

Features

- Transient protection for high-speed data lines
IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Air)
 $\pm 30\text{kV}$ (Contact)
IEC 61000-4-5 (Surge) 4A (8/20 μs)
- Protects two data, control or CAN bus lines
- Low capacitance: 12pF (Typical)
- Low leakage current: 0.01 μA @ V_{RWM} (Typical)
- Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge
- AEC-Q101 Qualified

Description

SAT03N24AOA is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for data, control or power lines. With typical capacitance of 12pF only, SAT03N24AOA is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), ($\pm 30\text{kV}$ air, $\pm 30\text{kV}$ contact discharge), IEC 61000-4-5 (Surge) (4A, 8/20 μs), etc.

SAT03N24AOA uses small SOT-23 package. Each SAT03N24AOA device can protect two automotive Controller Area Network (CAN) bus lines. It offers system designers flexibility to protect two data lines.

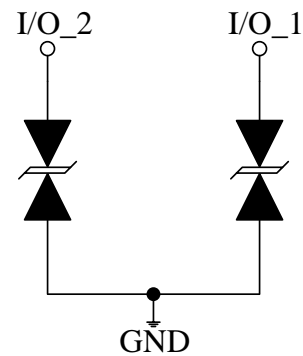
Applications

- CAN bus protection
- Automotive applications

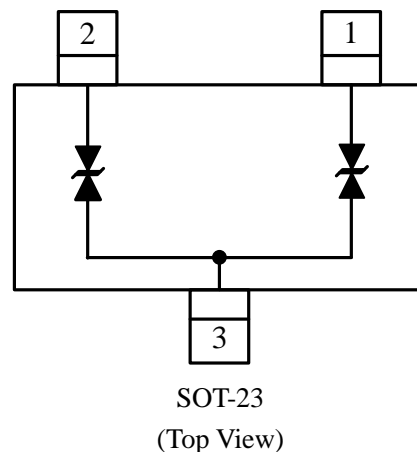
Mechanical Characteristics

- SOT-23 package
- Marking: Device code, date code
- Packaging: Tape and Reel

Circuit Diagram



Pin Configuration

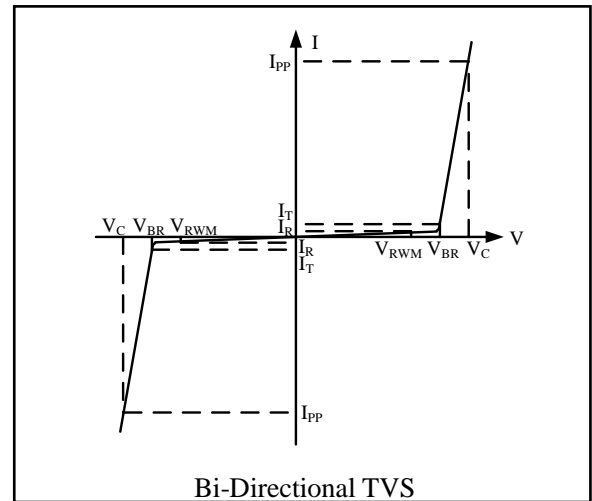


Absolute Maximum Rating

Symbol	Parameter	Value	Units
V_{ESD}	ESD per IEC 61000-4-2 (Air)	± 30	kV
	ESD per IEC 61000-4-2 (Contact)	± 30	
P_{PK}	Maximum Peak Pulse Power (8/20 μ s)	180	Watts
I_{PP}	Maximum Peak Pulse Current (8/20 μ s)	4	A
T_{OPT}	Operating Temperature	-40/+125	$^{\circ}$ C
T_{STG}	Storage Temperature	-55/+150	$^{\circ}$ C

Electrical Characteristics (T = 25 $^{\circ}$ C)

Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Reverse Breakdown Voltage @ I_T
I_T	Test Current for Reverse Breakdown
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
C_{ESD}	Parasitic Capacitance
V_R	Reverse Voltage
f	Small Signal Frequency

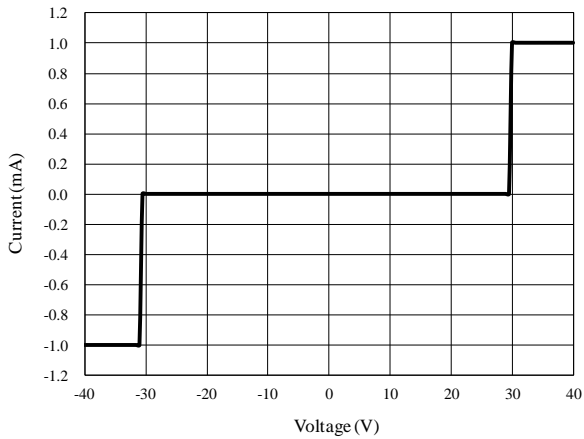


Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				24	V
I_R	$V_{RWM} = 24V, T = 25^{\circ}C$ Between I/O and GND		0.01	0.1	μ A
V_{BR}	$I_T = 1mA$ Between I/O and GND	26.7		35	V
V_C^1	$I_{PP} = 4A, t_p = 8/20\mu s$ Between I/O and GND			45	V
C_{ESD}^1	$V_R = 0V, f = 1MHz$ Between I/O and GND		12	17	pF

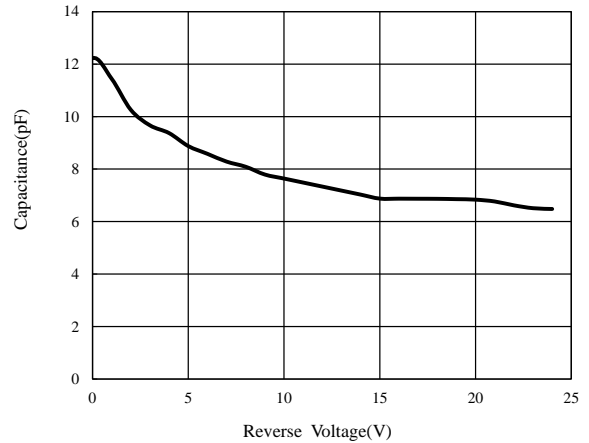
NOTES

¹Guaranteed by design and not subject to production test.

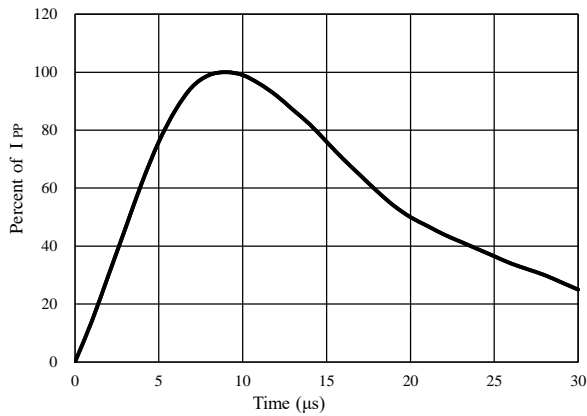
Voltage Sweeping of I/O to GND



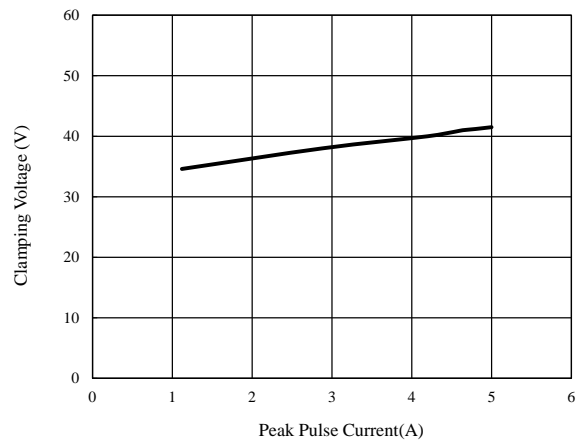
Capacitance vs. Voltage



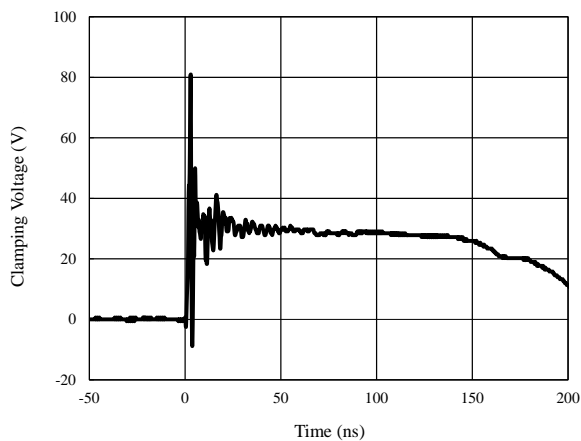
Pulse Waveform



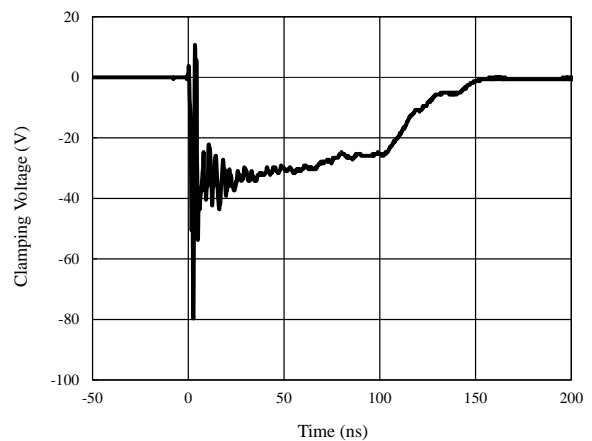
Clamping Voltage vs. Peak Pulse Current



**ESD Clamping of I/O to GND
(+8kV Contact per IEC 61000-4-2)**



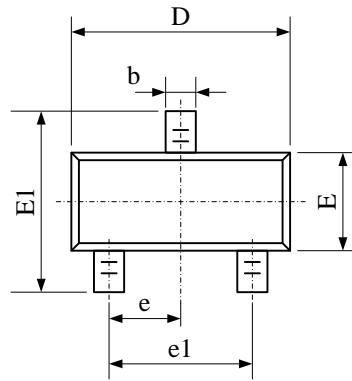
**ESD Clamping of I/O to GND
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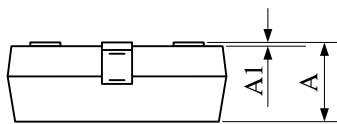


Package Outline

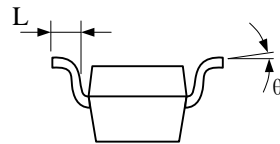
- SOT-23 package



Top View



Side View A



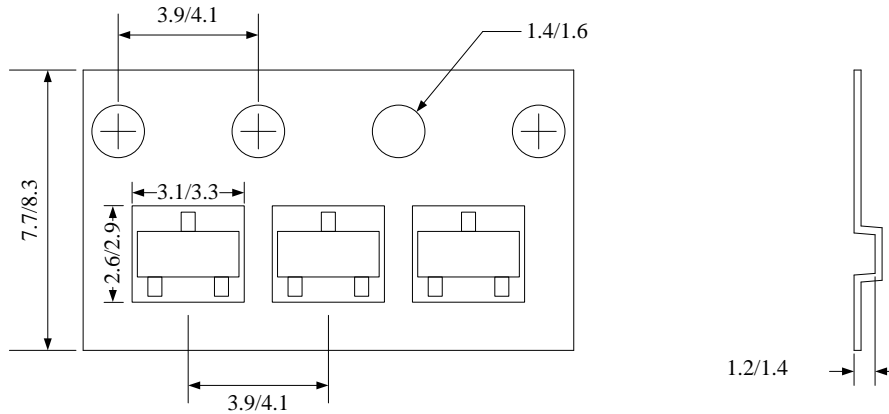
Side View B

Package Dimensions

Symbol	Dimensions In Millimeters	
	Minimum	Maximum
A	—	1.20
A1	0.00	0.15
b	0.28	0.52
D	2.70	3.10
e	0.95 BSC	
e1	1.90 BSC	
E	1.15	1.45
E1	2.20	2.60
L	0.25	0.55
θ	0°	8°

Notes: All dimension in mm and exclude mold flash & metal burr

Tape and Reel Specification

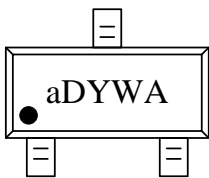


Dimensions In mm

Feeding direction →

Package types	Tape width (mm)	Pocket pitch(mm)	Reel size (Inch)	Trailer * length(mm)	Leader * length (mm)	Qty per reel (pcs)
SOT-23	8	4	7"	400	200	3000

Marking Codes



SOT-23

Ordering Information

Part Number	Pkg	Qty Per Reel	Reel Size
SAT03N24AOA	SOT-23	3,000	7 Inch

Note:

- (1) "aD" is the device code of SAT03N24AOA
- (2) "YWA" is the assembly date code.



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