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# BGF109C

10 Channel LCD Filter Array with ESD Protection

Small Signal Discretes



Never stop thinking

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**BGF109C**

**Revision History: 2008-08-05, V2.0**

**Previous Version: 2008-07-17, V1.0**

<b>Page</b>	<b>Subjects (major changes since last revision)</b>
All	Preliminary status removed

## 10 Channel LCD Filter Array with ESD Protection

### Feature

- 10 channel integrated RC filter array
- 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
- Improved package for increased drop test reliability

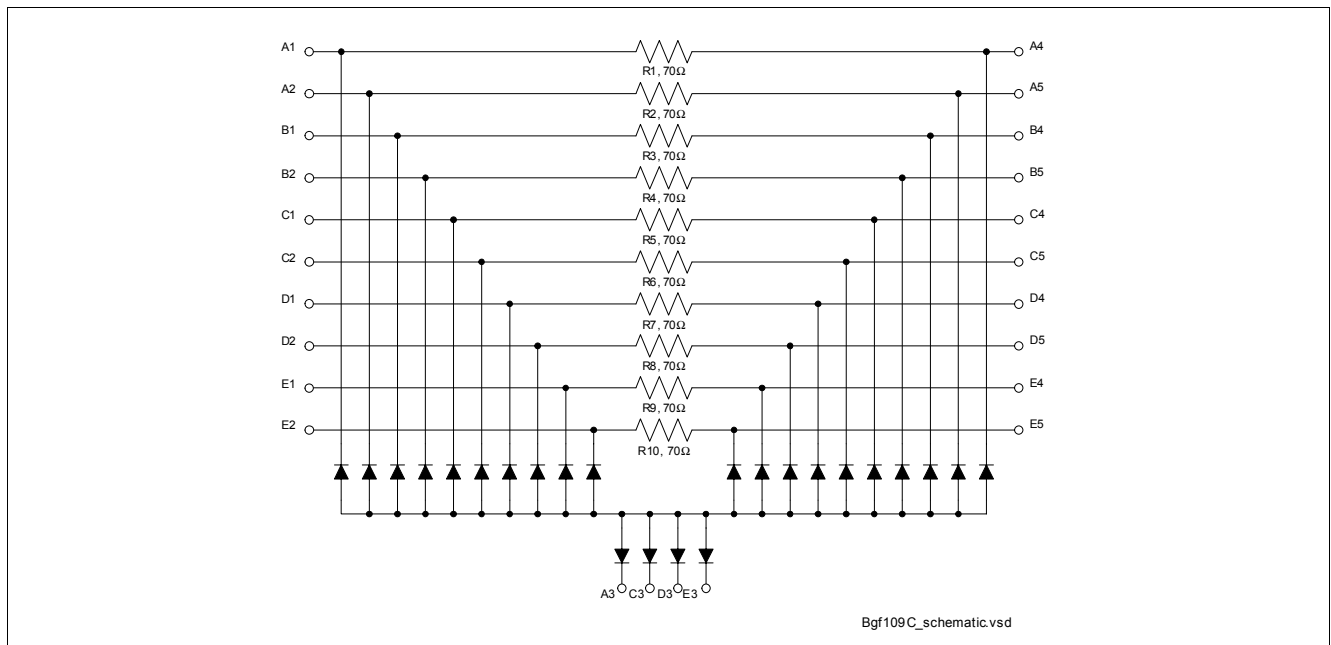


Figure 1 Schematic

### Description

The BGF109C is a 10 channel RC filter array to provide attenuation of undesired signals in the 800 - 2000 MHz range. 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 1.95 mm x 2.07 mm and a total height of 0.60 mm. The package has been improved for increased drop test reliability.

Type	Package	Marking	Chip
BGF109C	WLP-24-9	BGF109C	N0716

10 Channel LCD Filter Array with ESD Protection

**Table 1 Maximum Ratings**

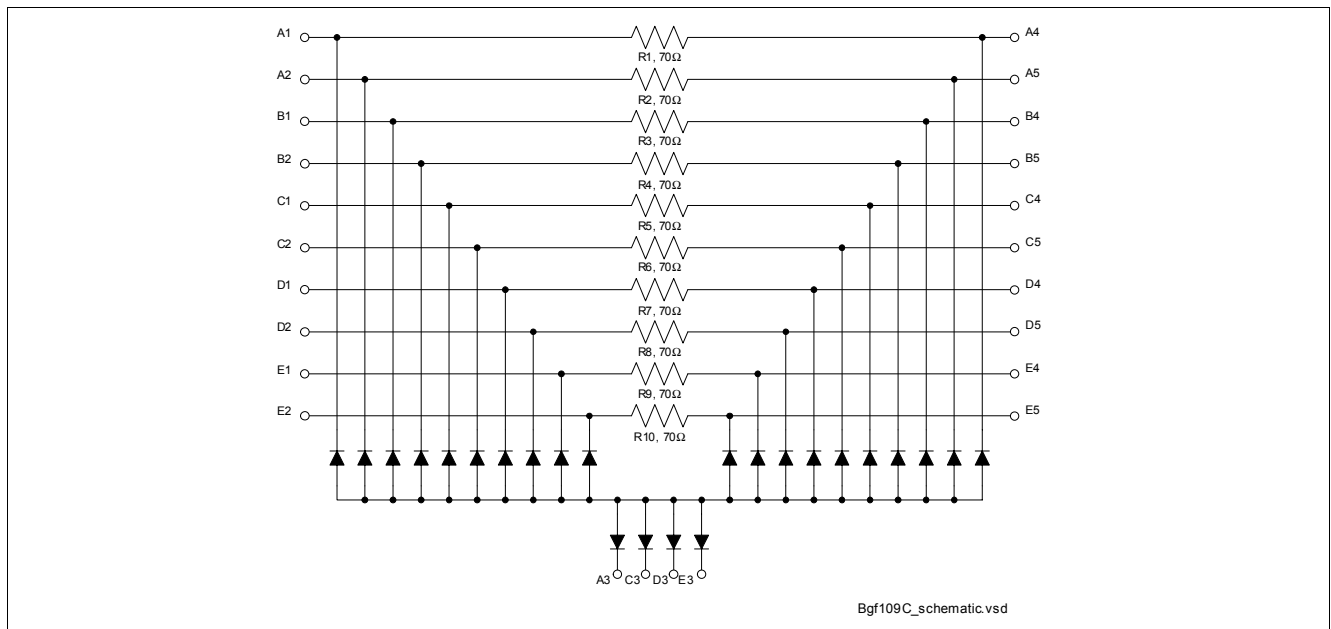
Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Voltage at all pins to GND	$V_P$	-7		7	V	
Operating temperature range	$T_{OP}$	-40		+85	°C	
Storage temperature range	$T_{STG}$	-65		+150	°C	
Summed up input power for all pins	$P_{IN}$			60	mW	$T_S < 70\text{ °C}$
Electrostatic discharge according to IEC61000-4-2 <sup>1)</sup> at all pins	$V_E$	-15		15	kV	

1) Contact discharge

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

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Series Resistors $R_1... R_{10}$	$R$	56	70	84	$\Omega$	
Line capacitance of each line to GND	$C_T$		28 17	30	pF	$V_R = 0\text{ V}$ $V_R = 3\text{ V}$
Leakage currents of lines to GND	$I_R$			100	nA	$V_R = 3\text{ V}$

1) at  $T_A = 25\text{ °C}$



**Figure 2 Schematic**

10 Channel LCD Filter Array with ESD Protection

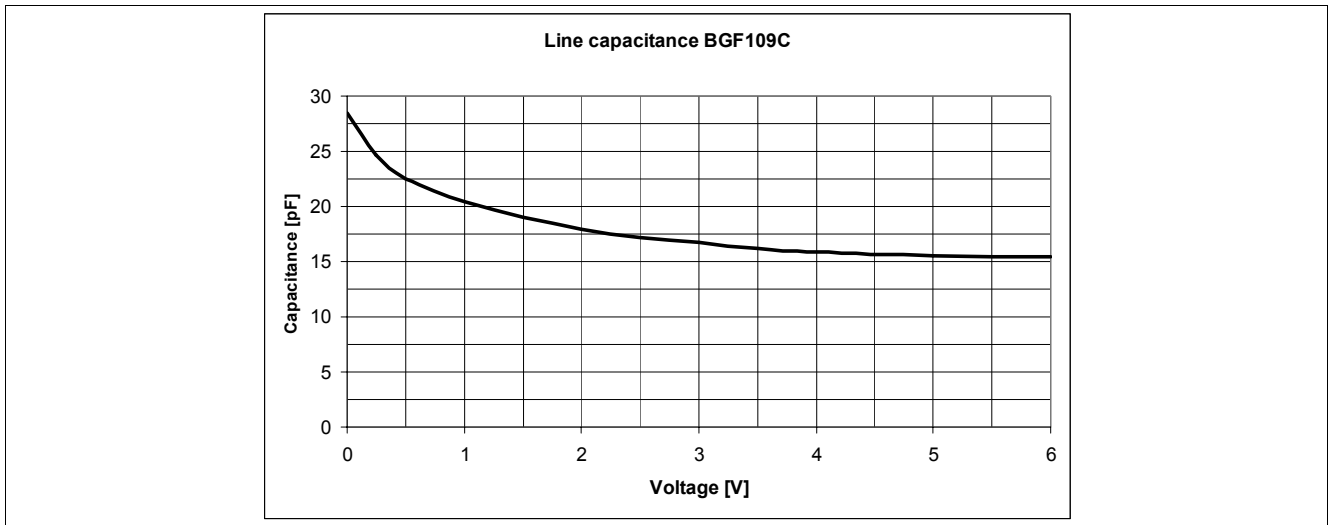


Figure 3 Capacitance of one line to GND versus DC voltage

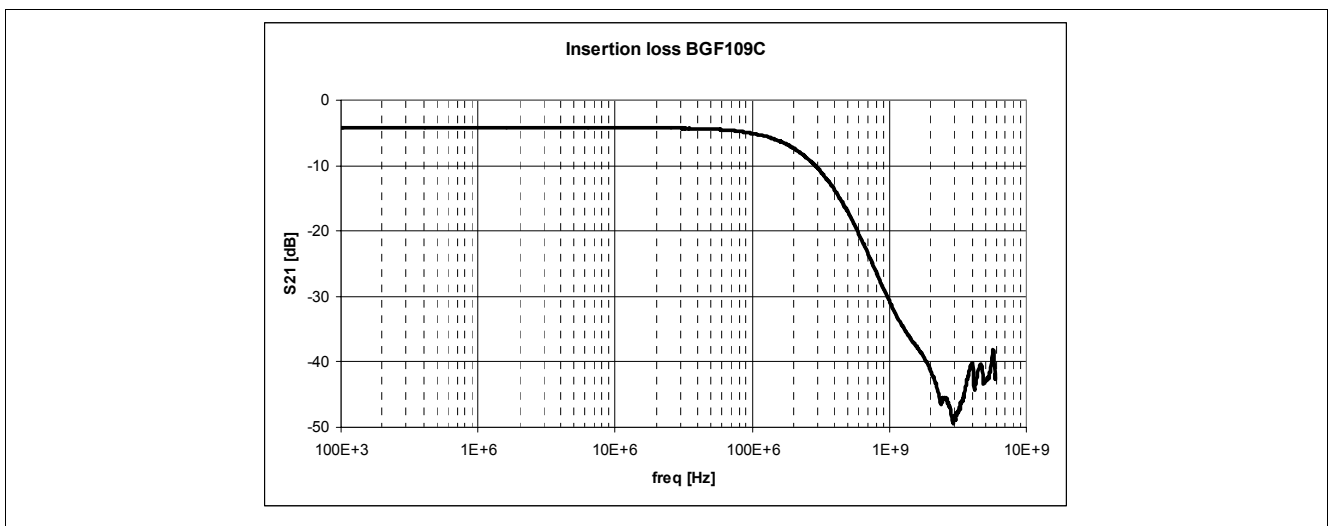


Figure 4 Typical filter characteristics of one filter channel ( $Z_S = Z_L = 50 \Omega$ ,  $V_R = 0 \text{ V}$ )

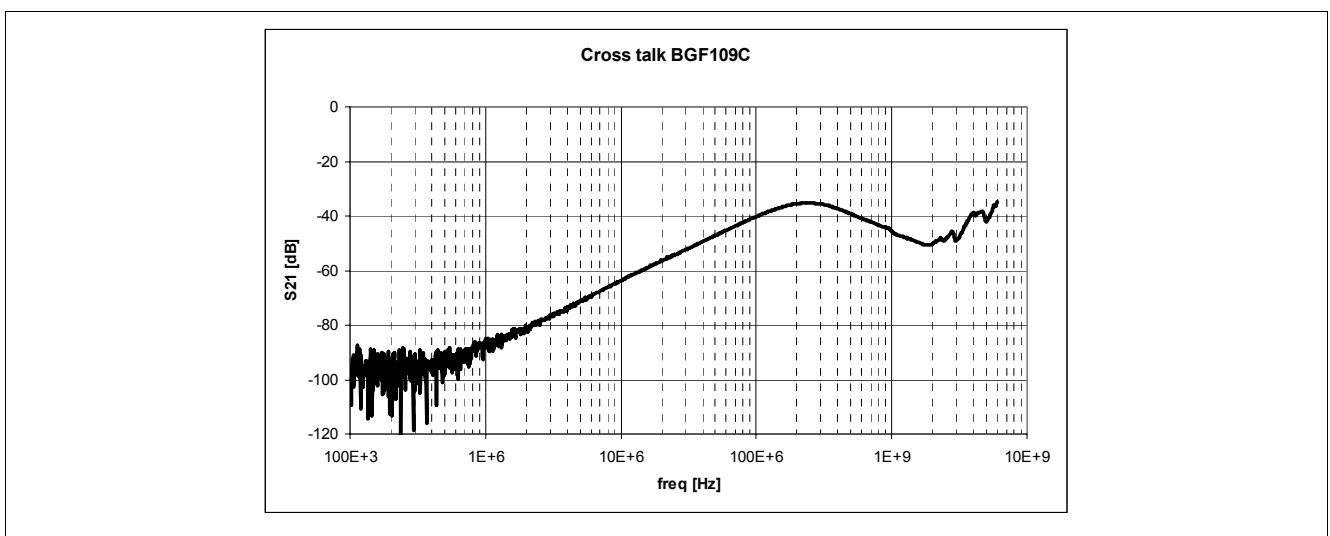


Figure 5 Typical cross talk between two filter channels ( $Z_S = Z_L = 50 \Omega$ ,  $V_R = 0 \text{ V}$ )

10 Channel LCD Filter Array with ESD Protection

Package Outline

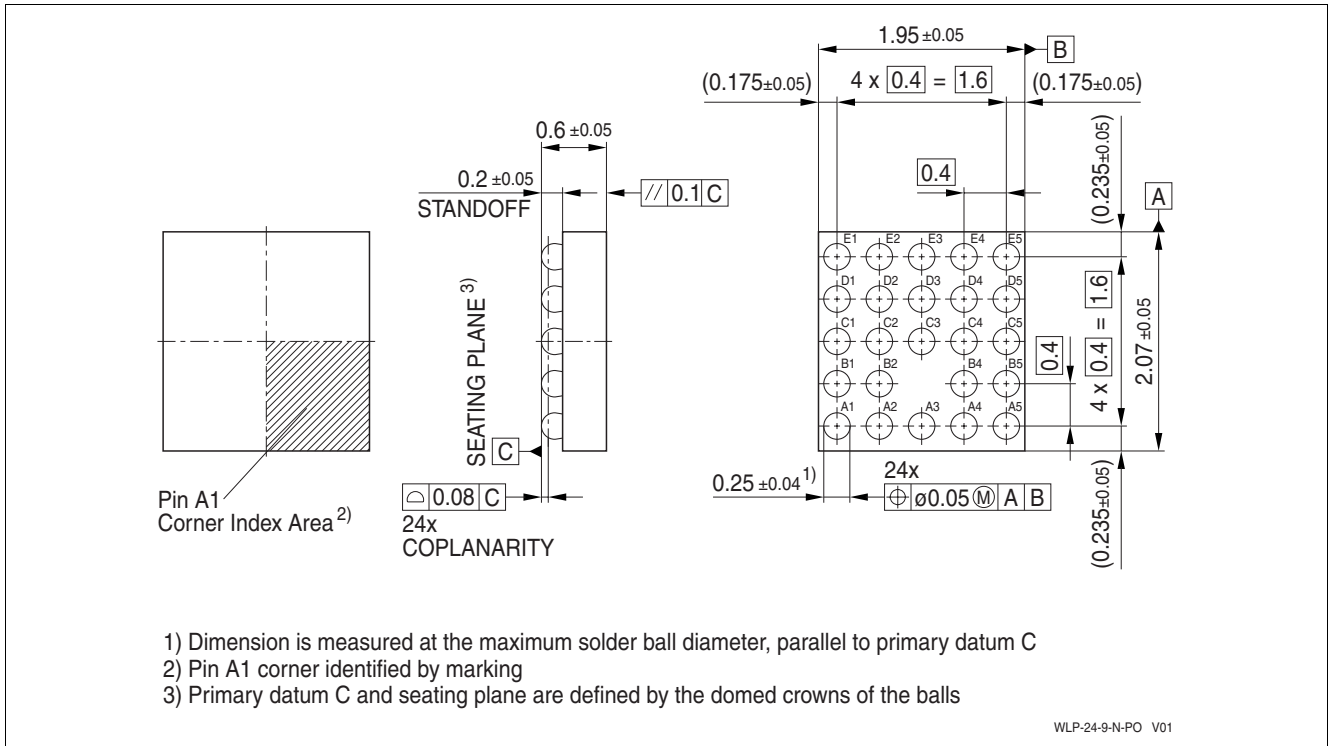


Figure 6 Package WLP-24-9

Tape and reel specification

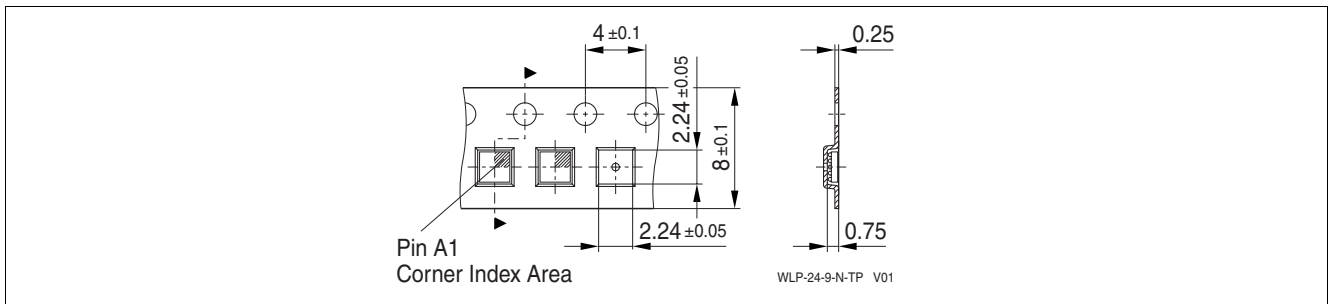


Figure 7 Tape for WLP-24-9