1 Characteristics

Table 1. Absolute ratings (T_{amb} = 25 °C)

Symbol	Parameter and test conditions	Value	Unit
V_{PP}	**Internal pins (D3, C3, C2, B2, B1):** ESD discharge IEC61000-4-2, air discharge ESD discharge IEC61000-4-2, contact discharge **External pins (D1, C1, A2, A3, B3):** ESD discharge IEC61000-4-2, air discharge ESD discharge IEC61000-4-2, contact discharge	 2 2 15 8	kV
T_j	Maximum junction temperature	125	°C
T_{op}	Operating temperature range	-40 to +85	°C
T_{stg}	Storage temperature range	-55 to 150	°C

Figure 3. Electrical characteristics (definitions)

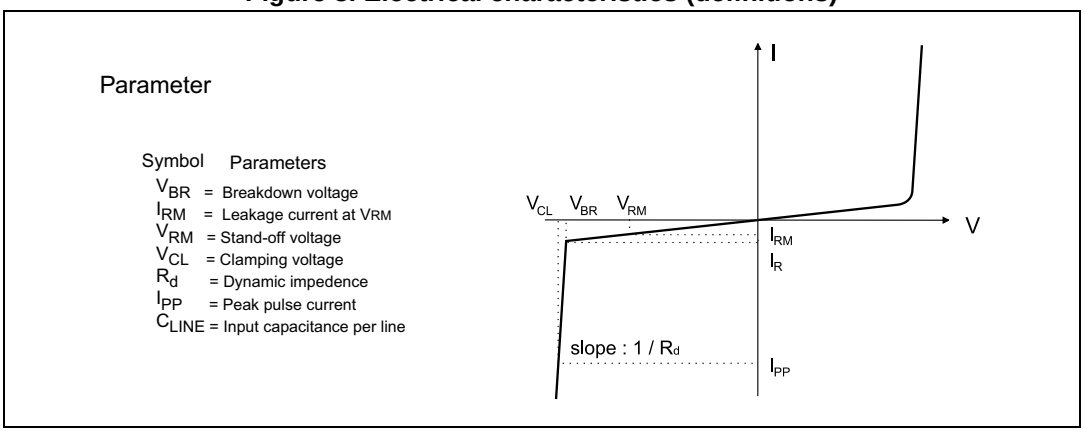


Table 2. Electrical characteristics (T_{amb} = 25 °C)

Symbol	Conditions	Min.	Typ.	Max.	Unit
V_{BR}	I_R = 1 mA	14			V
I_{RM}	V_{RM} = 3 V			0.2	µA
C_{LINE}	V_{LINE} = 0 V, V_{OSC} = 30 mV, F = 1 MHz, measured in zero light condition			20	pF
R_1, R_2	Tolerance ± 5%		33		Ω
R_3	Tolerance ± 5%		1.30		kΩ
R_4	Tolerance ± 5%		17		kΩ
R_5	Tolerance ± 5%		15		kΩ

Figure 4. Filtering measurement

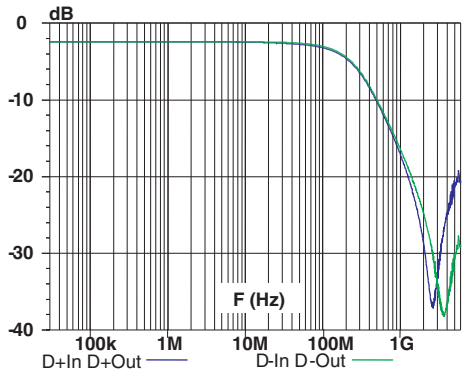


Figure 5. Analog crosstalk measurement

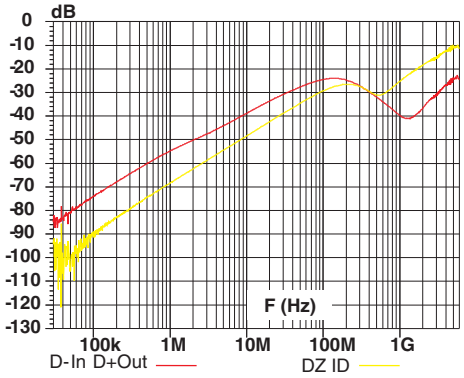


Figure 6. ESD response to IEC 61000-4-2 (+15 kV air discharge) on one input V_{IN} and on one output V_{OUT}

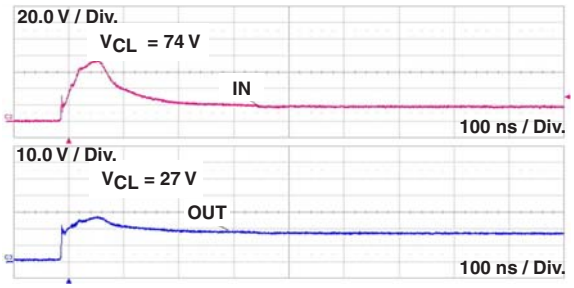


Figure 7. ESD response to IEC 61000-4-2 (-15 kV air discharge) on one input V_{IN} and on one output V_{OUT}

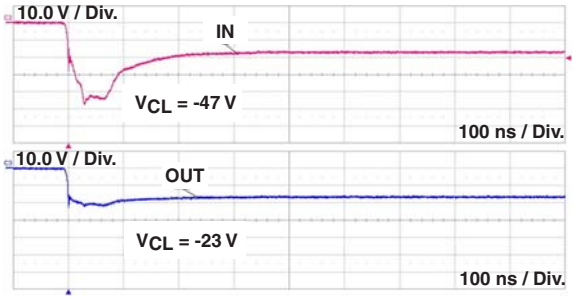
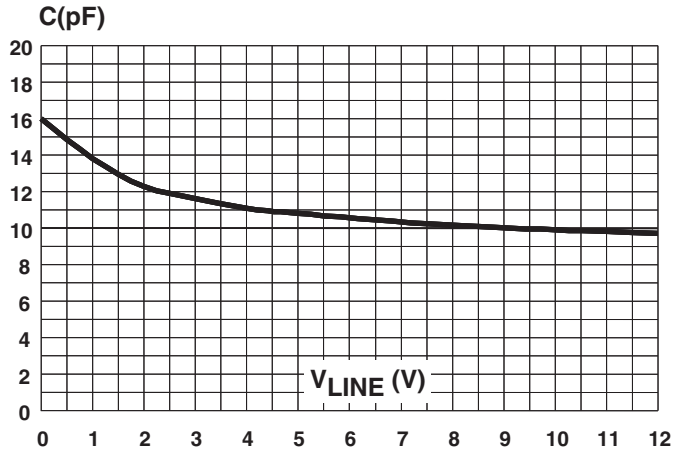


Figure 8. Junction capacitance versus reverse voltage applied (typical values)



2 Application information

Figure 9. Application schematic

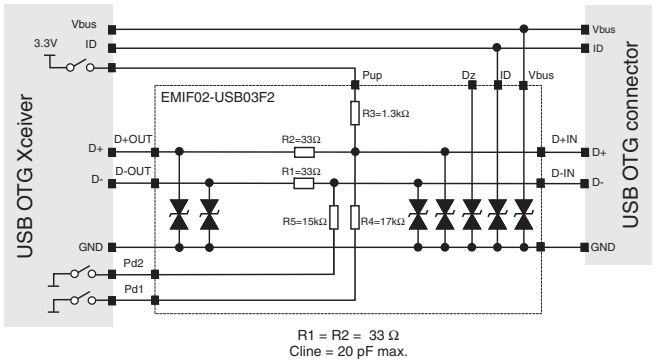


Figure 10. Aplac model

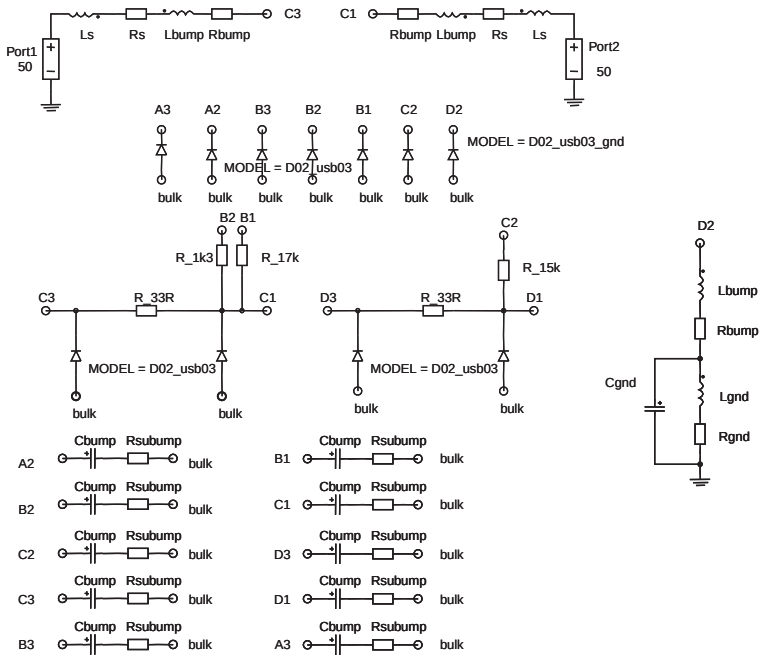


Figure 11. Aplac parameters

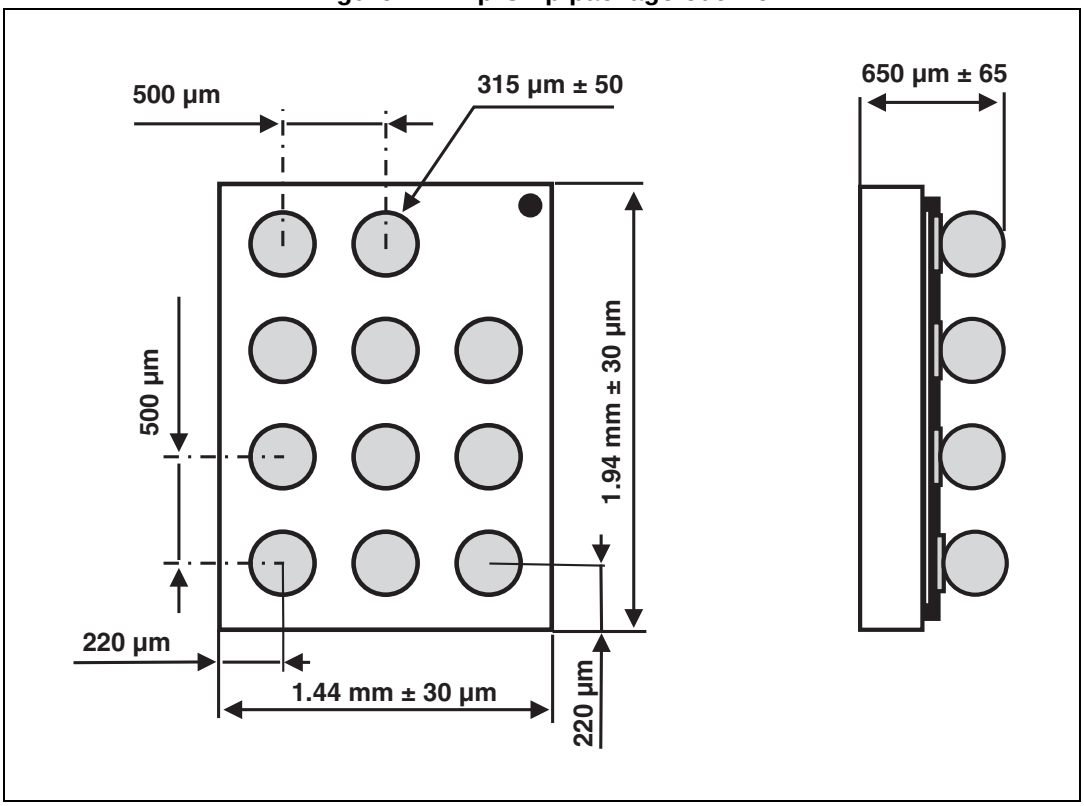
Ls 950pH	Rs_usb03_gnd 0.9
Rs 150m	Lgnd 50pH
R_33R 33	Rgnd 100m
R_1k3 1.3k	Cgnd 0.15pF
R_15k 15k	Lbump 50pH
R_17k 17k	Rbump 20m
Cz_usb03 11pF	Cbump 2.4pF
Rs_usb03 1	Rsubump 100m
Cz_usb03_gnd 220pF	

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.

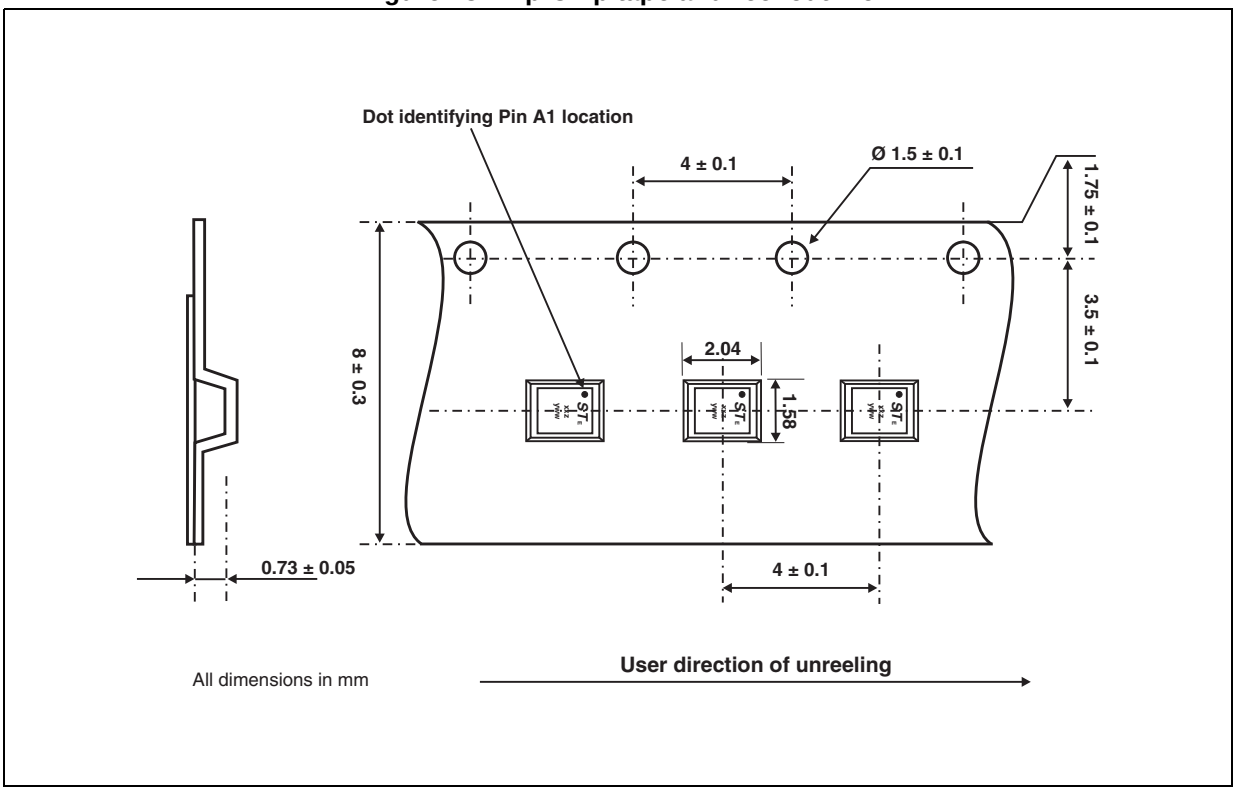
3.1 Flip-Chip package information

Figure 12. Flip-Chip package outline



3.2 Packing information

Figure 13. Flip-Chip tape and reel outline



Note: More information is available in the application notes:
AN1235:"Flip Chip: Package description and recommendations for use"
AN1751: "EMI filters: Recommendations and measurements"

Figure 14. Footprint

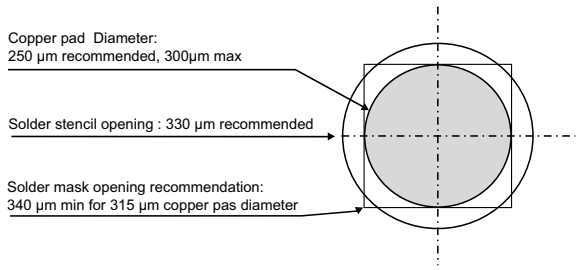
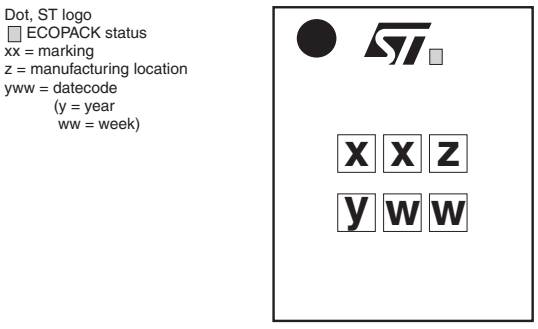


Figure 15. Marking



4 Ordering information

Figure 16. Ordering information scheme

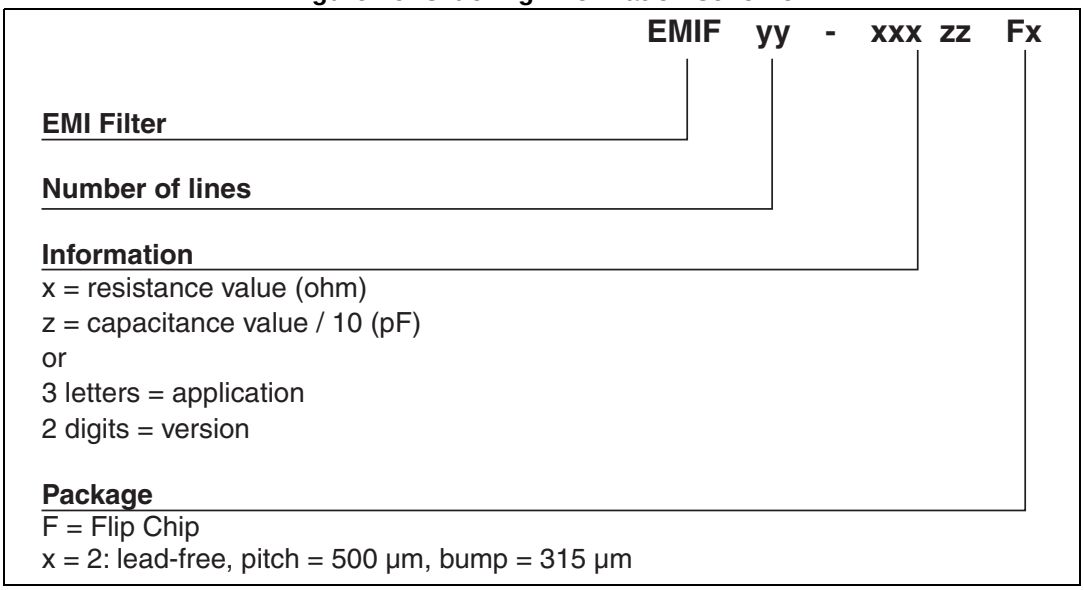


Table 3. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
EMIF02-USB03F2	FU	Flip Chip	4 mg	5000	Tape and reel 7”

5 Revision history

Table 4. Document revision history

Date	Revision	Changes
14-Oct-2004	1	Initial release.
25-Oct-2004	2	*Figure 12*: Flip Chip marking dimensions updated.
27-Oct-2004	3	Minor layout update. No content change.
28-Apr-2008	4	Updated ECOPACK statement. Updated *Figure 12*, *Figure 13*, *Figure 14*, *Figure 15* and *Figure 16* Reformatted to current standards.
08-Feb-2010	5	Updated the maximum value of I_{RM} in *Table 2*. Updated *Figure 12* and *Figure 13* for die dimension reductions.
15-Sep-2015	6	Updated *Figure 14* and reformatted to current standards.