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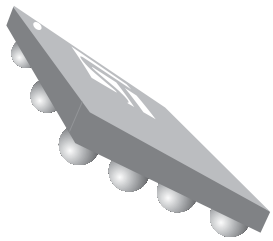
# EMIF03-SIM06F3

## 3-line IPAD™, EMI filter including ESD protection

**Datasheet – production data**



**Flip-chip package**
**(11 bumps)**

## Features

- EMI symmetrical (I/O) low-pass filter
- High efficiency in ESD protection
- Lead-free package
- Very thin package
- High reliability offered by monolithic integration
- High reduction of parasitic elements through integration and wafer level packaging

### Complies with the following standards:

- IEC 61000-4-2 level 4
  - ± 15 kV (air discharge)
  - ± 8 kV (contact discharge)
- IEC 61000-4-2 level 1
  - ± 2 kV (air discharge)
  - ± 2 kV (contact discharge)

## Application

Where EMI filtering in ESD sensitive equipment is required:

- Mobile phones and communication systems
- Computers, printers and MCU boards

## Description

The EMIF03-SIM06F3 chip is a highly integrated audio filter device designed to suppress EMI/RFI noise in all systems subjected to electromagnetic interface.

The filter included ESD protection circuitry, which prevents damage to the protected device when subjected to ESD surges up to 15 kV.

**Figure 1. Pin configuration (bump side)**

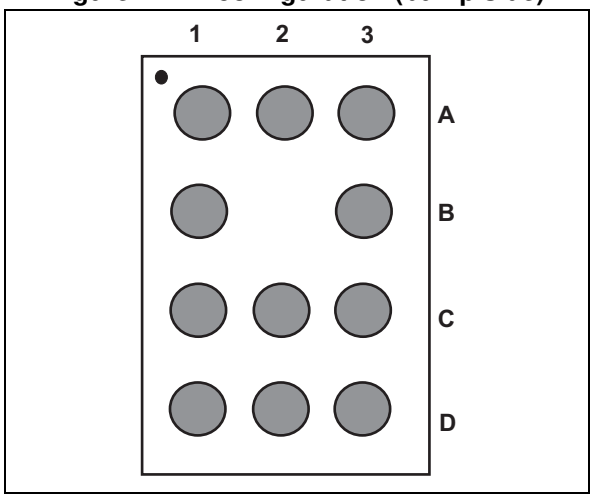
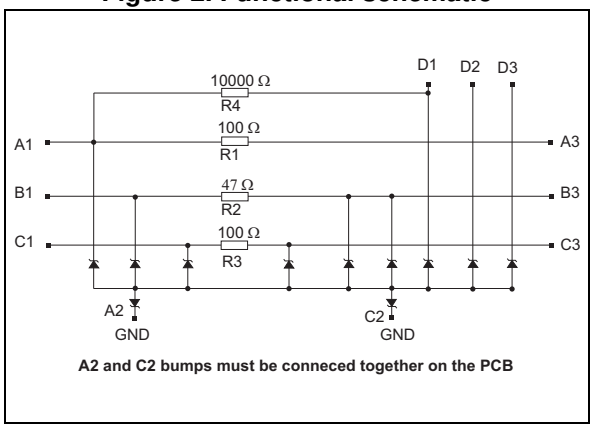



**Figure 2. Functional schematic**




A2 and C2 bumps must be conneced together on the PCB

# 1 Characteristics

**Table 1. Absolute maximum ratings ($T_{amb}$ = 25 °C)**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{PP}$ | Internal pins (A1, B1, C1):<br>ESD discharge IEC 61000-4-2(1), level 1<br>Air discharge<br>Contact discharge<br>External pins (A3, B3, C3, D1, D2, D3):<br>ESD discharge IEC 61000-4-2(1), level 4<br>Air discharge<br>Contact discharge | <br><br>2<br>2<br><br><br>20<br>20 | kV |
| $T_{op}$ | Operating temperature range | - 40 to + 85 | |
| $T_{stg}$ | Storage temperature range | - 55 to 150 | |

1. Measurements done on IEC 61000-4-2 test bench. For further details see Application note AN3353, “IEC 61000-4-2 standard testing”.

**Figure 3. Electrical characteristics (definitions)**

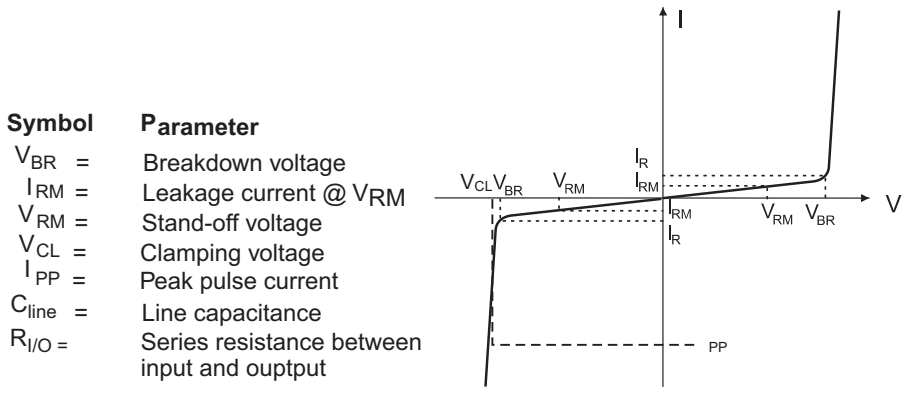



**Table 2. Electrical characteristics ($T_{amb}$ = 25 °C)**

| Symbol | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| $I_{RM}$ | $V_{RM}$ = 3 V | | | 50 | nA |
| $V_{BR}$ | $I_R$ = 1 mA | 6 | | | V |
| R1, R3 | Tolerance ±20% | | 100 | | Ω |
| R2 | Tolerance ±20% | | 47 | | Ω |
| R4 | Tolerance ±20% | | 10 | | kΩ |
| $C_{line}$ | $V_{line}$ = 0 V, $V_{osc}$ = 30 mV, F = 10 MHz (measured under zero light conditions) | 8 | 10 | 12 | pF |

Figure 4. Attenuation versus frequency

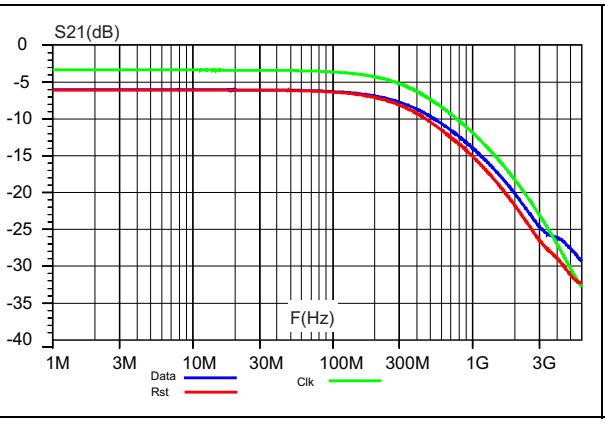



Figure 5. Analog crosstalk versus frequency

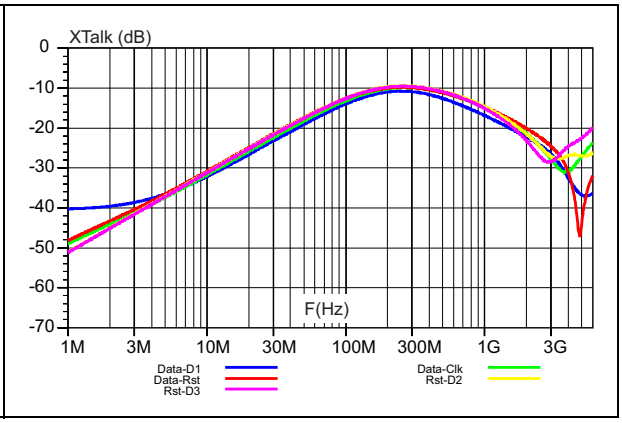



Figure 6. ESD response to IEC 61000-4-2 (+8 kV contact discharge)

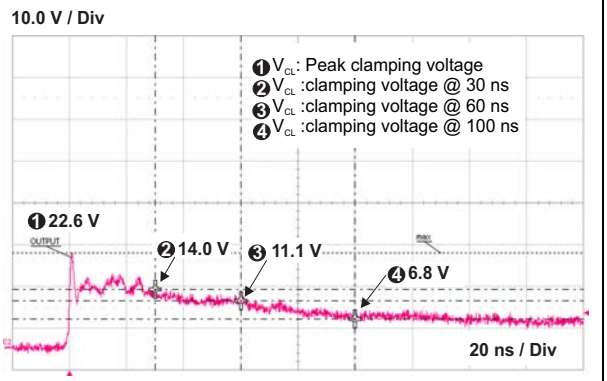



Figure 7. ESD response to IEC 61000-4-2 (-8 kV contact discharge)

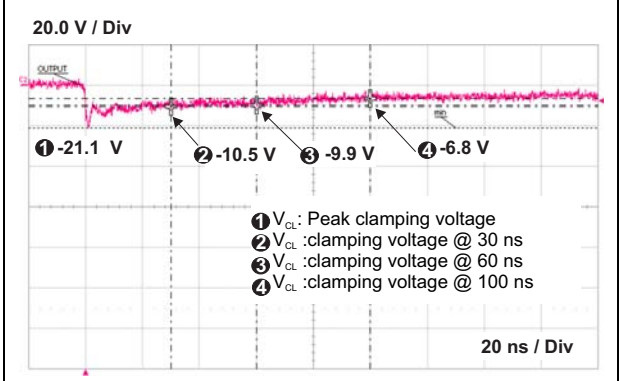
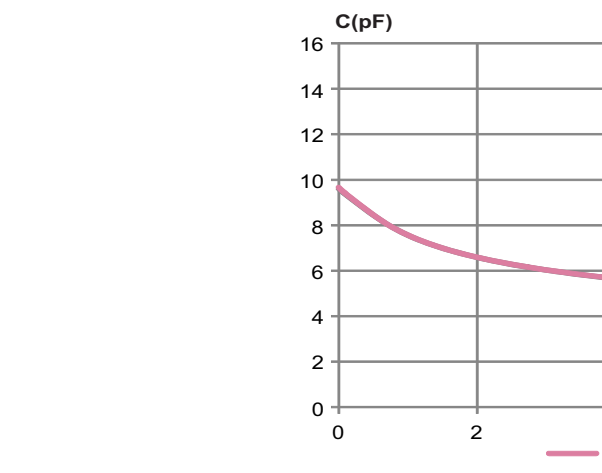



Figure 8. Line capacitance versus applied voltage



# 2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: *www.st.com.* ECOPACK® is an ST trademark.

**Figure 9. Flip-Chip package dimensions**

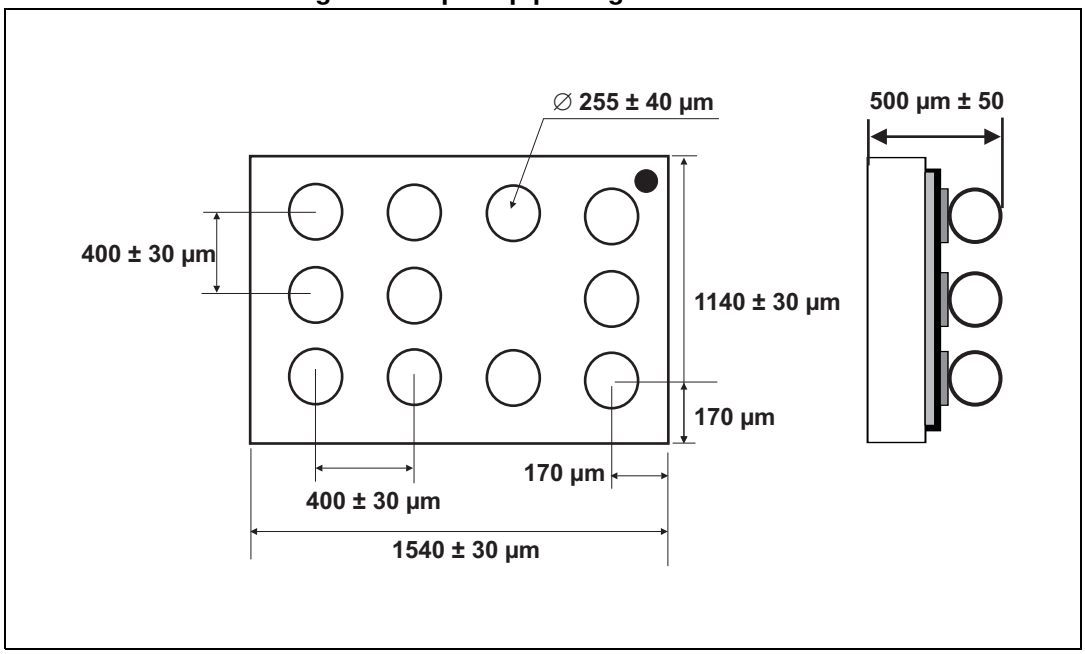



**Figure 10. Footprint recommendations**

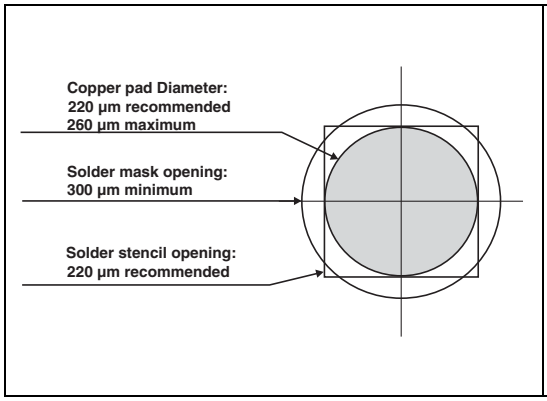



**Figure 11. Marking**

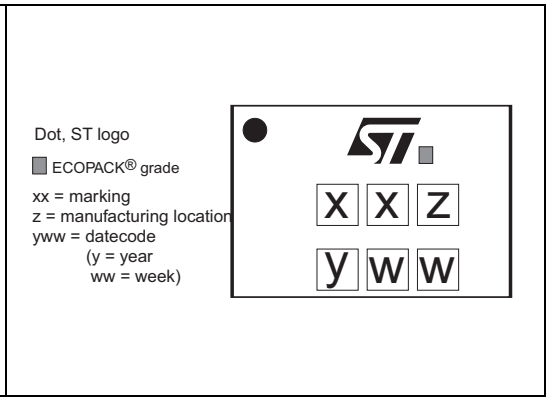
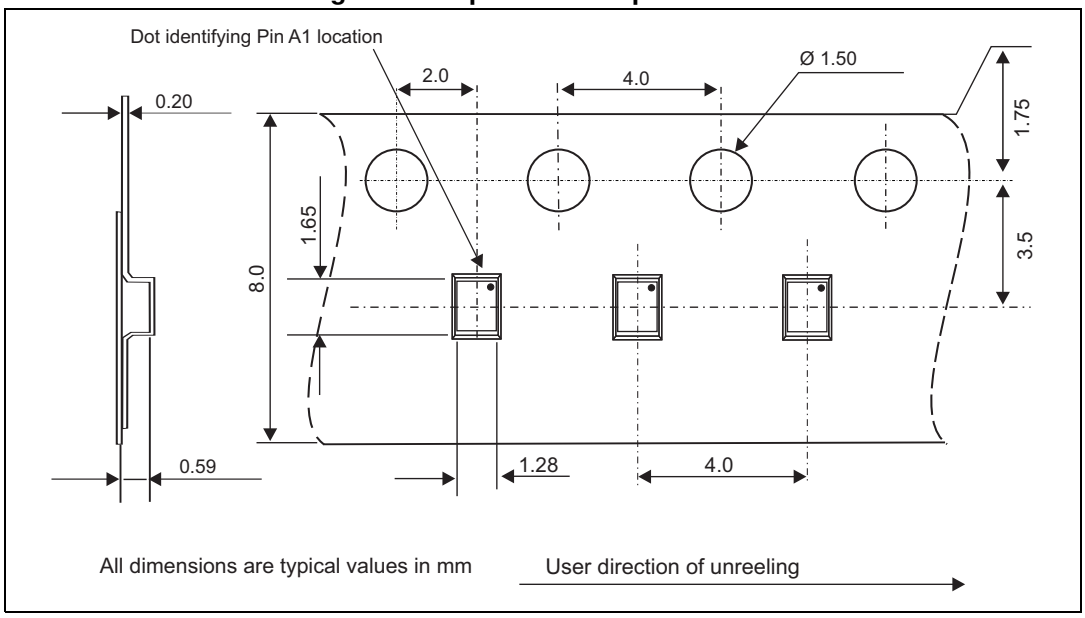


**Figure 12. Tape and reel specification**




*Note: More information is available in the application notes:*
*AN2348, "IPAD™ 400 µm Flip Chip: package description and recommendations for use"*
*AN1751, "EMI filters: recommendations and measurements"*

# 3 Ordering information

**Figure 13. Ordering information scheme**

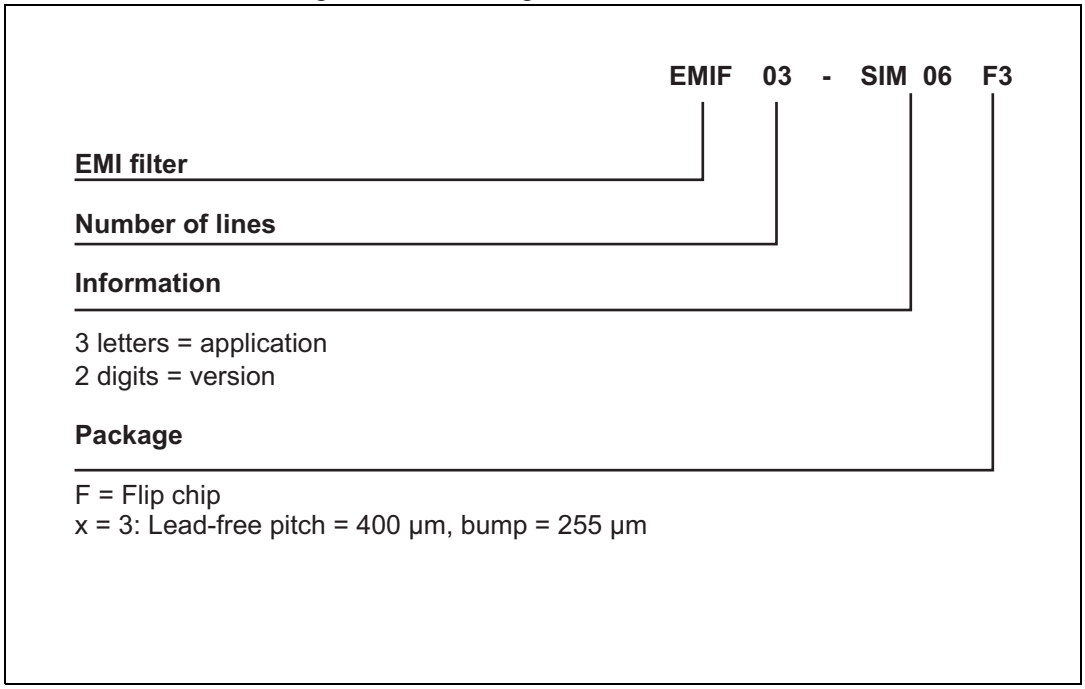



**Table 3.Ordering information**

| Order code | Marking | Package | Weight | Base qty | Delivery mode |
|---|---|---|---|---|---|
| EMIF03-SIM06F3 | KP | Flip Chip | 2.3 mg | 5000 | Tape and reel (7”) |

# 4 Revision history

**Table 4.Document revision history**

| Date | Revision | Changes |
|---|---|---|
| 19-Dec-2013 | 1 | Initial release |

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