SAW Components

SAW RF filter for base stations

TD-LTE, Band 41

Series/type: **B5179**
Ordering code:

Date: July 23, 2013
Version: 1.1

EPCOS AG is a TDK Group Company.

Preliminary data SMD

Revision History: Changes compared to previous iteration issue

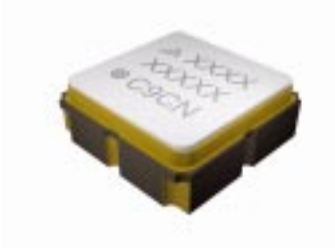
ISSUE	ORIGINATOR	DETAILED SEPECIFICATION CHANGES	DATE
DGAA52A01	T. Gaertner	initial release	Jun 18, 2012
DGAA52A02	T. Gaertner	selectivity in lower stop band improved, insertion loss relaxed, selectivity in upper stop band relaxed	Jul 05, 2012
AA52A_v1.0	T. Gaertner	pass band parameters relaxed, specification at room temperature included, matching proposal	Sep 13, 2012
AA52B_v1.0	T. Gaertner	pass band parameters improved, specification at room temperature removed	Dec 04, 2012
AA52B_v1.1	T. Gaertner	power durability updated, phase max. specified	Mar 18, 2013
B5179_v1.0	T. Gaertner	filter type B5179, several additional stop band specifications	May 29, 2013
B5179_v1.1	T. Gaertner	temperature range for specification: –40 ˚C to +100 ˚C, power durability updated	Jun 23, 2013

Preliminary data

SMD

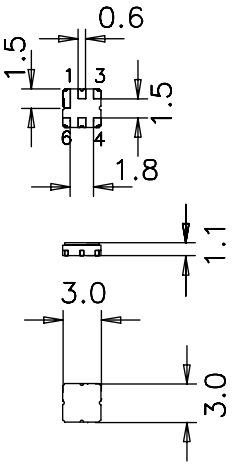
Application

- RF filter for base stations
- Usable band width 194 MHz
- Unbalanced operation



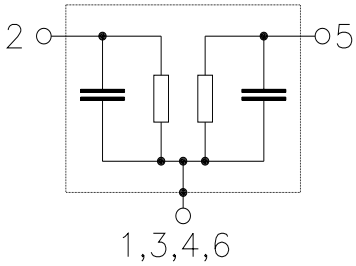
Features

- Package size 3.0 x3.0 x 1.10 mm^3
- Package code DCC6C
- RoHS compatible
- Approximate weight 0.037 g
- Ceramic package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- Filter surface passivated
- **M**oisture **S**ensitivity **L**evel 1



Pin configuration

- 2 Input
- 5 Output
- 1, 3, 4, 6 Case ground



Preliminary data

SMD

Characteristics

Temperature range for specification: T = –40 ˚C to +100 ˚C
Terminating source impedance: Z_S = 50 Ω and matching network
Terminating load impedance: Z_L = 50 Ω and matching network

		min.	typ. @ 25 ˚C	max.	
Nominal frequency	f_N	—	2593.0	—	MHz
Maximum insertion attenuation (including matching network)	α_{max}				
2496.0 ... 2690.0 MHz		—	4.3	5.0	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
2496.0 ... 2690.0 MHz		—	1.6	2.2	dB
2496.0 ... 2690.0 MHz in any contiguous 5 MHz band		—	0.3	0.8	dB
Group delay ripple (p-p)	$\Delta\tau$				
2496.0 ... 2690.0 MHz		—	5	20	ns
Absolute group delay	τ				
2496.0 ... 2690.0 MHz		—	5	20	ns
Phase ripple (p-p)	$\Delta\varphi$				
2496.0 ... 2690.0 MHz		—	15	30	°
Error vector magnitude[1)]	EVM				
2496.0 ... 2690.0 MHz		—	0.8	2.0	%
VSWR, IN					
2496.0 ... 2690.0 MHz		—	2.3:1	3.0:1	
VSWR, OUT					
2496.0 ... 2690.0 MHz		—	1.9:1	2.5:1	
Relative attenuation (relative to α_{max})	α_{rel}				
50.0 ... 500.0 MHz		30	60	—	dB
500.0 ... 960.0 MHz		20	40	—	dB
1390.0 ... 1584.0 MHz		10	35	—	dB
1584.0 ... 1670.0 MHz		20	26	—	dB
1670.0 ... 1675.0 MHz		38	43	—	dB
1675.0 ... 1788.0 MHz		20	26	—	dB
1788.0 ... 1805.0 MHz		20	35	—	dB
1805.0 ... 1880.0 MHz		33	35	—	dB
1880.0 ... 1974.0 MHz		33	36	—	dB
2165.0 ... 2302.0 MHz		12	16	—	dB

Preliminary data

	min.	typ. @ 25 ˚C	max.	
2302.0 ... 2400.0 MHz	9	12	—	dB
2810.0 ... 4900.0 MHz	4	13	—	dB
4900.0 ... 5850.0 MHz	6	13	—	dB
Temperature Drift				
high temperature[2] 2496 ... 2690 MHz	—	0.2	0.5	dB
low temperature[3] 2496 ... 2690 MHz	—	0.2	0.4	dB

1) EVM calculation based on root raised cosine filtered QPSK signal (fc_{RRC} within 2498.4 ... 2687.6 MHz, bw_{RRC}= 3.84 MHz)

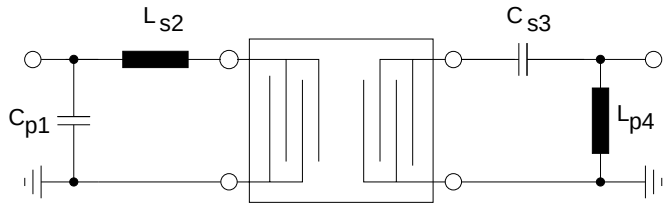
2) $T_{25°C}$ is transmission at 25 ˚C in dB, $T_{100°C}$ at 100 ˚C in dB

$$tempdrift_{hightemp} = \left| \frac{\max(T_{25°C} - T_{100°C}) - \min(T_{25°C} - T_{100°C})}{2} \right|$$

3) $T_{25°C}$ is transmission at 25 ˚C in dB, $T_{-30°C}$ at -30 ˚C in dB

$$tempdrift_{lowtemp} = \left| \frac{\max(T_{25°C} - T_{-30°C}) - \min(T_{25°C} - T_{-30°C})}{2} \right|$$

Matching network to 50 Ω unbalanced input and output



C_{p1} = 1.8 pF
L_{s2} = 1.2 nH
C_{s3} = 1.8 pF
L_{p4} = 1.5 nH

Element values depend upon board layout and properties.

Maximum ratings

Operable temperature range	T	–40/+100	˚C	
Storage temperature range	T_{stg}	–40/+100	˚C	
DC voltage	V_{DC}	0	V	
Input power at 2496.0 ... 2690.0 MHz	P_{IN}	22.0	dBm	cw, 100000 h, 85 ˚C

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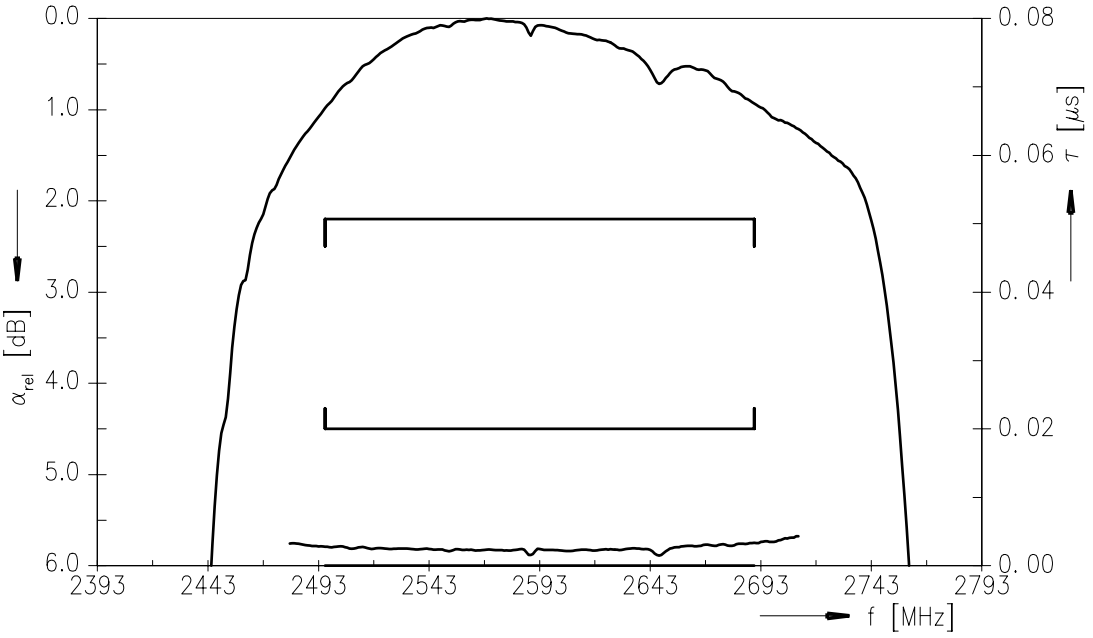
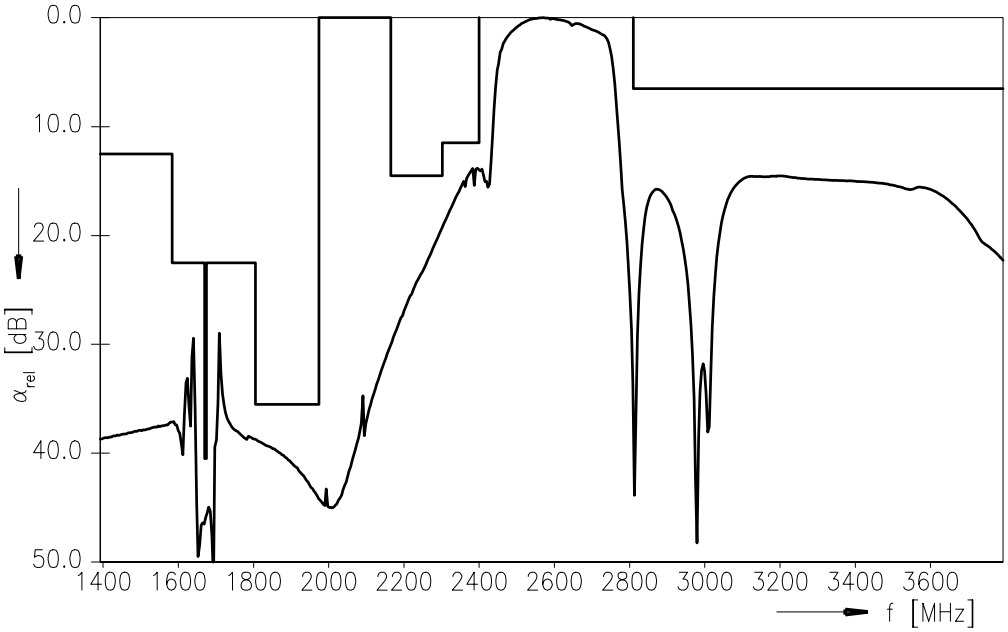
Transfer function (normalized)



Transfer function (stop band, normalized)



References

Type	B5179
Ordering code	
Marking and package	C61157-A7-A67
Packaging	F61074-V8228-Z000
Date codes	L_1126
S-parameters	B5179_NB.s2p, B5179_WB.s2p, B5179_NB_UN.s2p, B5179_WB_UN.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 8th, 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 for a large variety of matching coils.

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