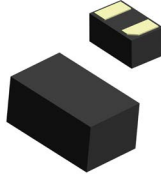


STN101050BLXXAH

Automotive TVS diode ESD suppressor



Product features

- AEC-Q101
- Protects one bi-directional I/O line
- Low clamping voltage
- Low capacitance
- High peak power
- Meets moisture sensitivity level (MSL) 1
- Molding compound flammability rating: UL 94V-0

Applications

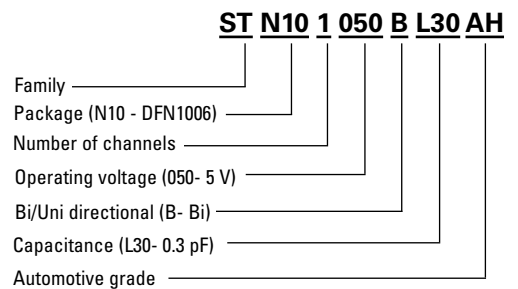
- Automotive chassis and safety systems
- Advanced driver assistance systems (ADAS)
- Communication and infotainment systems
- CAN-bus, LIN and Ethernet communication modules
- Network systems and body electronics
- Power train controls
- Automotive lighting

Environmental compliance and general specifications

- IEC61000-4-2 (ESD) Up to ± 25 kV (air), ± 25 kV (contact)
- IEC61000-4-4 (EFT) 40 A (5/50 ns)
- IEC61000-4-5 (Lightning) 4 A (8/20 μ s) STN101050BL25AH
- IEC61000-4-5 (Lightning) 4.5 A (8/20 μ s) STN101050BL30AH



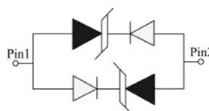
Ordering part number



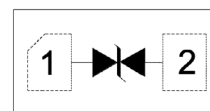
DFN1006-2L
(bottom view)



Pin configuration
STN101050BL25AH



Pin configuration
STN101050BL30AH



Product Specifications

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

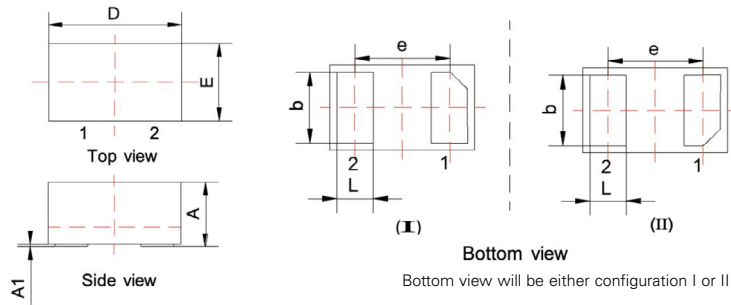
STN101050BL25AH

Parameter	Test condition	Minimum	Typical	Maximum	Symbol (Units)
Peak pulse power dissipation	8/20 μ s waveform	-	60	-	P_{PP} (W)
ESD per IEC 61000-4-2 (Air)	-	-	± 25	-	V_{ESD} (kV)
ESD per IEC 61000-4-2 (Contact)	-	-	± 25	-	V_{ESD} (kV)
Lead soldering temperature	-	-	-	+260 (10 seconds)	T_L ($^{\circ}$ C)
Operating junction temperature range	-	-55	-	+150	T_J ($^{\circ}$ C)
Storage temperature range	-	-55	-	+150	T_{STB} ($^{\circ}$ C)
Reverse working voltage	-	-	-	5.0	V_{RWM} (V)
Reverse breakdown voltage	$I_T = 1$ mA	6.0	-	-	V_{BR} (V)
Reverse leakage current	$V_{RWM} = 5$ V	-	-	0.1	I_R (μ A)
Peak pulse current	$t_p = 8/20$ μ s	-	-	4	I_{PP} (A)
Clamping voltage	$I_{PP} = 1$ A, $t_p = 8/20$ μ s	-	9.5	10.5	V_C (V)
	$I_{PP} = 3$ A, $t_p = 8/20$ μ s	-	10	12.5	V_C (V)
	$I_{PP} = 4$ A, $t_p = 8/20$ μ s	-	12.5	15	V_C (V)
Junction capacitance	$V_{RWM} = 0$ V, $f = 1$ MHz	-	0.25	0.5	C_J (pF)

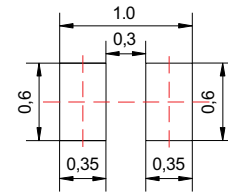
STN101050BL30AH

Parameter	Test condition	Minimum	Typical	Maximum	Symbol (Units)
Peak pulse power dissipation	8/20 μ s waveform	-	100	-	P_{PP} (W)
ESD per IEC 61000-4-2 (Air)	-	-	± 20	-	V_{ESD} (kV)
ESD per IEC 61000-4-2 (Contact)	-	-	± 20	-	V_{ESD} (kV)
Lead soldering temperature	-	-	-	+260 (10 seconds)	T_L ($^{\circ}$ C)
Operating junction temperature range	-	-55	-	+150	T_J ($^{\circ}$ C)
Storage temperature range	-	-55	-	+150	T_{STB} ($^{\circ}$ C)
Reverse working voltage	-	-	-	5.0	V_{RWM} (V)
Reverse breakdown voltage	$I_T = 1$ mA	6.0	-	-	V_{BR} (V)
Reverse leakage current	$V_{RWM} = 5$ V	-	-	1.0	I_R (μ A)
Peak pulse current	$t_p = 8/20$ μ s	-	-	4.5	I_{PP} (A)
Clamping voltage	$I_{PP} = 1$ A, $t_p = 8/20$ μ s	-	10	12.5	V_C (V)
	$I_{PP} = 2.5$ A, $t_p = 8/20$ μ s	-	15	18	V_C (V)
	$I_{PP} = 4.5$ A, $t_p = 8/20$ μ s	-	25	30	V_C (V)
Junction capacitance	$V_{RWM} = 0$ V, $f = 1$ MHz	-	0.3	0.5	C_J (pF)

Mechanical parameters - mm/inches



Recommended pad layout- mm



Dimension	Millimeters			Inches		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
A	0.4	0.5	0.55	0.016	0.020	0.022
A1	-	0.02	0.05	-	0.001	0.002
b	0.45	0.5	0.55	0.018	0.020	0.022
D	0.95	1.0	1.05	0.037	0.039	0.041
e	-	0.65 BSC	-	-	0.026 BSC	-
E	0.55	0.6	0.65	0.022	0.024	0.026
L	0.2	0.25	0.3	0.008	0.010	0.012

Marking code
STN101050BL25AH



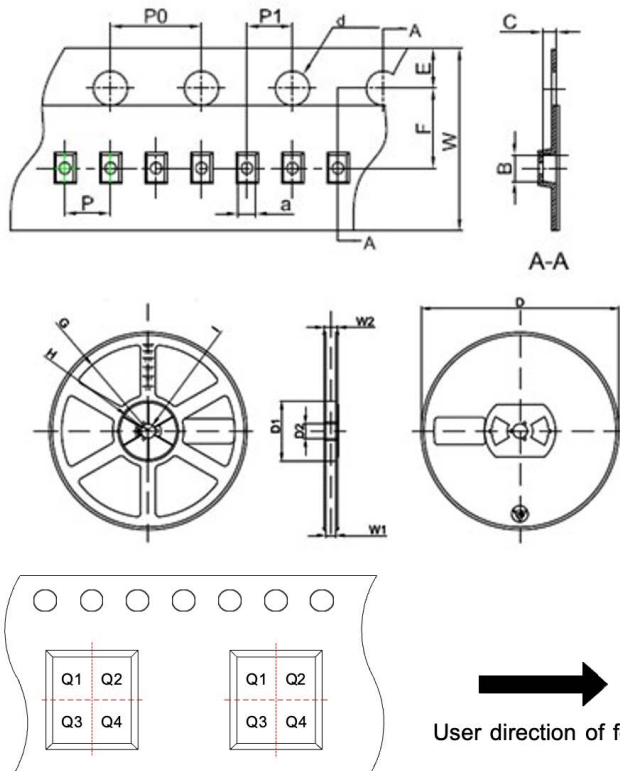
Marking code
STN101050BL30AH



Packaging information- mm/inches

Drawing not to scale.

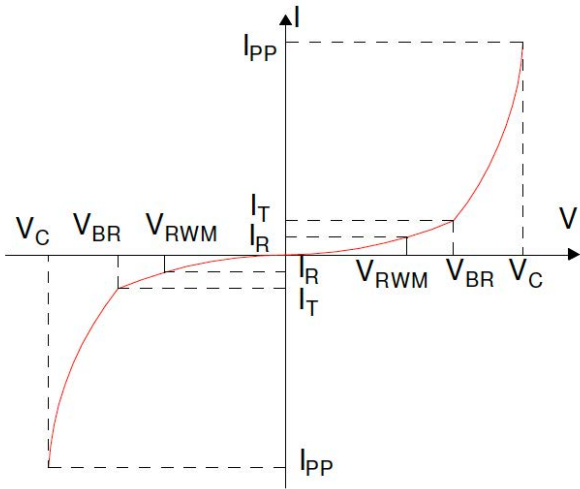
Supplied in tape and reel packaging, 10,000 parts per 7" diameter reel (EIA-481 compliant)



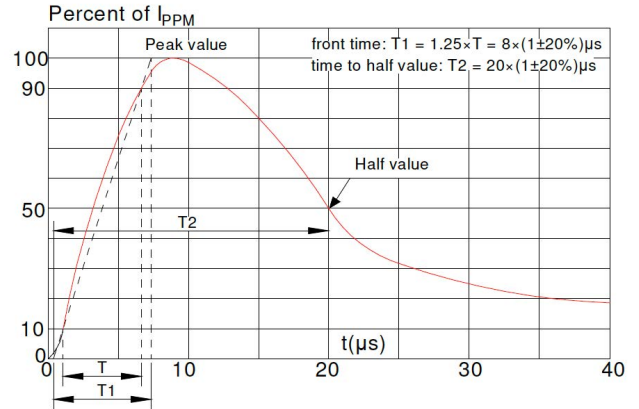
Dimension	Millimeter (typical)	Inches (typical)
a	0.66	0.026
B	1.15	0.045
C	0.66	0.026
d	1.50	0.059
E	1.75	0.069
F	3.50	0.138
P0	4	0.157
P	2	0.079
P1	2	0.079
W	8	0.315
D	178	7.008
D1	54.40	2.142
D2	13	0.512
G	R78	R3.071
H	R25	R1.008
I	R6.50	R0.256
W1	9.50	0.374
W2	12.30	0.484

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

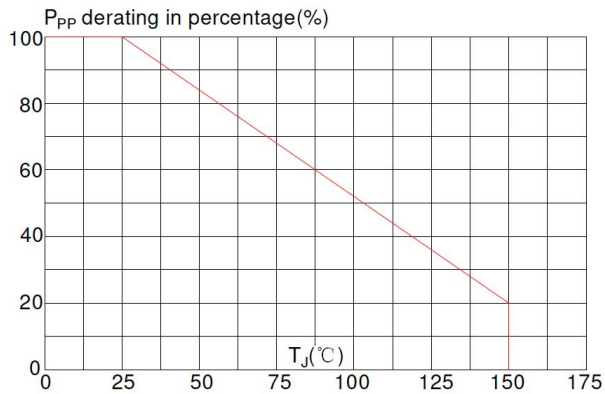
V- I curve characteristics (Bi-directional)



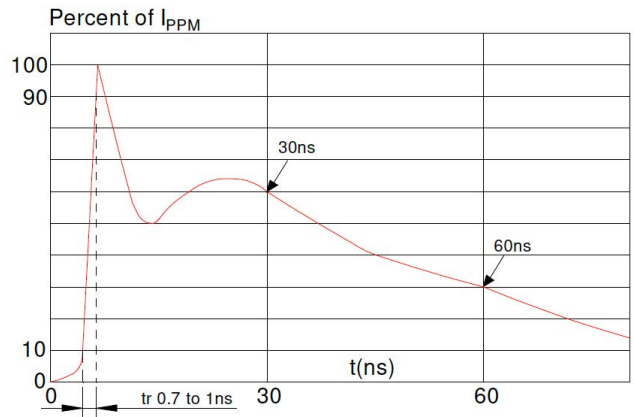
Pulse waveform (8/20 μ s)



Pulse derating curve



ESD waveform (15 kV contact)



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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