

# BGF104

HSMMC Interface Filter and ESD Protection

Small Signal Discretes



Never stop thinking

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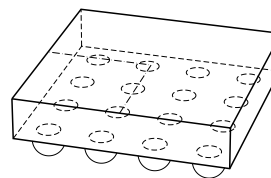
**BGF104****Revision History: 2006-10-17, V2.1****Previous Version: 2006-03-03**

| Page | Subjects (major changes since last revision) |
|------|----------------------------------------------|
| All  | Layout conformation                          |
|      |                                              |
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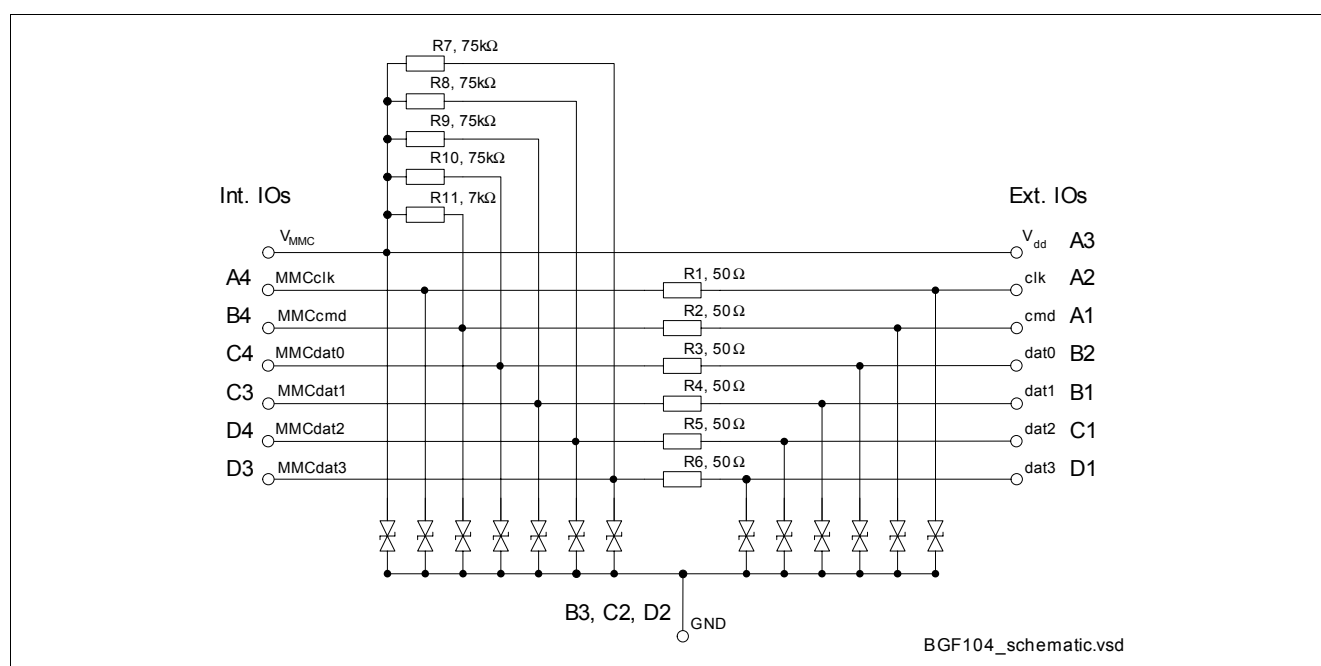
## HSMC Interface Filter and ESD Protection

### Feature

- ESD protection and filter for High Speed Multi Media Card interface
- ESD protection up to 15 kV at the external IOs
- 16 pin green wafer level package with SnAgCu solder balls
- 500  $\mu\text{m}$  solder ball pitch
- 300  $\mu\text{m}$  solder ball diameter



WLP-16-1



**Figure 1 Blockdiagram**

### Description

The BGF104 is an ESD protection and filter circuit for a high speed multi media card interface. External pins are protected up to 15 kV contact discharge according to IEC61000-4-2. The wafer level package is a green package with a size of only 1.96 mm x 1.96 mm and a total height of 0.65 mm.

| Type   | Package  | Marking | Chip  |
|--------|----------|---------|-------|
| BGF104 | WLP-16-1 | BGF104  | N0708 |

## HSMC Interface Filter and ESD Protection

Table 1 Maximum Ratings

| Parameter                                                | Symbol    | Values |      |      | Unit | Note / Test Condition |
|----------------------------------------------------------|-----------|--------|------|------|------|-----------------------|
|                                                          |           | Min.   | Typ. | Max. |      |                       |
| Voltage at all pins to GND                               | $V_P$     | -14    |      | 14   | V    |                       |
| Operating temperature range                              | $T_{OP}$  | -40    |      | +85  | °C   |                       |
| Storage temperature range                                | $T_{STG}$ | -65    |      | +150 | °C   |                       |
| <b>Electrostatic Discharge According to IEC61000-4-2</b> |           |        |      |      |      |                       |
| Ext. I/Os: A1, A2, A3, B1, B2, C1, D1                    | $V_E$     | -15    |      | 15   | kV   |                       |
| Int. I/Os: A4, B4; C3, C4, D3, D4                        | $V_I$     | -2     |      | 2    | kV   |                       |

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

| Parameter                                           | Symbol       | Values |      |      | Unit          | Note / Test Condition |
|-----------------------------------------------------|--------------|--------|------|------|---------------|-----------------------|
|                                                     |              | Min.   | Typ. | Max. |               |                       |
| Resistors $R_1...R_6$                               | $R_{1...6}$  | 40     | 50   | 60   | $\Omega$      |                       |
| Resistors $R_7...R_{10}$                            | $R_{7...10}$ | 52.5   | 75   | 97.5 | k $\Omega$    |                       |
| Resistor $R_{11}$                                   | $R_{11}$     | 4.9    | 7    | 9.1  | k $\Omega$    |                       |
| Reverse current of ESD protection diodes            | $I_R$        |        | 5    | 100  | nA            | $V_R = 3\text{ V}$    |
|                                                     |              |        | 0.1  | 10   | $\mu\text{A}$ | $V_R = 14\text{ V}$   |
| Line capacitance<br>Capacitance of each line to GND | $C_T$        |        | 16   | 20   | pF            | $V_R = 0\text{ V}$    |

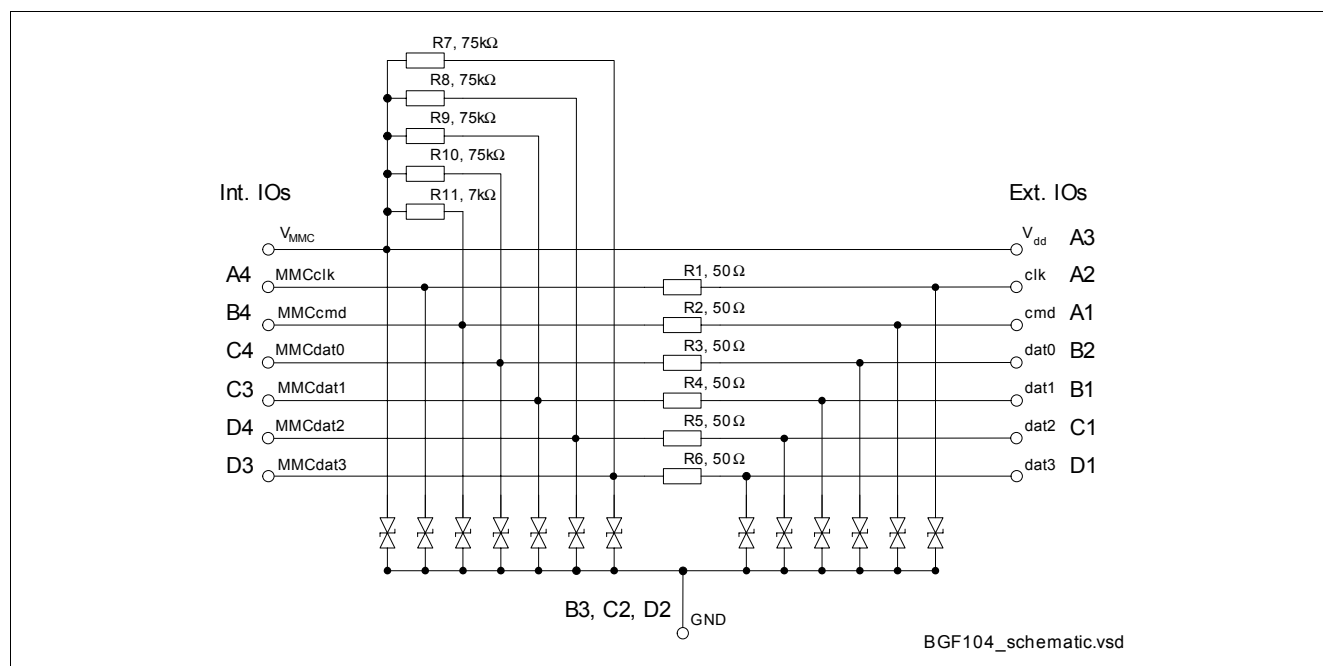
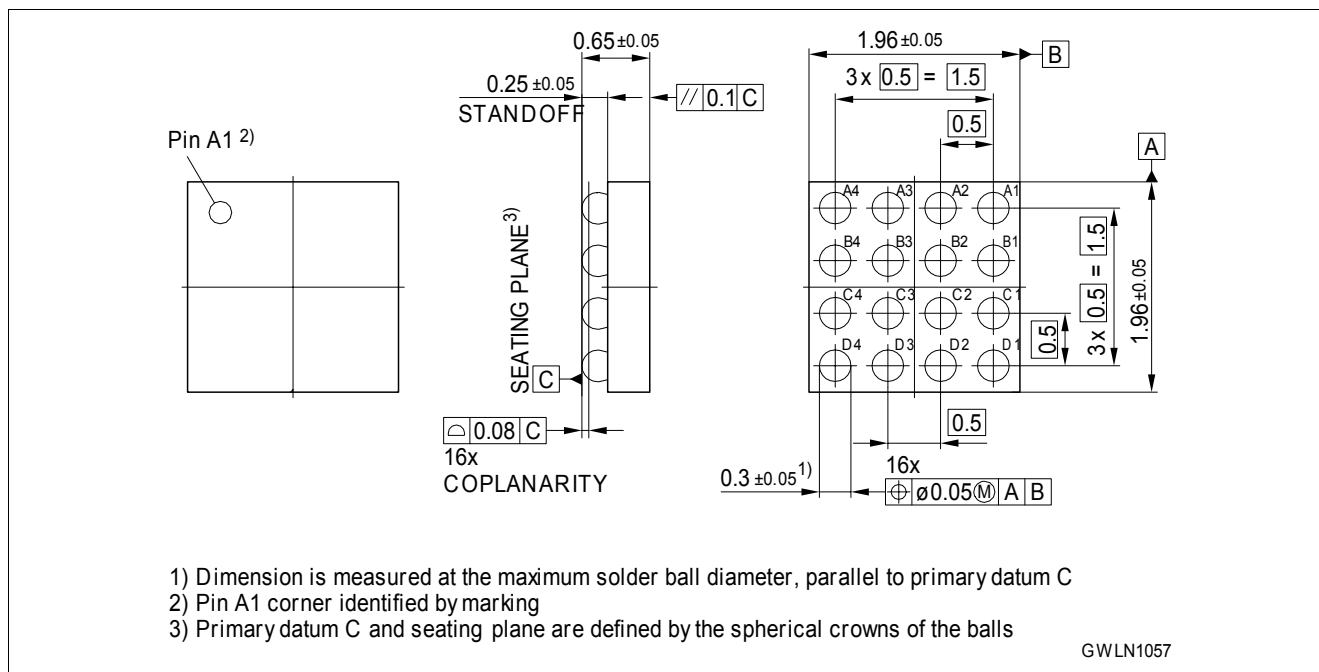
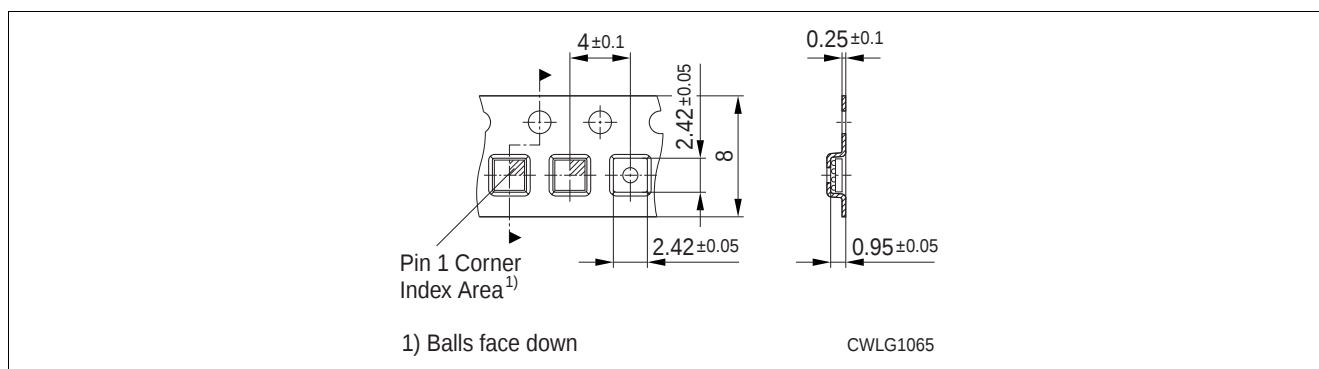
1) at  $T_A = 25\text{ °C}$ 


Figure 2 Schematic



**Figure 3 Package Outline WLP-16-1**



**Figure 4**      **Tape for WLP-16-1**