

# BGF121

Transient Voltage Suppressor

Small Signal Discretes



Never stop thinking

**Edition 2009-06-16**

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

**© Infineon Technologies AG 2009.  
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.

---

**BGF121****Revision History: 2009-06-16, V2.2****Previous Version: 2009-02-25, V2.1**

Page	Subjects (major changes since last revision)
7	<b>Figure 5</b> updated for 2mm component pitch

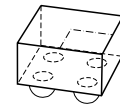
## Transient Voltage Suppressor

### Features

- 1 channel TVS diode designed for portable application
- ESD protection according to IEC61000-4-2 for  $\pm 15$  kV contact discharge on all IOs
- Wafer Level Package with SnAgCu solder balls
- RoHS and WEEE compliant package
- Very small form factor

### TVS

- High peak pulse power
- Stand-off voltage up to 10 V
- Low clamping voltage factor  $V_{cl}/V_{br}$
- Fast response time



WLP-4-1-3D



### Description

The BGF121 is a single line TVS diode designed for transient voltage and power overstress suppression. All pins are protected against ESD pulses of  $\pm 15$  kV contact discharge according to IEC61000-4-2. The wafer level package is a green package with a size of only 0.75 mm x 0.75 mm and a total height of 0.60 mm.

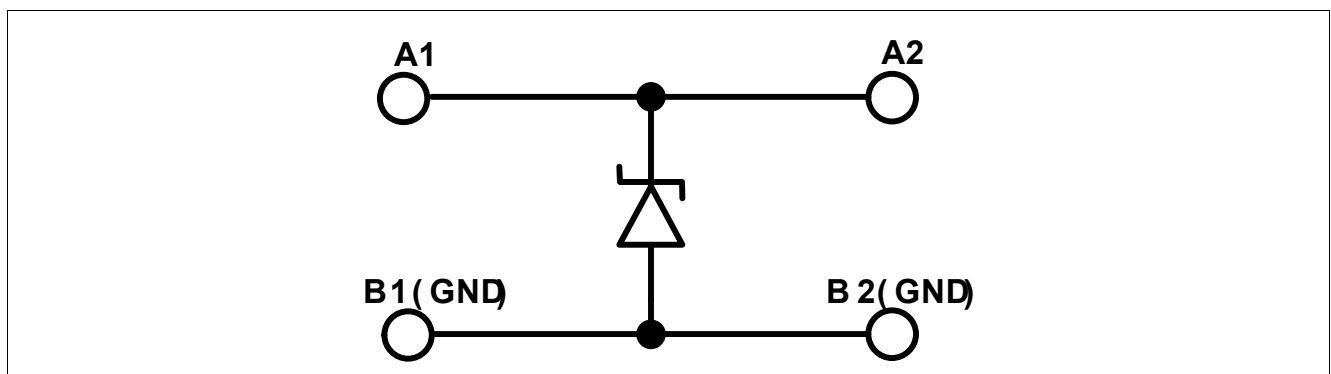


Figure 1 Schematic

Type	Package	Marking	Chip
BGF121	WLP-4-1	21	N0743

# Transient Voltage Suppressor

**Table 1 Maximum Ratings**

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Voltage at all pins to GND	$V_P$	0	–	10	V	–
Operating temperature range	$T_{OP}$	-30	–	+85	°C	–
Storage temperature range	$T_{STG}$	-55	–	+150	°C	–
Electrostatic Discharge According to IEC61000-4-2	$V_{ESD}$	-15	–	15	kV	–

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

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Line capacitance to GND	$C_T$		160		pF	$V_R = 0\text{ V}$
Forward voltage	$V_F^{2)}$		1.1	1.3	V	$I_F = 850\text{ mA}$
Break down voltage	$V_{BR}$	16	16.9 17.7		V	$I_R = 15\text{ mA}$ $T_A = -30\text{ °C}$ $T_A = 25\text{ °C}$
Clamping voltage during transient	$V_{CL}^{3)}$		18.7	20	V	$I_R = 1\text{ A}$ , $T_A = 85\text{ °C}$
Leakage current of line to GND	$I_R$		1 10 100	800	nA	$V_R = 10\text{ V}$ $T_A = -30\text{ °C}$ $T_A = 25\text{ °C}$ $T_A = 85\text{ °C}$

1) Otherwise specified at  $T_A = 25\text{ °C}$

2) To avoid high temperature and possible disassembling of component from the board, DC current operation to be limited to few seconds

3) 8/20  $\mu\text{s}$  pulse waveform according to IEC61000-4-5

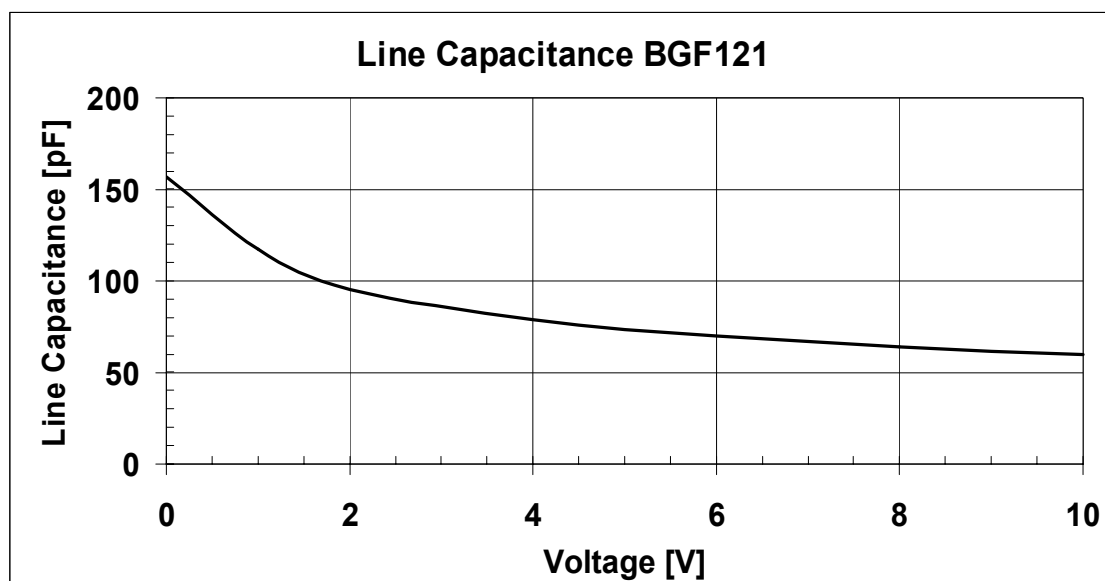


Figure 2 Line Capacitance vs reverse voltage (typical values) at 25°C

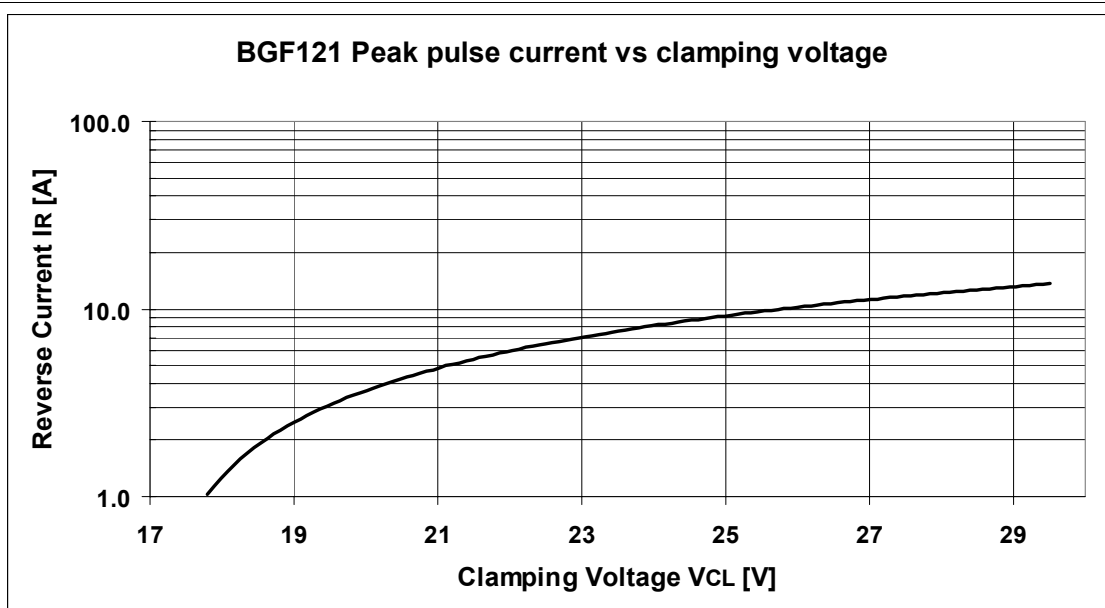
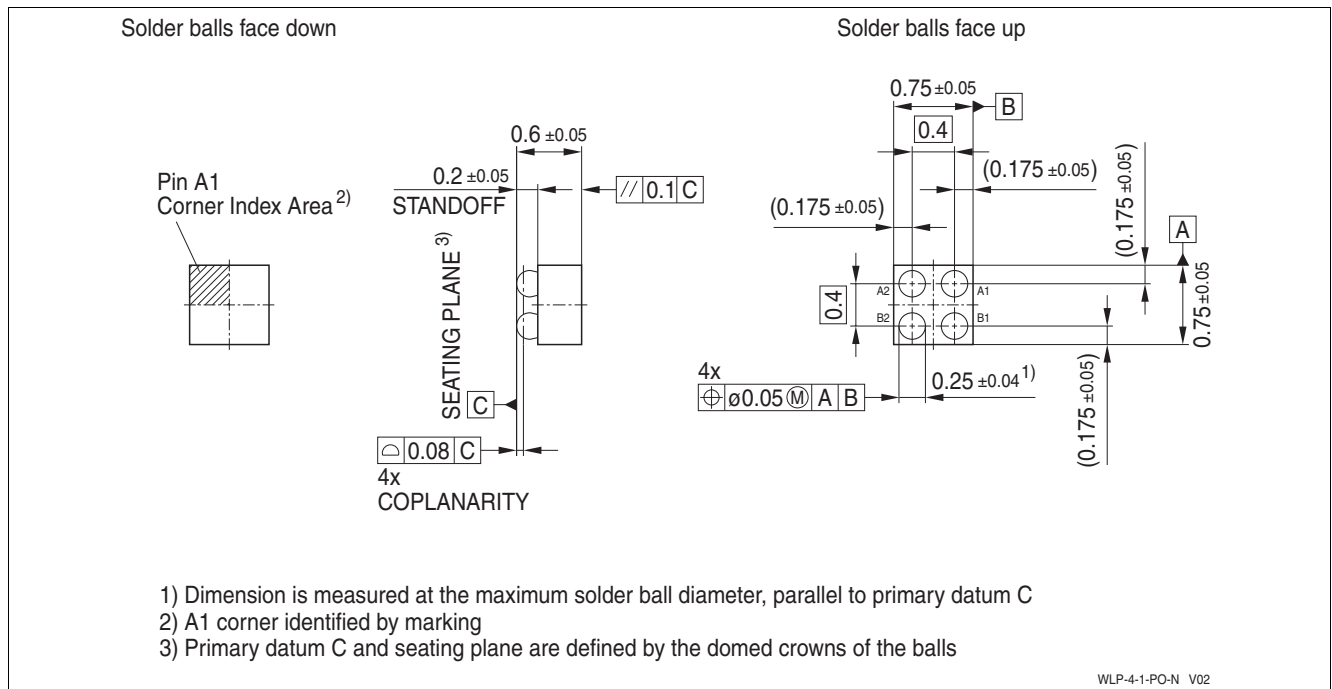


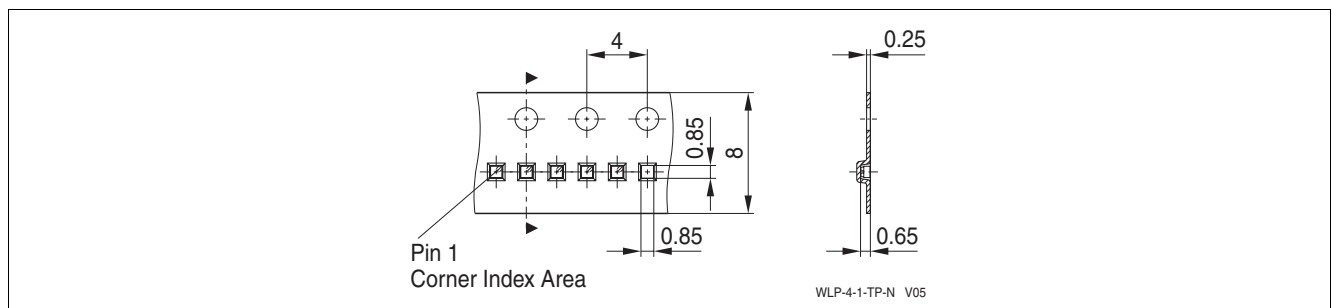
Figure 3 Peak pulse reverse current (IEC61000-4-5) versus clamping voltage (typical values) at 25°C

## Package Outline



**Figure 4** Package WLP-4-1 (dimension in mm)

## Tape and reel specification



**Figure 5** Tape for WLP-4-1 (dimension in mm)

You can find all of our packages, sorts of packing and others in our Infineon Internet Page "Products":  
<http://www.infineon.com/products>