BGF124

SIM Card Interface Filter and USB Interface with ESD Protection

Small Signal Discretes

Infineon

Never stop thinking

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BGF124

Revision History: 2009-04-01, V2.0

Previous Version: 2008-05-27, V1.0

Page	Subjects (major changes since last revision)
all	target status removed
5, 6	**Figure 2** and **Figure 3** updated
7	**Figure 5** added

BGF124

Features

- ESD protection circuit and interface filter for SIM cards
- Reduced line capacitance of 12 pF maximum
- ESD protection according to IEC61000-4-2 for ±15 kV contact discharge on external IOs
- Wafer level package with SnAgCu solder balls
- 400 µm solder ball pitch
- RoHS and WEEE compliant package

WLP-11-4-N

RoHS
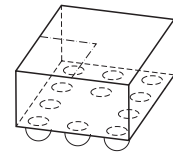
Description

BGF124 is an ESD protection and filtering circuit for SIM card and USB interfaces. All external IOs are protected against ESD pulses of ±15 kV contact discharge according to IEC61000-4-2. The wafer level package is a green lead-free and halogen-free package with a size of only 1.15 mm x 1.55 mm and a total height of 0.6 mm
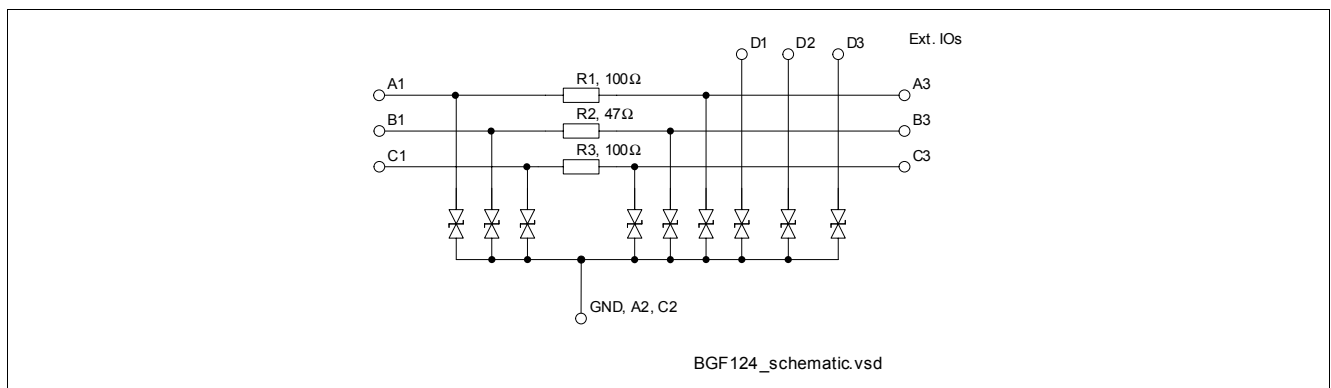

Figure 1   Schematic

Type	Package	Marking	Chip
BGF124	WLP-11-4	24	N0744

Table 1   Maximum Ratings

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Voltage at all pins to GND	V_P	0	–	5	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	$T_S < 70$ °C
Electrostatic Discharge According to IEC61000-4-2						
Contact discharge at internal pins A1, B1, C1	V_{ESD}	-2	–	2	kV	–
Contact discharge at external pins A3, B3, C3, D1, D2, D3	V_{ESD}	-15	–	15	kV	–

Table 2   Electrical Characteristics[1]

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Resistors R_1, R_3	$R_{1,3}$	80	100	120	Ω	–
Resistor R_2	R_2	37.6	47	56.4	Ω	–
Leakage current of ESD protection diodes	I_L	–	1	100	nA	V = 3 V
		–	2	200	nA	V = 5 V
Breakdown voltage of ESD diodes[2]	$V_{(BR)}$	–	18.5 -12.5	–	V	$I_{(BR)}$ = 1 mA $I_{(BR)}$ = -1 mA
Line capacitance Capacitance of all lines to GND	C_T	8	10	12	pF	V = 0 V

1) at T_A = 25 °C

2) after snap-back
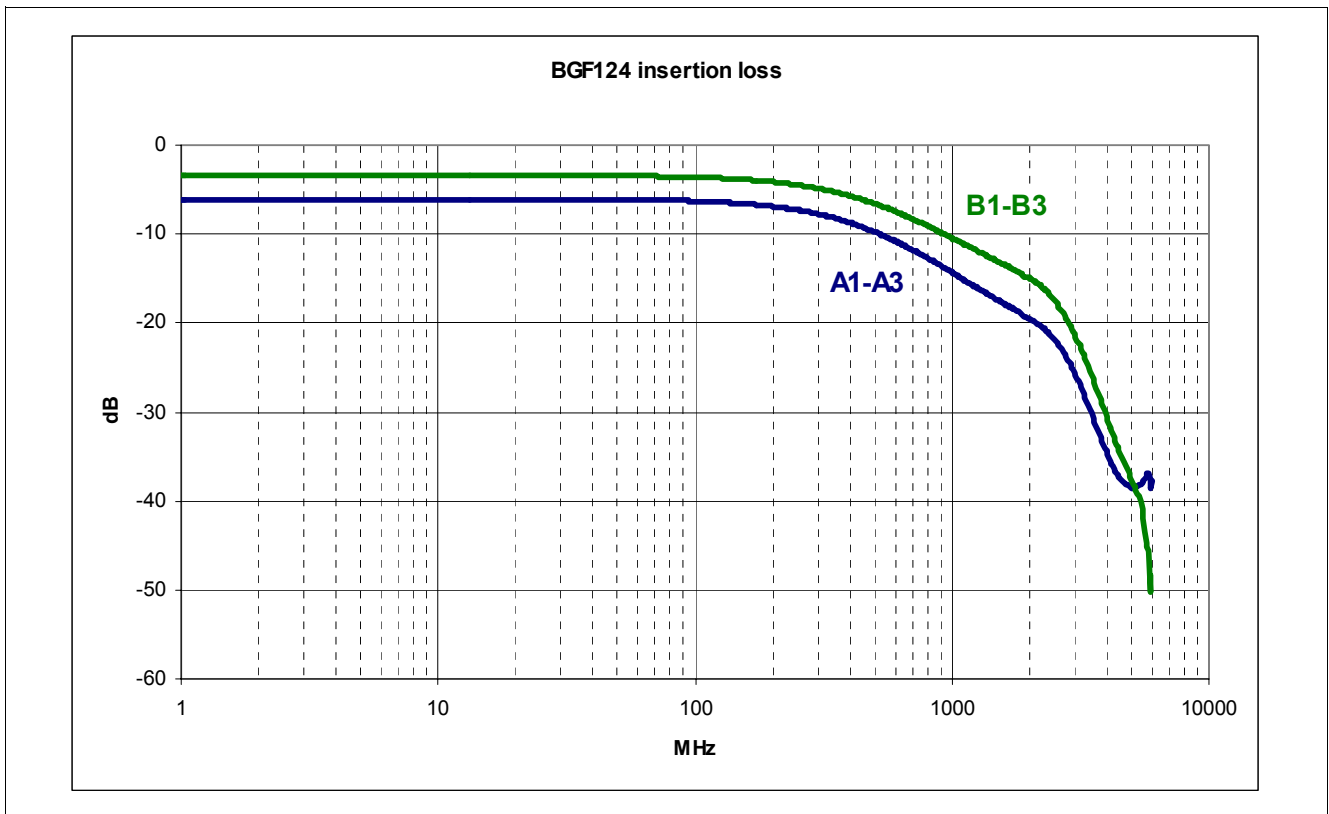
Figure 2   Insertion Loss
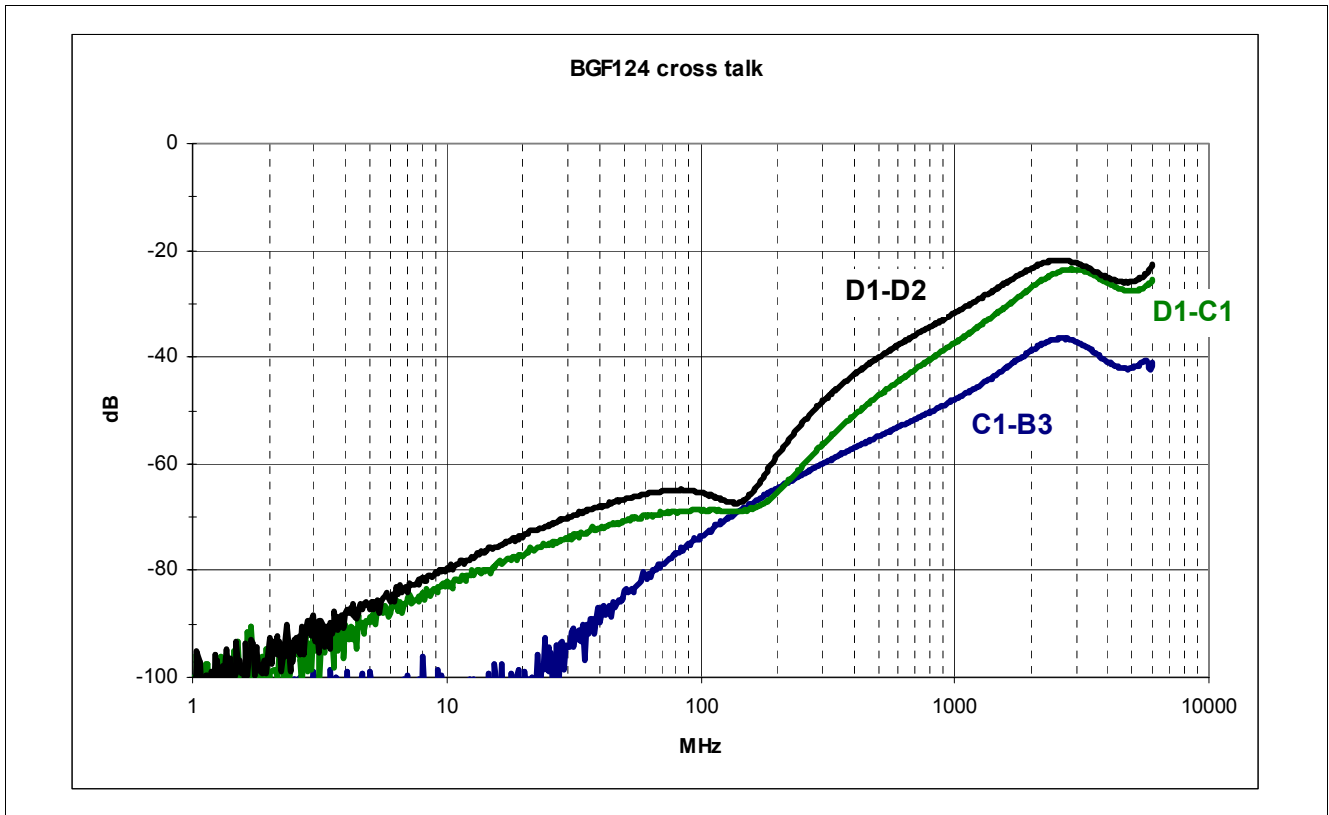
Figure 3   Typical Cross Talk

Package Outlines

1) Dimension is measured at the maximum solder ball diameter, parallel to primary datum C
2) Identified by marking
3) Primary datum C and seating plane are defined by the domed crowns of the balls
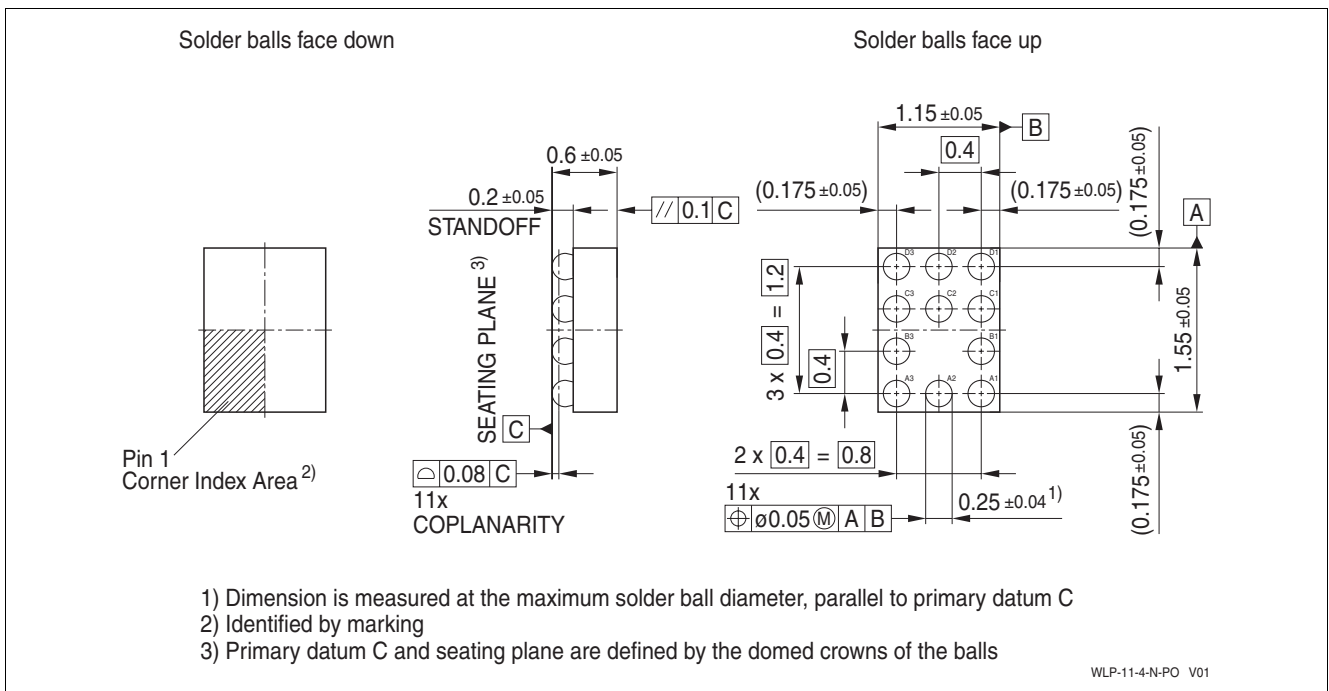
WLP-11-4-N-PO V01

Figure 4   WLP-11-4 (Wafer Level Package)
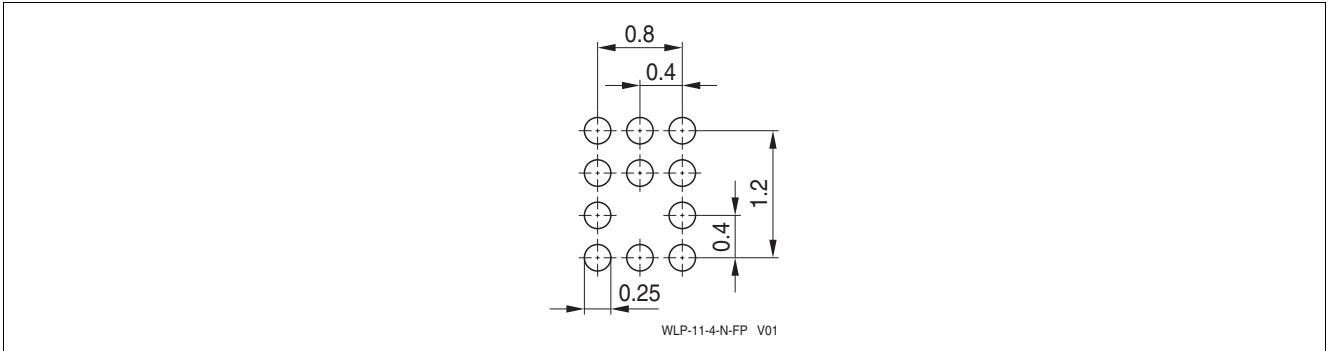
Footprint

Figure 5   Recommended PCB pad design for reflow soldering
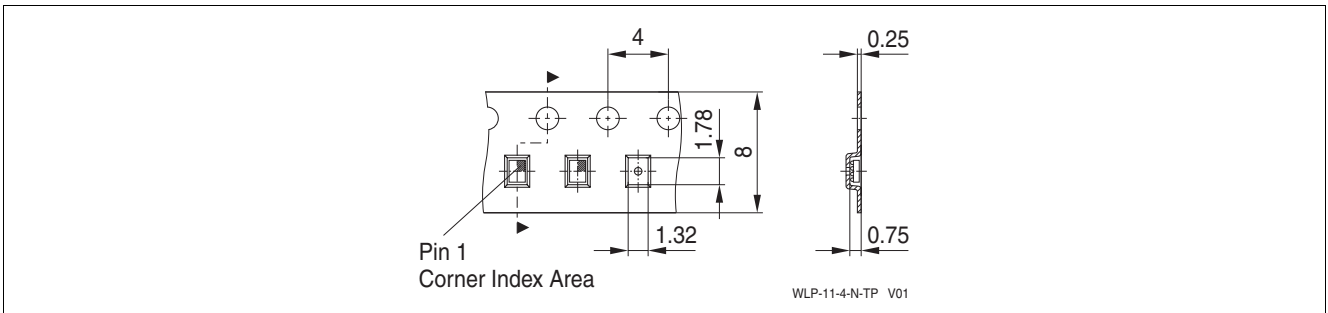
Tape

Figure 6   Tape for BGF124 / WLP-11-4

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