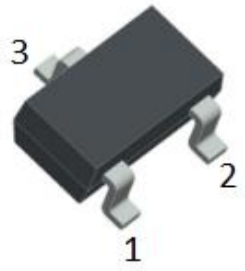
Technical Data
Data Sheet N2270, REV.C

SM712 TVS Diode

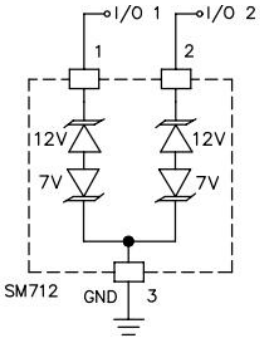


SOT-23

Description

The SM712 transient voltage suppressor (TVS) diode is designed for asymmetrical (12V to -7V) protection in multi-point data transmission standard RS-485 applications. The SM712 may be used to protect devices from transient voltages resulting from electrostatic discharge (ESD), electrical fast transients (EFT), and lightning.
The SM712 replaces four discrete components by integrating two 12V and two 7V TVS diodes in a single package. The integrated design aids in reducing voltage over-shoot associated with trace inductance. The low clamping voltage of the SM712 minimizes the stress on the protected transceiver. The SOT23 package allows flexibility in the design of “crowded” circuit boards.

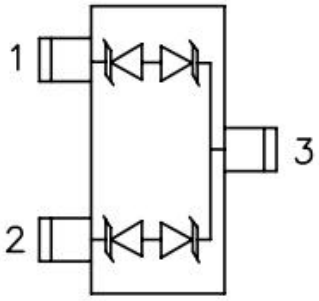
Circuit Diagram



Features

- Transient protection for high speed data lines
  IEC 61000-4-2(ESD)±15KV(air),±8KV(contact)
  IEC 61000-4-4(EFT) 40A (5/50ns)
  IEC 61000-4-5(Lightning) 12A (8/20us)
- Protects two +12V to -7V lines
- Low capacitance
- Low clamping voltage
- Solid-state silicon avalanche technology
- “-A” is an AEC-Q101 qualified device

Schematic and Pin Configuration



Mechanical Characteristics

- SOT-23 package
- Marking: 712
- Molding compound flammability rating: UL 94V-0

Applications

- Protection of RS-485 transceivers with extended
- common-mode range
- Security systems
- Automatic Teller Machines
- HFC systems

SM712

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Maximum Ratings:

Characteristics	Symbol	Max.	Units
Peak Pulse Power (tp=8/20us)	P_{PK}	300	W
Lead Soldering Temperature	T_L	260(10 seconds)	℃
Operating Temperature	T_J	-55 to +125	℃
Storage Temperature	T_{STG}	-55 to +150	℃

Electrical Characteristics@T_A=25°C unless otherwise specified

			Pins 1 to 3 and 2 to 3 (12V TVS)			Pins 3 to 1 and 3 to 2 (7V TVS)			
Characteristics	Symbol	Condition	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage*	V_{RWM}	-	-	-	12	-	-	7	V
Reverse Breakdown Voltage*	V_{BR}	I_{PT}=1mA	13.3	-	-	7.5	-	-	V
Reverse Leakage Current*	I_R	V_R=V_{RWM}	-	-	1	-	-	20	uA
Clamping Voltage	V_C	I_{PP}=5A, tp=8/20us	-	-	20	-	-	12	V
Clamping Voltage	V_C	I_{PP}=15A, tp=8/20us	-	-	26	-	-	14	V
Junction Capacitance	Cj	V_R=0V, f=1MHz	-		75	-	-	75	pF

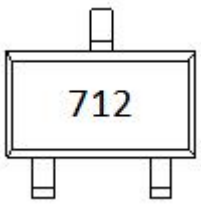
* Pulse width < 300 μs, duty cycle < 2%

Ordering Information

Device	Package	Shipping
SM712	SOT-23 (Pb-Free)	3000pcs / reel
SM712TR	SOT-23 (Pb-Free)	3000pcs / reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

Marking Diagram



712 = Device Code

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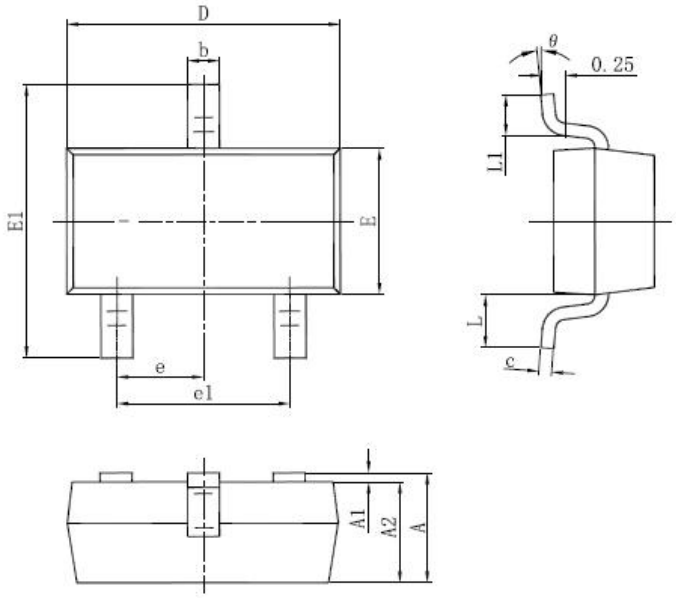
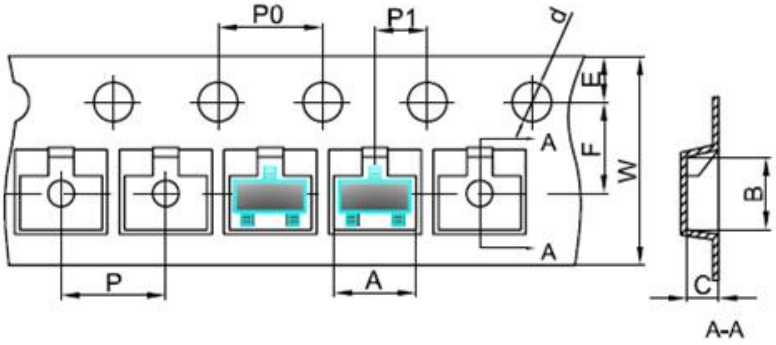
RoHS

Mechanical Dimensions SOT-23



SYMBOL	Millimeters		Inches	
	MIN.	MAX.	MIN.	MAX.
A	0.890	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.076	0.170	0.003	0.007
D	2.650	3.050	0.104	0.120
E	1.190	1.400	0.047	0.055
E1	2.100	2.550	0.083	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.780	2.050	0.070	0.081
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Carrier Tape Specification SOT-23



SYMBOL	Millimeters	
	Min.	Max.
A	3.05	3.25
B	2.67	2.87
C	1.12	1.32
d	1.40	1.60
E	1.65	1.85
F	3.40	3.60
P	3.90	4.10
P0	3.90	4.10
P1	1.90	2.10
W	7.90	8.30

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