

# EMIF04-2005QCF

IPAD™

## EMI FILTER INCLUDING ESD PROTECTION

## APPLICATIONS

Where EMI filtering in ESD sensitive equipment is required :

- Computers and printers
- Communication systems
- Mobile phones

## DESCRIPTION

The EMIF04-2005QCF is a highly integrated device designed to suppress EMI/RFI noise in all systems subjected to electromagnetic interferences. Additionally, the EMIF04-2005QCF filter includes an ESD protection circuitry which prevents destruction when subjected to ESD discharge up to 15kV.

### BENEFITS

- EMI symmetrical low-pass filter
- Low PCB space consuming: 4 mm<sup>2</sup>
- Very thin package < 1 mm
- High reliability offered by monolithic integration

## COMPLIES WITH THE FOLLOWING STANDARDS:

IEC61000-4-2:

15kV (air discharge)

8kV (contact discharge)

MIL STD 883E -Method 3015-6 Class 3: 25kV (human body test)



#### Table 1: Order Code

Part Number	Marking
EMIF04-2005QCF	E4

### Figure 1: Pin Configuration



#### Figure 2: Basic Cell Configuration



TM: IPAD is a trademark of STMicroelectronics.

## EMIF04-2005QCF

Symbol	Parameter ar	Value	Unit	
V <sub>PP</sub>	ESD discharge EC61000-4-2 air discharge IEC61000-4-2 contact discharge		± 45 ± 8	kV
Тj	Junction temperature	125	°C	
T <sub>stg</sub>	Storage temperature range	- 55 +150	°C	
T <sub>op</sub>	Operating temperature range	- 40 to + 85	°C	
TL	Maximum lead temperature for se	260	°C	

## Table 2: Absolute Ratings (T<sub>amb</sub> = 25 °C)

## Table 3: Electrical Characteristics ( $T_{amb} = 25 \degree C$ )

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
I <sub>PP</sub>	Peak pulse current
αΤ	Voltage temperature coefficient
V <sub>F</sub>	Forward voltage drop
R <sub>I/O</sub>	Series resistance between Input & Output
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		8	10	V
I <sub>RM</sub>	V <sub>RM</sub> = 3V per line			500	nA
Rd	I <sub>PP</sub> = 10A, t <sub>p</sub> = 2.5μs		1		Ω
R <sub>I/O</sub>		180	200	220	Ω
C <sub>in</sub>	@ 0V bias		45	50	pF

## Figure 3: Filtering behavior





Figure 4: Capacitance versus reverse applied

## Figure 5: Ordering Information Scheme



57



## Figure 6: QFN Package Mechanical Data

	DIMENSIONS					
REF.	Millimeters			Inches		
	Min.	Тур.	Max	Min.	Тур.	Max.
А	0.50		1.00	0.020		0.039
A1	0.00	0.03	0.05	0.00	0.001	0.002
A3			0.25			0.010
b	0.18		0.30	0.007		0.012
b1	0.17		0.44	0.007		0.017
D		2.00			0.079	
D2	0.88	0.98	1.08	0.035	0.039	0.043
Е		2.00			0.079	
E2	0.46	0.56	0.65	0.018	0.022	0.026
е		0.50			0.020	
L	0.20		0.45	0.008		0.018
L1			0.15			0.006
L2			0.13			0.005
k	0.20			0.008		

Figure 7: Foot Print Dimensions (in millimeters)





## **Table 4: Ordering Information**

C	Ordering code	Marking	Narking Package W		Base qty	Delivery mode
EN	/IF04-2005QCF	E4	QFN 2x2 8 pins	8.4 mg	3000	Tape & reel

Note: Further packing information available in the application note - AN1751: "EMI Filters: Recommendations and measurements"

## **Table 5: Revision History**

Date	Revision	Description of Changes	
Oct-2002	1A	First issue.	
03-Jan-2005	2 Minor template update. No content change.		
16-Mar-2005	3	QFN package mechanical data update: 1/ A min: 0.50 mm instead of 0.80 2/ A typ: deleted 3/ b1 max: 0.44 mm instead of 0.30	
01-Apr-2005 4		QFN package mechanical data update: 1/ Reference Details A and B added	



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners

© 2005 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan -Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America www.st.com

