

EMIF10-LCD03F3

10-line IPAD[™], EMI filter and ESD protection

Features

- High attenuation in the mobile frequency range (typically better than -40 dB from 900 MHz to 2 GHz)
- Very low clamping voltage
- Low line capacitance (30 pF max) suitable for high-speed interfaces
- Maximum rise and fall time: 6 ns (10% 90%)
- Compliant with high speed data rate
- Lead-free Flip Chip package in 400 µm pitch
- Very thin package: 0.6 mm thickness

Benefits

- High efficiency in EMI filtering
- High bandwidth: typically 200 MHz at -3 dB
- 80% space saving versus discrete solution (BOM reduction)
- 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 on inputs and outputs
 - ±15 kV (air discharge)
 - ± 8 kV (contact discharge)

Applications

Displays and cameras where outstanding EMI filtering in ESD sensitive equipment is required:

- Mobile phones and PDAs
- Personal and home entertainment (portable audio, DVD players, LCD TVs)
- Portable navigation devices
- Digital still cameras
- Portable gaming systems



Figure 1. Pin layout (bump side)



Figure 2. Device configuration



Description

The EMIF10-LCD03F3 is a 10-line highly integrated LC filter designed to suppress EMI/RFI noise in all systems subjected to electromagnetic interference. The EMIF10 Flip Chip package means the package size is equal to the die size.

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

TM: IPAD is a trademark of STMicroelectronics.

1 Characteristics

Symbol	Parameter	Value	Unit
	Input and output pins:		
V _{PP}	ESD discharge IEC 61000-4-2, air discharge	± 15	kV
	ESD discharge IEC 61000-4-2, contact discharge	± 15	
Тj	Maximum junction temperature	125	°C
T _{op}	Operating temperature range	-40 to +85	°C
T _{stg}	Storage temperature range	-55 to 150	°C

Table 1. Absolute maximum ratings ($T_{amb} = 25 \ ^{\circ}C$)

Table 2. Electrical characteristics ($T_{amb} = 25 \ ^{\circ}C$)

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Symbol	Parameters			I.▲		
V _{BR}	Breakdown voltage					
I _{RM}	Leakage current @ V _{RM}					
V _{RM}	Stand-off voltage					
V _{CL}	Clamping voltage			► V		
R _d	Dynamic impedance					
I _{PP}	Peak pulse current					
R _{I/O}	Series resistance between Input & Output					
C _{line}	Line capacitance	1				
Symbol	Test conditions		Min	Тур	Max	Unit
V_{BR}	I _R = 1 mA		14			V
I _{RM}	V _{RM} = 3 V per line				200	nA
R _{I/O}	Tolerance ± 20%			125	150	Ω
C _{line}	$V_{line} = 0 \text{ V}, V_{OSC} = 30 \text{ mV}, \text{ F} = 1 \text{ MHz}$				30	pF





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

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



Figure 7. Line capacitance versus applied voltage (typical values)





Figure 8. Typical rise and fall time: input 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 14. Flip Chip tape and reel specification

Note:

More information is available in the application notes:

AN2348: "STMicroelectronics 400 micro-metre Flip Chip: Package description and recommendation for use"

AN1751: "EMI Filters: Recommendations and measurements"

4 Ordering information

Table 3.	Ordering	information
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Order code	Marking	Package	Weight	Base qty	Delivery mode
EMIF10-LCD03F3	HI	Flip Chip	5.3 mg	5000	Tape and reel 7"

5 Revision history

Table 4.	Document	revision	history
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Date	Revision	Changes	
14-Apr-2008	1	Initial release	
19-Feb-2010	2	Updated pocket dimensions in <i>Figure 14</i> .	



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