EMIF02-AV01F3

Dual audio and video line IPAD™, EMI filter and ESD protection

Features

- High-density capacitor
- EMI low-pass filter and ESD protection
- High-efficiency in EMI filtering
- Lead-free package
- 400 µm pitch
- Very small PCB footprint: 0.77 mm x 1.17 mm
- Very thin package: 0.605 mm
- High reliability offered by monolithic integration
- Reduction of parasitic elements thanks to CSP integration

Complies with the following standards

- IEC 61000-4-2 level 4 on external pin (A2, C2)
  - 15 kV (air discharge)
  - 8 kV (contact discharge)
- IEC 61000-4-2 level 1 on internal pin (A1, C1)
  - 2 kV (air discharge)
  - 2 kV (contact discharge)

Application

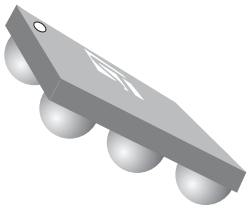
- Dual audio and video line interface protection and filtering in mobile phones

Description

The EMIF02-AV01F3 is a highly integrated array designed to suppress EMI / RFI noise and provide impedance matching for mobile phones and portable applications.

The EMIF02-AV01F3 is in Flip-Chip package to offer space saving and high RF performance.

Additionally, this low-pass filter includes an ESD protection circuitry to prevent damage to the application when subjected to ESD surges up to 15 kV.



Flip Chip
5 bumps

Figure 1. Pin configuration (bump side view)

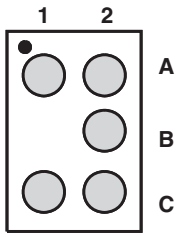
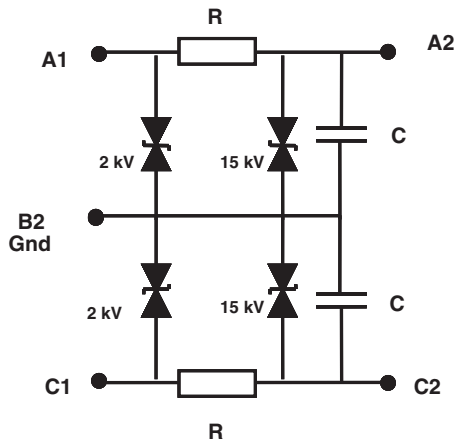


Figure 2. Schematic



TM: IPAD is a trademark of STMicroelectronics.

1 Characteristics

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

Symbol	Parameter	Value	Unit
V_{pp}	**Internal pins (A1, C1)** ESD discharge IEC 61000-4-2, air discharge ESD discharge IEC 61000-4-2, contact discharge **External pins (A2, C2)** ESD discharge IEC 61000-4-2, air discharge ESD discharge IEC 61000-4-2, contact discharge	 2 2 15 8	kV
T_j	Maximum junction temperature	125	°C
P_{TOT}	Total Power Dissipation	200	mW
T_{op}	Operating temperature range	- 40 to + 85	°C
T_{stg}	Storage temperature range	- 55 to 150	°C

Figure 3. Electrical characteristics (definitions)

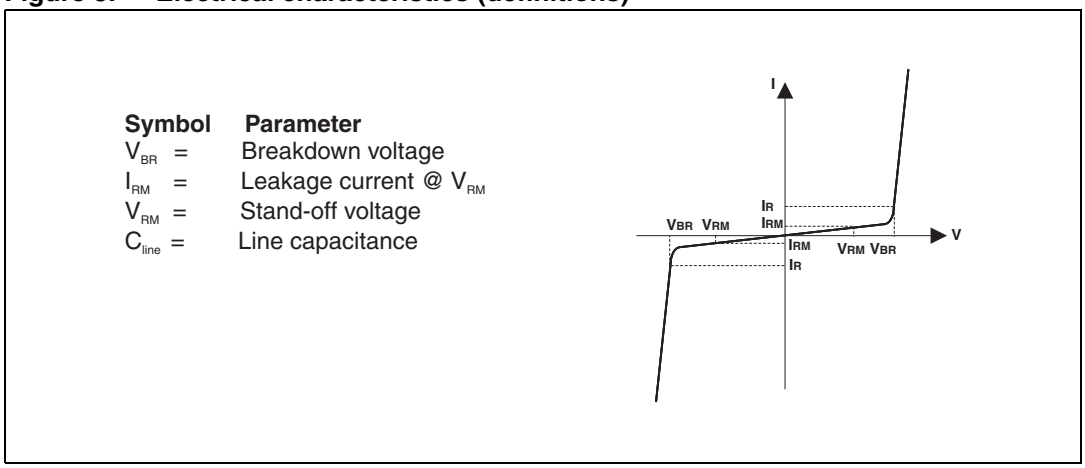


Table 2. Electrical characteristics (values, T_{amb} = 25 °C)

Symbol	Test conditions	Min.	Typ.	Max.	Unit
V_{BR}	I_R = 1 mA	14		18	V
I_{RM}	V_{RM} = 3 V per line			0.5	µA
$R_{I/O}$		12	15	18	Ω
C_{line}	V_{line} = 0 V, V_{osc} = 30 mV, F = 100 kHz	2.56	3.2	3.84	nF

Figure 4. Attenuation simulation with 1 kΩ input and 10 kΩ ouput

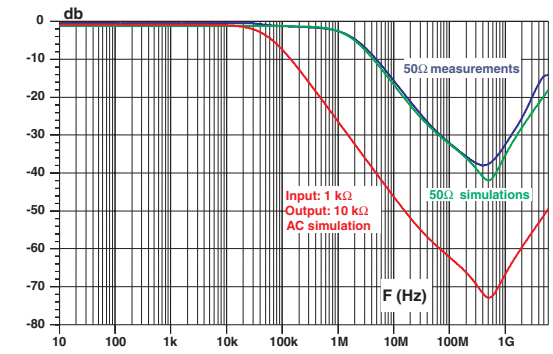


Figure 5. Analog crosstalk

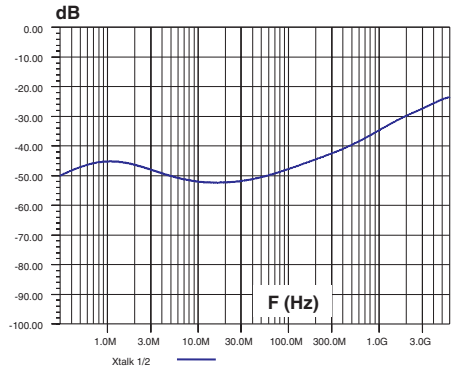


Figure 6. Digital crosstalk

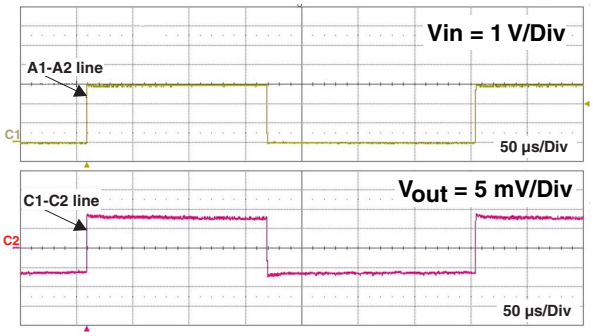


Figure 7. ESD response to IEC 61000-4-2 (+15 kV air discharge) on one input (V_{IN}) and one output (V_{OUT})

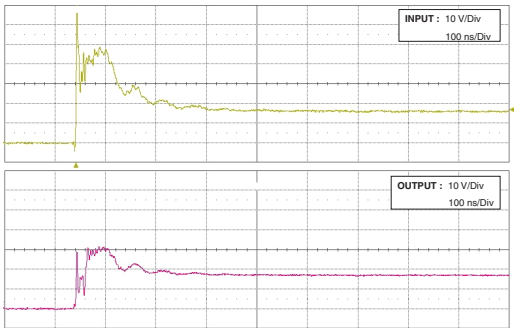


Figure 8. ESD response to IEC 61000-4-2 (-15 kV air discharge) on one input (V_{IN}) and one output (V_{OUT})

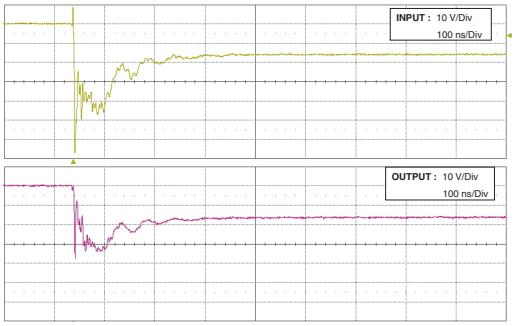
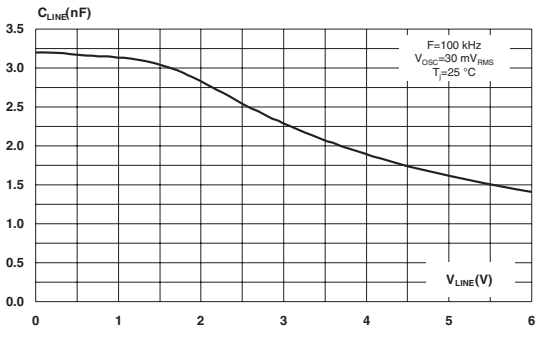
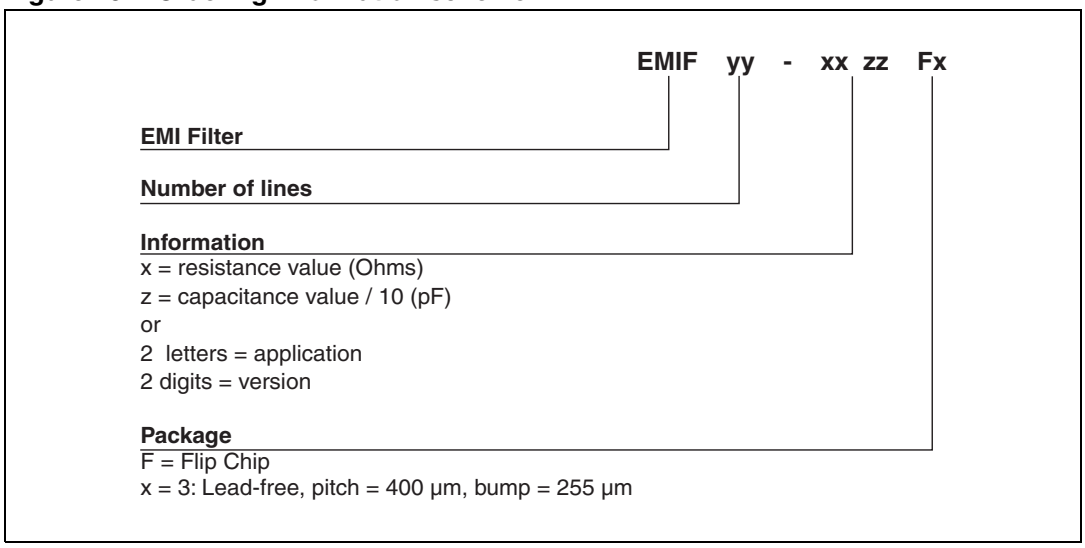


Figure 9. Line capacitance versus applied voltage



2 Ordering information scheme

Figure 10. 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 11. Package dimensions

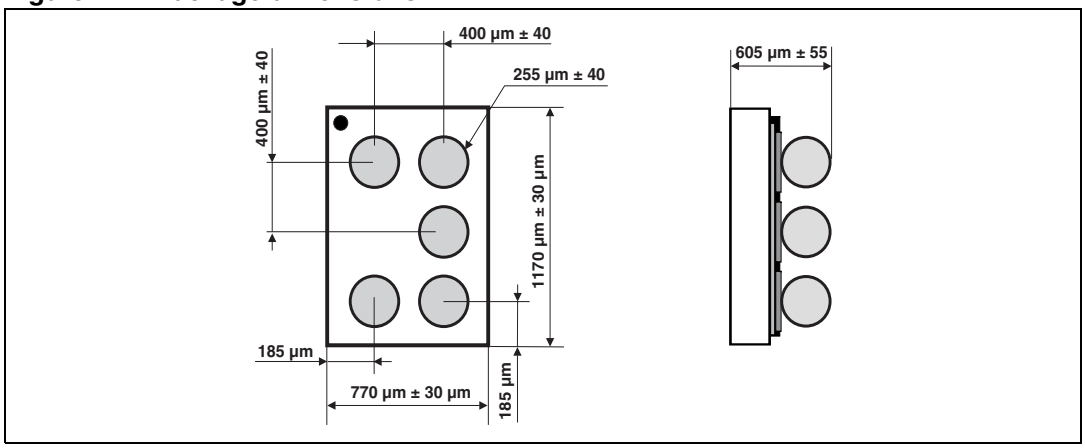


Figure 12. Footprint

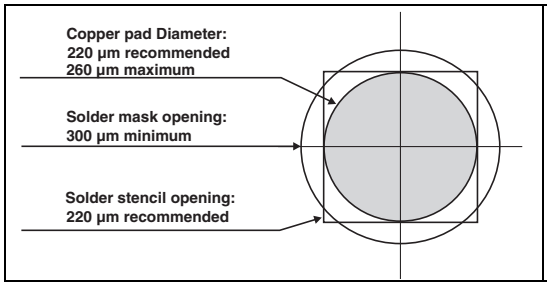


Figure 13. Marking

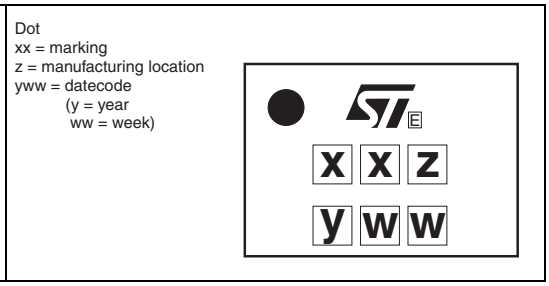
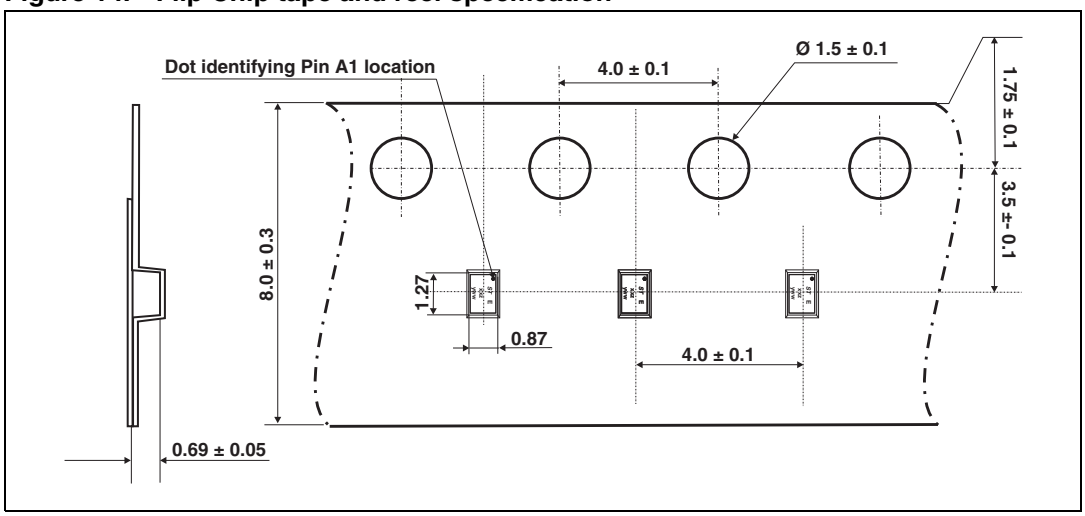


Figure 14. Flip Chip tape and reel specification



Note: Note: More information is available in the application note:
AN2348:"Flip Chip: Package description and recommendations for use"
AN1751: “EMI filters: Recommendations and measurements”

4 Ordering information

Table 3. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
EIMF02-AV01F3	HH	Flip Chip	1.4 mg	5000	Tape and reel 7”

5 Revision history

Table 4. Document revision history

Date	Revision	Changes
06-Oct-2006	1	Initial release.
11-Oct-2006	2	Corrected test conditions for C_{line} in Table 2.
17-Apr-2008	3	Updated ECOPACK statement. Updated *Figure 10*, *Figure 11* and *Figure 14.* Reformatted to current standards.
08-Apr-2010	4	Updated dimensions on page 1 and *Figure 4*, *Figure 11*, *Figure 14*.

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