GSM712

Asymmetrical TVS Diode for Extended Common-Mode RS-485

DESCRIPTION

The GSM712 transient voltage suppressor (TVS) diode is designed for asymmetrical (12V to -7V) protection in multi-point data transmission standard RS-485 applications. The GSM712 may be used to protect devices from transient voltages resulting from electrostatic discharge (ESD), electrical fast transients (EFT), and lightning.

The GSM712 features 400 Watts (tp=8/20μs) 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 integrated design aids in reducing voltage over-shoot associated with trace inductance. The low clamping voltage of the GSM712 minimizes the stress on the protected transceiver. The SOT-23 package allows flexibility in the design of “crowed” circuit boards.

FEATURES

- ✧400 watts peak pulse power (tp=8/20μs)
- ✧Transient protection for asymmetrical data lines to
  IEC 61000-4-2 (ESD) ±15kV(air), ±8kV(contact)
  IEC 61000-4-4 (EFT) 40A (5/50ns)
  IEC 61000-4-5 (Lightning) 12A (8/20μs)
- ✧Protects two +12V to -7V lines
- ✧Low capacitance
- ✧Low leakage current
- ✧Low clamping voltage
- ✧Solid-state silicon avalanche technology
- ✧RoHS compliant

MACHANICAL DATA

- ✧SOT-23 package
- ✧Flammability Rating: UL 94V-0
- ✧Terminal: Matte tin plated.
- ✧Packaging: Tape and Reel
- ✧High temperature soldering guaranteed: 260℃/10s
- ✧Reel size: 7 inch

ORDERING INFORMATION

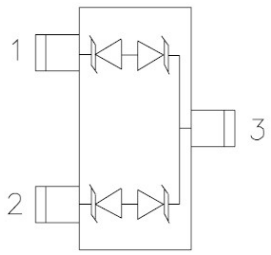
- ✧Device: GSM712
- ✧Package: SOT-23
- ✧Marking: 712 or C72
- ✧Material: Halogen free
- ✧Packing: Tape & Reel

Quantity per reel: 3,000pcs

APPLICATIONS

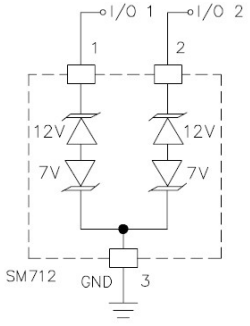
- ✧Protection of RS-485 transceivers with extended common-mode range
- ✧Security systems
- ✧Automatic Teller Machines
- ✧HFC systems
- ✧Networks

PIN CONFIGURATION & SCHEMATIC



SOT23 (Top View)

CIRCUIT DIAGRAM



ABSOLUTE MAXIMUM RATING

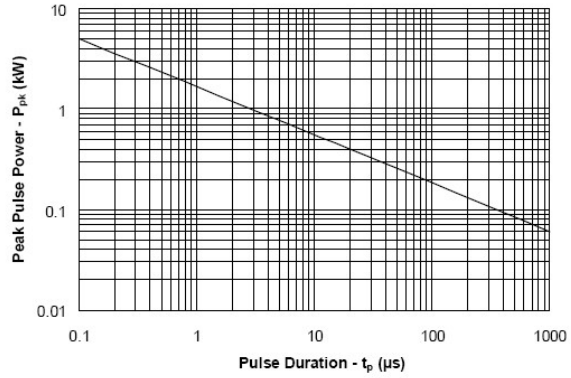
Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20μs)	400	W
I_{PP}	Peak Pulse Current (8/20μs)	17	A
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±15 ±8	kV
T_{OPT}	Operating Temperature	-55/+150	°C
T_{STG}	Storage Temperature	-55/+150	°C

ELECTRICAL CHARACTERISTICS (Tamb=25°C)

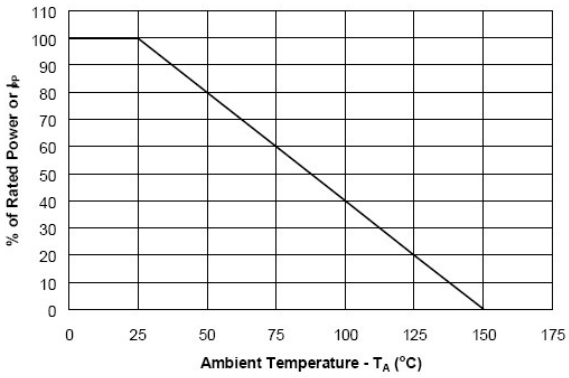
Symbol	Parameter	Test Condition	Pin 1 to 3 and Pin 2 to 3 (12V) TVS			Pin 3 to 1 and Pin 3 to 2 (7V TVS)			Units
			Min	Typ	Max	Min	Typ	Max	
V_{RWM}	Reverse Working Voltage	Pin 3 to 1 or Pin 2 to 1			12			7	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA	13.3			7.5			V
I_R	Reverse Leakage Current	$V_R = V_{RWM}$			1			20	μA
V_{C1}	Clamping Voltage 1	I_{PP} = 5A, t_p = 8/20μs			20			12	V
V_{C2}	Clamping Voltage 2	I_{PP} = 17A, t_p = 8/20μs			26			16	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

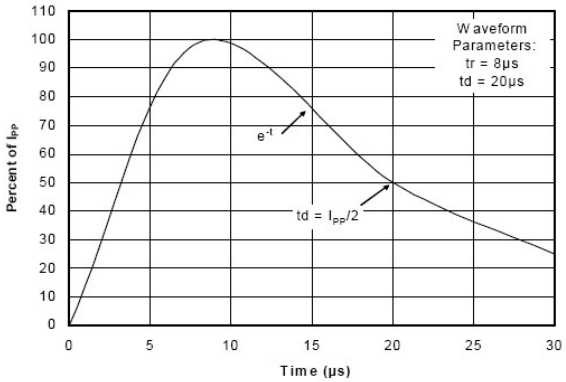
Non-Repetitive Peak Pulse Power vs. Pulse Time



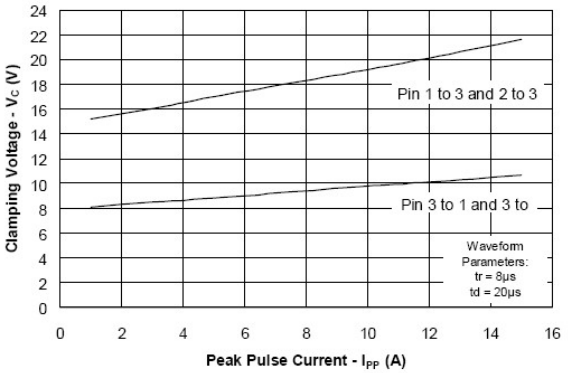
Power Derating Curve



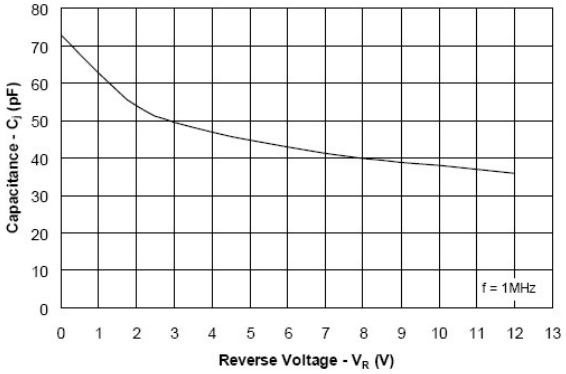
Pulse Waveform



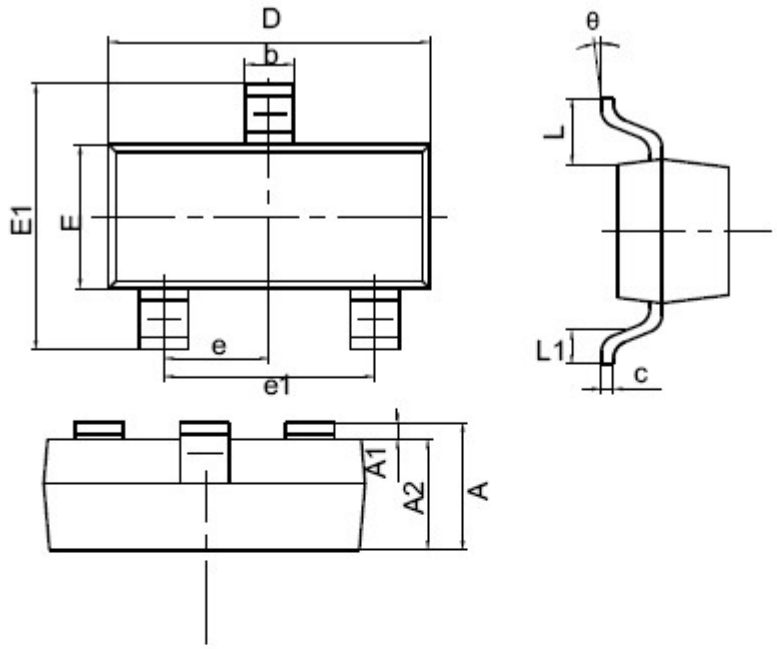
Clamping Voltage vs. Peak Pulse Current



Capacitance vs. Reverse Voltage



SOT-23 PACKAGE OUTLINE DIMENSIONS



symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	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	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950REF.		0.037REF.	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°