DACO

SM712

STANDARD CAPACITANCE TVS ARRAY

PROTECTION PRODUCTS 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.

Applications

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

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(5/50 η s)
  IEC61000-4-5(Lightning):12A(8/20us)
- Protects two +12V to -7V lines
- Low capacitance; Low clamping voltage
- Solid-state silicon avalanche technology

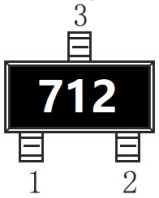
Ordering Information

- Device: SM712
- Package: SOT-23
- Packing: Tape & Reel
- Quantity per reel: 3,000pcs

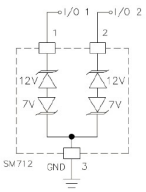
Mechanical Data

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

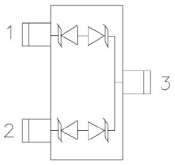
Marking code



Diagram



Schematic



SOT23(Top View)

ABSOLUTE MACIMUM RATING

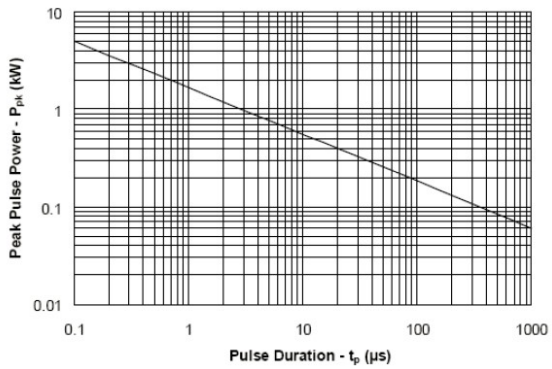
Parameters	Symbol	Value	Unit
Peak Pulse Power (8/20us)	P_{PP}	400	W
Peak Pulse Current (tp=8/20us)	I_{PP}	17	A
Operating temperature	T_{OPT}	-55-+125	℃
Storage temperature range	T_{STG}	-55-+150	℃

Electrical Characteristics (Ratings at 25℃ ambient temperature unless otherwise specified).

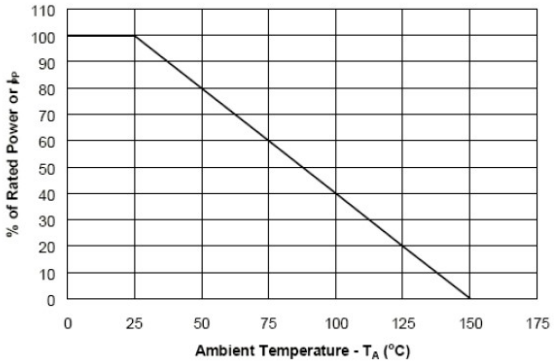
Symbol	Parameter	Test Condition	Pin 1 to 3 and Pin 2 to 3 (12V) TVS			Pin 3 to 1 and Pin 3 to 2 (7V TVS)			Units
			Min	Typ	Max	Min	Typ	Max	
V_{RWM}	Reverse Working Voltage	Pin 3 to 1 or Pin 2 to 1			12			7	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA	13.3			7.5			V
I_R	Reverse Leakage Current	$V_R = V_{RWM}$			1			20	μA
V_{C1}	Clamping Voltage 1	I_{PP} = 5A, t_p = 8/20μs			20			10	V
V_{C2}	Clamping Voltage 2	I_{PP} = 17A, t_p = 8/20μs			26			12	V
C_{J1}	Junction Capacitance 1	V_R = 0V, f = 1MHz			75			75	pF
C_{J2}	Junction Capacitance 2	$V_R = V_{RWM}$, f = 1MHz		45			45		pF

ELECTRICAL CHARACTERISTICS CURVE

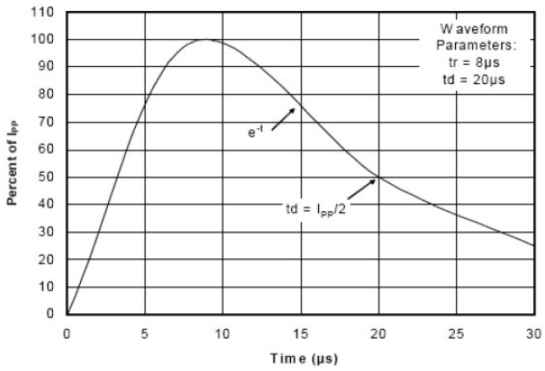
Non-Repetitive Peak Pulse Power vs. Pulse Time



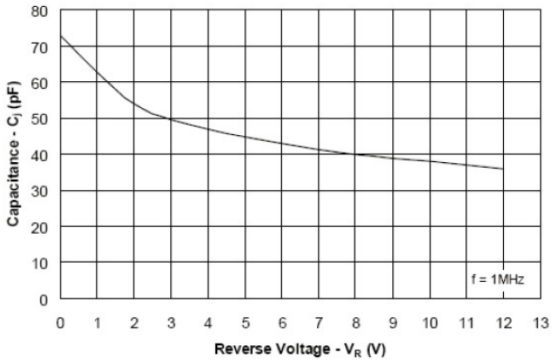
Power Derating Curve



Pulse Waveform

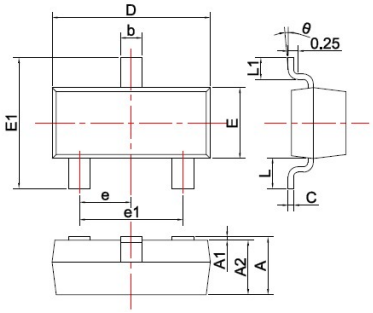


Capacitance vs. Reverse Voltage



SOT-23 PACKAGE OUTLINE

Plastic surface mounted package

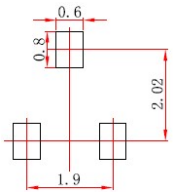


SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Unit: mm

Precautions: PCB Design

(Recommended land dimensions for SOT-23 diode. Electrode patterns for PCBs)



Note:
1.Controlling dimension:In millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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