EMIF01-TV02F3

Single line IPAD™, EMI filter and ESD protection

Features

- user-customizable filtering solution (recommended use of 2.2 µH external inductor)
- 8 MHz bandwidth
- provides very high attenuation at 27 MHz
- ultralow stand-by power consumption compared to active filters, ideal for portable applications
- accurate 75 Ω ± 5% impedance matching
- high efficiency in ESD protection (IEC standards)
- high reliability offered by monolithic integration

Complies with the following standards

- IEC 61000-4-2 level 4 on internal and external pins:
  - ±15 kV (air discharge)
  - ±8 kV (contact discharge)

Application

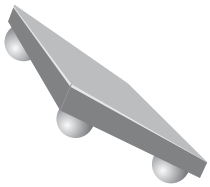
Portable applications with analog TV output

Description

The EMIF01-TV02F3 chip is a highly integrated device designed to suppress EMI and RFI noise in all systems with a TV analog output signal subjected to electromagnetic interferences.

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

The EMIF01-TV02F3 provides high anti-aliasing filtering performances to reject frequencies above 8 MHz, with high attenuation at 27 MHz when an external inductor of 2.2 µH is connected between pins B2 and B1.



Flip-Chip package
(4 bumps)

Figure 1. Pin configuration (bump side)

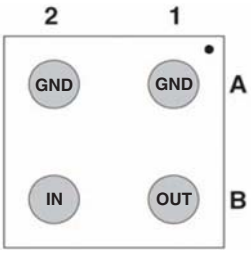
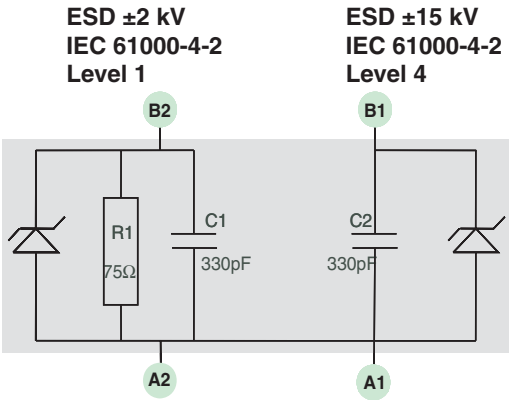


Figure 2. Configuration



TM: IPAD is a trademark of STMicroelectronics.

1 Characteristics

Table 1. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{PP}	Internal pins (B1) and external pin (B2): ESD discharge IEC 61000-4-2, air discharge ESD discharge IEC 61000-4-2, contact discharge	 15 15	kV
T_j	Maximum junction temperature	150	°C
T_{op}	Operating temperature range	-40 to +85	°C
T_{stg}	Storage temperature range	-55 to 150	°C

Figure 3. Electrical characteristics (definitions, T_{amb} = 25 °C)

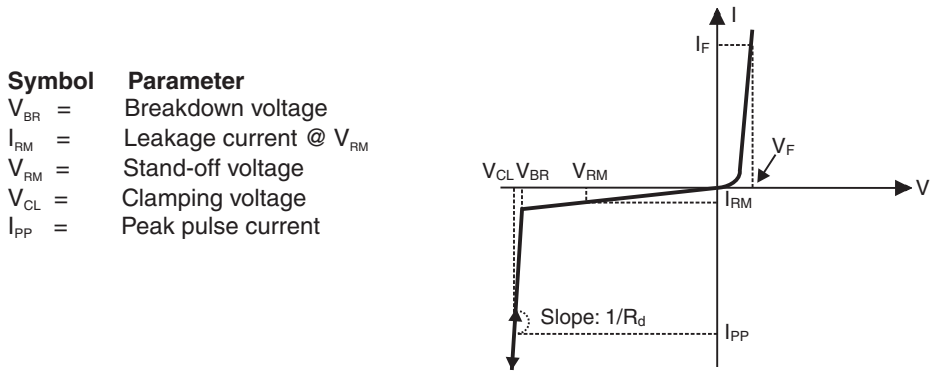


Table 2. Electrical characteristics (values, T_{amb} = 25 °C)

Symbol	Test conditions	Min.	Typ.	Max.	Unit
V_{BR}	I_R = 1 mA	6.1		7.9	V
I_{RM}	V_R = 1 mA, between bumps B1 and A1			200	nA
R1	Tolerance ± 5 %		75		Ω
C1, C2	V_{line} = 0 V, V_{osc} = 30 mV, F = 1 MHz (measured under zero light conditions) Tolerance: ± 20%		330		pF

Figure 4. S21 attenuation measurement (typical value) in 75/75 environment

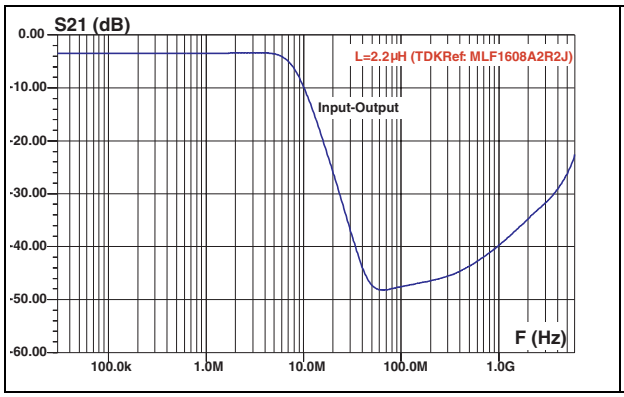


Figure 5. ESD response to IEC 61000-4-2 (+15 kV air discharge) on one input $V_{(in)}$ and on one output $V_{(out)}$

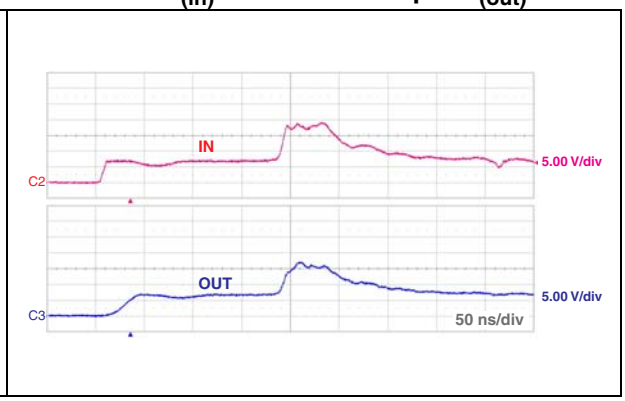
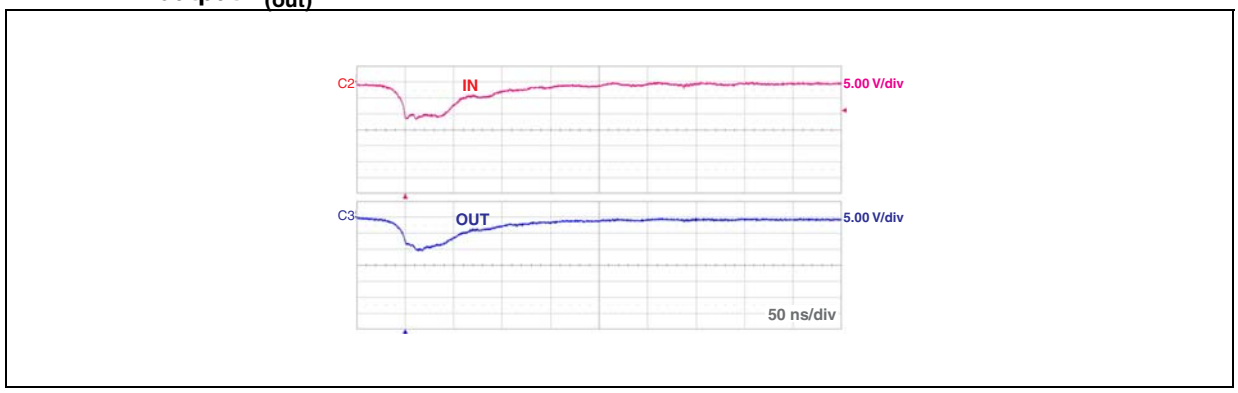


Figure 6. ESD response to IEC 61000-4-2 (-15 kV air discharge) on one input $V_{(in)}$ and on one output $V_{(out)}$



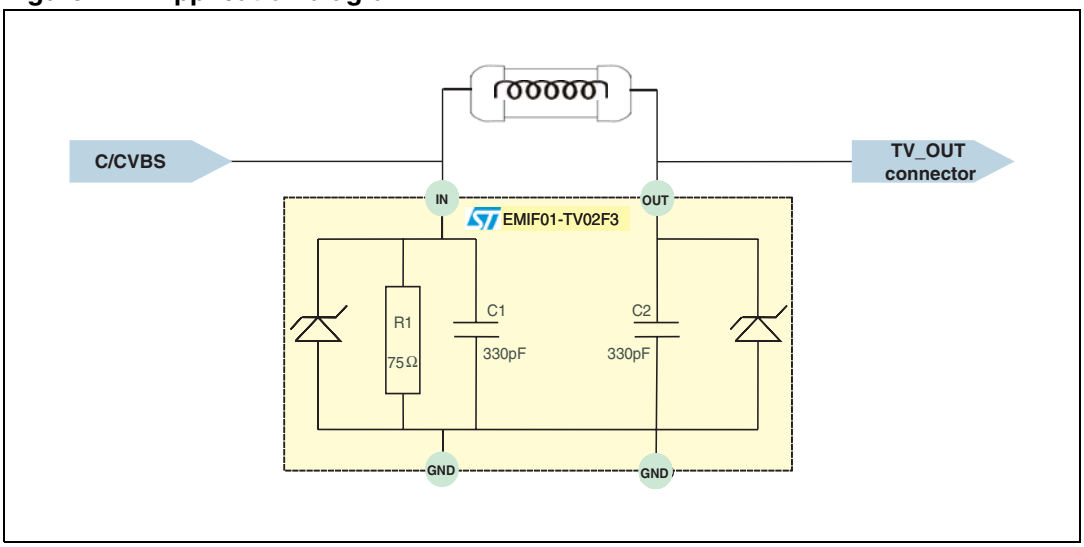
2 Application information

An external inductor is used to provide the filtering performance required by the TV-out application.

ST recommends one of these two references:

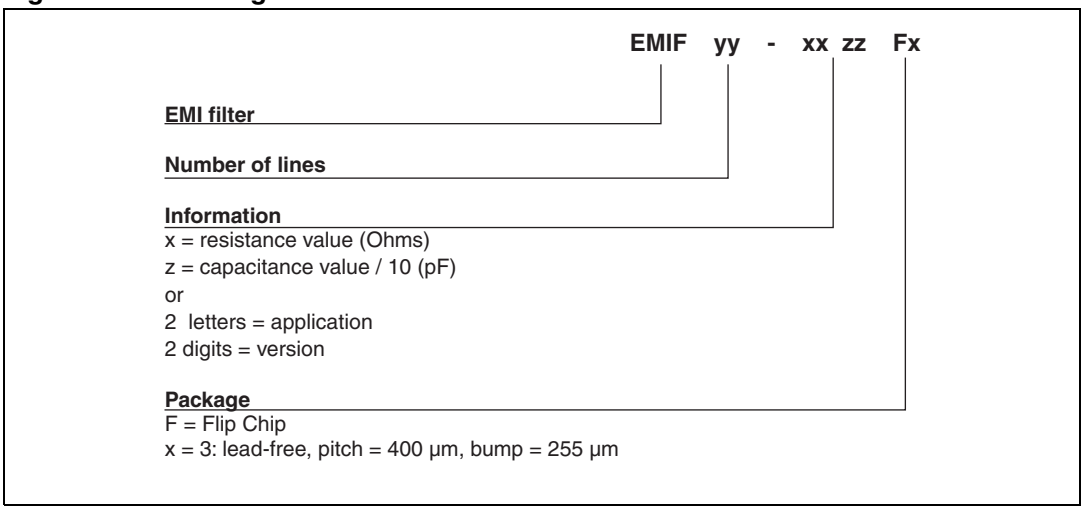
- TDK: MLF1608A2R2J
- MURATA: LQM18NN2R2J

Figure 7. Application diagram



3 Ordering information scheme

Figure 8. Ordering information scheme



4 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

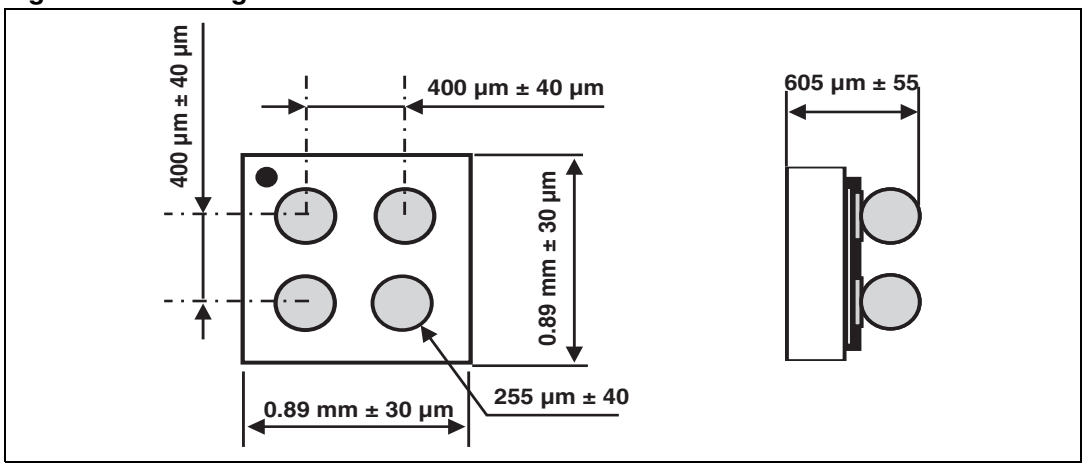


Figure 10. Footprint

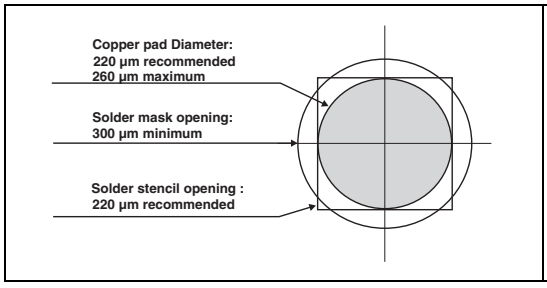


Figure 11. Marking

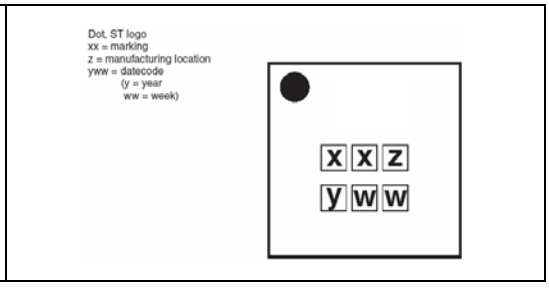
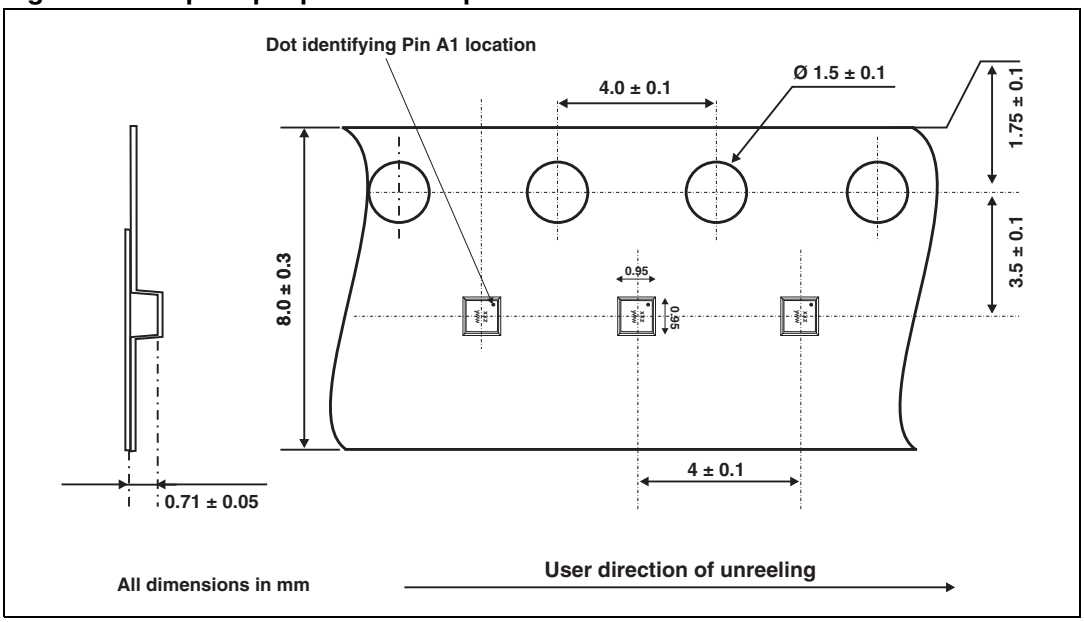


Figure 12. Flip Chip tape and reel specification



5 Ordering information

Table 3. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
EMIF01-TV02F3	HZ	Flip Chip	1.1 mg	5000	Tape and reel 7”

Note: More information is available in the application note:
AN1235:"Flip Chip: Package description and recommendations for use"
AN1751: “EMI filters: Recommendations and measurements”

6 Revision history

Table 4. Document revision history

Date	Revision	Changes
20-Jan-2009	1	Initial release.
18-Sep-2009	2	Updated *Figure 5* and *Figure 6*.
06-Oct-2010	3	Added text above *Figure 7*.

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