

# BGF109C

10 Channel LCD Filter Array with ESD Protection

Small Signal Discretes



Never stop thinking

**Edition 2008-08-05**

**Published by  
Infineon Technologies AG  
81726 München, Germany**

**© Infineon Technologies AG 2008.  
All Rights Reserved.**

### **Legal Disclaimer**

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie"). With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

### **Information**

For further information on technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies Office ([www.infineon.com](http://www.infineon.com)).

### **Warnings**

Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies Office.

Infineon Technologies Components may only be used in life-support devices or systems with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

---

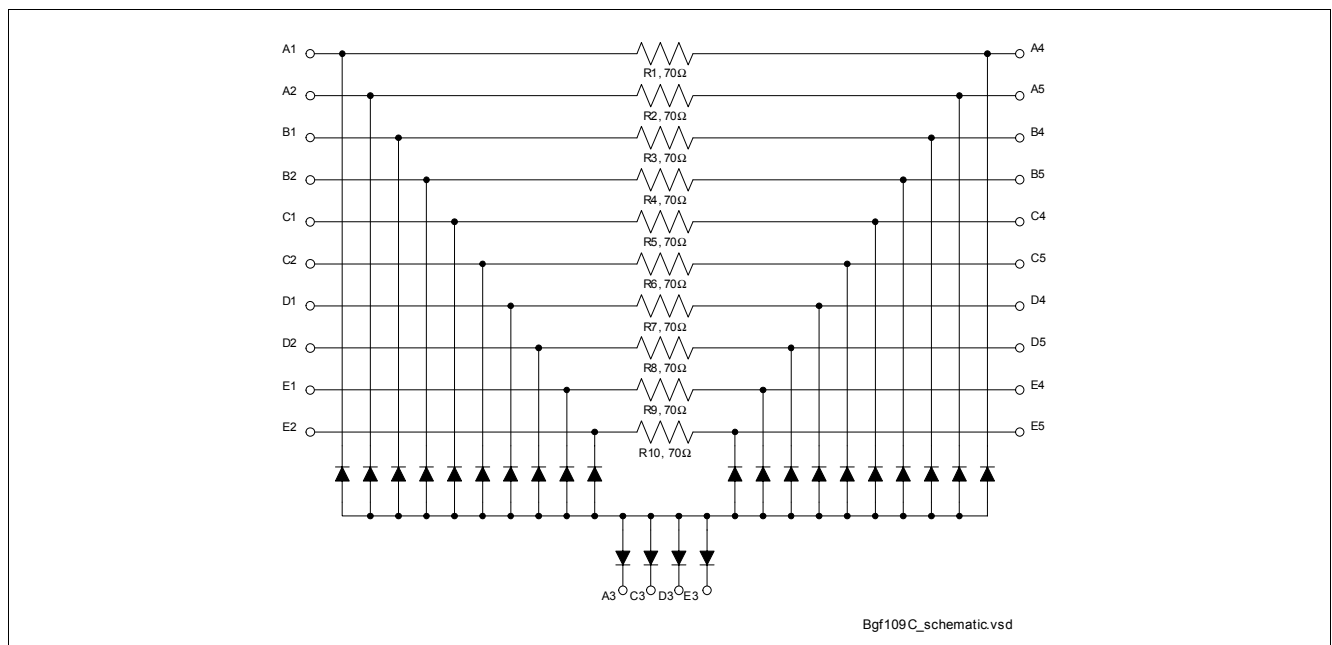
**BGF109C****Revision History: 2008-08-05, V2.0****Previous Version: 2008-07-17, V1.0**

| Page | Subjects (major changes since last revision) |
|------|----------------------------------------------|
| 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 $R_1 \dots R_{10}$  | $R$    | 56     | 70       | 84   | $\Omega$ |                                          |
| Line capacitance of each line to GND | $C_T$  |        | 28<br>17 | 30   | pF       | $V_R = 0\text{ V}$<br>$V_R = 3\text{ V}$ |
| Leakage currents of lines to GND     | $I_R$  |        |          | 100  | nA       | $V_R = 3\text{ V}$                       |

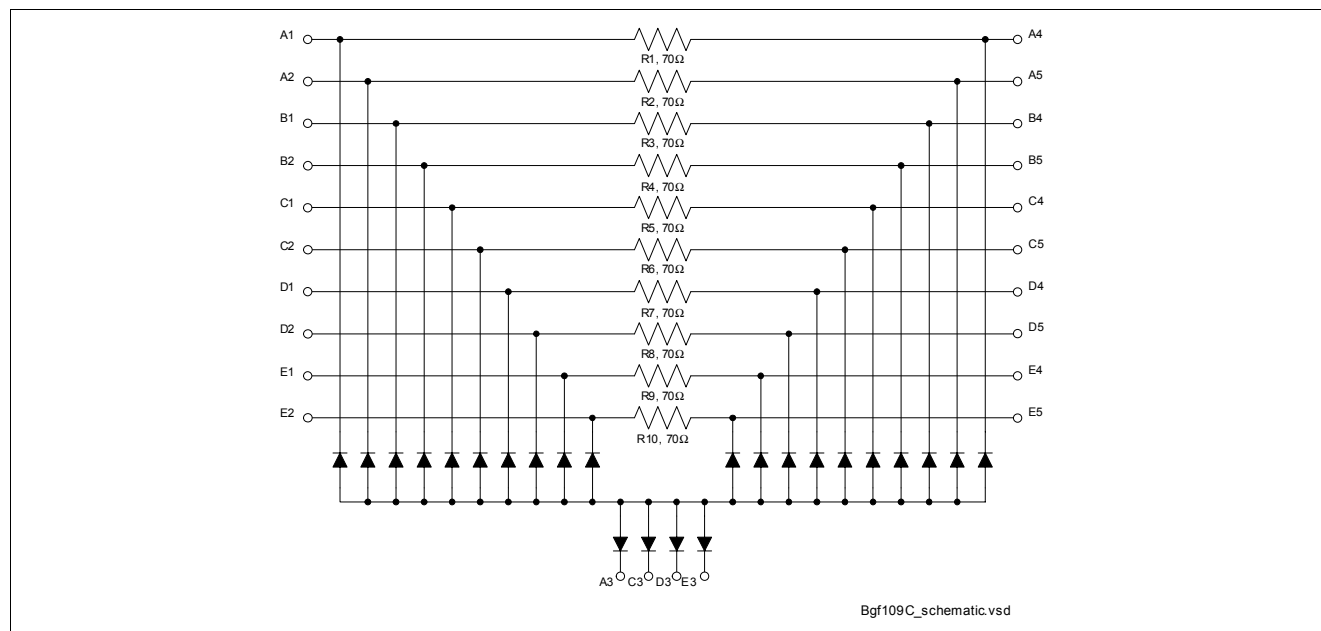
1) at  $T_A = 25\text{ °C}$ 


Figure 2 Schematic

## 10 Channel LCD Filter Array with ESD Protection

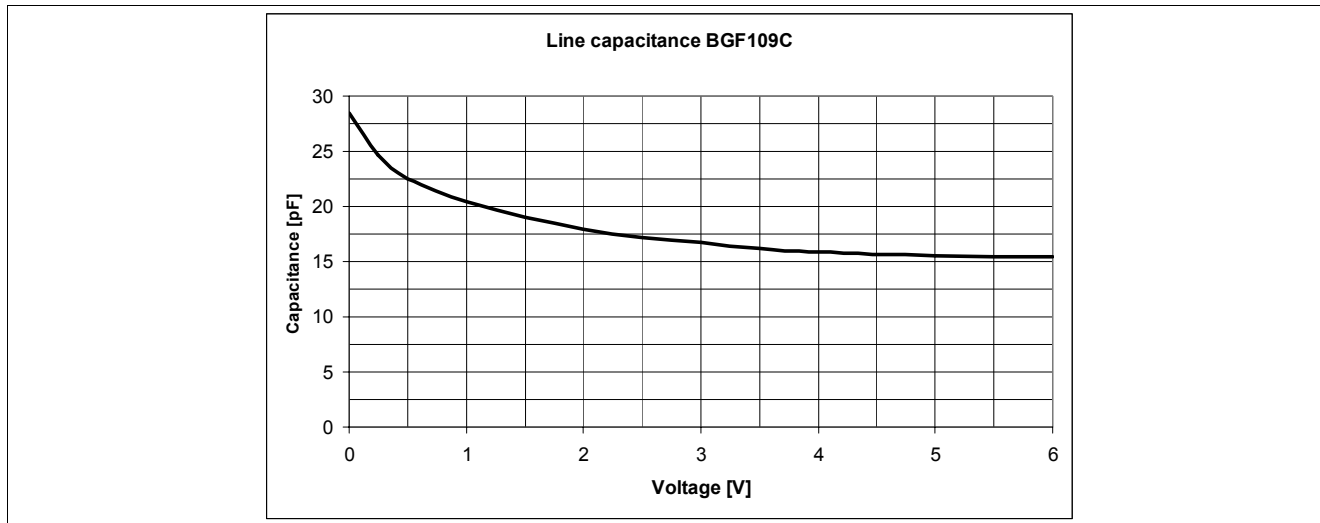


Figure 3 Capacitance of one line to GND versus DC voltage

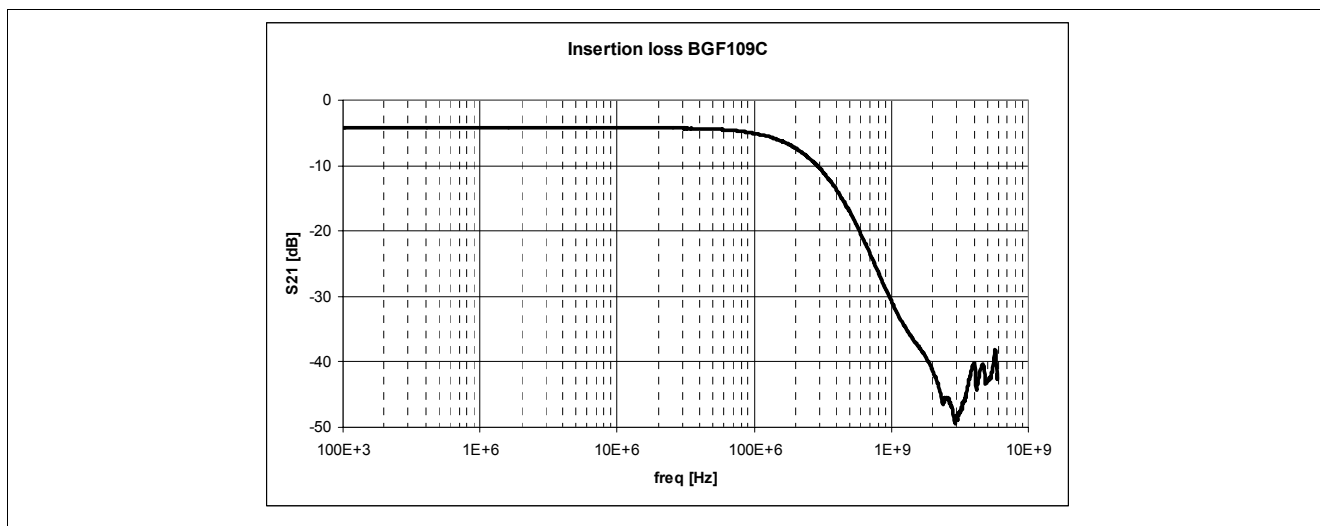


Figure 4 Typical filter characteristics of one filter channel ( $Z_S = Z_L = 50 \Omega$ ,  $V_R = 0 \text{ V}$ )

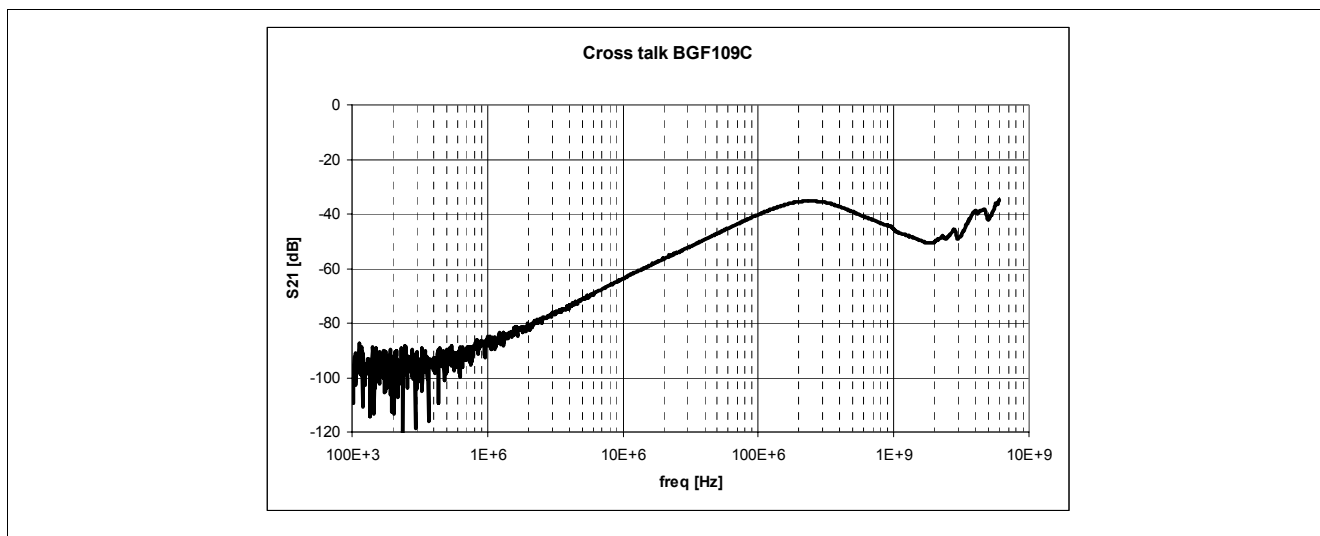
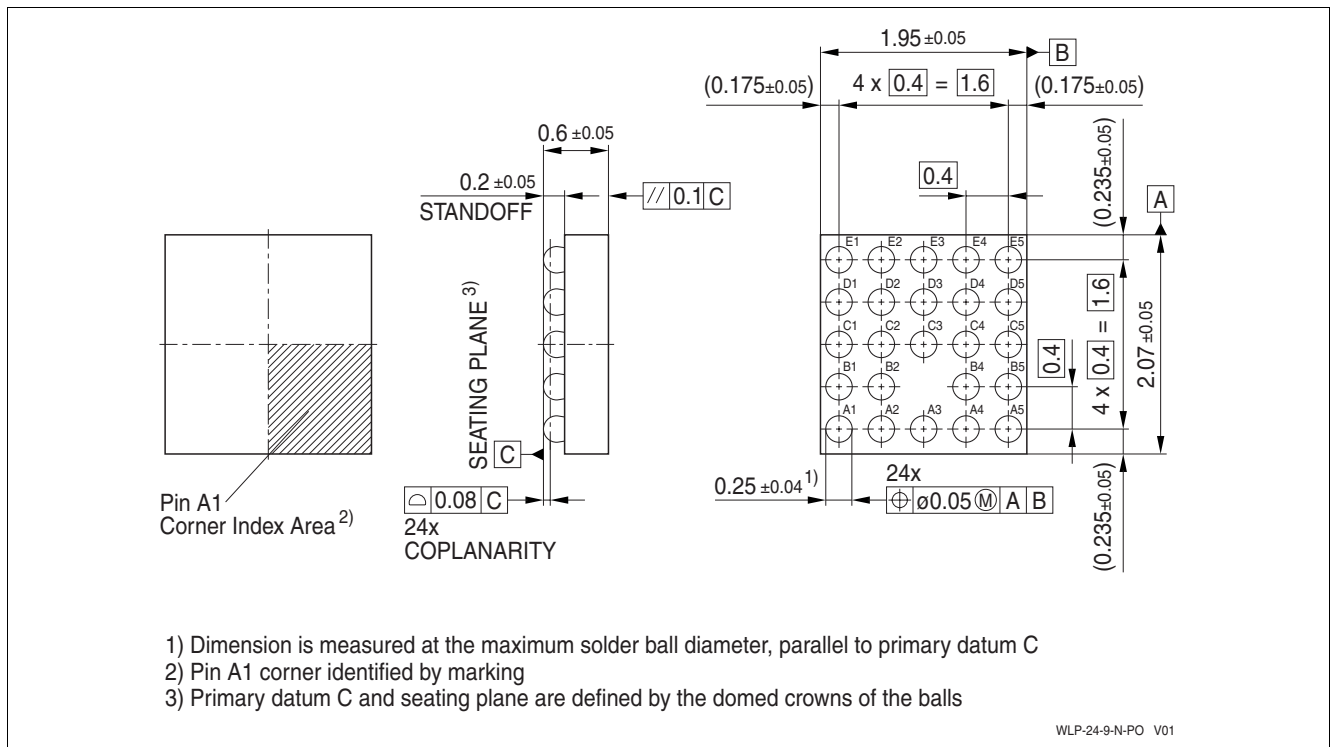


Figure 5 Typical cross talk between two filter channels ( $Z_S = Z_L = 50 \Omega$ ,  $V_R = 0 \text{ V}$ )

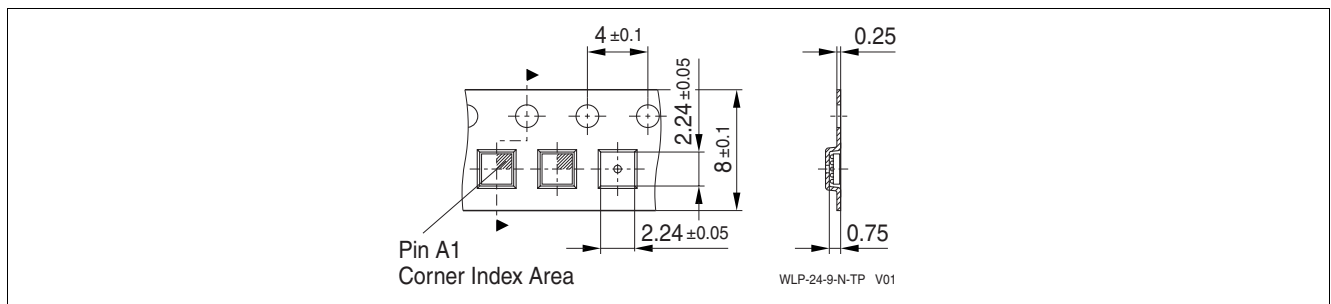
# 10 Channel LCD Filter Array with ESD Protection

## Package Outline



**Figure 6 Package WLP-24-9**

## Tape and reel specification



**Figure 7 Tape for WLP-24-9**