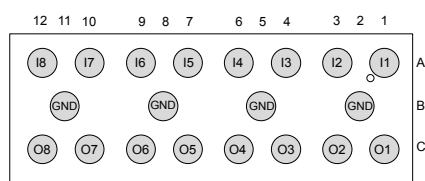


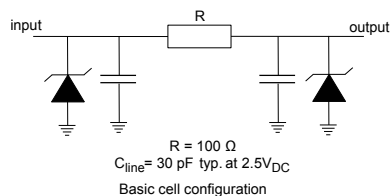
## 8-line low capacitance EMI filter and ESD protection



WLCSP package – 20 bumps



Pin configuration (Bump side view)



### Features

- High efficiency in EMI filtering in wide filter bandwidth: better than -25 dB from 700 MHz to 3.0 GHz
- Very thin package: 0.6 mm max.
- High efficiency in ESD suppression on all input and output pins (exceeds IEC61000-4-2 level 4:  $\pm 20\ \text{kV}$  contact discharge)
- High reliability offered by monolithic integration
- High reduction of parasitic elements through integration and wafer level packaging

### Applications

- LCD and camera for mobile phones
- Computers and printers
- Communication systems
- MCU boards

### Description

This is a highly integrated 8-line device designed to suppress EMI/RFI noise in all systems exposed to electromagnetic interference.

This filter includes ESD protection circuitry, which prevents the application from damages when subjected to ESD surges up to 20 kV.

Product status link

[EMIF08-VID1F3](#)

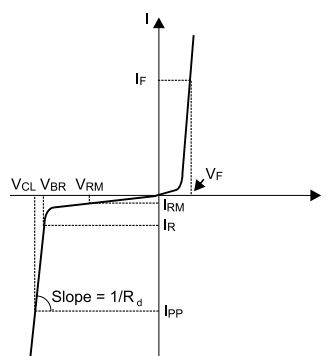
# 1 Characteristics

**Table 1. Absolute maximum ratings (  $T_{amb} = 25\text{ }^{\circ}\text{C}$  )**

Symbol	Parameter	Value	Unit
$V_{pp}$	Peak pulse voltage	IESD IEC 61000-4-2	
		Contact discharge	$\pm 20$
		Air discharge	$\pm 30$
$T_j$	Operating junction temperature	$\pm 125$	$^{\circ}\text{C}$
$T_{stg}$	Storage temperature range	-40 to +85	$^{\circ}\text{C}$
$T_{op}$	Operating temperature range	-65 to +150	$^{\circ}\text{C}$

**Figure 1. Electrical characteristics (definitions)**

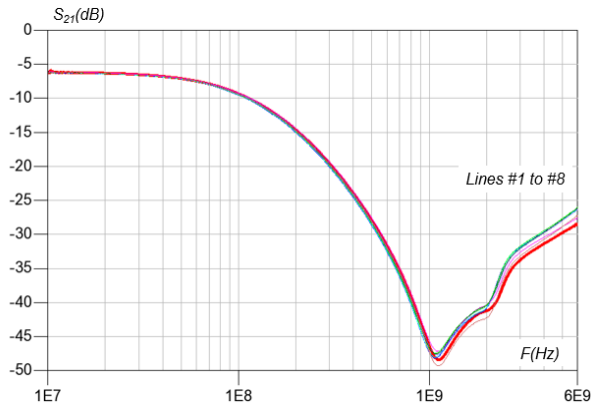
Symbol	Parameter
$V_{BR}$	= Breakdown voltage
$V_{CL}$	= Clamping voltage
$I_{RM}$	= Leakage current @ $V_{RM}$
$V_{RM}$	= Stand-off voltage
$I_F$	= Forward current
$I_{PP}$	= Peak pulse current
$I_R$	= Breakdown current
$V_F$	= Forward voltage drop
$R_d$	= Dynamic impedance


**Table 2. Electrical characteristics (  $T_{amb} = 25\text{ }^{\circ}\text{C}$  )**

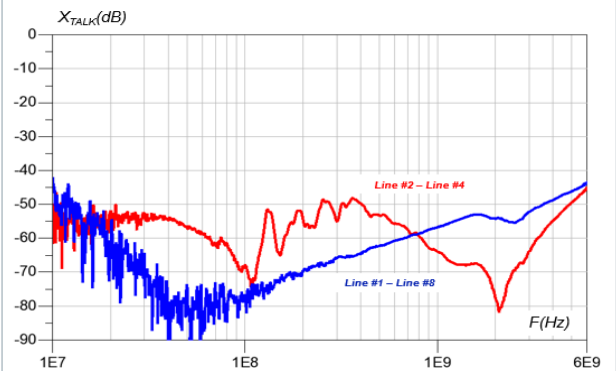
Symbol	Test conditions	Min.	Typ.	Max.	Unit
$V_{BR}$	$I_R = 1\text{ mA}$	5.8		9	V
$V_F$	$I_F = 1\text{ mA}$	0.4		1.5	
$I_{RM}$	$V_{RM} = 3.5\text{ V per line}$			100	nA
$R$	Serial resistance	80	100	120	$\Omega$
$C_{line}$	$V_{BIAS} = 2.5\text{ V}_{DC}$ reverse Bias, $F = 1\text{ MHz}$ , $V_{OSC} = 30\text{ mV}$		30		pF
$F_C$	Cut off frequency		98		MHz
$S_{21}$	Attenuation from 700 MHz to 3 GHz	-25	-30		dB
	$F = 1.7\text{ GHz}$		-45		

## 1.1 Characteristics (curves)

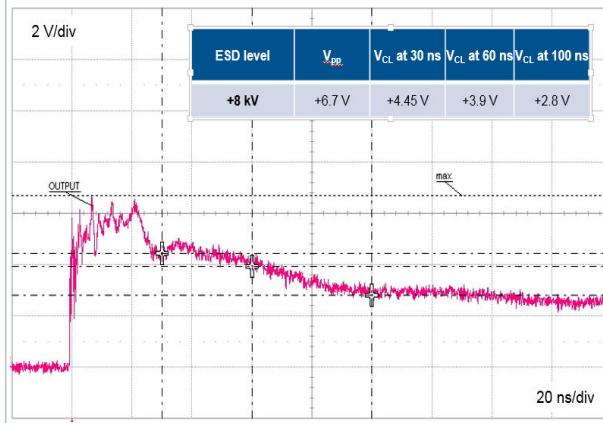
**Figure 2. Attenuation versus frequency**



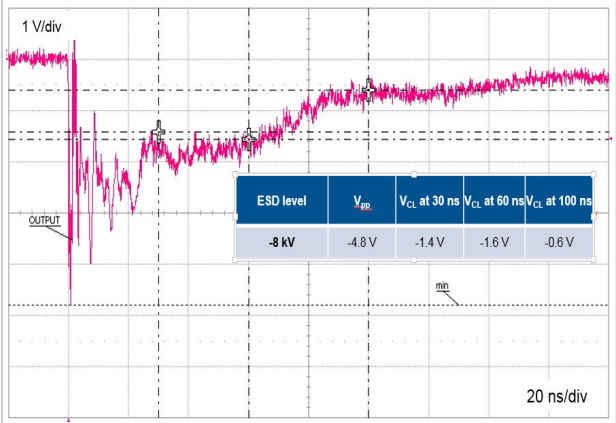
**Figure 3. Analog crosstalk measurements versus frequency**



**Figure 4. ESD response to IEC 61000-4-2  
(+8 kV contact discharge)**



**Figure 5. ESD response to IEC 61000-4-2  
(-8 kV contact discharge)**

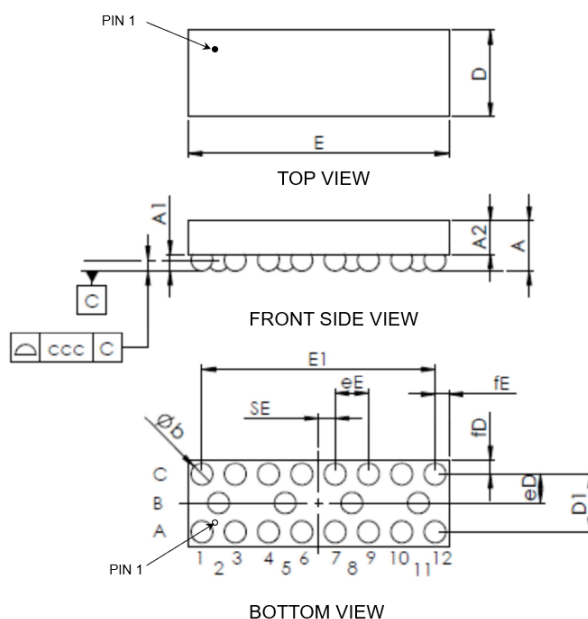


## 2 Package information

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](http://www.st.com). ECOPACK is an ST trademark.

### 2.1 WLCSP 20 bumps package information

**Figure 6. WLCSP 20 bumps package outline**



**Table 3. WLCSP 20 bumps package mechanical data**

Ref.	Dimensions in millimeters		
	Min.	Typ.	Max.
A	0.550	0.605	0.660
A1	0.170	0.205	0.240
A2	0.380	0.400	0.420
b	0.215	0.255	0.295
D	1.007	1.037	1.067
D1		0.700	
E	3.112	3.142	3.172
E1		2.800	
eD		0.350	
eE		0.400	
SE		0.200	
fD		0.163	
fE		0.166	
ccc		0.050	

Figure 7. Footprint recommendations

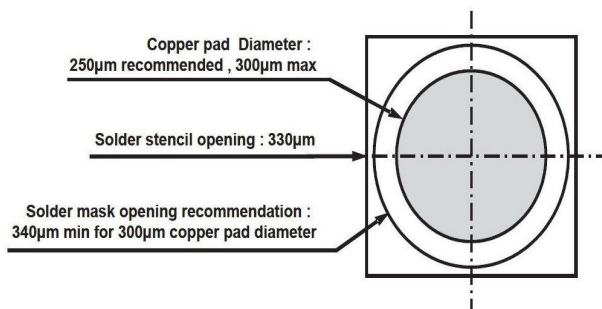


Figure 8. Marking layout

Dot, ST Logo  
xx = marking  
z = packaging  
location  
yww = date code  
Dimensions in µm

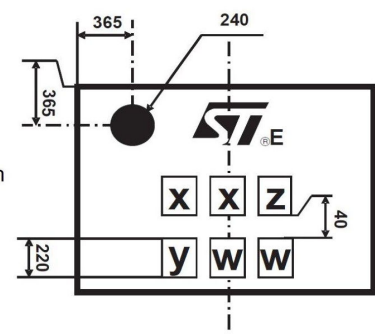
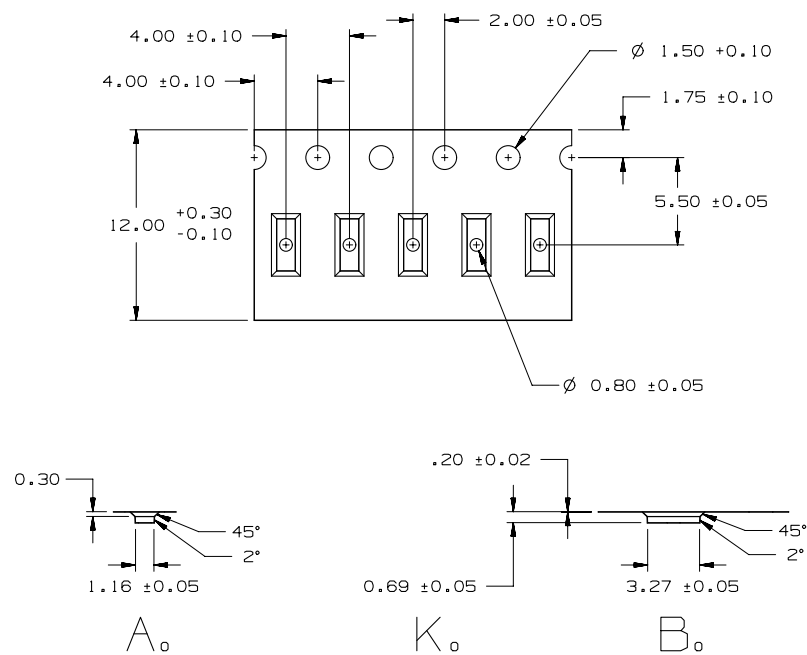


Figure 9. Tape dimension definitions



### 3 Ordering information

Figure 10. Ordering information scheme

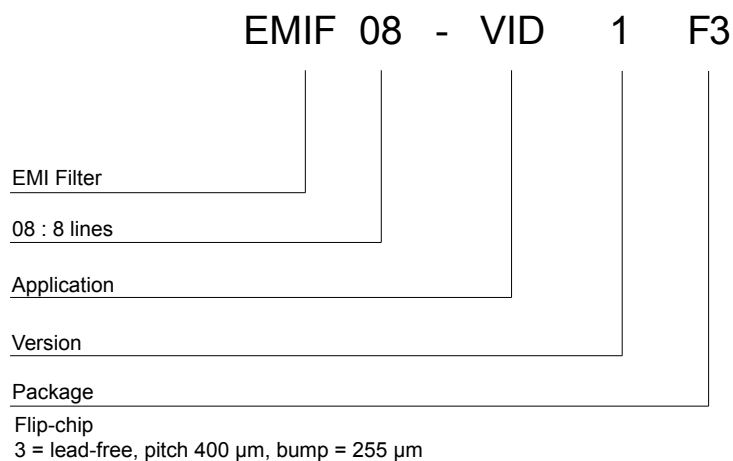


Table 4. Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
EMIF08-VID1F3	LN	WLCSP 20 bumps	7.2 mg	5000	Tape and reel

## Revision history

**Table 5. Document revision history**

Date	Revision	Changes
19-May-2017	1	Initial release.
03-Apr-2023	2	Updated pin configuration (bump side view) figure on coverpage, and <i>Figure 6. WLCSP 20 bumps package outline</i> . Minor text changes.
12-Mar-2024	3	Updated <a href="#">Figure 6</a> , and added <a href="#">Table 3</a> .

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