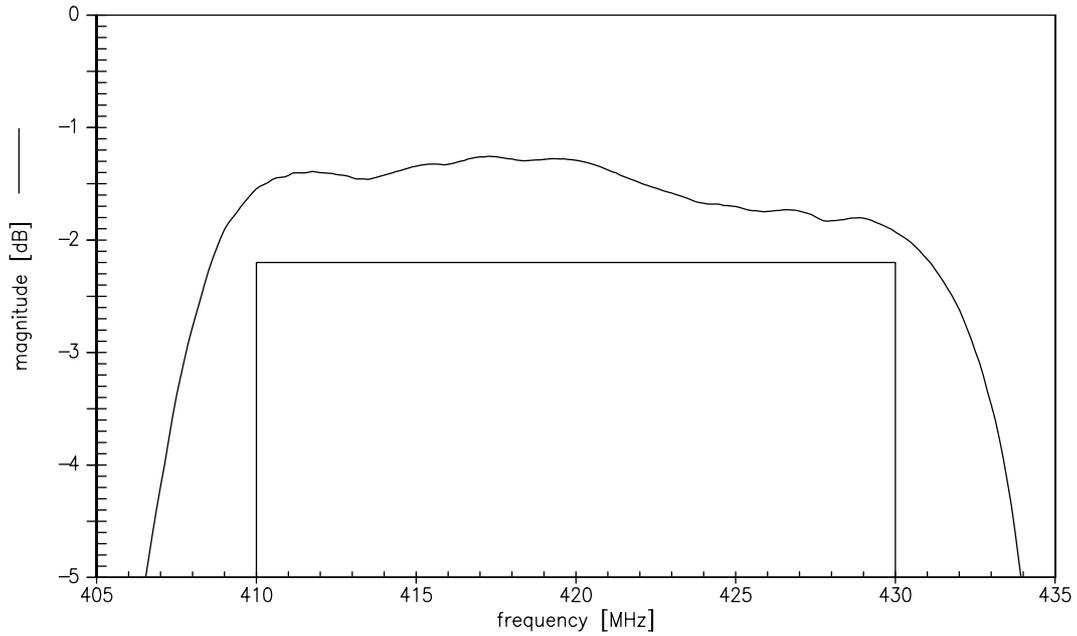
**Characteristics Filter 2**

Operating temperature range:  $T = -30$  to  $+85^{\circ}\text{C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 50\ \Omega$

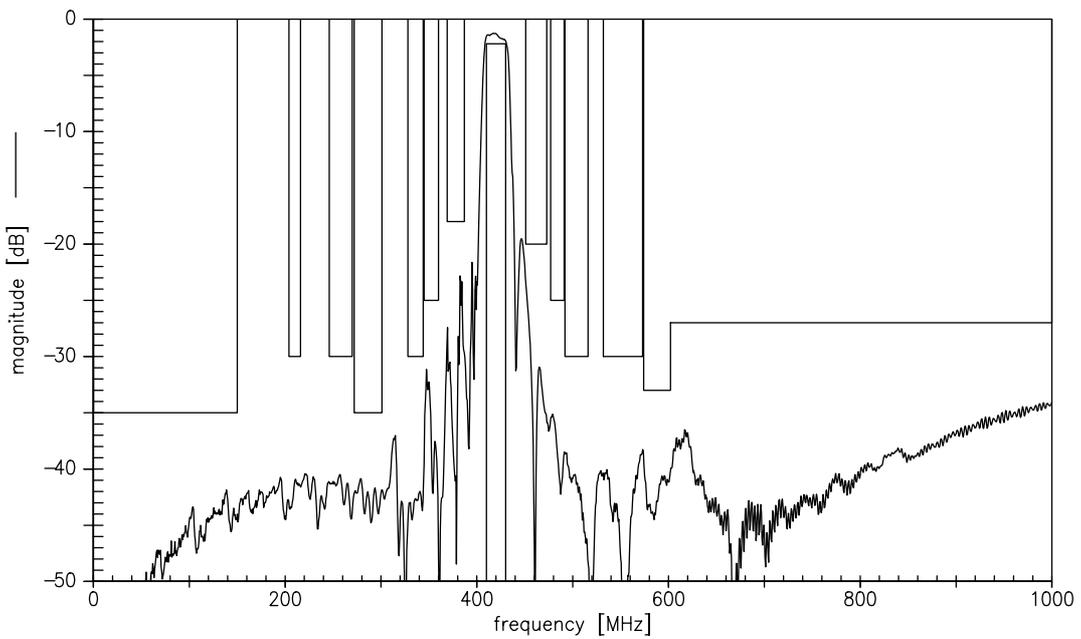
				<b>min.</b>	<b>typ.</b>	<b>max.</b>	
<b>Center frequency</b>			$f_c$	—	420,0	—	MHz
<b>Maximum insertion attenuation</b>	410,0 ... 430,0		$\alpha_{\max}$	—	2,5	3,3	dB
<b>Amplitude ripple (p-p)</b>	410,0 ... 430,0		$\Delta\alpha$	—	1,2	2,2	dB
<b>Input return loss</b>	410,0 ... 430,0			10,0	11,5	—	dB
<b>Output return loss</b>	410,0 ... 430,0			10,0	13,5	—	dB
<b>Attenuation</b>			$\alpha_{\text{abs}}$				
	0,1 ... 150,0			35,0	42,0	—	dB
	204,0 ... 216,0			30,0	41,0	—	dB
	246,0 ... 270,0			30,0	41,0	—	dB
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	345,0 ... 360,0			25,0	31,0	—	dB
	369,0 ... 387,0			18,0	23,0	—	dB
	451,0 ... 473,0			20,0	21,0	—	dB
	477,0 ... 491,0			25,0	35,0	—	dB
	492,0 ... 516,0			30,0	39,0	—	dB
	532,0 ... 573,0			30,0	38,0	—	dB
	574,0 ... 602,0			33,0	39,0	—	dB
	602,0 ... 1000,0			27,0	34,0	—	dB



Transfer function of filter 2 (passband)



Transfer function of filter 2 (narrow band)



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