

STN06XXXB101

TVS Diode ESD suppressor



Product features

- Protects one bi-directional I/O line
- Low clamping voltage
- Low operating voltage
- Low leakage current
- Ultra-low capacitance
- Meets moisture sensitivity level (MSL) 3
- Molding compound flammability rating: UL 94V-0
- Termination finish: Ni/Pd/Au

Applications

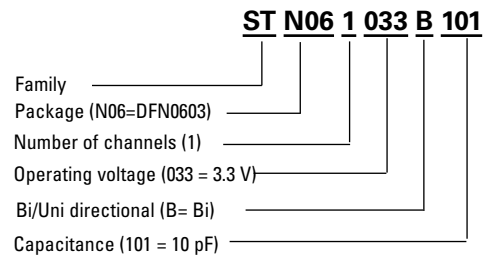
- Cellular handsets and accessories
- Wearables
- Notebooks, desktops, and servers
- Portable instrumentation
- Communication systems
- Microprocessor based equipment

Environmental compliance and general specifications

- IEC61000-4-2 (ESD)
 - Up to ± 30 kV (air)
 - Up to ± 30 kV (contact)
- IEC61000-4-5 (Lightning) Up to 7 A (8/20 μ s)



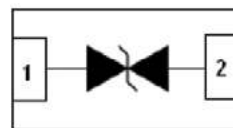
Ordering part number



Pin out/functional diagram



DFN0603-2L



PIN Configuration

Absolute maximum ratings

(+25 °C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value		Unit
		STN061033B101	STN061050B101	
Peak pulse power dissipation on 8/20 μs waveform	P_{pp}	60	80	W
ESD per IEC 61000-4-2 (Air)	V_{ESD}	+/-30	+/-30	kV
ESD per IEC 61000-4-2 (Contact)		+/-30	+/-30	
Lead soldering temperature	T_L	+260 (10 seconds)	+260 (10 seconds)	°C
Operating junction temperature range	T_J	-55 to +125	-55 to +125	°C
Storage temperature range	T_{STG}	-55 to +150	-55 to +150	°C

Electrical characteristics

(+25 °C)

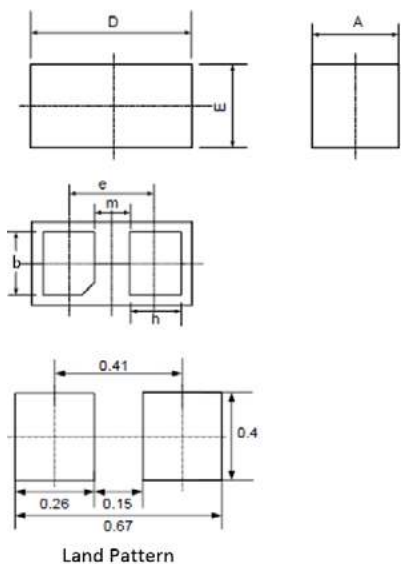
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Parameter	Test condition	Minimum	Typical	Maximum	Symbol (Units)
Reverse working voltage	-	-	-	3.3	V_{RWM} (V)
Reverse breakdown voltage	$I_T = 1$ mA	3.7	-	-	V_{BR} (V)
Reverse leakage current	$V_{RWM} = 3.3$ V	-	-	100	I_R (μA)
Peak pulse current	$t_p = 8/20$ μs	-	-	7	I_{pp} (A)
Clamping voltage	$I_{pp} = 1$ A, $t_p = 8/20$ μs	-	5.5	7	V_C (V)
	$I_{pp} = 7$ A, $t_p = 8/20$ μs	-	8.5	10	V_C (V)
Junction capacitance	$V_{RWM} = 0$ V, $f = 1$ MHz	-	10	15	C_J (pF)

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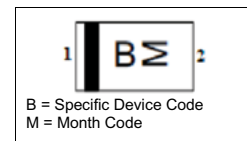
Parameter	Test condition	Minimum	Typical	Maximum	Symbol (Units)
Reverse working voltage	-	-	-	5	V_{RWM} (V)
Reverse breakdown voltage	$I_T = 1$ mA	5.5	-	-	V_{BR} (V)
Reverse leakage current	$V_{RWM} = 5$ V	-	-	100	I_R (μA)
Peak pulse current	$t_p = 8/20$ μs	-	-	5	I_{pp} (A)
Clamping voltage	$I_{pp} = 1$ A, $t_p = 8/20$ μs	-	9.5	11	V_C (V)
	$I_{pp} = 5$ A, $t_p = 8/20$ μs	-	13	15	V_C (V)
Junction capacitance	$V_{RWM} = 0$ V, $f = 1$ MHz	-	10	15	C_J (pF)

Mechanical parameters, pad layout- mm

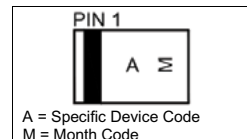


Dimension	Minimum	Maximum
A	0.28	0.32
D	0.55	0.65
E	0.25	0.35
b	0.20	0.30
e	0.350	
m	0.165	
h	0.14	0.24

Part marking



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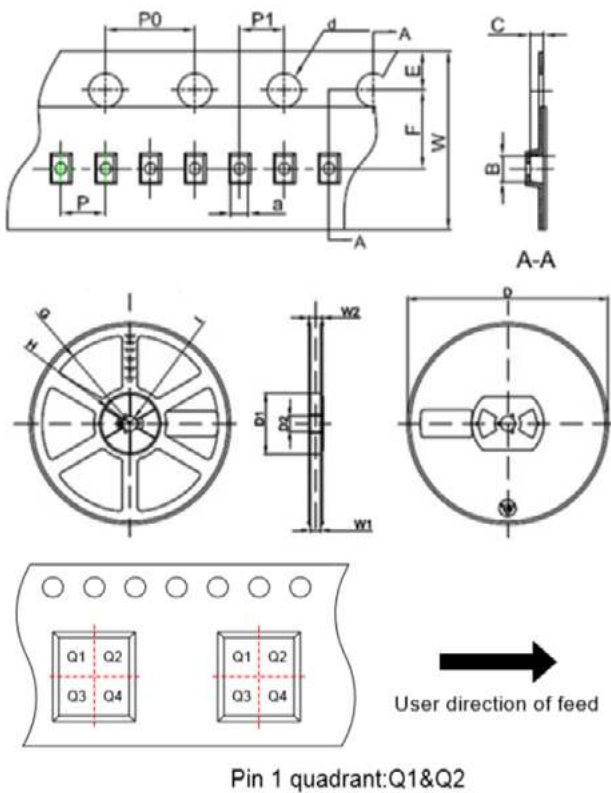


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Packaging information mm/inches

Drawing not to scale.

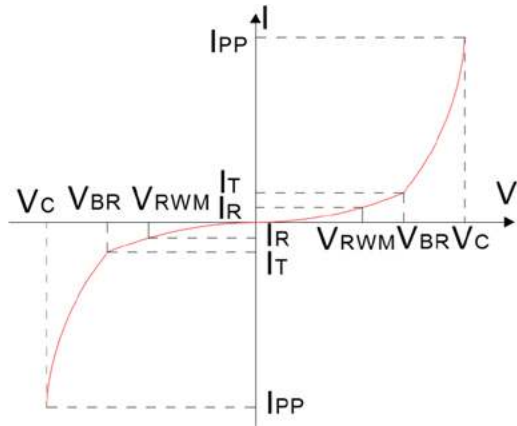
Supplied in tape and reel packaging, 10,000 parts per 7" diameter reel (EIA-481 compliant)



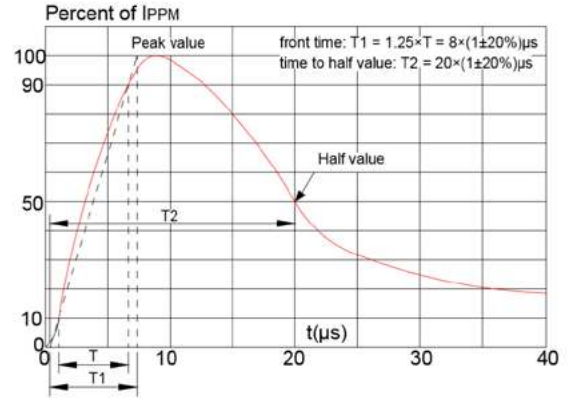
Symbol	Millimeters	Inches
	Typ.	Typ.
a	0.41	0.016
B	0.70	0.028
C	0.38	0.015
d	Φ1.50	Φ0.059
E	1.75	0.069
F	3.50	0.138
P0	4.00	0.157
P	2.00	0.079
P1	2.00	0.079
W	8.00	0.315
D	Φ178	Φ7.008
D1	54.40	2.142
D2	13.00	0.512
G	R78.00	R3.071
H	R25.60	R1.008
I	R6.50	R0.256
W1	9.50	0.374
W2	12.30	0.484

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

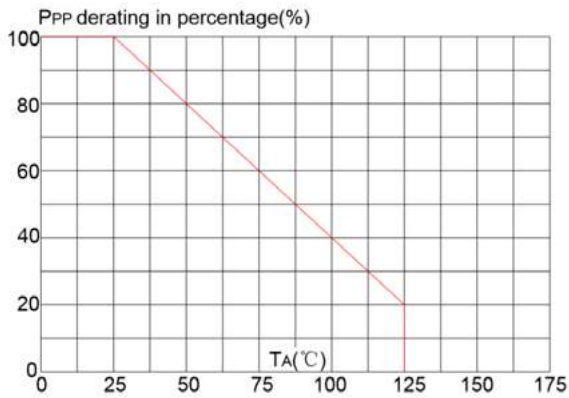
V- I curve characteristics (Bi-directional)



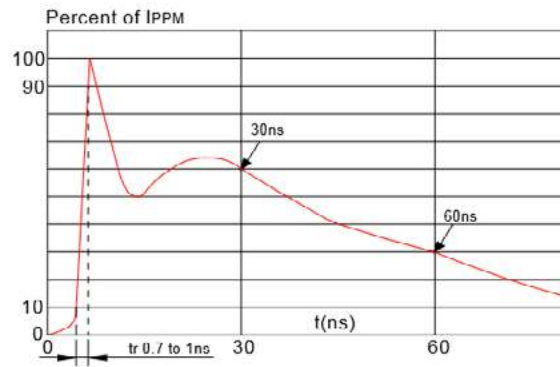
Pulse waveform (8/20 μ s)



Pulse derating curve



ESD waveform



Solder reflow profile

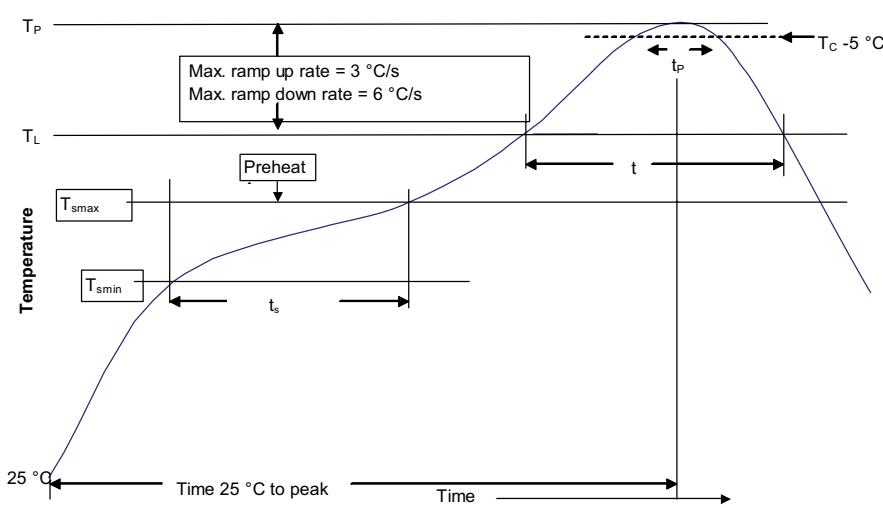


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥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 ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >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.

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Publication No. 11130 BU-MC20112
September 2020

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