EMIF04-MMC02F1

4 LINES EMI FILTER INCLUDING ESD PROTECTION

IPAD™

MAIN APPLICATION

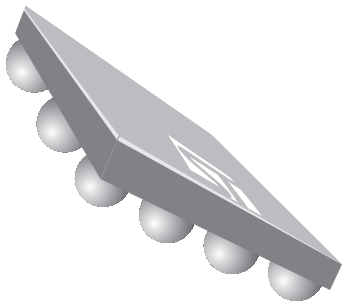
- MULTIMEDIACARD™

DESCRIPTION

The EMIF04-MMC02F1 is a highly integrated array designed to suppress EMI / RFI noise for MULTIMEDIACARD™ port filtering.

The EMIF04-MMC02F1 flip-chip packaging means the package size is equal to the die size. That's why EMIF04-MMC02F1 is a very small device.

Additionally, this filter includes an ESD protection circuitry which prevents the protected device from destruction when subjected to ESD surges up to 15 kV.



Flip Chip package

BENEFITS

- 4 lines low-pass-filter
- High efficiency in EMI filtering
- Very low PCB space consuming: < 3.3 mm^2
- Very thin package: 0.65 mm
- 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.

COMPLIES WITH THE FOLLOWING STANDARDS :

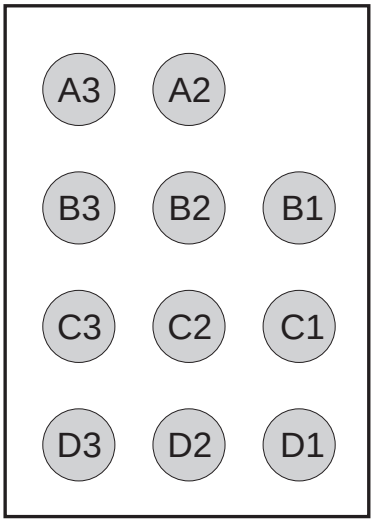
IEC 61000-4-2 Level 4:

15kV (air discharge)
8 kV (contact discharge)

on input & output pins.

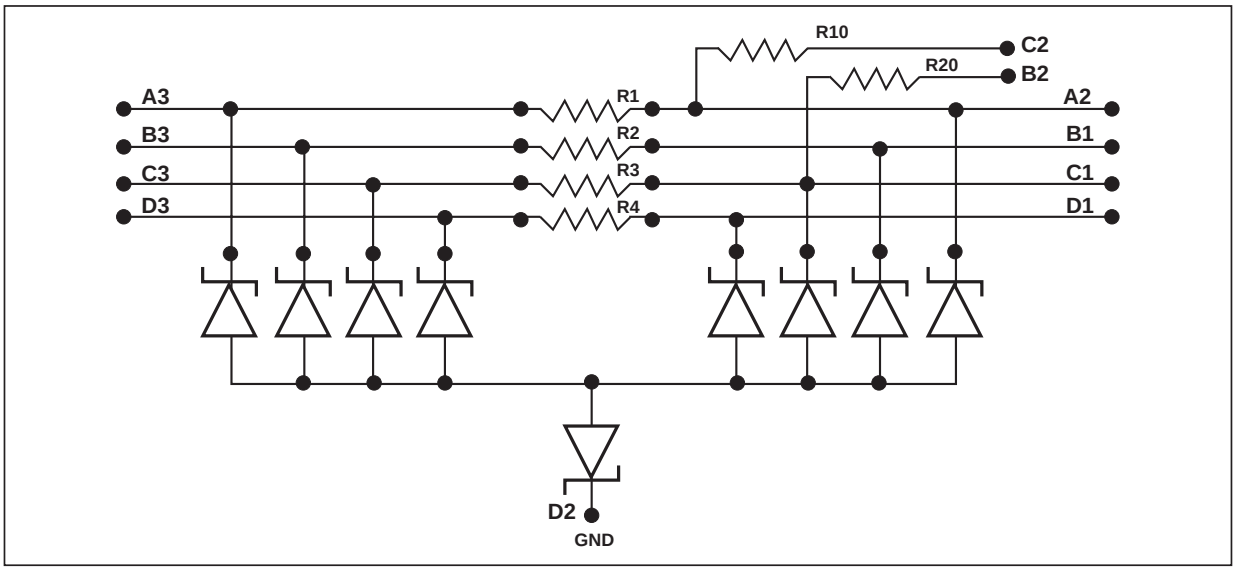
MIL STD 883E - Method 3015-6 Class 3

PIN CONFIGURATION



TM : IPAD is a trademark of STMicroelectronics.

SCHEMATIC

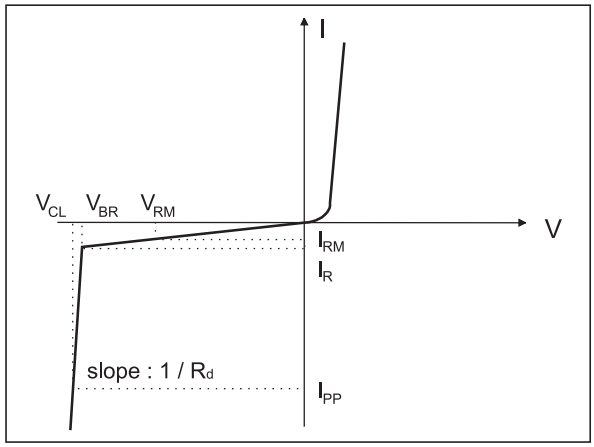


ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C)

Symbol	Parameter and test conditions	Value	Unit
V_{PP}	ESD discharge IEC61000-4-2, air discharge ESD discharge IEC61000-4-2, contact discharge	15 8	kV
T_j	Junction temperature	125	°C
T_{op}	Operating temperature range	-40 to + 85	°C
T_{stg}	Storage temperature range	-55 to +150	°C

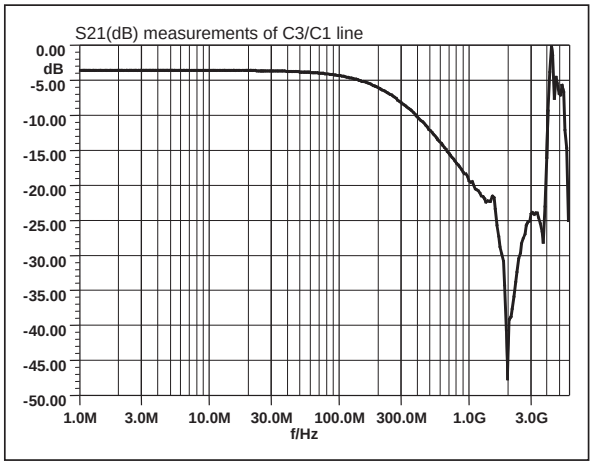
ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C)

Symbol	Parameter
V_{BR}	Breakdown voltage
I_{RM}	Leakage current @ V_{RM}
V_{RM}	Stand-off voltage
V_{CL}	Clamping voltage
Rd	Dynamic impedance
I_{PP}	Peak pulse current



Symbol	Test conditions	Min.	Typ.	Max.	Unit
V_{BR}	I_R = 1 mA	6			V
I_{RM}	V_{RM} = 3V		0.1	0.5	µA
C_{line}	@ 0V			20	pF
R_1,R_2,R_3,R_4	Tolerance ± 5%		47		Ω
R_{10}	Tolerance ± 5%		13		kΩ
R_{20}	Tolerance ± 5%		56		kΩ
P				70	mW

Fig. 1: Filtering measurements



Note: spikes at high frequencies are induced by the PCB layout.

Fig. 2: Cross talk measurements

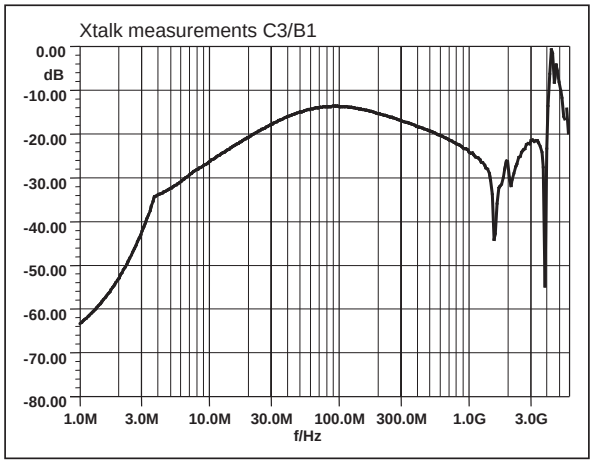


Fig. 3: Line capacitance versus reverse applied voltage.

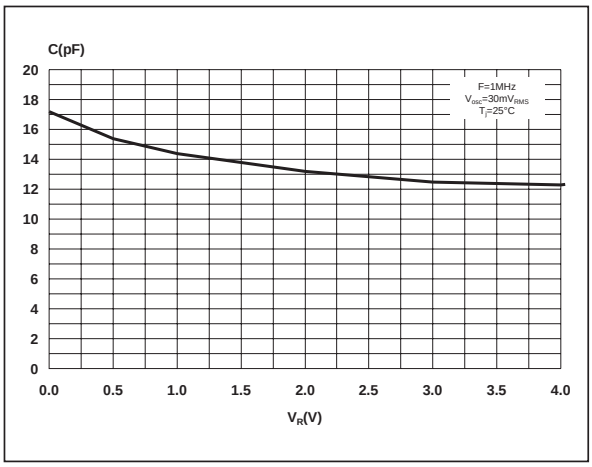
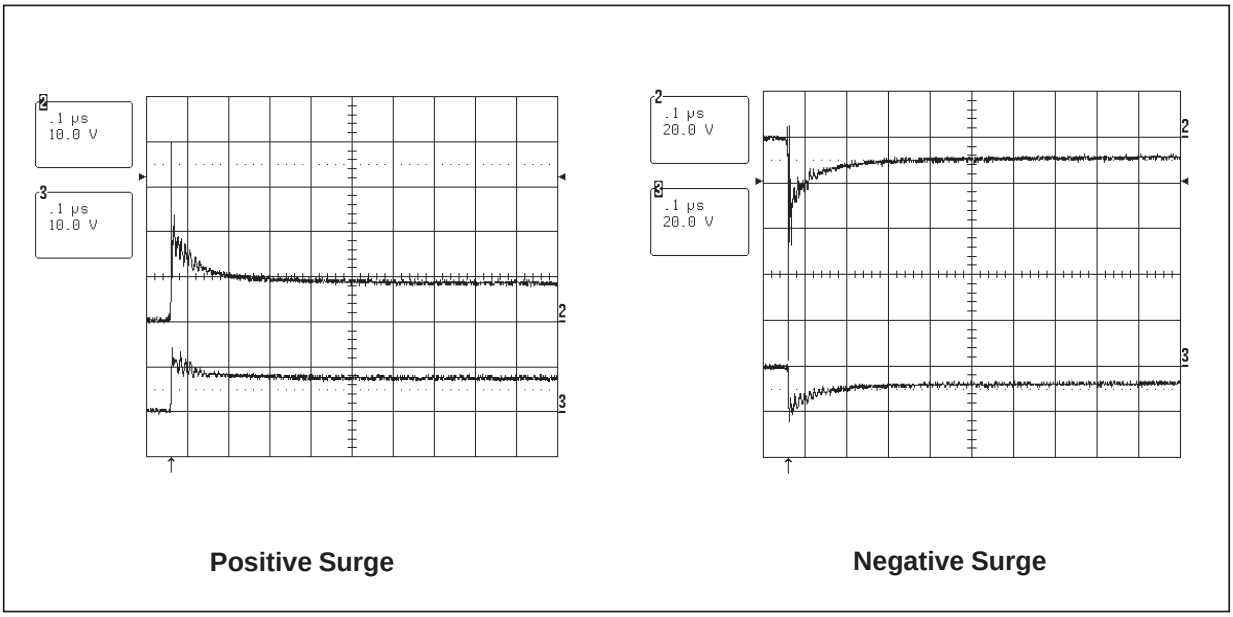


Fig. 4: ESD response to IEC61000-4-2 (+15kV contact discharge).



APLAC MODEL

Fig. 5: Device structure

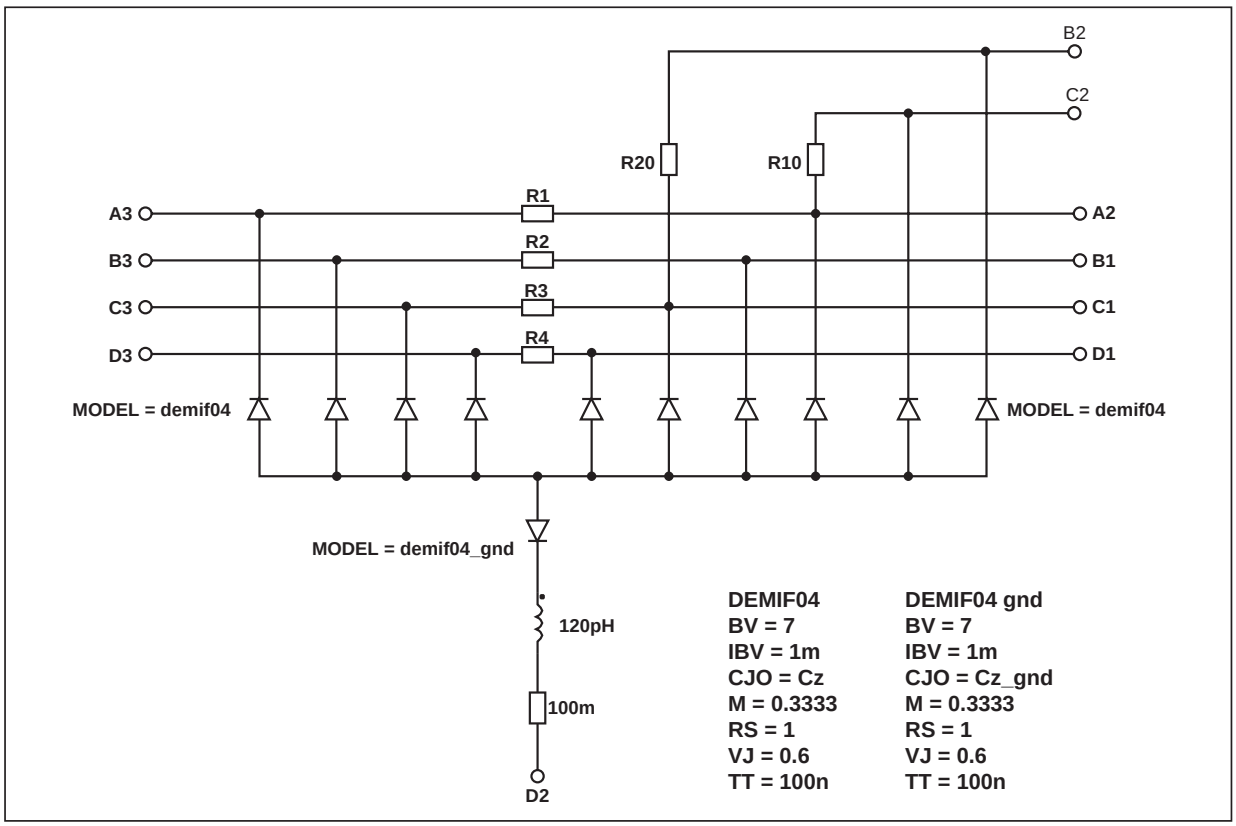


Fig. 6: Aplac model connections

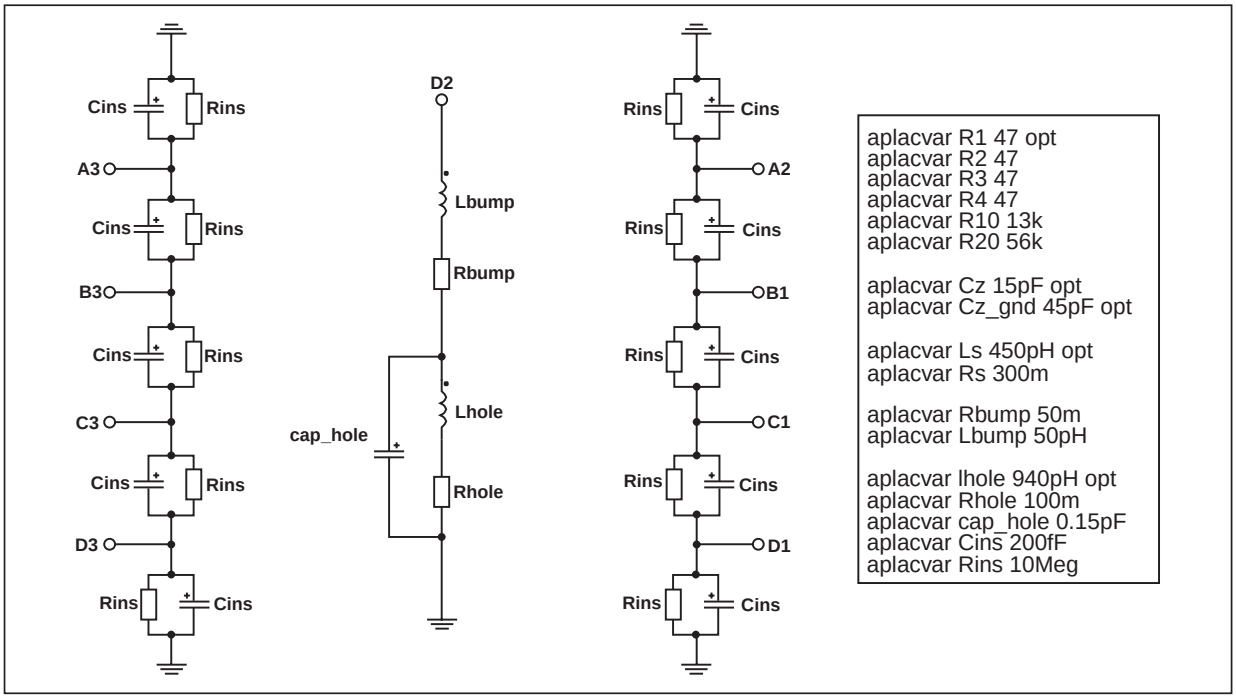
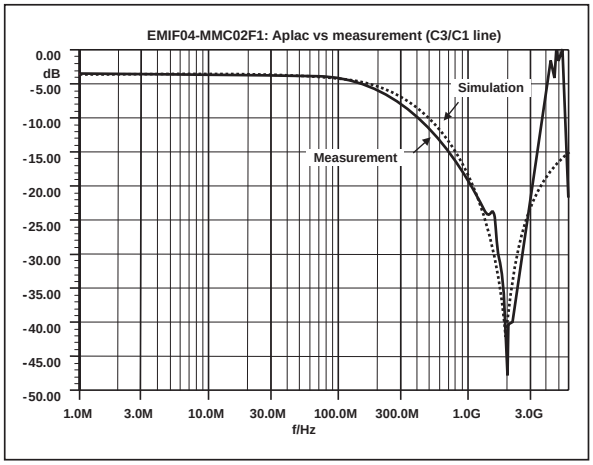


Fig. 7: Aplac simulation versus frequency measurement.

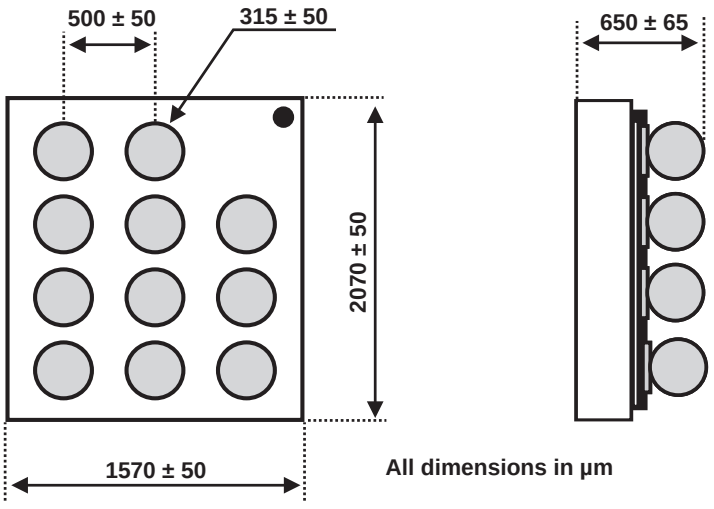


ORDER CODE

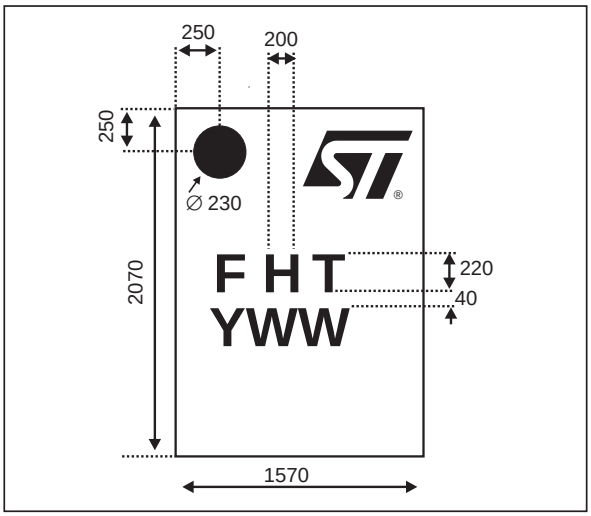
EMIF 04 - MMC 02 F 1

- EMIF: Electro Magnetic Interference Filter
- 04: Nb of lines
- MMC: MULTIMEDIACARD™ port fonction
- 02: Version
- F: FLIP CHIP
- 1: Pitch and Bump version
  1: pitch = 0.5mm
  bump = 0.3mm

PACKAGE MECHANICAL DATA

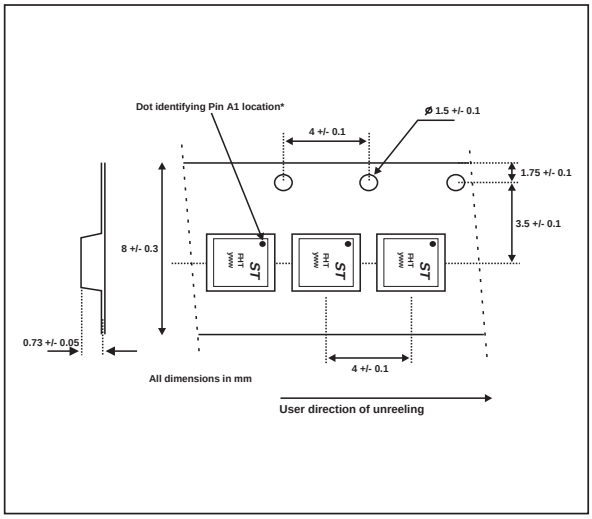


MARKING



- yww: Date code

PACKING



OTHER INFORMATION

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
EMIF04-MMC02F1	FHT	Flip-Chip	4.5 mg	5000	Tape & reel (7”)

Note: More packing informations are available in the application note AN1235: "Flip-Chip: Package description and recommandations for use"

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