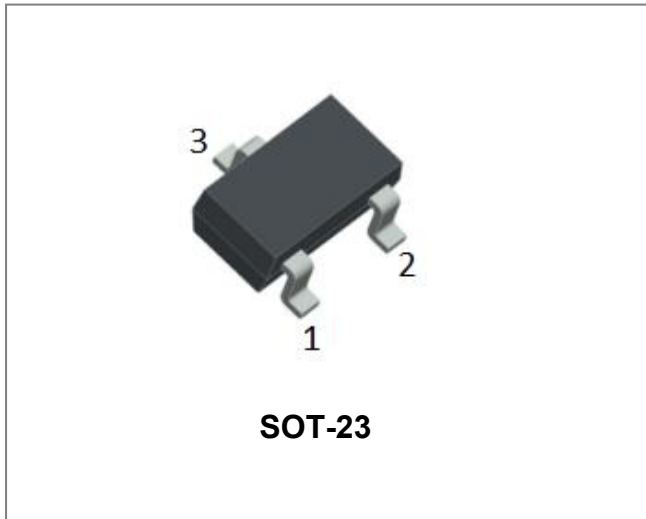


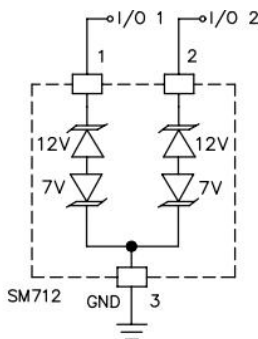
SM712 TVS Diode



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.

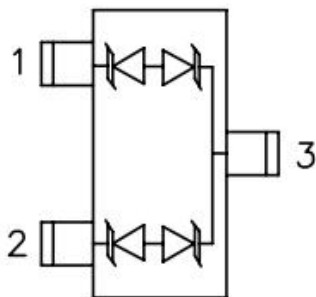
Circuit Diagram



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

Maximum Ratings:

Characteristics	Symbol	Max.	Units
Peak Pulse Current (tp=8/20us)	I _{PP}	15	A
Lead Soldering Temperature	T _L	260(10 seconds)	°C
Operating Temperature	T _J	-55 to +125	°C
Storage Temperature	T _{STG}	-55 to +150	°C

Electrical Characteristics@T_A=25°C unless otherwise specified

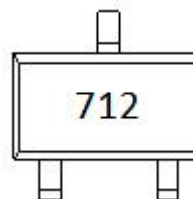
Characteristics	Symbol	Condition	Pins 1 to 3 and 2 to 3 (12V TVS)			Pins 3 to 1 and 3 to 2 (7V TVS)			Units
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Reverse Stand-Off Voltage*	V _{RWM}	-	-	-	12	-	-	7	V
Reverse Breakdown Voltage*	V _{BR}	I _{PT} =1mA	13.3	-	-	7.5	-	-	V
Reverse Leakage Current*	I _R	V _R =V _{RWM}	-	-	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	C _j	V _R =0V, f=1MHz	-	-	75	-	-	75	pF

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

Ordering Information

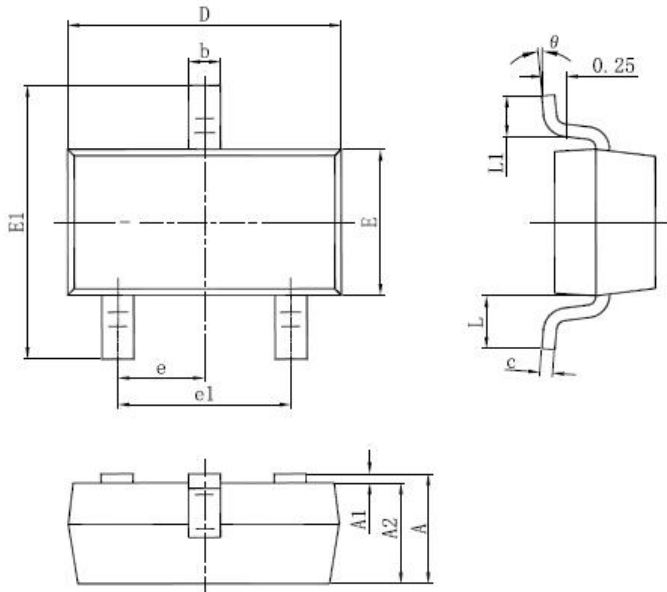
Device	Package	Shipping
SM712	SOT-23 (Pb-Free)	3000pcs / reel
SM712TR	SOT-23 (Pb-Free)	3000pcs / reel

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

Marking Diagram


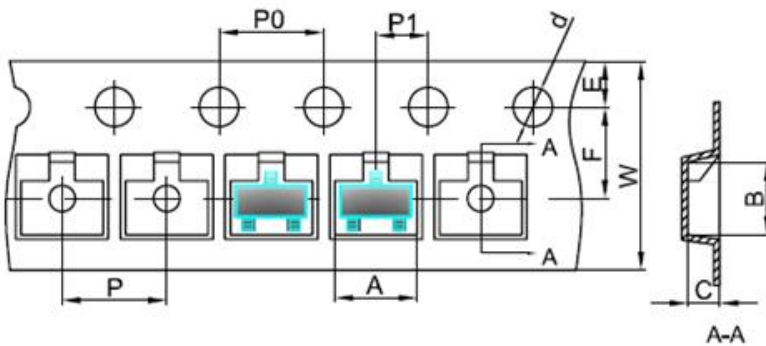
712 = Device Code

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

DISCLAIMER:

- 1- The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact the SMC Diode Solutions sales department for the latest version of the datasheet(s).
- 2- In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, medical equipment, and safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement.
- 3- In no event shall SMC Diode Solutions be liable for any damages that may result from an accident or any other cause during operation of the user's units according to the datasheet(s). SMC Diode Solution assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in the datasheets.
- 4- In no event shall SMC Diode Solutions be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
- 5- No license is granted by the datasheet(s) under any patents or other rights of any third party or SMC Diode Solutions.
- 6- The datasheet(s) may not be reproduced or duplicated, in any form, in whole or part, without the expressed written permission of SMC Diode Solutions.
- 7- The products (technologies) described in the datasheet(s) are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety nor are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations.