

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 features 400 Watts ($t_p = 8/20\mu s$) of power handling capability to accommodate the higher transient voltage levels which may be expected in extended common mode applications. This provides higher equipment reliability and eliminates the “guess work” required when using zener diodes that are not rated to handle such transient conditions.

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.

APPLICATIONS

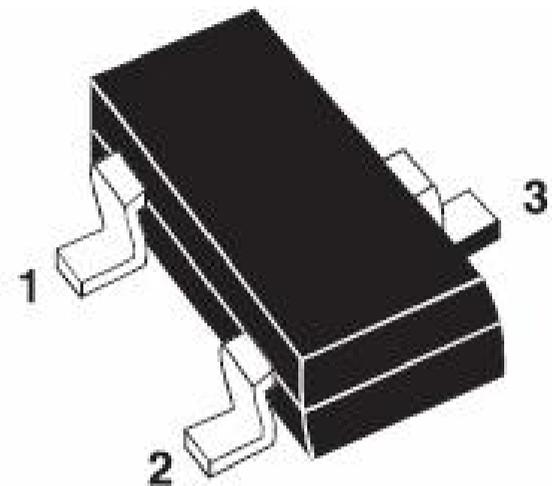
- ✧ Protection of RS-485 transceivers with extended common-mode range.
- ✧ Security systems.
- ✧ Automatic Teller Machines.
- ✧ HFC systems.
- ✧ Networks.

FEATURES

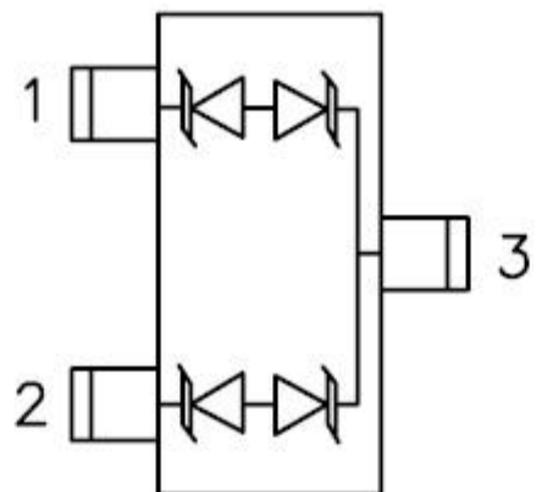
- ✧ 400 watts peak pulse power ($t_p = 8/20\mu s$).
- ✧ Protects two +12V to -7V lines.
- ✧ Low capacitance.
- ✧ Low clamping voltage.
- ✧ Solid-state silicon avalanche technology.

COMPLIES WITH THE FOLLOWING STANDARDS

- ✧ IEC61000-4-2.
- ✧ Level 4 15 kV (air discharge)
8 kV(contact discharge).
- ✧ MIL STD 883E - Method 3015-7 Class 3
25 kV HBM (Human Body Model).



SOT-23

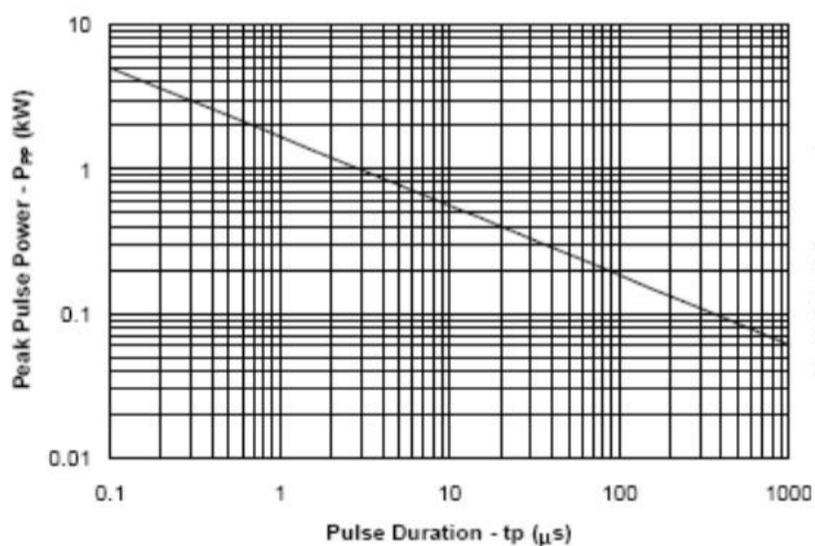
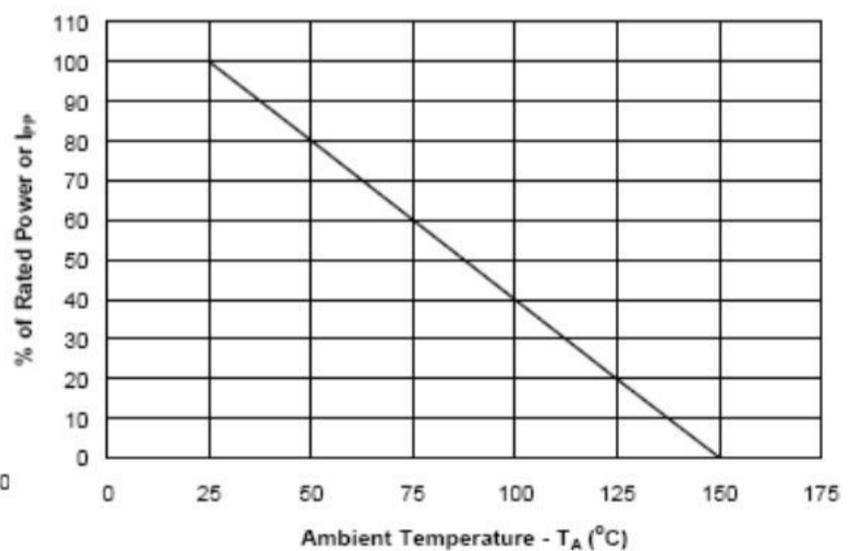


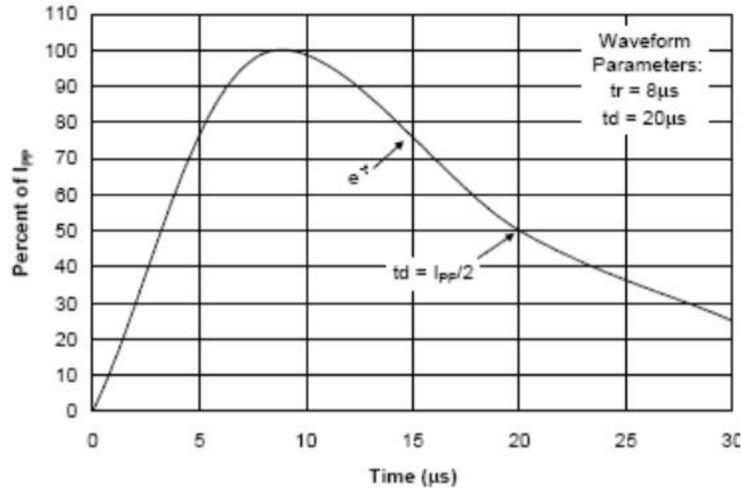
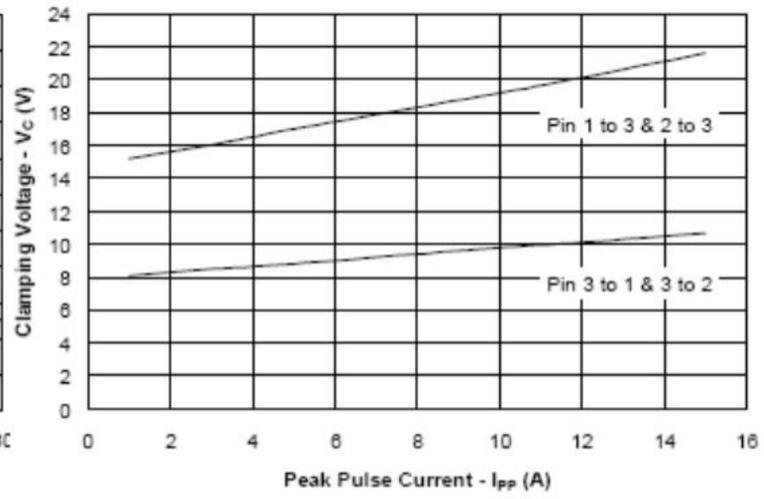
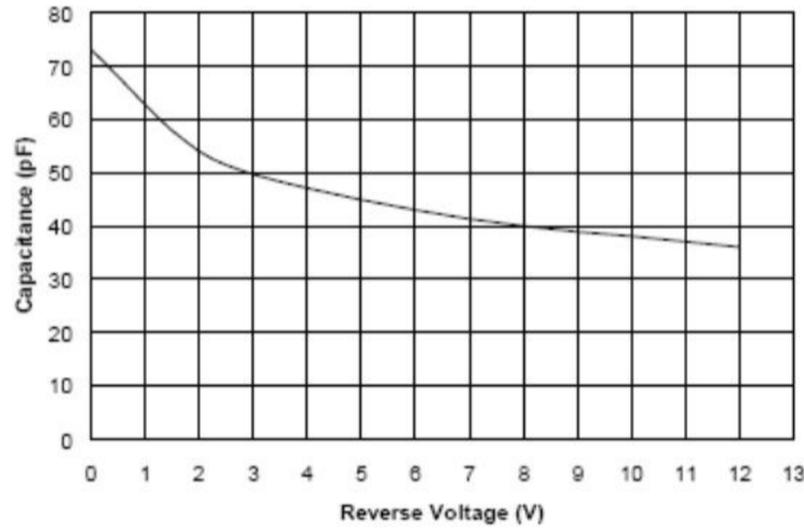
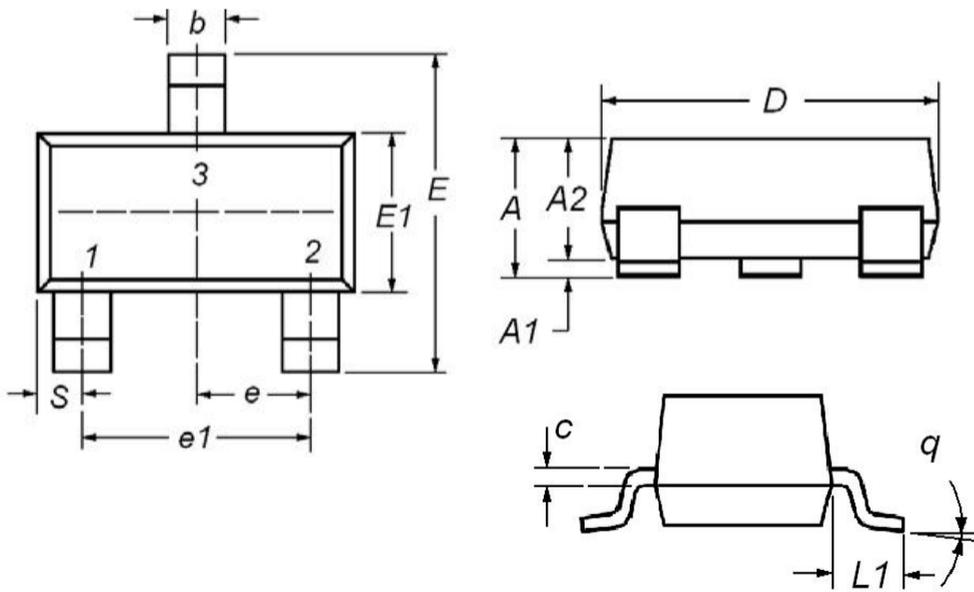
DEVICE CHARACTERISTICS
MAXIMUM RATINGS (@ 25°C Unless Otherwise Specified)

Symbol	Parameter	Value	Unit
P_{PK}	Peak Pulse Power ($t_p = 8/20\mu s$)	400	W
I_{PP}	Peak Pulse Current ($t_p=8/20\mu s$)	17	A
T_L	Lead soldering temperature	260(10 sec.)	°C
T_{stg}	Storage Temperature Range	-55 to +150	°C
T_j	Operating temperature	-55 to+125	°C

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ C$ unless otherwise noted, $V_F=0.9V$ Max. © $I_F=10mA$ for all types)

Part Numbers	V_{BR}			I_T	V_{RWM}	I_R	C	
	Min.	Typ.	Max.				Typ.0v bias	V_{RWM} bias
SM712	V	V	V	mA	V	nA	pF	pF
Pins 1 to 3 and 2 to 3(12V TVS)	13.3	14.0	14.7	1	12	1	75	45
Pins 3 to 1 and 3 to 2(7V TVS)	7.5	8.1	8.6	1	7	20	75	45

TYPICAL CHARACTERISTICS

Fig1. Non-Repetitive Peak Pulse Power vs. Pulse Time

Fig2. Power Derating Curve


Fig3. Pulse Waveform

Fig4. Clamping Voltage vs. Peak Pulse Current

Fig5. Capacitance vs. Reverse Voltage
SOT-23 MECHANICAL DATA


Dim	Millimeters		
	Min	TYP	Max
A	1.00	1.20	1.40
A1	0	0.05	0.10
A2	1.00	1.15	1.30
b	0.35	0.40	0.50
c	0.10	0.15	0.20
D	2.70	2.90	3.10
E	2.40	2.60	2.80
E1	1.40	1.50	1.60
e	0.85	1.00	1.15
e1	1.80	1.90	2.00
L1	0.40	.	
q	0°	5°	10°
S	0.45	0.50	0.55

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