



# 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)

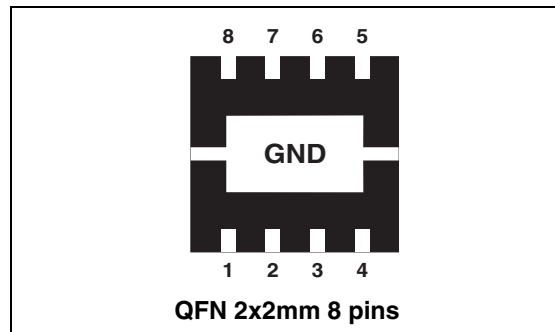


Table 1: Order Code

Part Number	Marking
EMIF04-2005QCF	E4

Figure 1: Pin Configuration

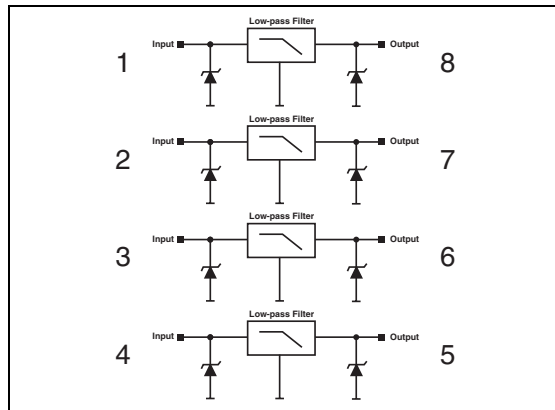
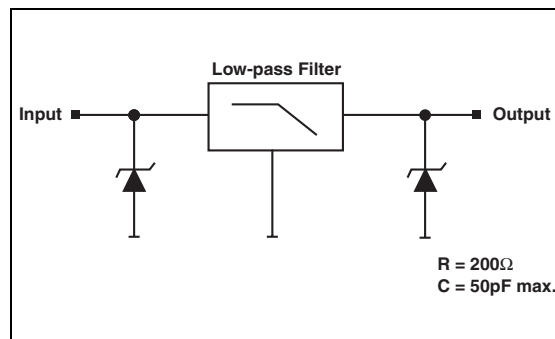


Figure 2: Basic Cell Configuration



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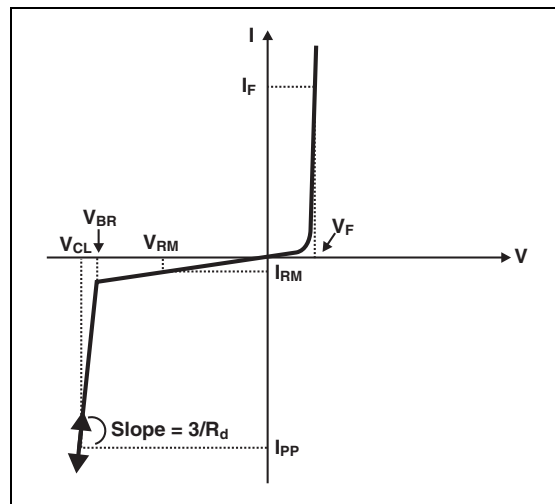
## EMIF04-2005QCF

**Table 2: Absolute Ratings** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ )

Symbol	Parameter and test conditions		Value	Unit
$V_{PP}$	ESD discharge	EC61000-4-2 air discharge IEC61000-4-2 contact discharge	$\pm 45$ $\pm 8$	kV
$T_j$	Junction temperature		125	$^{\circ}\text{C}$
$T_{stg}$	Storage temperature range		- 55 +150	$^{\circ}\text{C}$
$T_{op}$	Operating temperature range		- 40 to + 85	$^{\circ}\text{C}$
$T_L$	Maximum lead temperature for soldering during 10s at 5mm from case		260	$^{\circ}\text{C}$

**Table 3: Electrical Characteristics** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ )

Symbol	Parameter
$V_{BR}$	Breakdown voltage
$I_{RM}$	Leakage current @ $V_{RM}$
$V_{RM}$	Stand-off voltage
$V_{CL}$	Clamping voltage
$I_{PP}$	Peak pulse current
$\alpha T$	Voltage temperature coefficient
$V_F$	Forward voltage drop
$R_{I/O}$	Series resistance between Input & Output
$C_{line}$	Input capacitance per line



Symbol	Test conditions	Min.	Typ.	Max.	Unit
$V_{BR}$	$I_R = 1\text{ mA}$	6	8	10	V
$I_{RM}$	$V_{RM} = 3\text{V per line}$			500	nA
$R_d$	$I_{PP} = 10\text{A}$ , $t_p = 2.5\mu\text{s}$		1		$\Omega$
$R_{I/O}$		180	200	220	$\Omega$
$C_{in}$	@ 0V bias		45	50	pF

Figure 3: Filtering behavior

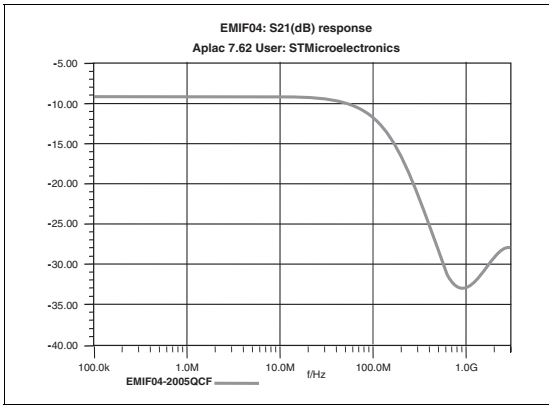


Figure 4: Capacitance versus reverse applied voltage

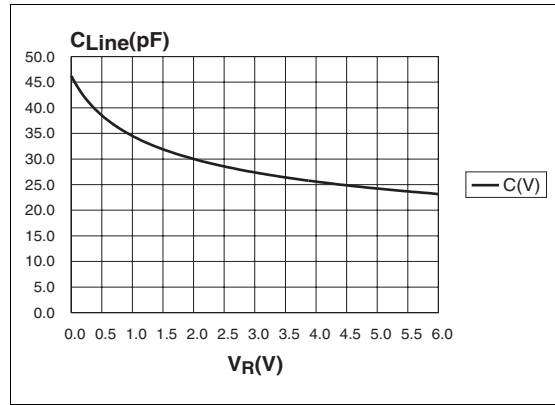


Figure 5: Ordering Information Scheme

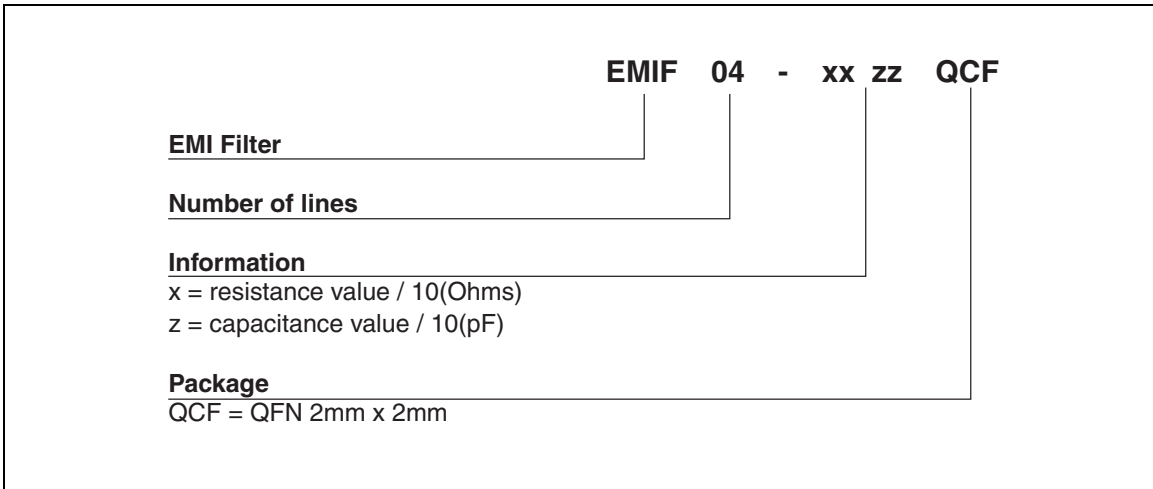


Figure 6: QFN Package Mechanical Data

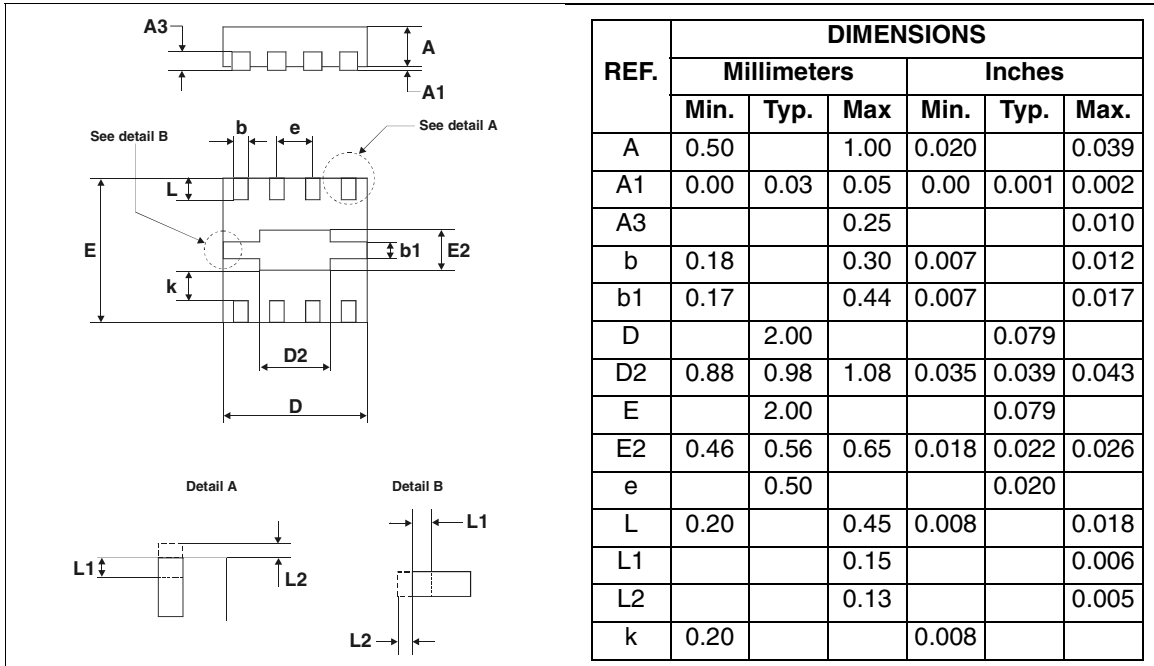
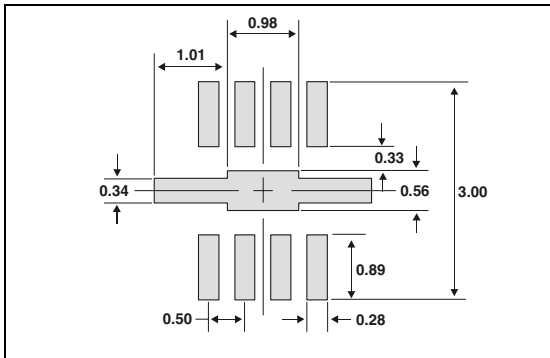


Figure 7: Foot Print Dimensions (in millimeters)



**Table 4: Ordering Information**

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
EMIF04-2005QCF	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

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