# BGF109L

10 Channel LCD Filter Array with ESD Protection

**Small Signal Discretes** 



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# BGF109L

**Revision History: 2008-05-20, V3.0** 

Previous Version: 2007-09-10, V2.1

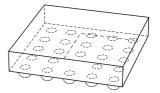
Page	Subjects (major changes since last revision)					
5	Maximum ratings for DC current and power dissipation updated					
5	Electrical characteristics for line resistance and capacitance updated					
7	Package drawings updated					



# 10 Channel LCD Filter Array with ESD Protection

#### **Feature**

- 10 channel integrated 5th other LC filter array
- Very good EMI compatibility
- ESD protection according to IEC61000-4-2 up to 15 kV contact discharge on all IOs
- Wafer Level Package with SnAgCu solder balls
- RoHS and WEEE compliant package







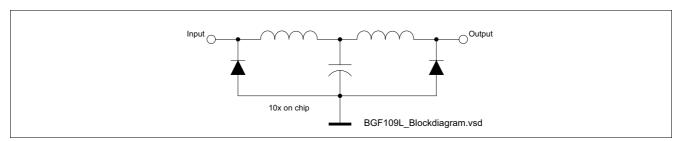


Figure 1 Blockdiagram

#### **Description**

The BGF109L is a 10 channel 5th order LC filter array to provide superior signal attenuation in the 800 - 2200 MHz range. EMI compatibility is very good in point of high power mobile TX signals. LCD data integrity will be much less affected by the mobile's TX signal.

All pins are protected against ESD up to 15 kV according to IEC61000-4-2 (contact discharge). The wafer level package is a green package with a size of only 2.1 mm x 2.1 mm and a total height of 0.6 mm.

Туре	Package	Marking	Chip
BGF109L	WLP-24-4	BGF109L	N0729



Table 1 Maximum Ratings

Parameter	Symbol	Values			Unit	Note /
		Min.	Тур.	Max.		<b>Test Condition</b>
Voltage at all pins to GND	$V_{P}$	0	-	5.0	V	
Operating temperature range	$T_{OP}$	-40	-	+85	°C	
Storage temperature range	$T_{STG}$	-65	-	+150	°C	
DC current for each line	$I_{DC}$		-	25	mA	T <sub>A</sub> < 85 °C
Total dissipated power for all lines	$P_{diss}$		-	200	mW	T <sub>A</sub> < 85 °C
Electrostatic discharge according to IEC61000-4-2 <sup>1)</sup> at all pins	$V_{ESD}$	-15	-	+15	kV	

<sup>1)</sup> Contact discharge

Table 2 Electrical Characteristics<sup>1)</sup>

Parameter	Symbol	Values			Unit	Note /
		Min.	Тур.	Max.		<b>Test Condition</b>
Series Resistors $R_1$ $R_{10}$	R	68	90	112	Ω	
Line capacitance of each line to GND	$C_{T}$	36	42.5 28	49	pF	$V_{\rm R}$ = 0 V $V_{\rm R}$ = 3 V
Leakage currents of lines to GND	$I_{R}$			200	nA	V <sub>R</sub> = 3 V
Breakdown voltage of ESD diodes	$I_{R}$	6.5	7.8	-	V	$I_{(BR)}$ = 1 mA
Stopband attenuation Input of output pin <sup>2)</sup>	$IL_{800} \\ IL_{2200}$		45 35		dB	f = 800 MHz f = 2200 MHz
Cross talk between adjacent channels 2 channel, all pins <sup>2)</sup>	$CT_{800} \\ CT_{2200}$		-30 -20		dB	f = 800 MHz f = 2200 MHz

<sup>1)</sup> at  $T_A$  = 25 °C

<sup>2)</sup>  $Z_{\rm S}$  =  $Z_{\rm L}$  = 50  $\Omega$ , 0 V bias



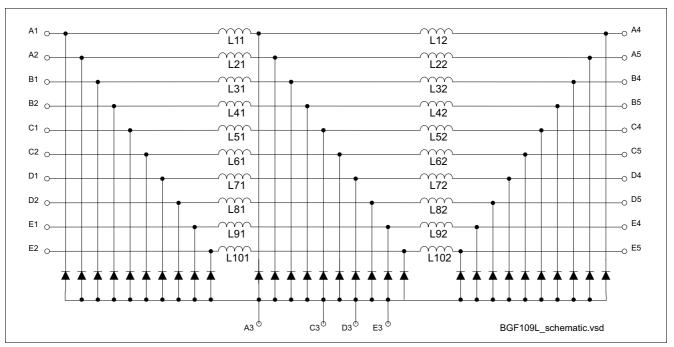


Figure 2 Schematic

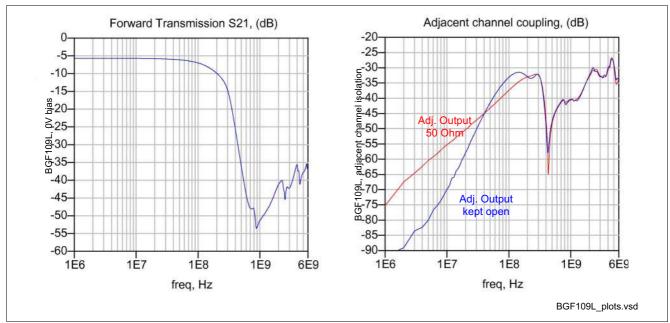


Figure 3 Filter characteristic of one channel and the crosstalk between adjacent channels with different termination



# **Package Outline**

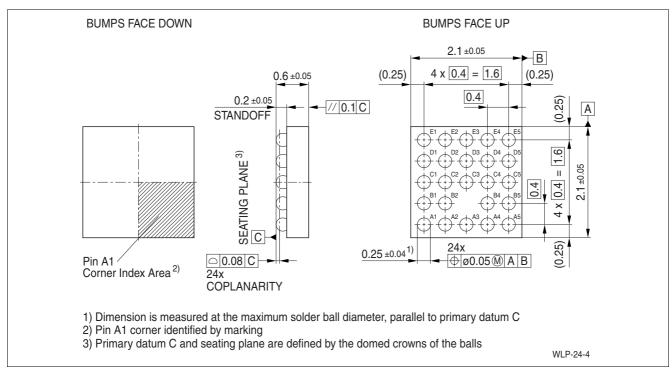


Figure 4 Package WLP-24-4

# Tape and reel specification

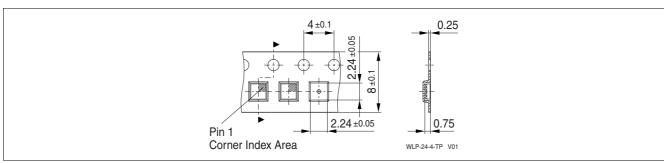


Figure 5 Tape for WLP-24-4