

CBTVS2A12-1F3

Datasheet - production data

Circuit breaker with transient voltage suppressor

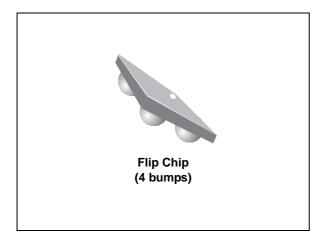


Figure 1. Pin configuration (bump side)

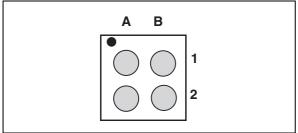
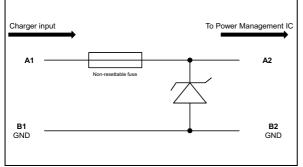


Figure 2. Configuration^(a)



a. B1 and B2 bumps must be grounded on the PCB together.

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Features

- Transient voltage suppressor (TVS)
- Non-resettable over current protection (OCP)
- Electrostatic discharge protection
- Electrical overstress protection (OVP)
- Unidirectional device
- Fast response time
- Very thin package: 0.4 mm
- High ESD protection level
- High integration
- Suitable for high density boards

Complies with the following standards:

- IEC 61000-4-2 level 4:
 - ±15 kV (air discharge)
 - ±15 kV (contact discharge)

Description

The CBTVS2A12-1F3 is a single line diode TVS integrating a fuse designed specifically for the protection of integrated circuits in portable equipment and miniaturized electronics devices subject to ESD, OVP and OCP.

This is information on a product in full production.

1 Characteristics

Symbol	Parameter	Test condition	Value	Unit	
V	Peak pulse voltage	IEC 61000-4-2 contact discharge	15	– kV	
V _{PP}		IEC 61000-4-2 air discharge	15		
P _{PP}	Peak pulse power dissipation	10/1000 μ s pulse, on A2-B2, T _j = T _{amb}	44	— w	
		8/20 µs pulse, on A2-B2, T _j = T _{amb}	350		
Тj	Maximum operating junction temperature		125	°C	
T _{stg}	Storage temperature range		-55 to +150	°C	

Table 1. Absolute maximum ra	atings ($T_{\rm max} = 25$ °C)
	10193(1amh - 200)

Figure	3	Electrical	characteristics	(definitions)
Iguie	э.	Liectifical	characteristics	(ueminions)

Symb	ol	Parameter	IF
V_{BR}	=	Breakdown voltage	• F
V _{CL}	=	Clamping voltage	
I _{RM}	=	Leakage current @ V _{BM}	
V _{RM}	=	Stand-off voltage	
l _F	=	Forward current	
R _d	=	Dynamic impedance	l l l l l l l l l l l l l l l l l l l
I _{PP}	=	Peak pulse current	
I _R	=	Breakdown current	
V _F	=	Forward voltage drop	Slope = 1/Rd

Table 2. Electrical characteristics (at operating temperature: T_{op} = -30 °C to +85 °C, unless otherwise specified)

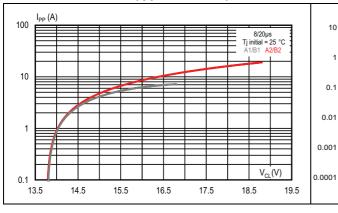
Symbol	Test conditions	Min.	Тур.	Max.	Unit
V _{BR}	$I_R = 1 \text{ mA}, T_{amb} = 25 \text{ °C}$	12			V
I _{RM}	V_{RM} = 10 V, at T_{amb} = 25 °C			100	nA
V _{CL}	I_{PP} = 1 A, 8/20 µs pulse waveform, between A1-B1 at T_{amb} = 25 °C			15	V
V _F	I _F = 850 mA, between A1-B1			1.4	V
C _{line}	$V_R = 0 V$, $V_{OSC} = 30 mV$, $F = 1 MHz$		180		pF
R _{A1-A2}	At T _{amb} = 25 °C at 100 mA			50	mΩ
R _{A1-A2}	After fused	1			MΩ
T _{Fuse}	At 5 A (maximum opening time) A ₁ -A ₂ , A ₂ -A ₁			100	ms
T _{Fuse2}	At 3.2 A, A ₁ -A ₂ , A ₂ -A ₁			24	hours
T _{fuse Lifetime}	$I_{DC} = 2 \text{ A}$ (continuous current) at $T_{amb} = 25 \text{ °C}$	500			hours

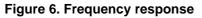


Tj init = 25 °C

1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 V_{EM}(V

Figure 4. Clamping voltage versus peak pulse current (typical values)





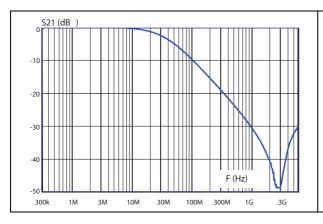


Figure 8. ESD response to IEC 61000-4-2 (+8 kV contact discharge)

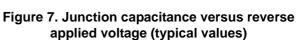


Figure 5. Forward voltage drop versus peak

forward current (typical values)

I_{FM} (A)

0.6 0.7 0.8 0.9

1

10

0.1

0.01

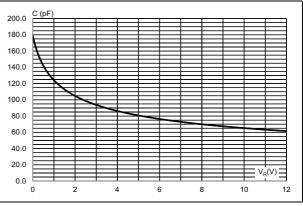
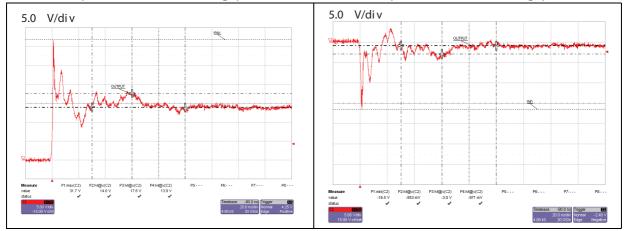


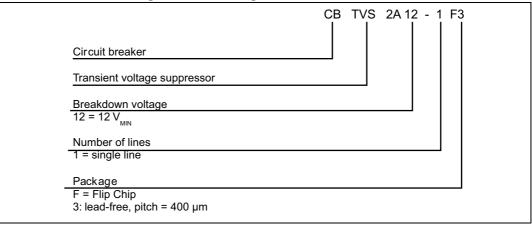
Figure 9. ESD response to IEC 61000-4-2 (-8 kV contact discharge)



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2 Ordering information scheme

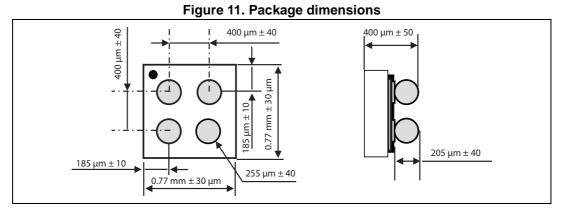
Figure	10.	Ordering	information	scheme
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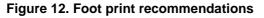


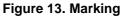


3 Package information

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: <u>www.st.com</u>. ECOPACK[®] is an ST trademark.







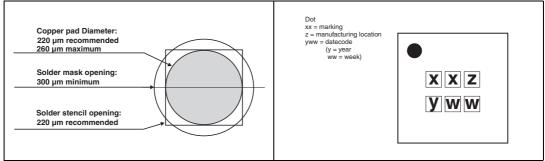
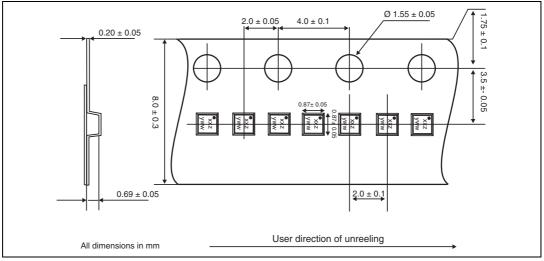


Figure 14. Tape and reel specifications





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Note:More information is available in the application notes:AN2348: "400 μm Flip Chip: Package description and recommendations for use"AN1751: "EMI Filters: Recommendations and measurements"

4 Ordering information

Table 5. Ordering mormation					
Order code	Marking	Package	Weight	Base qty	Delivery mode
CBTVS2A12-1F3	EB	Flip Chip	0.659 mg	10 000	Tape and reel (7")

Table 3. Ordering information

5 Revision history

Table 4. Document	revision history
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Date	Revision	Changes
19-May-2014	1	Initial release.



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