EMIF06-1002F2

6-line IPAD™, EMI filter and ESD protection

Features

- Lead-free package
- Very low PCB space consumption
  1.92 mm x 1.79 mm
- Very thin package: 0.65 mm
- High efficiency in ESD suppression
  (IEC 61000-4-2 level 4 on external pins)
- 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)

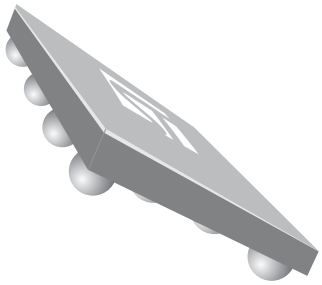
Application

This device is designed for EMI filtering in ESD sensitive equipment such as mobile phones.

Description

The EMIF06-1002F2 is a highly integrated device designed to suppress EMI/RFI noise in all systems subjected to electromagnetic interference. The EMIF06-1002F2 Flip Chip packaging means the package size is equal to the die size.

This filter includes an ESD protection circuitry which prevents damage to the application when subjected to ESD surges up 15 kV. This device includes 6 EMI filters.



Flip Chip
(14 bumps)

Figure 1. Pin configuration (bump side)

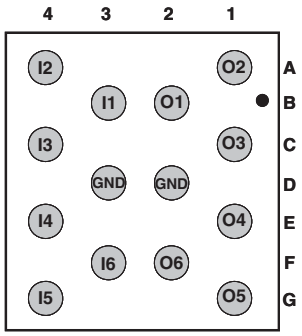
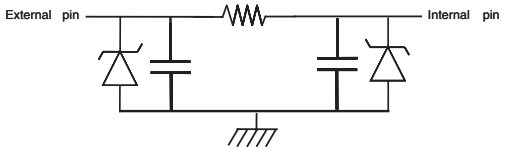


Figure 2. Basic cell configuration



TM: IPAD is a trademark of STMicroelectronics.

1 Electrical characteristics

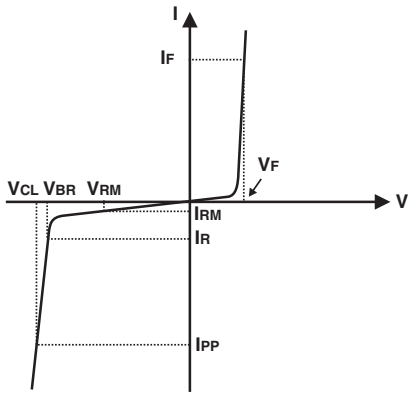
Table 1. Absolute maximum ratings(1)

Symbol	Parameter	Value	Unit
V_{PP}	ESD discharge IEC 61000-4-2, level 4 on external pins (I1 to I6) Air discharge Contact discharge Air discharge on internal pins (O1 to O6) Contact discharge on internal pins (O1 to O6)	 15 8 2 2	kV
T_j	Junction temperature range	-30 to 125	°C
T_{stg}	Storage temperature range	-55 to 150	°C

1. (Tamb = 25 °C)

Table 2. Electrical characteristics(1)

Symbol	Parameters
V_{BR}	Breakdown voltage
I_{RM}	Leakage current @ V_{RM}
V_{RM}	Stand-off voltage
V_{CL}	Clamping voltage
R_d	Dynamic impedance
I_{PP}	Peak pulse current
$R_{I/O}$	Series resistance between input and output
C_{line}	Input capacitance per line



Symbol	Test conditions	Min	Typ	Max	Unit
V_{BR}	I_R = 1 mA	6			V
I_{RM}	V_{RM} = 3 V			200	nA
$R_{I/O}$		80	100	120	Ω
C_{line}	V_R = 3 V DC, F = 1 MHz	9.2	11.5	13.8	pF
F_C	Cut-off frequency (Z_{source} = Z_{load} = 50 Ω)		280		MHz

1. (Tamb = 25 °C)

Figure 3. S21 attenuation measurements

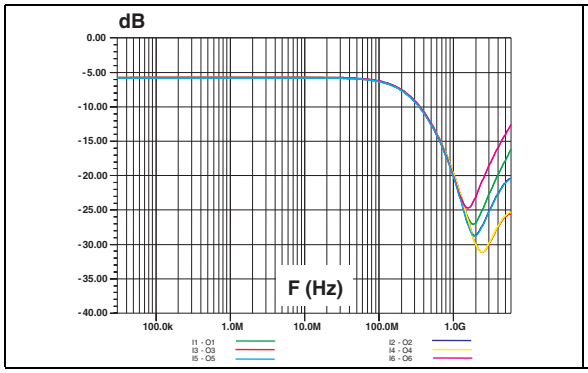


Figure 4. Analog crosstalk measurements

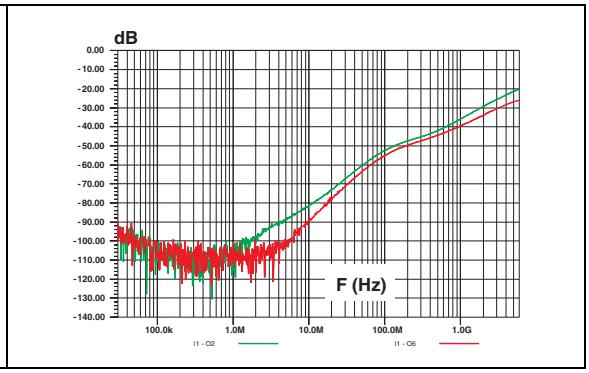


Figure 5. ESD response to IEC61000-4-2 (+ 15 kV air discharge) on one input (V_{in}) and one output (V_{out})

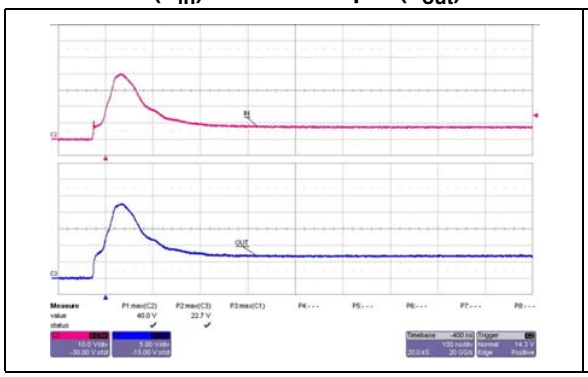


Figure 6. ESD response to IEC61000-4-2 (- 15 kV air discharge) on one input (V_{in}) and one output (V_{out})

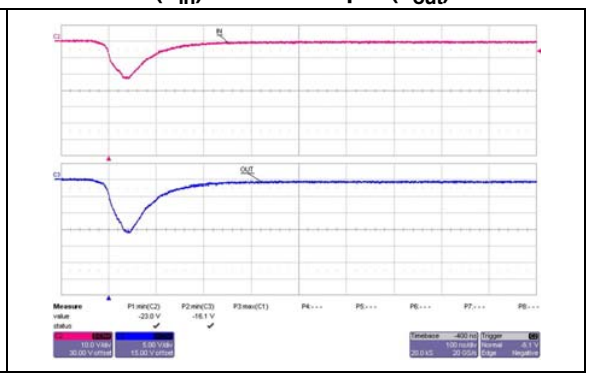
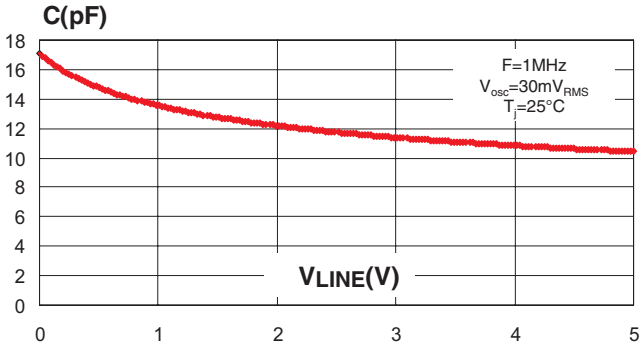
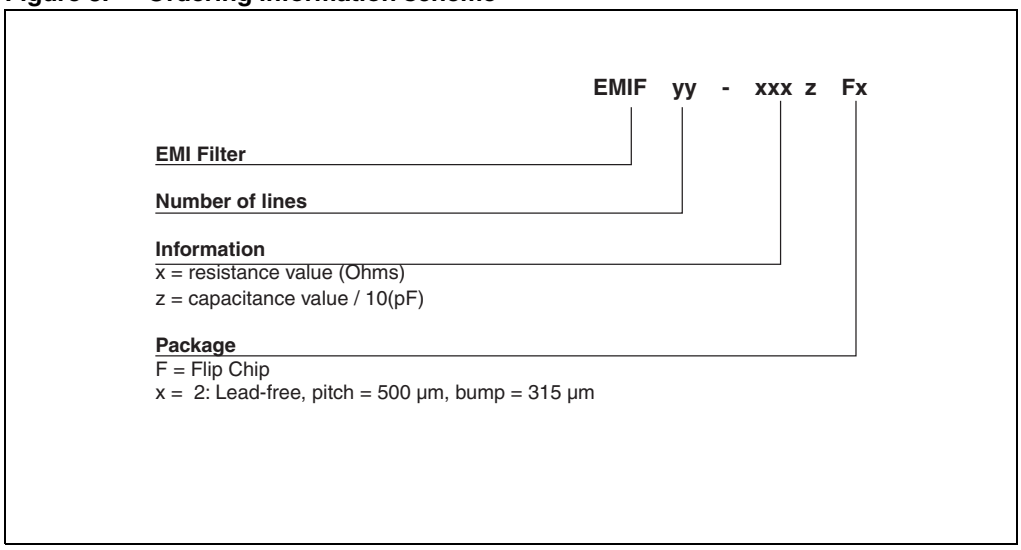


Figure 7. Line capacitance versus applied voltage for filter



2 Ordering information scheme

Figure 8. 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 9. Package dimensions

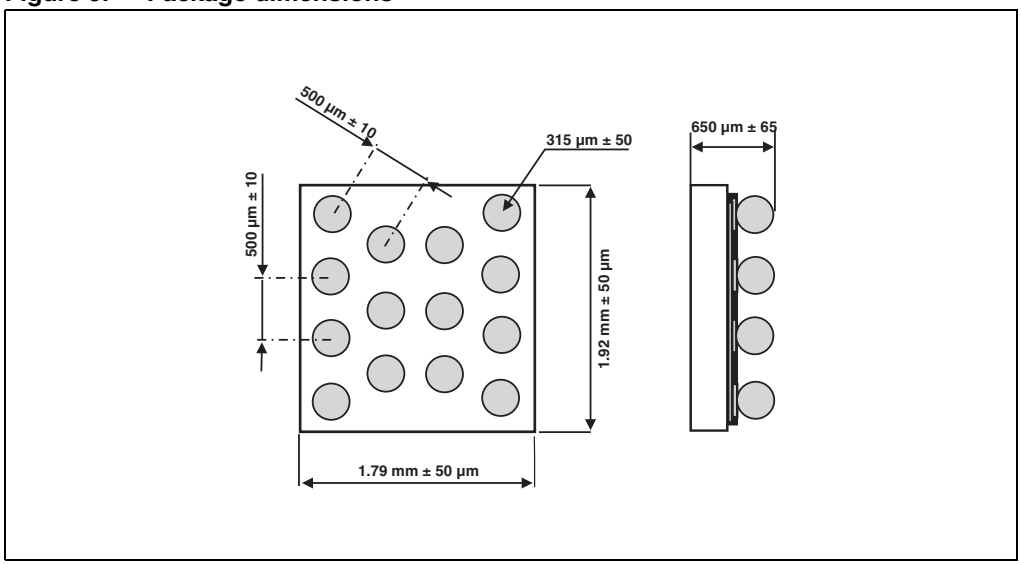


Figure 10. Footprint

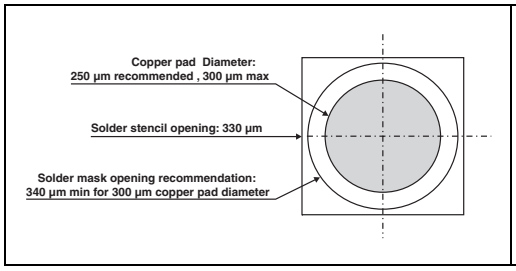
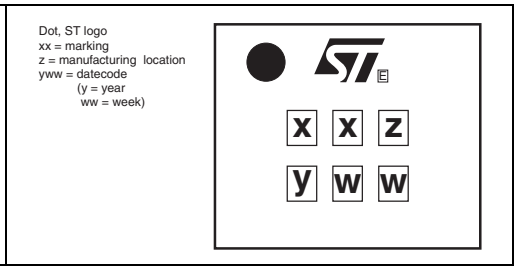


Figure 11. Marking

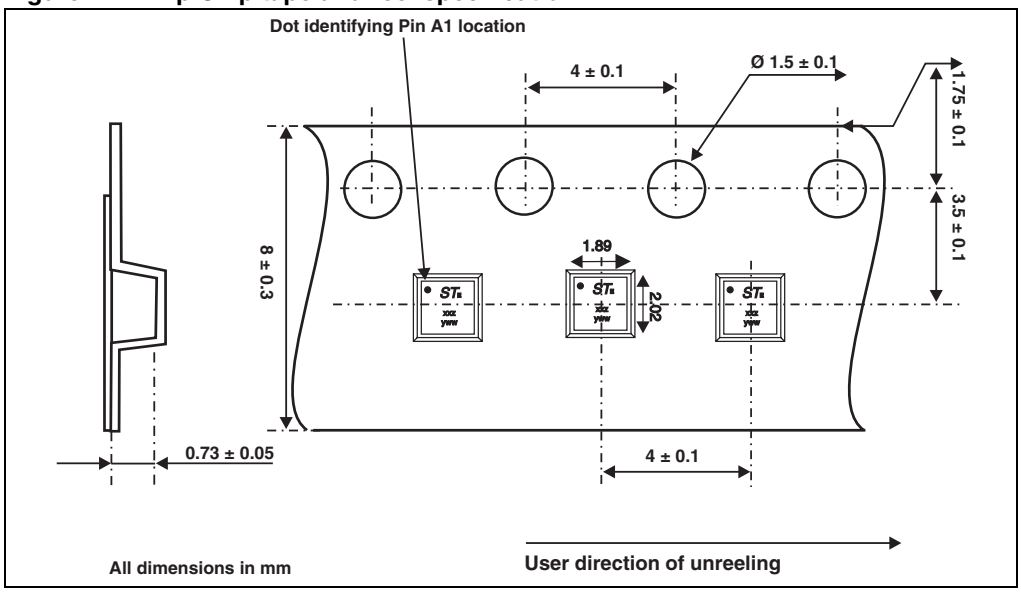


Note: More packing information is available in the application notes:

AN1235: "Flip Chip: Package description and recommendations for use"

AN1751: “EMI filters: Recommendations and measurements”

Figure 12. Flip Chip tape and reel specification



4 Ordering information

Table 3. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
EMIF06-1002F2	JC	Flip Chip	4.7 mg	5000	Tape and reel 7”

5 Revision history

Table 4. Document revision history

Date	Revision	Changes
21-May-2008	1	First issue.
29-Mar-2010	2	Upated Flip Chip tape and reel specification *Figure 12.*

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