

# EMIF10-LCD01F2

## 10 line EMI filter and ESD protection

### Main product characteristics:

Where EMI filtering in ESD sensitive equipment is required :

- LCD for Mobile phones
- Computers and printers
- Communication systems
- MCU Boards

### Description

The EMIF10-LCD01F2 is a 10 line highly integrated device designed to suppress EMI/RFI noise in all systems subjected to electromagnetic interferences. The EMIF10 Flip-Chip packaging means the package size is equal to the die size.

This filter includes ESD protection circuitry, which prevents damage to the application when it is subjected to ESD surges up to 15 kV

### Benefits

- EMI symmetrica: ('/O) iow-pass filter
- High efficiency in EMI filtering
- Very lov CB space consuming: < 6 mm<sup>2</sup>
- Leía fi se package
- 🔽 ve.y thin package: 0.69 mm
- High efficiency in ESD suppression on input pins (IEC 61000-4-2 level 4)
- High reliability offered by monolithic integration
- High reducing of parasitic elements through integration and wafer level packaging.

#### Complies with following standards:

#### IEC 61000-4-2

level 4 input pins	15 kV	(air discharge)		
	8 kV	(contact discharge)		

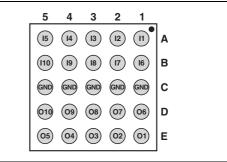
#### MIL STD 883G - Method 3015-7 Class 3



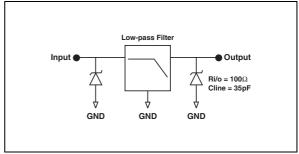
#### Order code

Part Number	Marking		
ے AIF10-LCD01F2	FL		

#### Figure 1. Pin Configuration (bump side)



#### Figure 2. Basic Cell Configuration



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January 2	2007
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# 1 Characteristics

#### Table 1.Absolute Maximum Ratings ( $T_{amb} = 25^{\circ} \text{ C}$ )

Symbol	Parameter	Value	Unit
Тj	Junction temperature	125	°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 ( $T_{amb} = 25^{\circ} C$ )

Symbol	Parameter	
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 resistance	IR IR
I <sub>PP</sub>	Peak pulse current	
R <sub>I/O</sub>	Series resistance between Input and Output	Ipp
C <sub>line</sub>	Input capacitance per line	

Symbol	Test conditions	Min.	Тур.	Max.	Unit
V <sub>BR</sub>	I <sub>R</sub> = 1 mA	6	8	10	V
I <sub>RM</sub>	V <sub>RM</sub> = 3 V			500	nA
R <sub>I/O</sub>	00	90	100	110	Ω
C <sub>line</sub>	@ 0 V 'Jik S		28	35	pF
Rt / Ft	Induceo rise and fall time 10-90% at 26 MHz frequency signal V = 1.9 V (Rt / Ft input 1 ns, 50 $\Omega$ impedance generator)		8 <sup>(1)</sup>		ns

1. guaran and by design

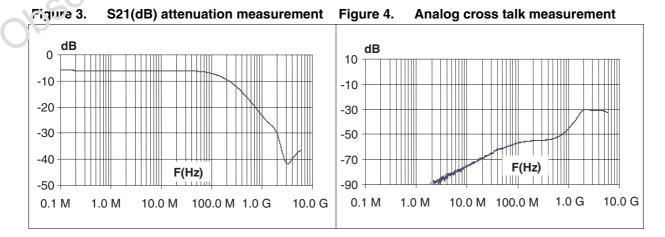


Figure 5. ESD response to IEC 61000-4-2 (+15 kV air discharge) on one input and on one output

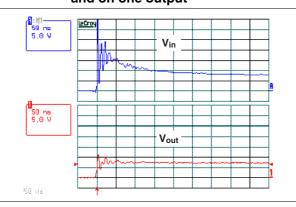


Figure 7. Line capacitance versus applied voltage

Figure 6. ESD response to IEC 61000-4-2 (-15 kV air discharge) on one input and on one output

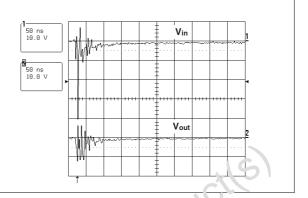


Figure 8. Rise time 10-90% incasurements with 1.9 V signa' at 26 MHz frequer.cv (51 Ω generator)

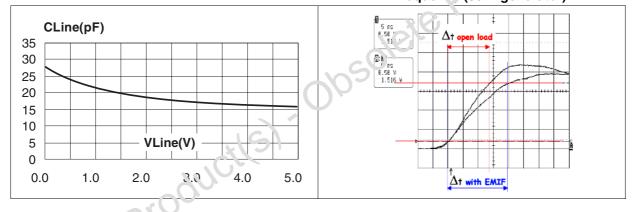


Figure 9. Fall time 10-90% measurements with 1.5 V signal at 26 MHz irequency (50 Ω generator)

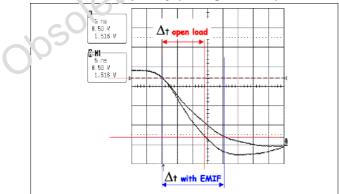
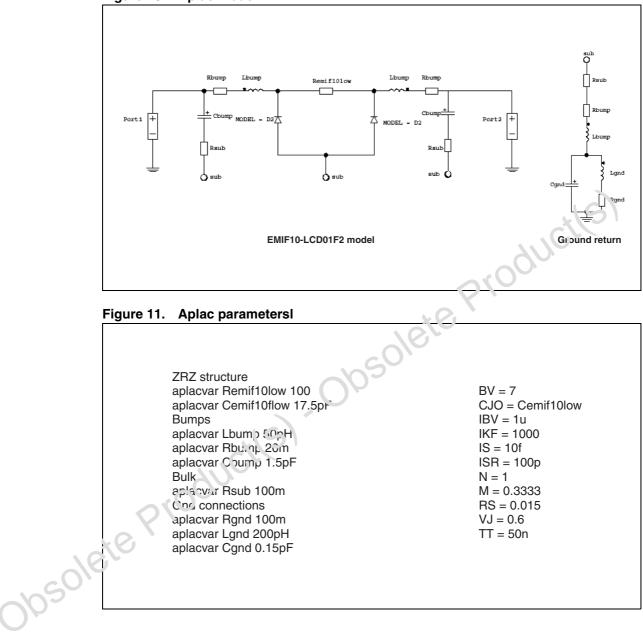


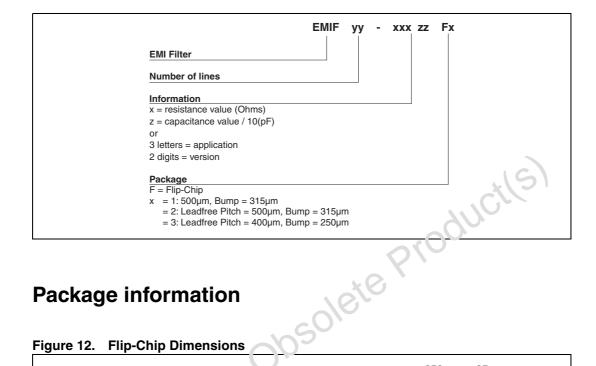


Figure 10. Aplac model



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#### Ordering information scheme 2



#### **Package information** 3

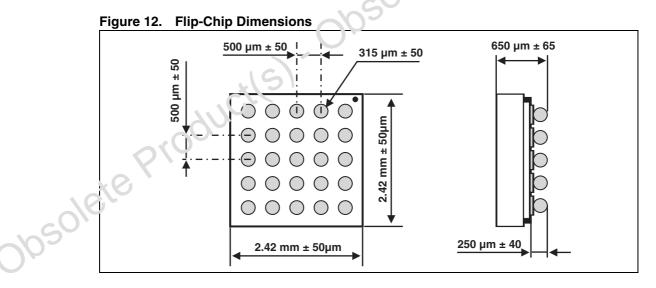
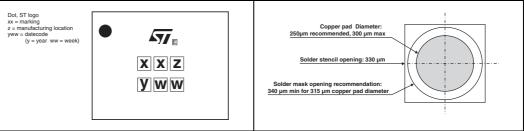
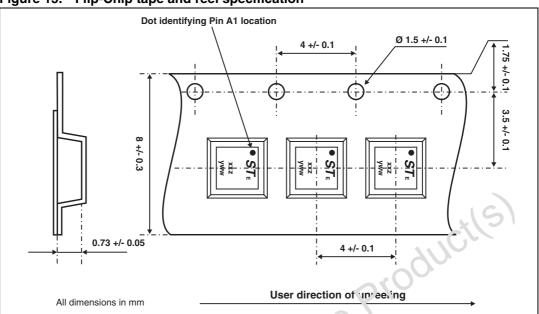


Figure 13. Marking









#### Figure 15. Flip-Chip tape and reel specification

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second evel interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESDS The maximum ratings related to soldering conditions are also marked on the inr er t o. label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

More packing information is available in the application notes: AN1235: "Flip-Chip: Papirage description and recommendations for use" AN1751: "EMI Filters' Recommendations and measurements"

Note:

4	Ordering information						
05	Ordering code Marking Package Weight Base qty Delivery mode						
U.	EMIF10-LCD01F2	FL	Flip-Chip	9.3 mg	5000	Tape and reel (7")	

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# 5 Revision history

	Date	Revision	Changes
	14-Feb-2005	1	Initial release.
	17-Mar-2005	2	Capacitance $C_{line}$ specification changed from 47 pF (typ) to 28 pF (typ) and 35 pF (max).
	30-Jan-2007	3	Reformatted to current standards. Reduced die size and updated Figures 3 and 4.
obsole	tepro	Jucil	Figures 3 and 4.



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