STANDARD CAPACITANCE TVS ARRAY

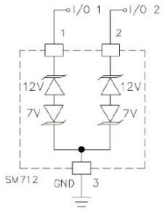
1 General Description

1.1 Description

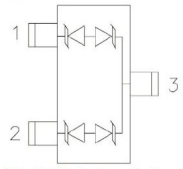
- The SM712 transient voltage suppressor (TVS) diode is designed for asymmetrical (12V to _7V) protection in multi-point data transmission standard RS-485 applications. The SM712 may be used to protect devices from transient voltages resulting from electrostatic discharge (ESD). Electrical fast transients (EFT). And lightning.The SM712 features 400 Watts (tp=8/20us) 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.

Reverse Working Voltage
7/12V
Capacitance
75pF Max

Diagram



Schematic



SOT23(Top View)

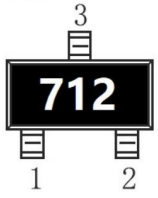
1.2 Features

- 400Watts Peak Pulse Power per (tp=8/20us)
- Transient protection for asymmetrical data lines to IEC61000-4-2(ESD) 15kV(air), 8kV(contact)
- IEC61000-4-4(EFT) 40A(5/50ηs)
- IEC61000-4-5(Lightning):12A(8/20us)
- Protects two +12V to -7V lines
- Low capacitance; Low clamping voltage
- Solid-state silicon avalanche technology Mechanical Data
- JEDEC SOT-23 Package
- Molding compound flammability Rating: UL 94V-0
- High temperature soldering guaranteed: 260℃/10s
- Material: Halogen free

1.3 Applications

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

Marking code



1.4 Mechanical Data

- JEDEC SOT-23 Package
- Molding compound flammability Rating: UL 94V-0
- High temperature soldering guaranteed: 260℃/10s
- Material: Halogen free

2 Ordering Information

PACKAGE	UNIT WEIGHT (g)	REEL (pcs)	BOX (pcs)	CARTON (pcs)
SOT-23	Approximate 0.03	3000	6000	180000

3 Maximum Ratings(TA=25℃ Unless otherwise specified)

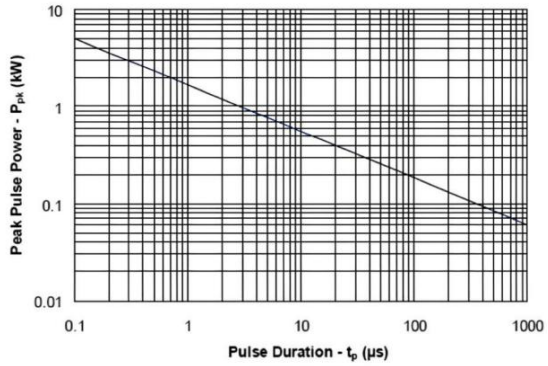
PARAMETER	SYMBOL	VALUE	UNIT
Peak Pulse Power (8/20μs)	P_{PP}	400	W
Peak Pulse Current (8/20μs)	I_{PP}	17	A
Operating Temperature	T_{OPT}	-55 to +125	℃
Storage Temperature Range	T_{STG}	-55 to +150	℃

4 Electrical Characteristics(TA=25℃ Unless otherwise specified)

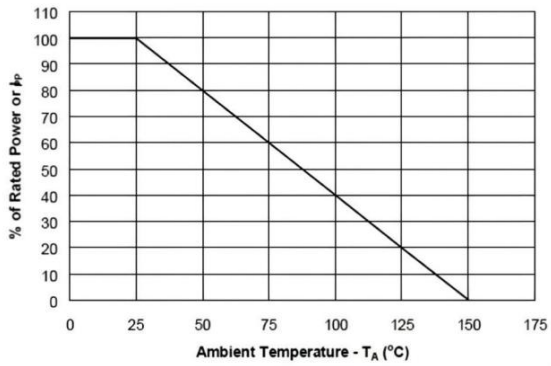
PARAMETER	SYMBOL	Conditions	Pin 1 to 3 and Pin2 to 3 (12V) TVS			Pin 3 to 1 and Pin 3 to 2 (7V) TVS			UNIT
			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Reverse Working Voltage	V_{RWM}	Pin 3 to 1 or Pin 2 to 1	-	-	12	-	-	7	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	13.3	-	-	7.5	-	-	V
Reverse Leakage Current	I_R	V_R=V_{RWM}	-	-	1	-	-	20	μA
Clamping Voltage	V_C	Ipp=5A(8/20μs)	-	-	20	-	-	10	V
		Ipp=17A(8/20μs)	-	-	26	-	-	12	V
Junction Capacitance	C_J	V_R=0V,f=1MHZ	-	-	75	-	-	75	pF
		V_R=V_{RWM},f=1MHZ	-	45	-	-	45	-	pF

5 Characteristics Curves(TA=25℃ Unless otherwise specified)

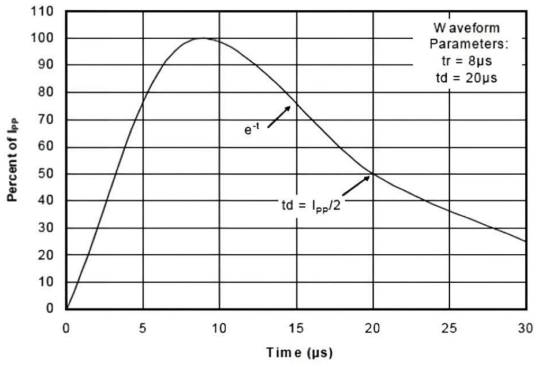
Non-Repetitive Peak Pulse Power vs. Pulse Time



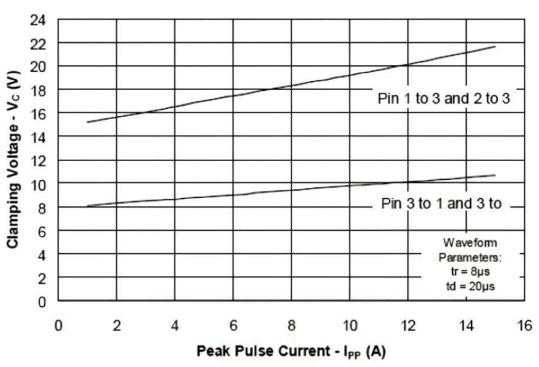
Power Derating Curve



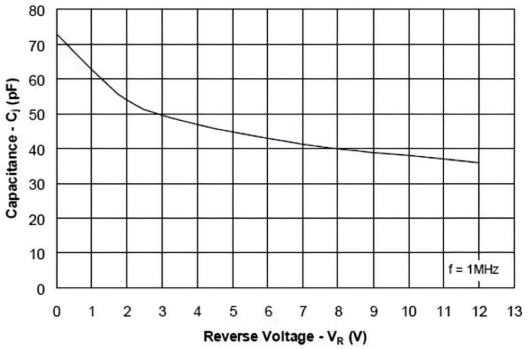
Pulse Waveform



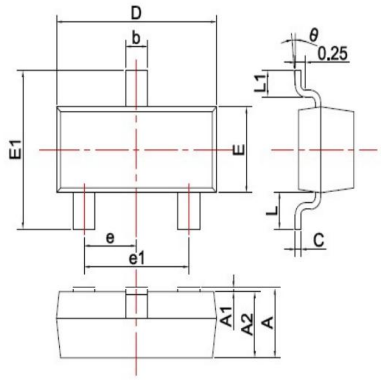
Clamping Voltage vs. Peak Pulse Current



Capacitance vs. Reverse Voltage

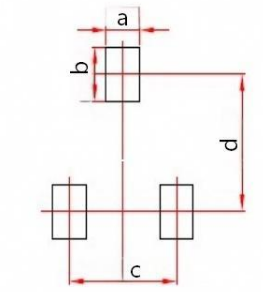


6 Package Outline Dimensions



Symbol	Millimeters	
	Min	Max
A	0.900	1.150
A1	0	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950 TYP	
e1	1.800	2.000
L	0.550 REF	
L1	0.300	0.500
θ	0°	8°

7 Suggested Pad Layout



Symbol	Millimeters	
	Min	Max
a	0.55	0.65
b	0.75	0.85
c	1.85	1.95
d	1.97	2.07

Note:The pad layout is for reference

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