

# STN265033U380

## TVS Diode array ESD suppressor



### Product features

- 450 Watts peak pulse power per line ( $t_p = 8/20 \mu s$ )
- Protects four I/O lines and one  $V_{CC}$  line
- Low clamping voltage
- Ultra low capacitance: <3 pF for high-speed interfaces
- Working voltage: 3.3 V
- Low leakage current
- Meets moisture sensitivity level (MSL) 3
- Molding compound flammability rating: UL 94V-0
- Termination finish: Ni/Pd/Au

### Applications

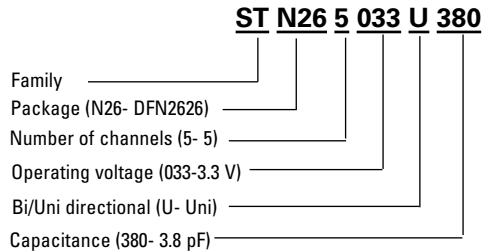
- USB interfaces
- 10/100/1000 ethernet
- DVI interfaces
- Wireless data (WAN/LAN) systems
- Analog video
- T1/E1 secondary protection
- T3/E3 secondary protection

### Environmental compliance and general specifications

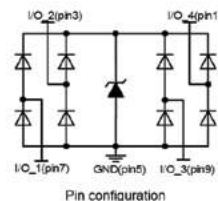
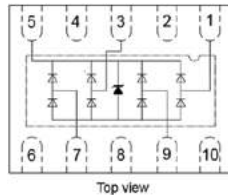
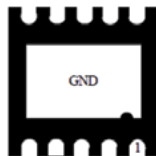
- IEC61000-4-2 (ESD)
  - $\pm 30$  kV (air)
  - $\pm 30$  kV (contact)
- IEC61000-4-5 (Lightning) 25 A (8/20  $\mu s$ )



### Ordering part number



### Pin out/functional diagram



**Absolute maximum ratings**

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

**STN265033U380**

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 8/20 μs waveform	$P_{PP}$	450	W
ESD per IEC 61000-4-2 (Air)	$V_{ESD}$	+/-30	kV
ESD per IEC 61000-4-2 (Contact)		+/-30	
Lead soldering temperature	$T_L$	+260 (10 seconds)	°C
Operating junction temperature range	$T_J$	-55 to +125	°C
Storage temperature range	$T_{STG}$	-55 to +150	°C

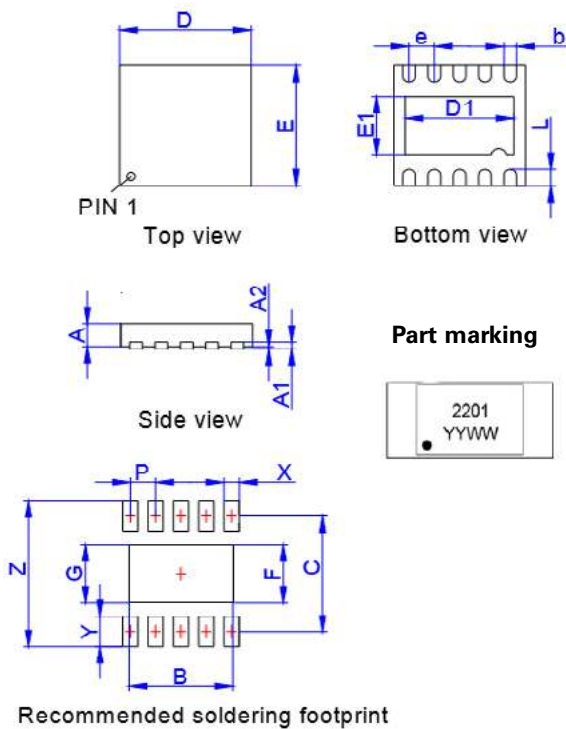
**Electrical characteristics**

(+25 °C)

**STN265033U380**

Parameter	Test condition	Minimum	Typical	Maximum	Symbol (Units)
Reverse working voltage	Any pin to ground	-	-	3.3	$V_{RWM}$ (V)
Reverse breakdown voltage	$I_r = 1$ mA pin to ground	3.7	-	-	$V_{BR}$ (V)
Reverse holding voltage	$I_h = 50$ mA	3.5	-	-	$V_h$ (V)
Reverse leakage current	$V_{RWM} = 3.3$ V	-	-	0.1	$I_R$ (μA)
Clamping voltage	$I_{PP} = 5$ A, $t_p = 8/20$ μs I/O pin to GND	-	-	10	$V_c$ (V)
	$I_{PP} = 25$ A, $t_p = 8/20$ μs I/O pin to GND	-	-	16	$V_c$ (V)
Junction capacitance	$V_{RWM} = 0$ V, $f = 1$ MHz Between I/O pins	-	2	-	$C_j$ (pF)
	$V_{RWM} = 0$ V, $f = 1$ MHz I/O pin to GND	-	3.8	5	$C_j$ (pF)

**Mechanical parameters, pad layout- mm/inches**

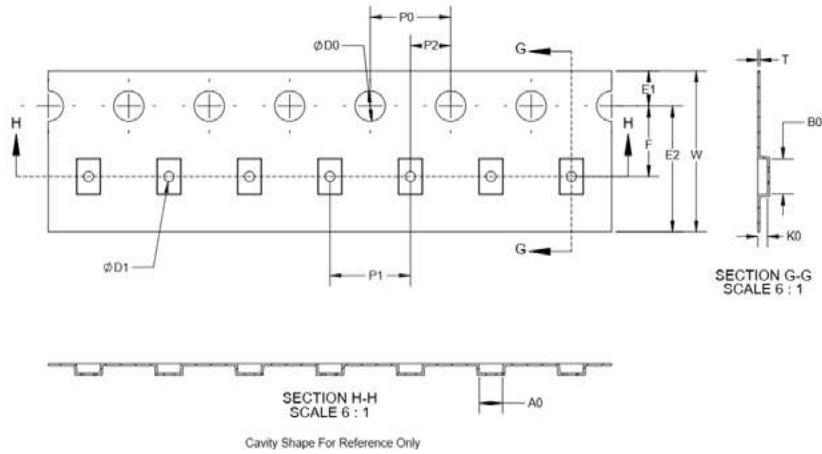


Dimension	Millimeters			Inches		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
D	2.55	2.60	2.65	0.100	0.102	0.104
E	2.55	2.60	2.65	0.100	0.102	0.104
D1	2.10	2.15	2.20	0.083	0.085	0.087
E1	1.21	1.26	1.31	0.048	0.050	0.052
L	0.30	0.35	0.40	0.012	0.014	0.016
b	0.20	0.25	0.30	0.008	0.010	0.012
e	0.50 BSC			0.020 BSC		
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.15 REF			0.006 REF		
A2	0.00	0.02	0.05	0.000	0.001	0.002
B	2.05			0.081		
C	2.50			0.098		
F	1.26			0.050		
G	1.85			0.073		
P	0.50			0.020		
X	0.30			0.012		
Y	0.65			0.026		
Z	3.15			0.124		

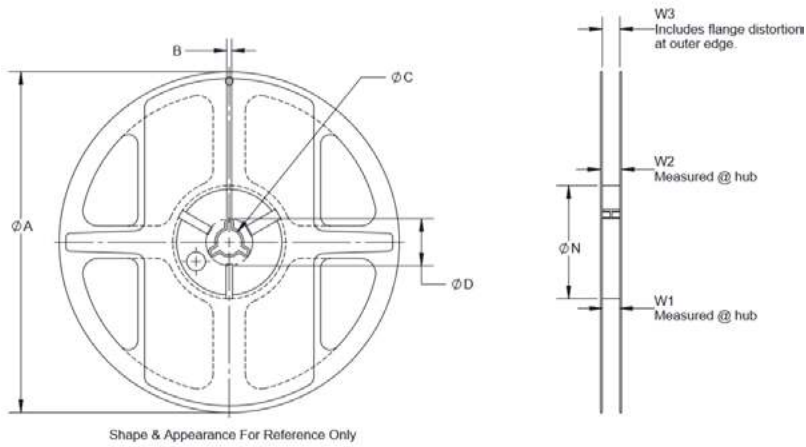
**Packaging information mm/inches**

Drawing not to scale.

Supplied in tape and reel packaging, 3,000 parts per 7" diameter reel (EIA-481 compliant)



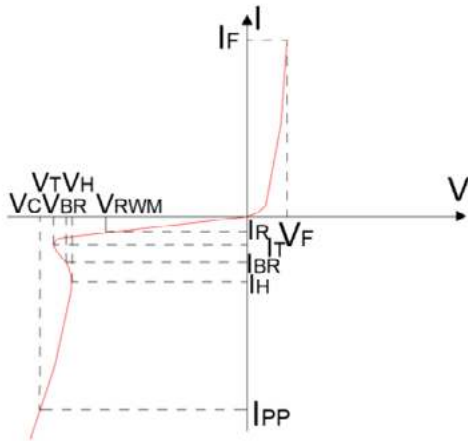
W	8.00
F	3.50
E1	1.75
E2	N/A
P0	4.00
P1	4.00
P2	2.00
ØD0	1.50
ØD1	N/A
A0	2.73
B0	2.78
K0	0.97
T	N/A



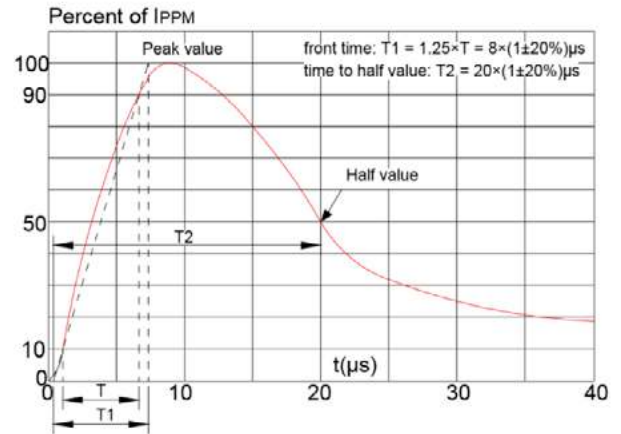
A	178.00
B	N/A
C	13.00
D	N/A
N	54.40
W1	9.50
W2	12.30
W3	N/A

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

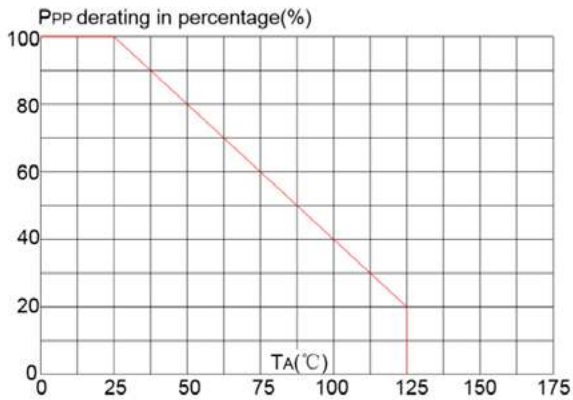
**V- I curve characteristics (Uni-directional)**



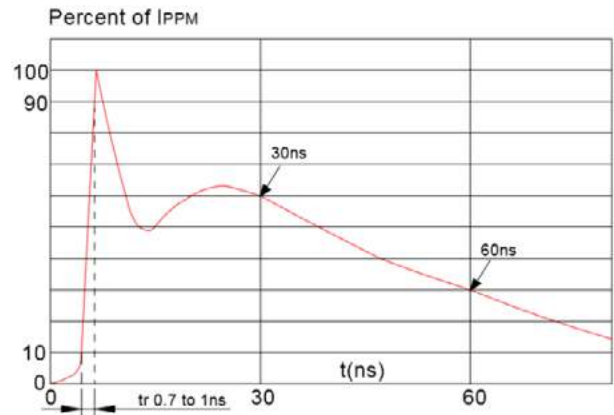
**Pulse waveform (8/20 μs)**



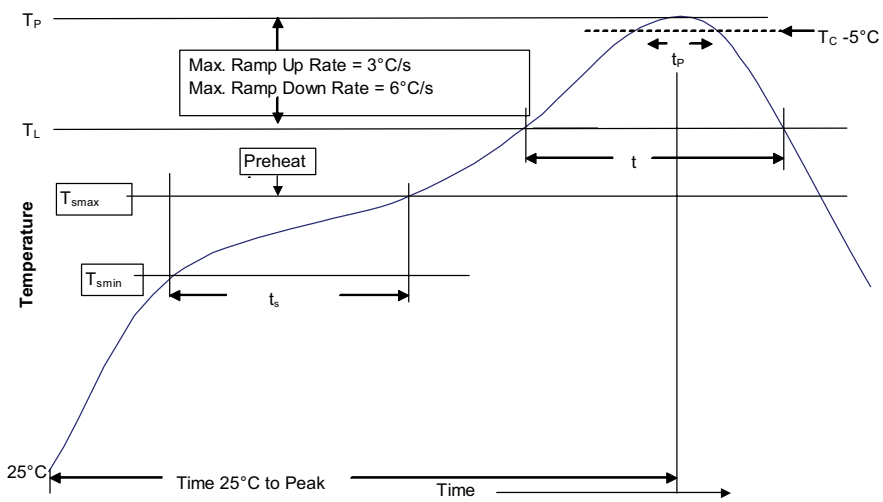
**Pulse derating curve**



**ESD waveform**



**Solder reflow profile**



**Table 1 - Standard SnPb solder (T<sub>C</sub>)**

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<sub>C</sub>)**

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 <sub>smin</sub> )	100 °C	150 °C
• Temperature max. (T <sub>smax</sub> )	150 °C	200 °C
• Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	60-120 seconds	60-120 seconds
Ramp up rate T <sub>L</sub> to T <sub>p</sub>	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T <sub>L</sub> )	183 °C	217 °C
Time (t <sub>L</sub> ) maintained above T <sub>L</sub>	60-150 seconds	60-150 seconds
Peak package body temperature (T <sub>p</sub> )*	Table 1	Table 2
Time (t <sub>p</sub> )* within 5 °C of the specified classification temperature (T <sub>C</sub> )	20 seconds*	30 seconds*
Ramp-down rate (T <sub>p</sub> to T <sub>L</sub> )	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<sub>p</sub>) is defined as a supplier minimum and a user maximum.

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Printed in USA  
Publication No. 11144 BU-MC20126  
September 2020

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