



EMIF01-TV02F3

Single line IPAD™, EMI filter and ESD protection

Features

- User-customizable filtering solution (recommended use of 2.2  $\mu$ H external inductor)
- 8 MHz bandwidth
- Provide very high attenuation at 27 MHz
- Ultra-low stand-by power consumption compared to active filters, ideal for portable applications
- Accurate 75 + 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:
  - $\pm$  15 kV (air discharge)
  - $\pm$  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 TV analog output signal 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.

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  $\mu$ H is connected between pins B2 and B1.

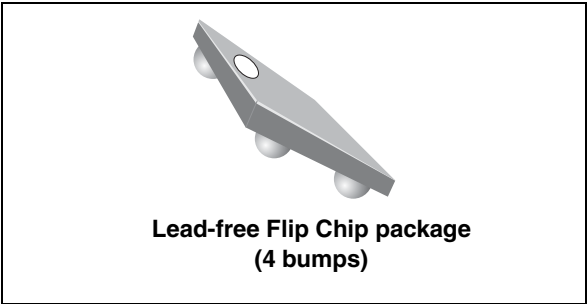


Figure 1. Pin configuration (bump side)

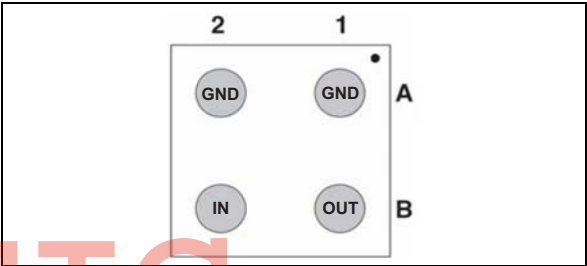
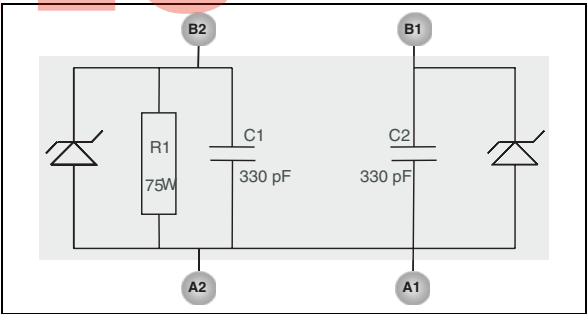


Figure 2. Configuration



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1 Characteristics

Table 1. Absolute maximum ratings

Symbol	Parameter and test conditions	Value	Unit
V <sub>PP</sub>	Internal pins (B1) and external pin (B2):		
	ESD discharge IEC 61000-4-2, air discharge	15	kV
	ESD discharge IEC 61000-4-2, contact discharge	15	
T <sub>j</sub>	Maximum junction temperature	150	°C
T <sub>op</sub>	Operating temperature range	-40 to +85	°C
T <sub>stg</sub>	Storage temperature range	-55 to 150	°C

Table 2. Electrical characteristics (T<sub>amb</sub> = 25 °C)

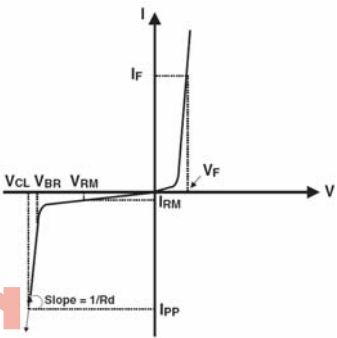
Symbol	Parameters				
V <sub>BR</sub>	Breakdown voltage				
I <sub>RM</sub>	Leakage current @ V <sub>RM</sub>				
V <sub>RM</sub>	Stand-off voltage				
V <sub>CL</sub>	Clamping voltage				
R <sub>d</sub>	Dynamic impedance				
I <sub>PP</sub>	Peak pulse current				
R <sub>I/O</sub>	Series resistance between Input and Output				
C <sub>line</sub>	Input capacitance per line				
Symbol	Test conditions	Min	Typ	Max	Unit
V <sub>BR</sub>	I <sub>R</sub> = 1 mA	6.1		7.9	V
I <sub>RM</sub>	V <sub>R</sub> = 1 mA, between bumps B1 and A1			200	nA
R1	Tolerance ± 5 %		75		Ω
C1, C2	V <sub>line</sub> = 0 V, V <sub>osc</sub> = 30 mV, F = 1 MHz (measured under zero light conditions) Tolerance: ± 20%		330		pF

Figure 3. S21 attenuation measurement (typical value)

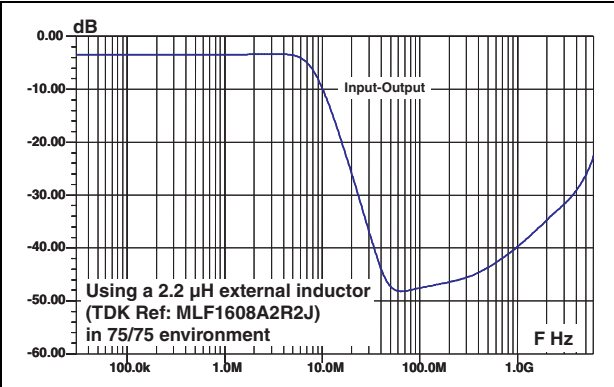


Figure 4. ESD response to IEC 61000-4-2 (+15 kV air discharge) on one input  $V_{(in)}$  and on one output  $V_{(out)}$

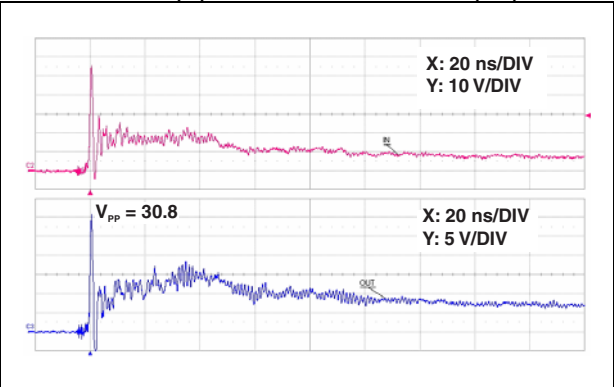
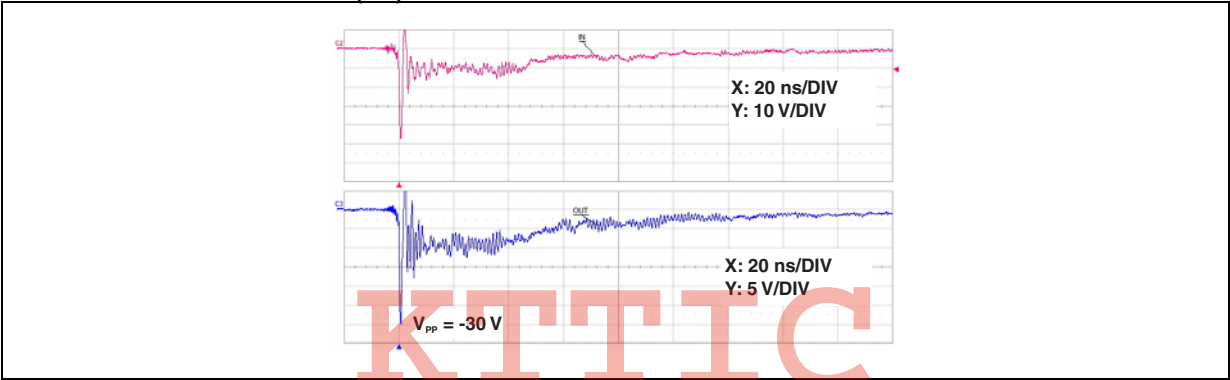
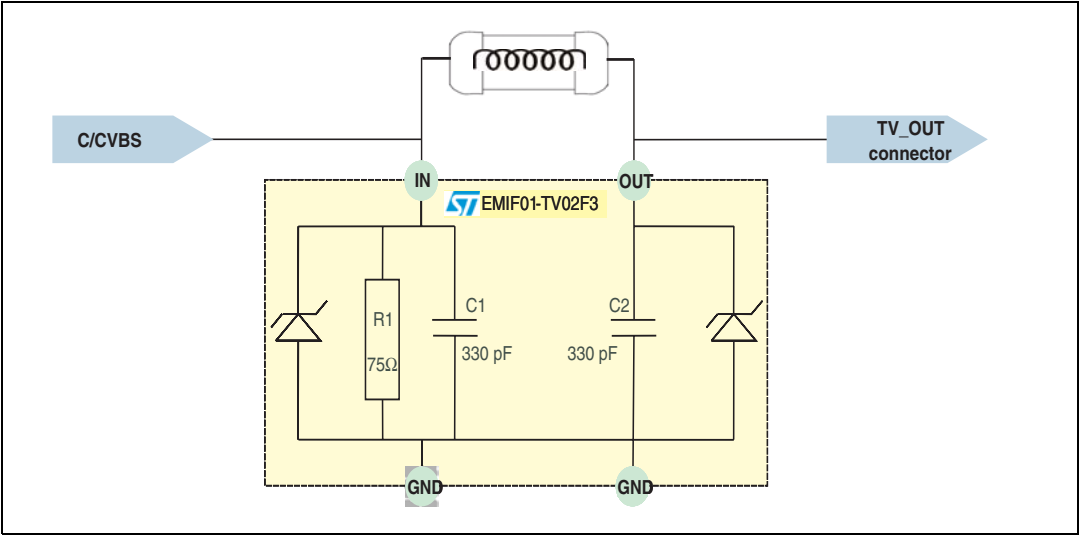


Figure 5. ESD response to IEC 61000-4-2 (-15 kV air discharge) on one input  $V_{(in)}$  and on one output  $V_{(out)}$



2 Application information

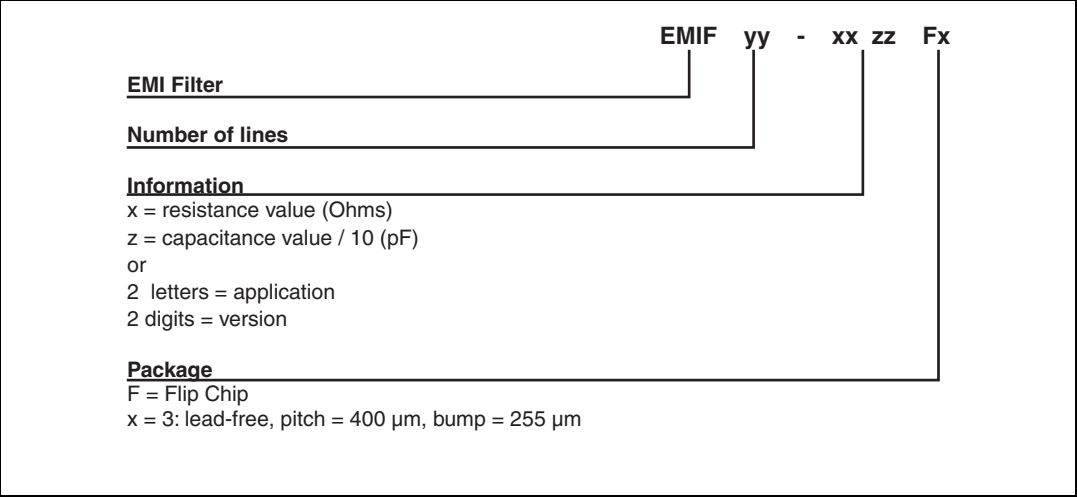
Figure 6. Application diagram



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3 Ordering information scheme

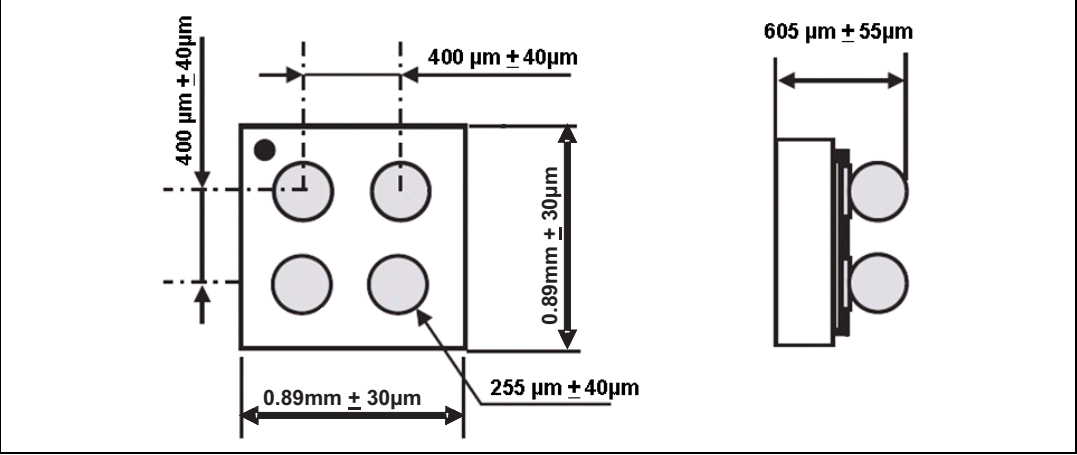
Figure 7. Ordering information scheme



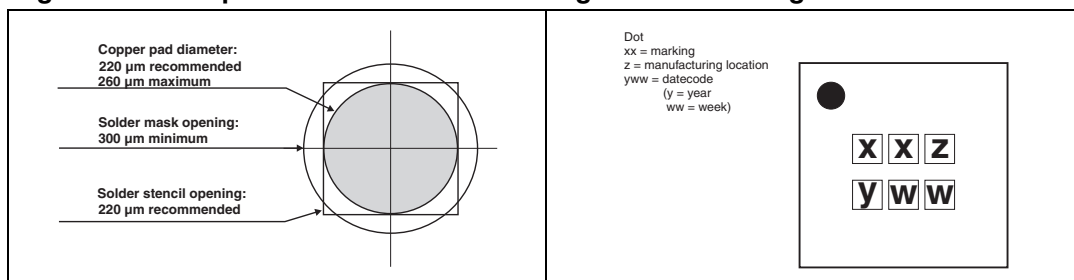
4 Package information

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

Figure 8. Package dimensions



### Figure 10. Marking



Dot identifying pin A1 location

$4.0 \pm 0.1$

$\varnothing 1.5 \pm 0.1$

$1.75 \pm 0.1$

$3.5 \pm 0.05$

$8.0 \pm 0.3$

$0.71 \pm 0.05$

$4 \pm 0.1$

$0.95$

$36.10$

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All dimensions in mm

User direction of unreeling

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 informations are 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.

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