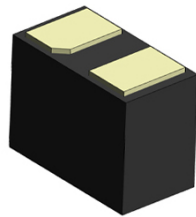


# STN06 1050B351

## TVS Diode ESD suppressor



### Product features

- Protects one bi-directional I/O line
- DFN0603-2L package size
- Low clamping voltage
- Low operating voltage: 5.0 V
- Low leakage current
- Ultra-low capacitance
- Meets moisture sensitivity level (MSL) 1
- Molding compound flammability rating: UL 94V-0

### Applications

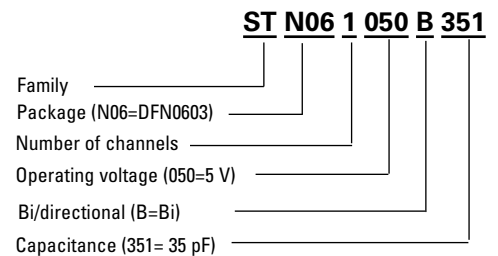
- USB ports
- Display port
- Wireless communications
- Digital visual interface (DVI)
- Cellular handsets & accessories

### Environmental compliance and general specifications

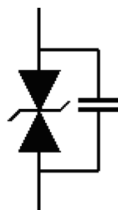
- IEC61000-4-2 (ESD)
  - ± 30 kV (air)
  - ± 30 kV (contact)



### Ordering part number



### Pin out/functional diagram



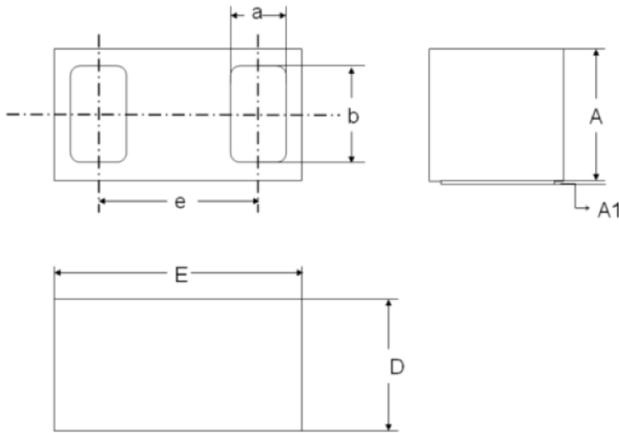
**Electrical characteristics**

(+25 °C)

**STN061050B351**

Parameter	Test condition	Minimum	Typical	Maximum	Symbol (Units)
Operating supply voltage		-	5	-	$V_{dc}$
Reverse stand-off voltage		-5	-	5	$V_{RWM}$ (V)
Reverse breakdown voltage	$I_{BV} = 1 \text{ mA}$ , $T = +25 \text{ °C}$	6.2	8	9.8	$V_{BV}$ (V)
Reverse leakage current	$V_{RWM} = 5 \text{ V}$ , $T = +25 \text{ °C}$	-	-	1	$I_{Leak}$ ( $\mu\text{A}$ )
Peak pulse current	$t_p = 8/20 \text{ }\mu\text{s}$	-	19	-	$I_{PP}$ (A)
Clamping voltage	$I_{TLP} = 1 \text{ A}$ (100 ns transmission line)	-	6.5	-	$V_{TLP}$ (V)
	$I_{TLP} = 16 \text{ A}$ (100 ns transmission line)	-	8.4	-	$V_{TLP}$ (V)
Channel input capacitance	$V_R = 0 \text{ V}$ , $f = 1 \text{ MHz}$	-	35	-	$C_{IN}$ (pF)
ESD per IEC 61000-4-2 (Air)	-	-	$\pm 30$	-	$V_{ESD}$ (kV)
ESD per IEC 61000-4-2 (Contact)	-	-	$\pm 30$	-	$V_{ESD}$ (kV)
Lead soldering temperature	-	-	260 (20 to 40 seconds)	-	$T_{SOL}$ °C
Operating temperature range	-	-55	-	+85	$T_{OP}$ °C

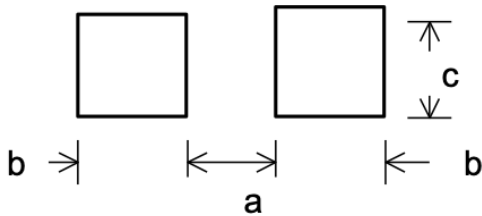
**Mechanical parameters- mm**



Dimension	Value
A	0.27 ± 0.05
A1	0.015 REF
a	0.15 ± 0.05
b	0.21 ± 0.05
e	0.35 REF
D	0.3 ± 0.05
E	0.6 ± 0.05

Part marking: (No marking)

**Recommended pad layout**



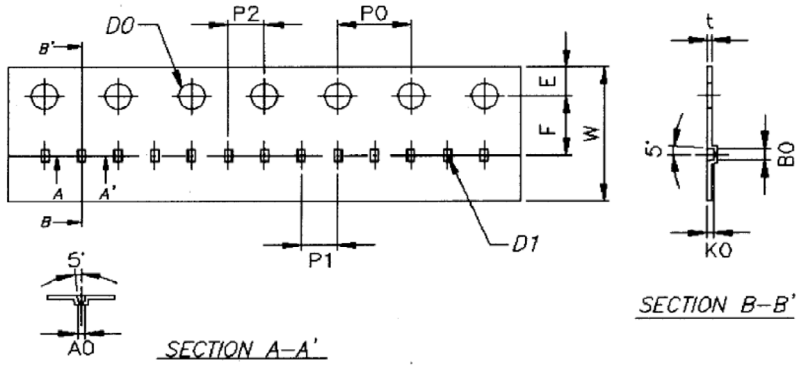
Dimension	Value
a	0.18 to 0.28
b	0.25 to 0.30
c	0.3 to 0.4

Print solder in a thickness of 80 to 100  $\mu\text{m}$

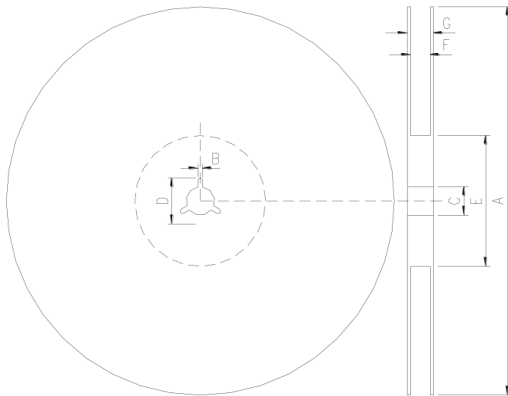
**Packaging information- mm/inches**

Drawing not to scale.

Supplied in tape and reel packaging, 15,000 parts per 7" diameter reel (EIA-481 compliant)



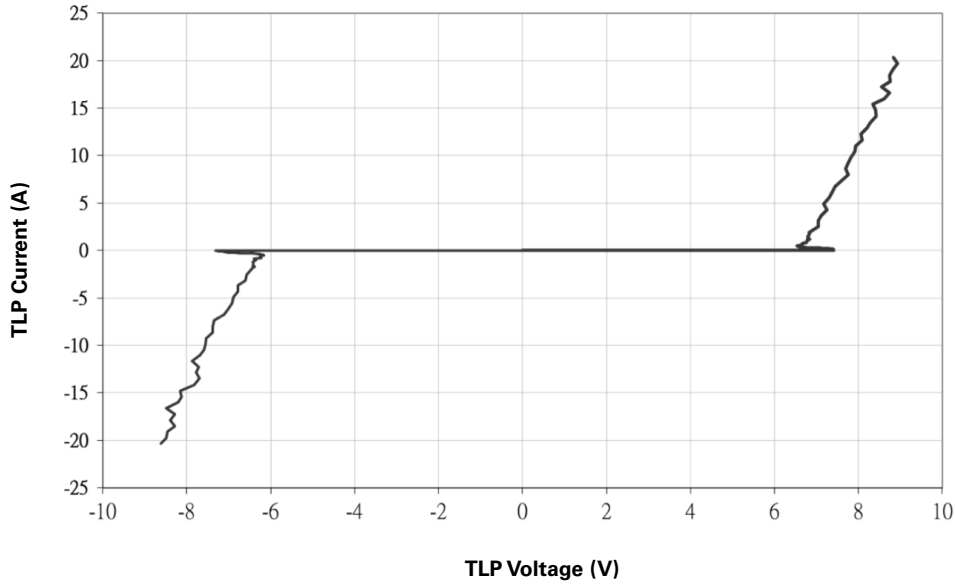
Dimension	Milimeter	Tolerance
W	8	±0.02
P1	2	±0.1
E	1.75	±0.1
F	3.5	±0.1
D0	1.5	0.1
D1	0.2	±0.1
P0	4	±0.1
P0 x 10	40	±0.2
P2	2	±0.05
A0	0.39	±0.03
B0	0.69	±0.04
K0	0.32	±0.05
t	0.20	±0.05



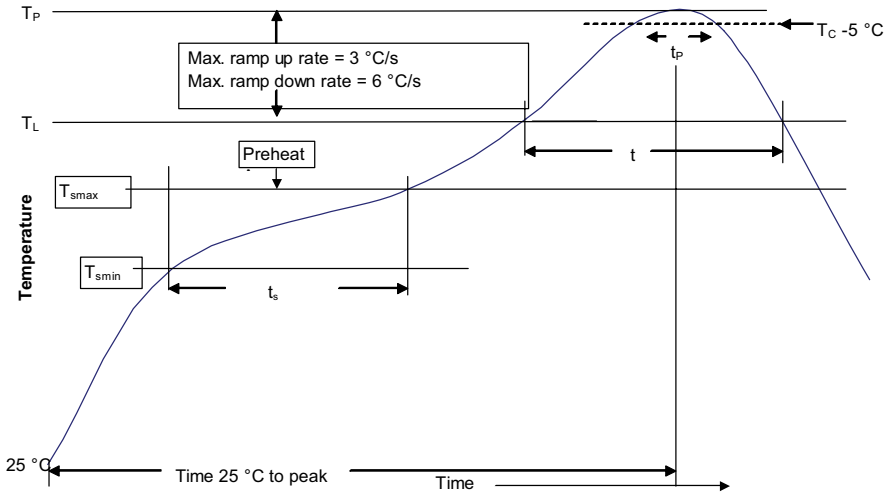
Dimension	Milimeter	Tolerance
A	178	±2.0
B	2	±0.5
C	13	±0.5
D	21	±0.8
E	62	±1.5
F	9	±0.5
G	13	±1.0

**Ratings and V-I characteristic curves** (+25 °C unless otherwise noted)

**Typical characteristics**



**Solder reflow profile**



**Table 1 - Standard SnPb solder ( $T_C$ )**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

**Table 2 - Lead (Pb) free solder ( $T_C$ )**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

**Reference J-STD-020**

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak		
• Temperature min. ( $T_{smin}$ )	100 °C	150 °C
• Temperature max. ( $T_{smax}$ )	150 °C	200 °C
• Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	60-120 seconds	60-120 seconds
Ramp up rate $T_L$ to $T_p$	3 °C/ second max.	3 °C/ second max.
Liquidous temperature ( $T_L$ )	183 °C	217 °C
Time ( $t_L$ ) maintained above $T_L$	60-150 seconds	60-150 seconds
Peak package body temperature ( $T_p$ )*	Table 1	Table 2
Time ( $t_p$ )* within 5 °C of the specified classification temperature ( $T_C$ )	20 seconds*	30 seconds*
Ramp-down rate ( $T_p$ to $T_L$ )	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

\* Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

**Manual solder**

+330 °C, 6 seconds maximum, 30 W maximum soldering iron, generally manual/hand soldering is not recommended

Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

**Eaton**  
**Electronics Division**  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
Eaton.com/electronics

© 2022 Eaton  
All Rights Reserved  
Printed in USA  
Publication No. ELX1240 BU-ELX22102  
October 2022

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

Follow us on social media to get the latest product and support information.

