EMIF03-SIM03F3

3-line IPAD™, EMI filter including ESD protection

Features

- EMI symmetrical (I/O) low-pass filter
- high efficiency in EMI/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)
- ETSI 102.221 (configuration FIDI = 97)

Applications

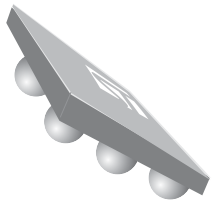
Where EMI filtering in ESD sensitive equipment is required:

- mobile phones and communication systems
- computers, printers and MCU Boards

Description

The EMIF03-SIM03F3 chip is a very low capacitance EMI filter designed to suppress EMI/RFI noise in all systems subjected to electromagnetic interference.

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



Lead-free Flip-Chip package (8 bumps)

Figure 1. Pin configuration (bump side)

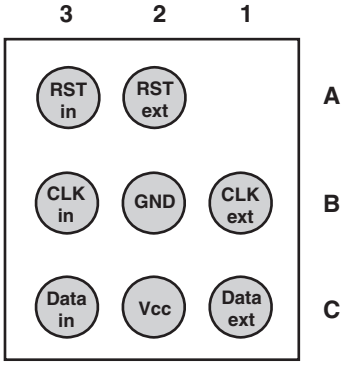
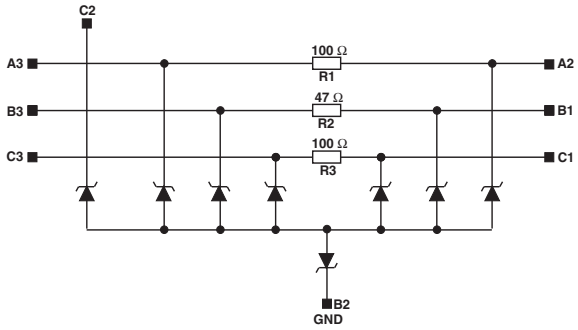


Figure 2. Configuration



TM: IPAD is a trademark of STMicroelectronics.

1 Electrical characteristics

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

Symbol	Parameter	Value	Unit
V_{PP}	**Internal pins (A3, B3, C3):** ESD discharge IEC 61000-4-2, level 1, air discharge ESD discharge IEC 61000-4-2, level 1, contact discharge **External pins (A2, B1, C1, C2):** ESD discharge IEC 61000-4-2, level 4, air discharge ESD discharge IEC 61000-4-2, level 4, contact discharge	 2 2 15 8	kV
P_d	Line resistance power dissipation at 70 °C	60	mW
T_{op}	Operating temperature range	- 40 to + 85	°C
T_{stg}	Storage temperature range	- 55 to 150	°C

Figure 3. Electrical characteristics - definitions

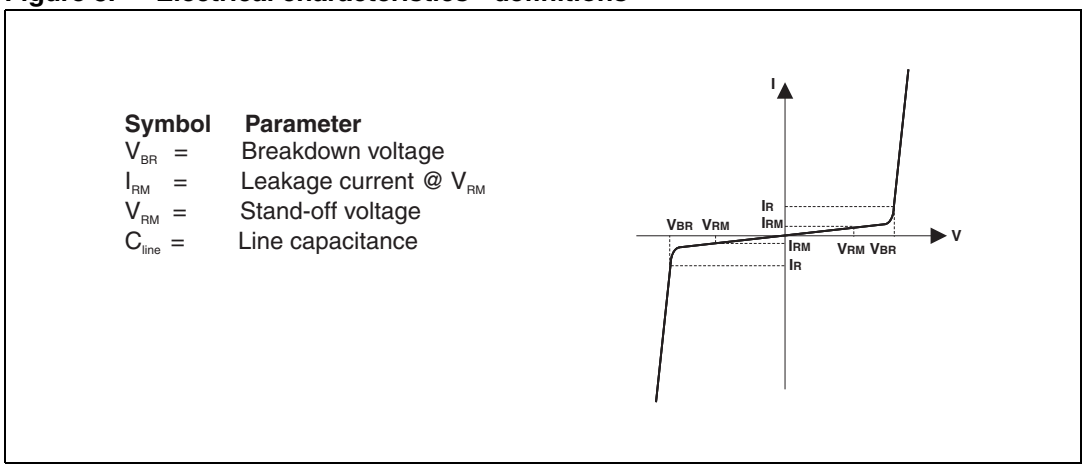


Table 2. Electrical characteristics - values (T_{amb} = 25 °C)

Symbol	Test conditions	Min.	Typ.	Max.	Unit
V_{BR}	I_R = 1 mA	14			V
I_{RM}	V_{RM} = 3 V per line		50	200	nA
R_1, R_3	Tolerance ± 20%	80	100	120	Ω
R_2	Tolerance ± 20%	37.6	47	56.4	Ω
C_{line}	V_{line} = 0 V, V_{osc} = 30 mV, F = 1 MHz (measured under zero light conditions)	8	10	12	pF

Figure 4. Attenuation measurement A2 - A3

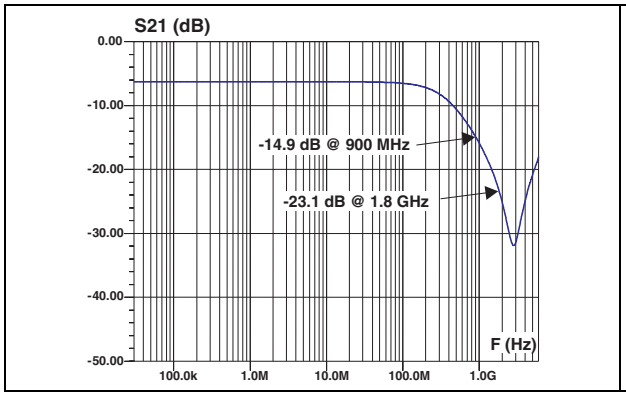


Figure 5. Attenuation measurement B1 - B3

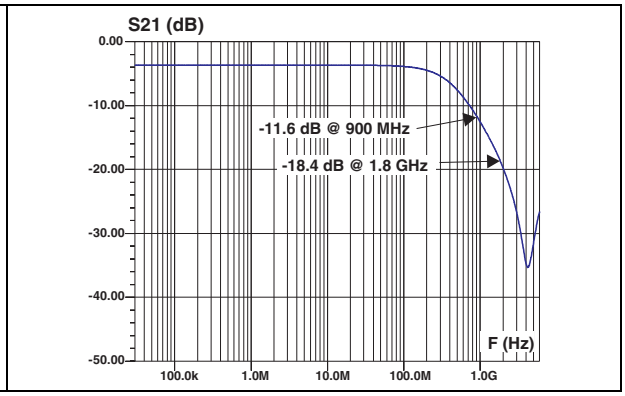


Figure 6. Attenuation measurement C1 - C3

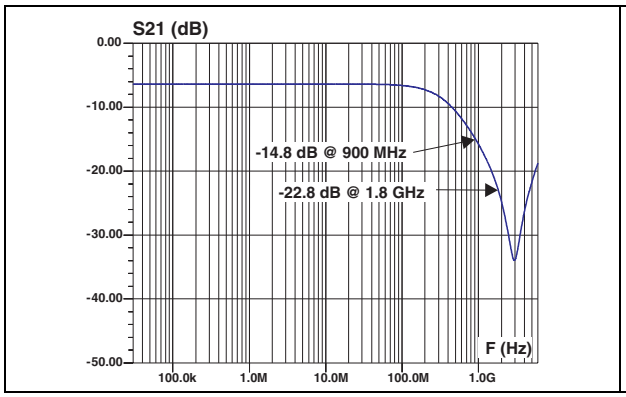


Figure 7. Analog crosstalk measurement A2 - B3 (30 kHz < F < 6 GHz > 11.8 dB)

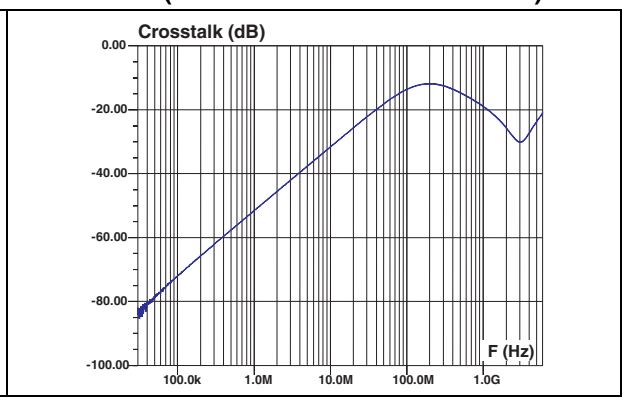


Figure 8. Analog crosstalk measurement A2 - C3 (30 kHz < F < 6 GHz > 13.8 dB)

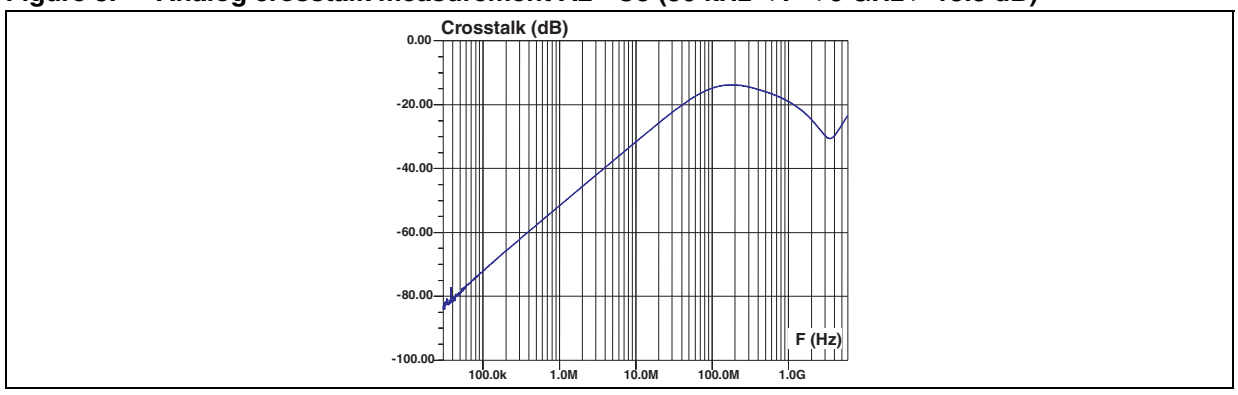


Figure 9. Digital crosstalk measurements

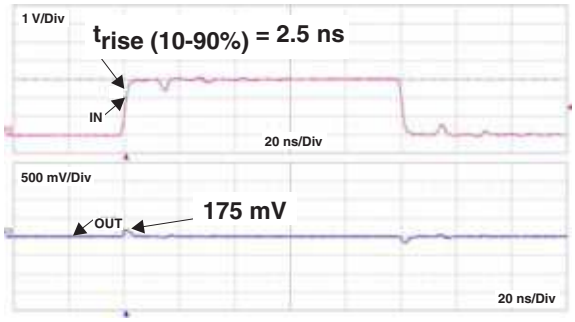


Figure 10. ESD response to IEC 61000-4-2 (+15 kV air discharge) on one line

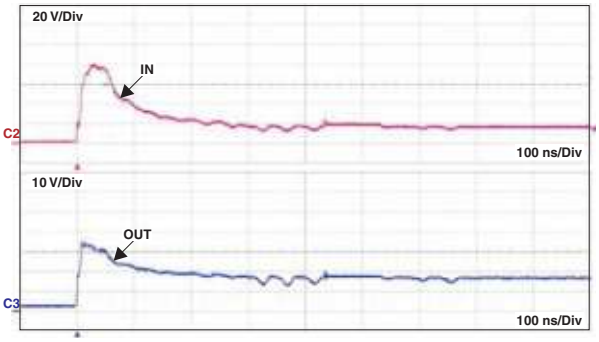


Figure 11. ESD response to IEC 61000-4-2 (-15 kV air discharge) on one line

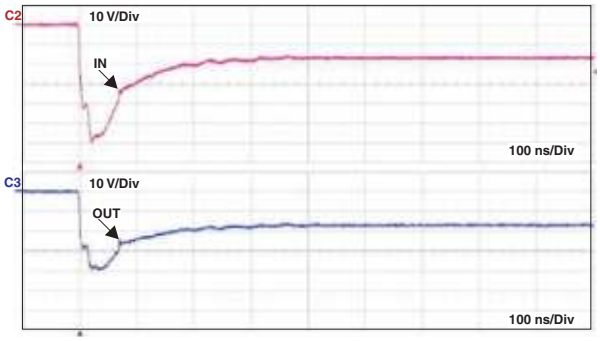
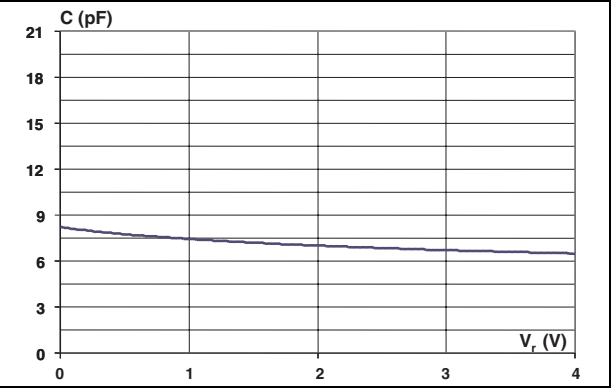
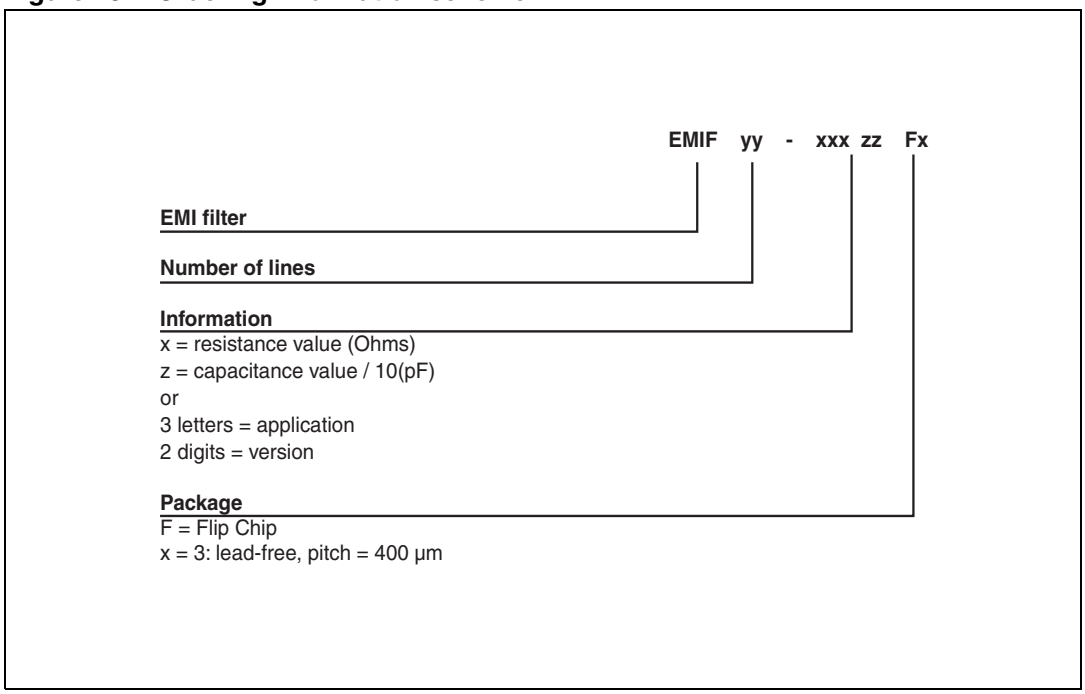


Figure 12. Line capacitance versus applied voltage



2 Ordering information scheme

Figure 13. Ordering information scheme



3 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 14. Package dimensions

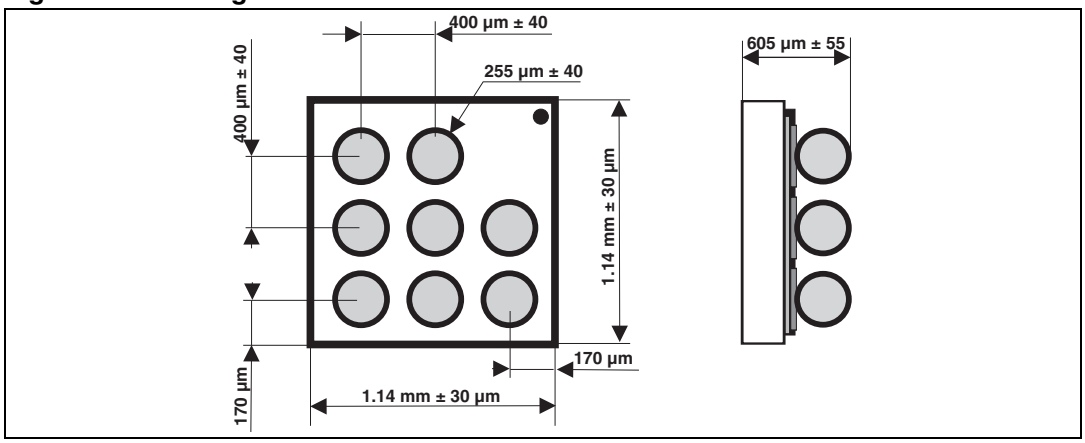


Figure 15. Footprint

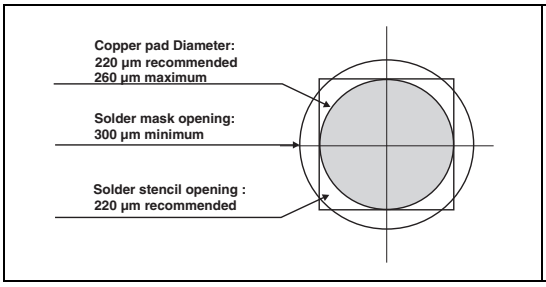


Figure 16. Marking

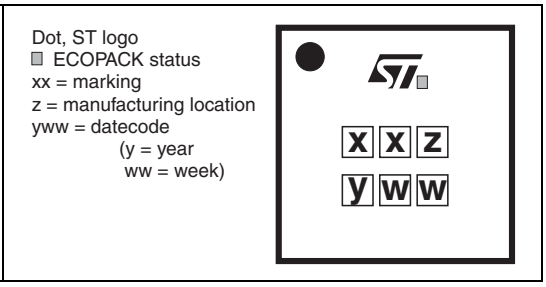
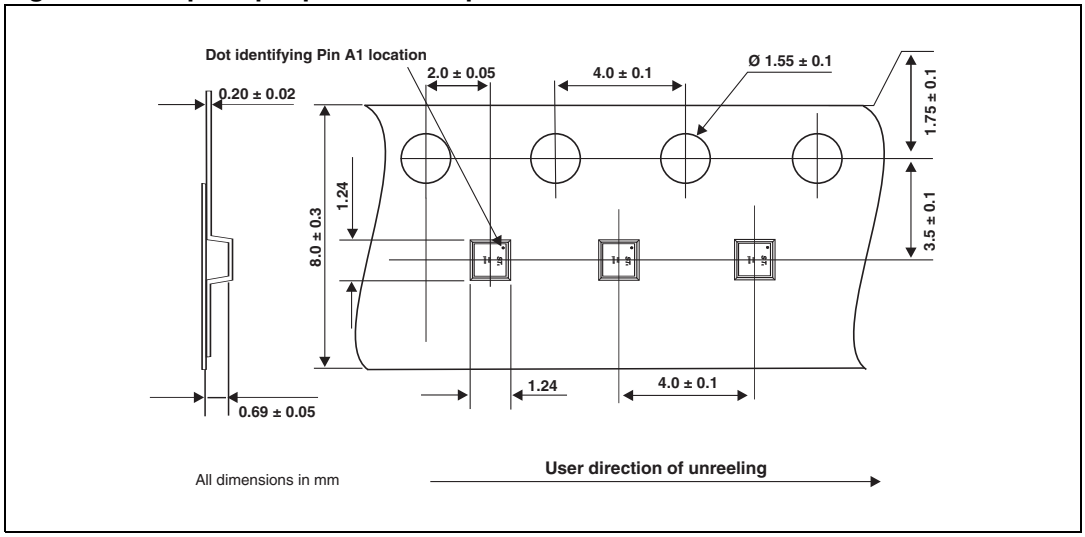


Figure 17. Flip-Chip tape and reel specification



4 Ordering information

Table 3. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
EMIF03-SIM03F3	JH	Flip Chip	1.8 mg	5000	Tape and reel 7”

Note: More information is available in the application notes:
AN2348: “STMicroelectronics 400 micro-metre Flip Chip: package description and recommendation for use”
AN1751: “EMI filters: recommendations and measurements”

5 Revision history

Table 4. Document revision history

Date	Revision	Changes
03-May-2010	1	Initial release.
12-Oct-2010	2	Updated *Figure 2* and value I_{RM} in *Table 2.*

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