



EMIF11-10002C4

9 LINES EMI FILTER AND ESD PROTECTION

IPAD™

MAIN PRODUCT CHARACTERISTICS:

Where EMI filtering in ESD sensitive equipment is required :

- Mobile phones and communication systems
- Computers, printers and MCU Boards

DESCRIPTION

The EMIF11-10002C4 is a highly integrated devices designed to suppress EMI/RFI noise in all systems subjected to electromagnetic interferences.

This device includes 9 EMI filters & ESD protection circuitry which prevents the device from destruction when subjected to ESD surges up 15kV. In addition, the EMIF11 integrates 2 other ESD protection for data and 1 ESD protection for V_{CC}.

BENEFITS

- EMI symmetrical (I/O) low-pass filter
- High efficiency in EMI filtering
- High efficiency in ESD suppression (IEC61000-4-2 level 4)
- High reliability offered by monolithic integration
- High reducing of parasitic elements through integration & wafer level packaging
- QFN 4x4mm package for an easy layout

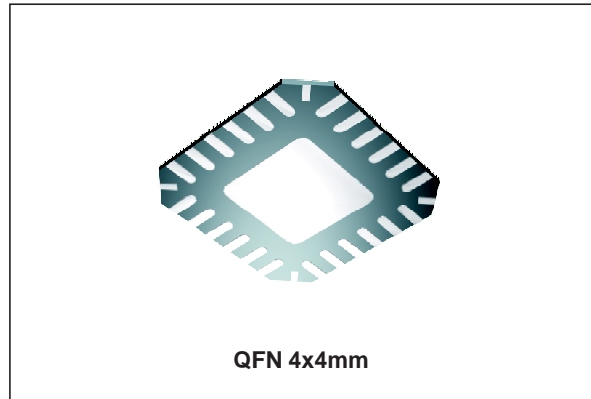
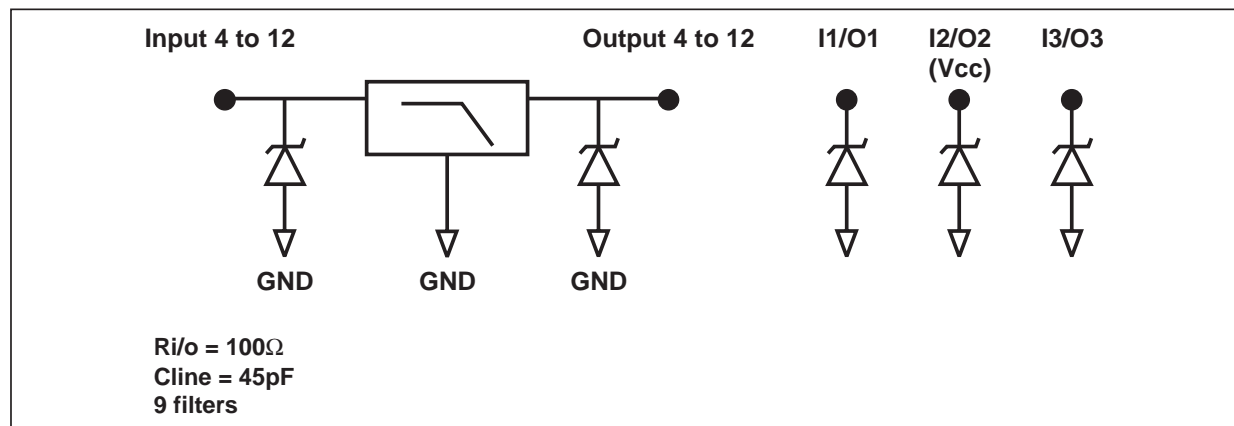
COMPLIES WITH THE FOLLOWING STANDARDS:

IEC61000-4-2

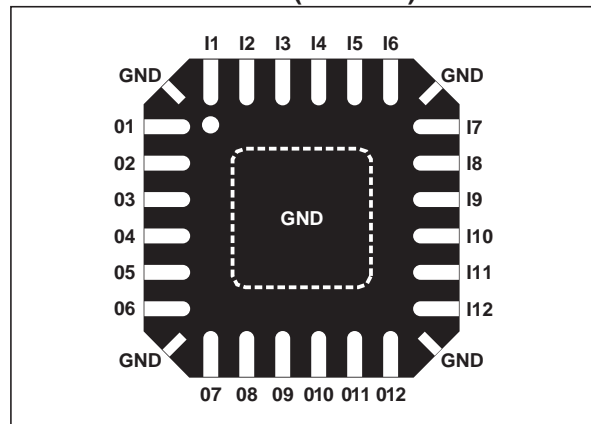
Level 4 on input pins 15kV (air discharge)
8 kV (contact discharge)

MIL STD 883E - Method 3015-7 Class 3

BASIC CELL CONFIGURATION



PIN CONFIGURATION (ball side)



TM : IPAD is a trademark of STMicroelectronics.

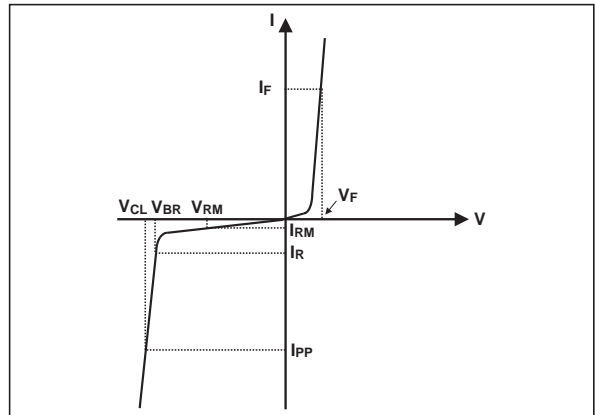
EMIF11-10002C4

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter and test conditions	Value	Unit
T_j	Maximum junction temperature	150	°C
T_L	Maximum lead temperature for soldering during 10s	260	°C
T_{op}	Operating temperature range	-40 to +85	°C
T_{stg}	Storage temperature range	-40 to +85	°C

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ °C}$)

Symbol	Parameter
V_{BR}	Breakdown voltage
I_{RM}	Leakage current @ V_{RM}
V_{RM}	Stand-off voltage
$R_{I/O}$	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	7	8	V
I_{RM}	$V_{RM} = 3\text{V per line}$			1	μA
$R_{I/O}$	Cells 4 to 12	90	100	110	Ω
C_{line}	$V_R = 0\text{V}$ (Cells 4 to 12)		45		pF

Fig. 1: S21(dB) attenuation measurement and Aplac simulation.

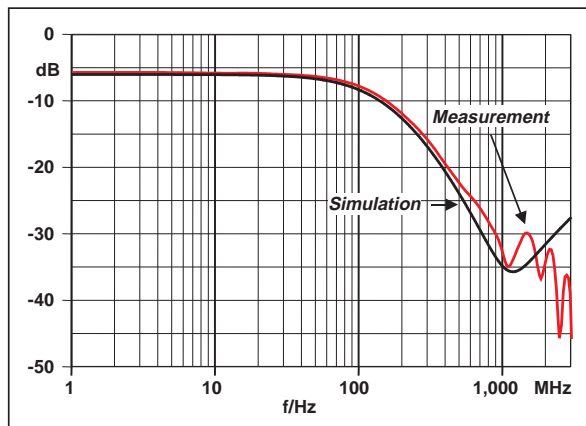


Fig. 2: Analog crosstalk measurements.

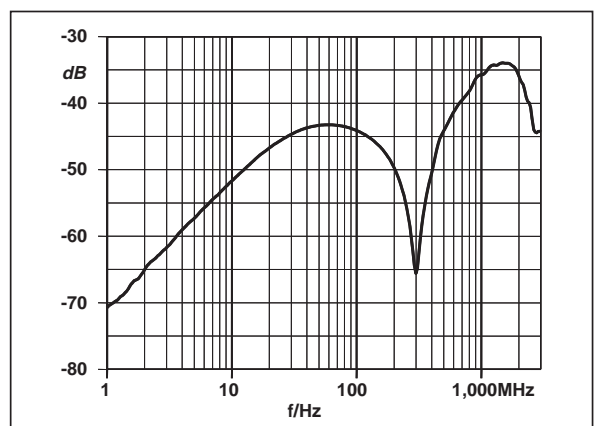


Fig. 3: Digital crosstalk measurement.

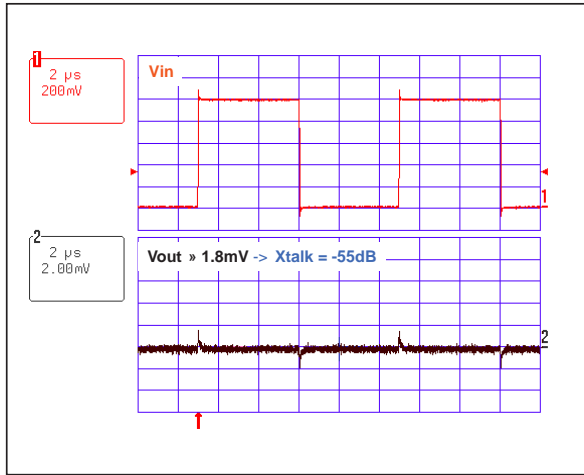


Fig. 4: ESD response to IEC61000-4-2 (+15kV air discharge) on one input V(in) and on one output V(out).

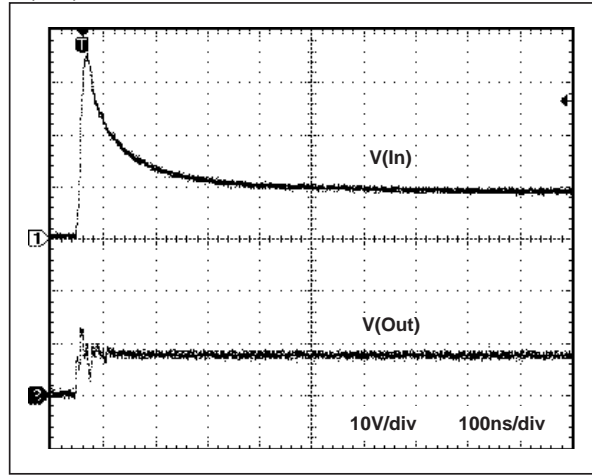


Fig. 5: ESD response to IEC61000-4-2 (-15kV air discharge) on one input V(in) and on one output V(out).

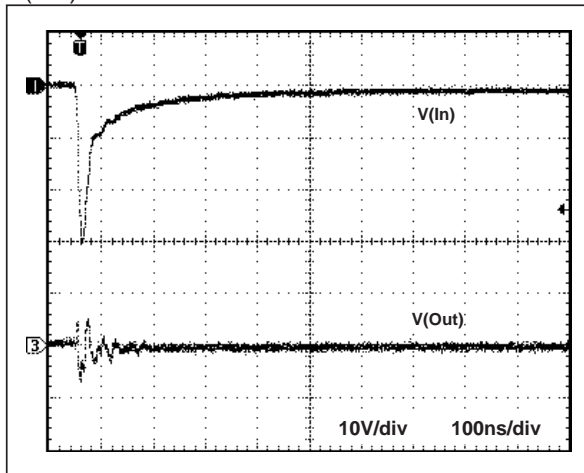
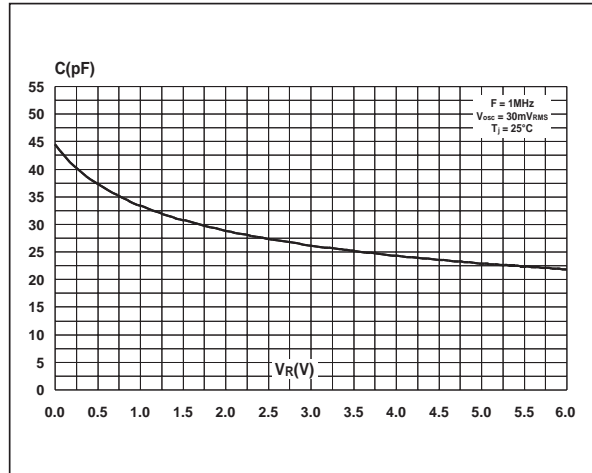
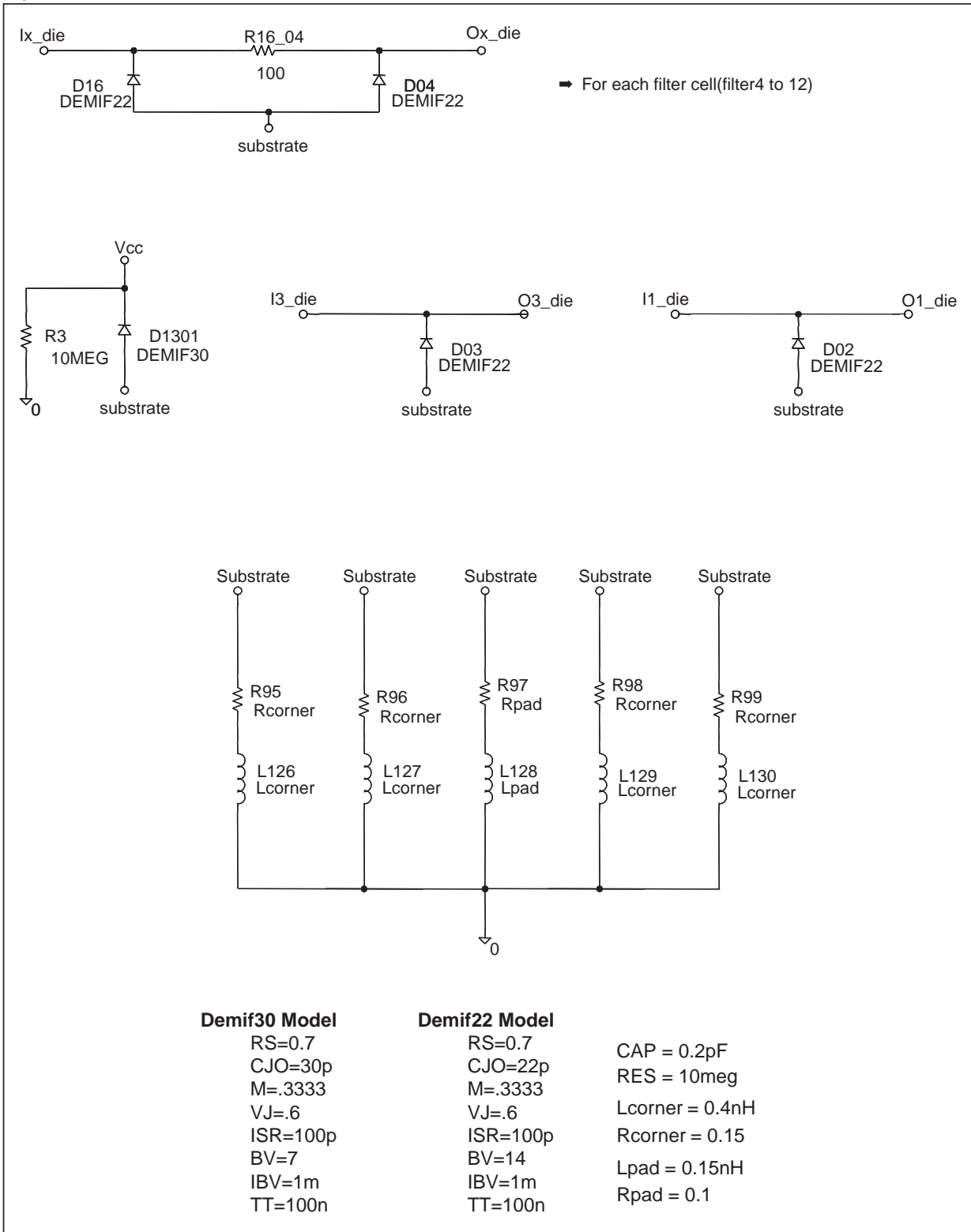


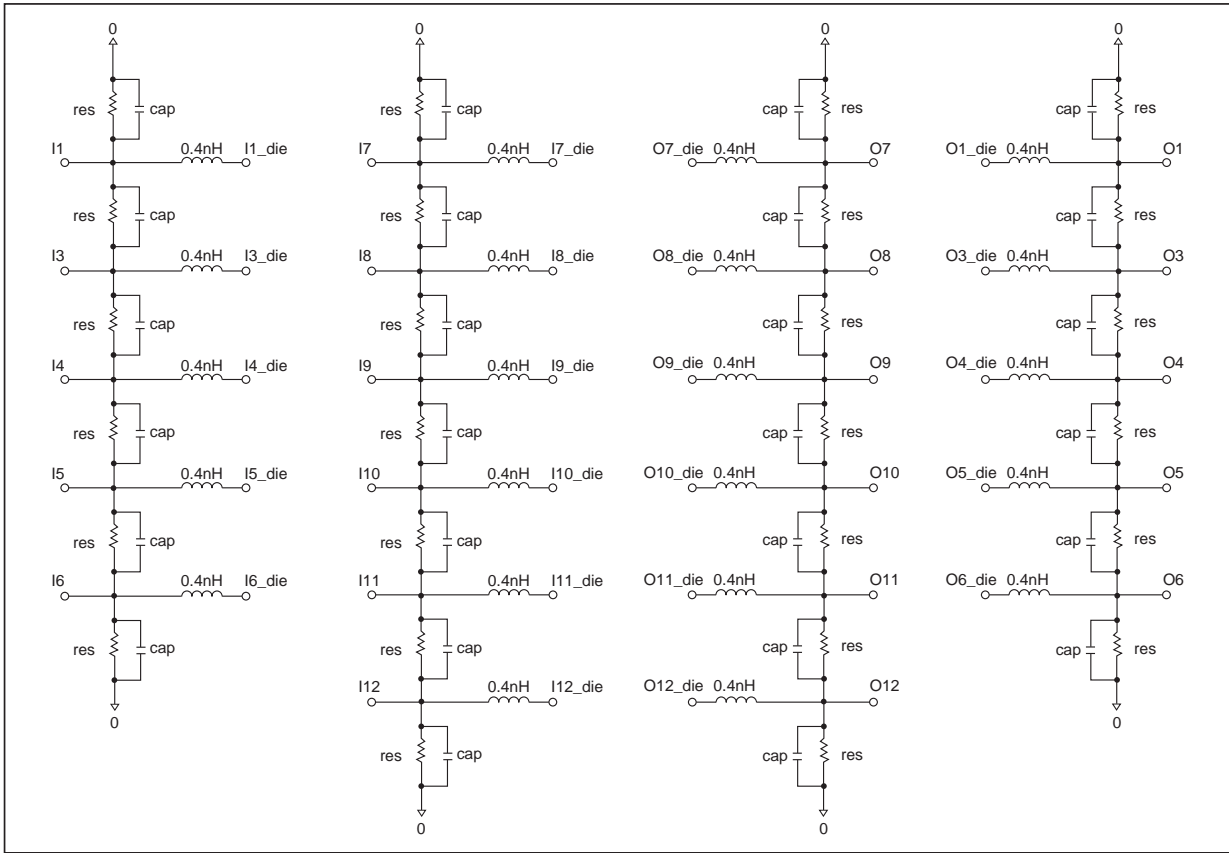
Fig. 6: Line capacitance of filter cells versus applied voltage.



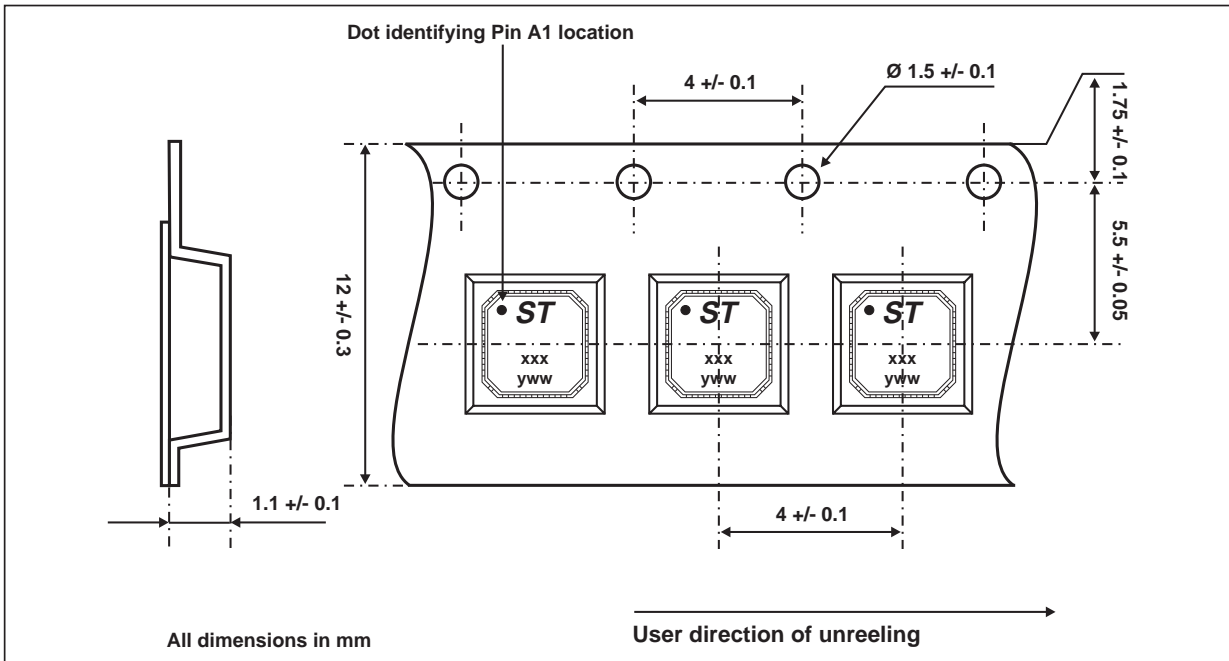
Aplac model.



Aplac model (continued).



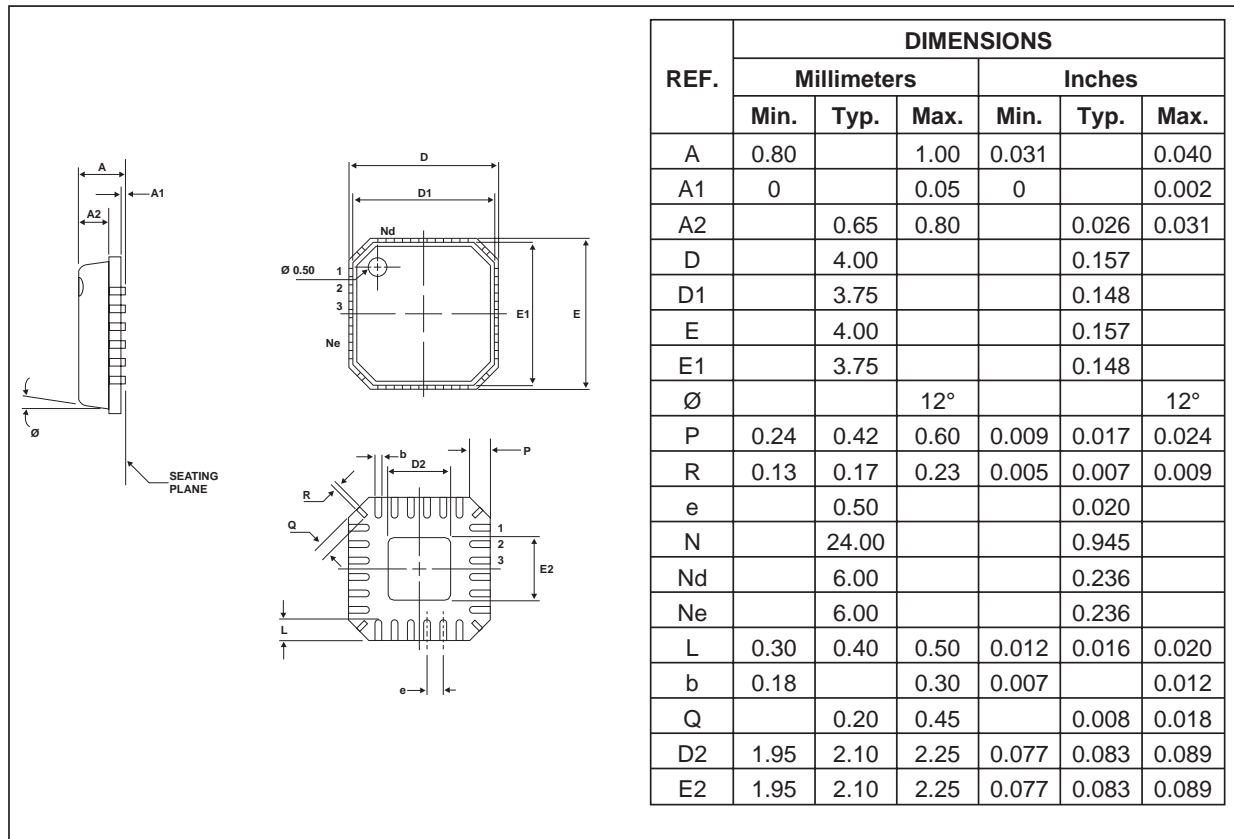
PACKING



EMIF11-10002C4

PACKAGE MECHANICAL DATA

QFN 4x4mm



OTHER INFORMATION

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
EMIF11-10002C4	E11U	QFN 4x4mm	235 mg	4000	Tape & reel (7'')

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.

© 2003 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

www.st.com