SSCESM712S6

2-Line Ultra Low Capacitance TVS Diode

● Description

The SSCESM712S6 is designed for asymmetrical (12V to -7V) protection in multi-point data transmission standard RS-485 applications. The SSCESM712S6 may be used to protect devices from transient voltages resulting from electrostatic discharge (ESD), electrical fast transients (EFT), and lightning.

The SSCESM712S6 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 SSCESM712S6 minimizes the stress on the protected transceiver.

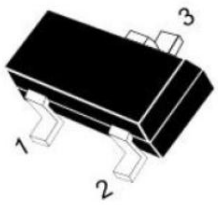
● Feature

- ✧ 350W peak pulse power (t_P = 8/20μs)
- ✧ SOT-23 Package
- ✧ Working voltage: 7V or 12V
- ✧ Low clamping voltage
- ✧ Low leakage current
- ✧ RoHS compliant
- ✧ Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±20kV
    Contact discharge: ±15kV

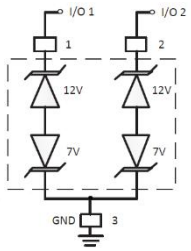
● Applications

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

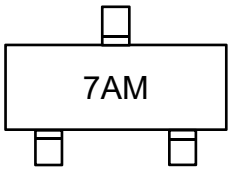
● PIN configuration



SOT-23



Circuit diagram



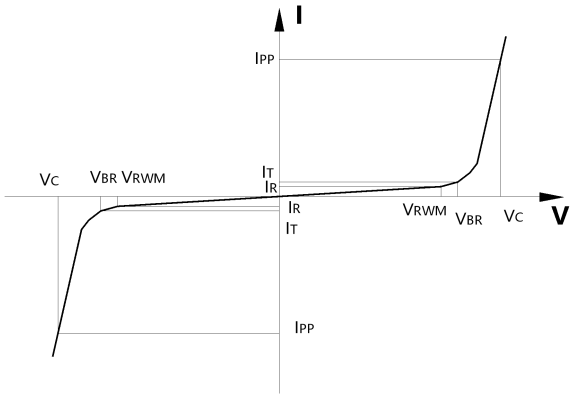
Marking(Top view)

● Mechanical data

- ✧ Lead finish:100% matte Sn(Tin)
- ✧ Mounting position: Any
- ✧ Qualified max reflow temperature:260℃
- ✧ Device meets MSL 3 requirements
- ✧ Pure tin plating: 7 ~ 17 um

Electronic Parameter

Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
P_{PP}	Peak Pulse Power
C_J	Junction Capacitance



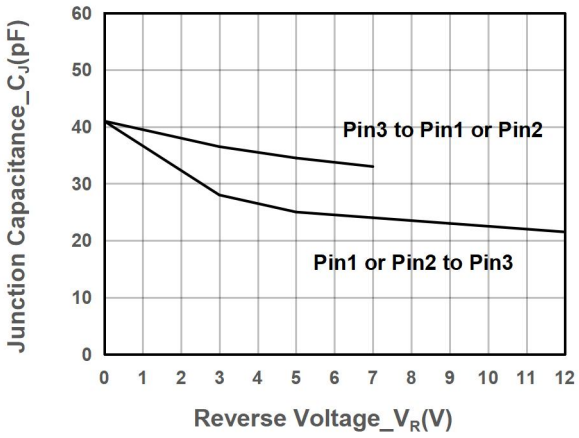
Absolute maximum rating @T_A=25℃

Parameter	Symbol	Value	Unit
Peak Pulse Power（8/20μs）	P_{PP}	350	W
Peak Pulse Current（8/20μs）	I_{PP}	13	A
ESD Rating per IEC61000-4-2： Contact Air	V_{ESD}	15 20	kV
Storage Temperature	T_{STG}	-55/+150	℃
Operating Temperature	T_J	-55/+125	℃

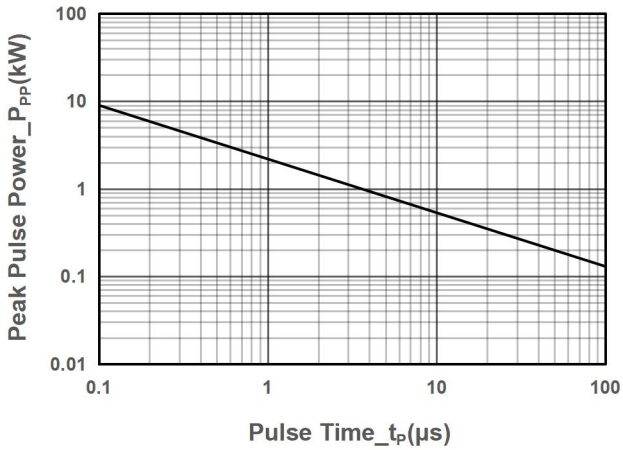
Electrical Characteristics @T_A=25℃

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Reverse Working Voltage	V_{RWM}	Pin1 or Pin2 to Pin3			12	V
		Pin3 to Pin1 or Pin2			7	V
Breakdown Voltage	V_{BR}	I_T = 1mA, Pin1 or Pin2 to Pin3	13.3			V
		I_T = 1mA, Pin3 to Pin1 or Pin2	7.5			V
Reverse Leakage Current	I_R	V_{RWM} = 12V, Pin1 or Pin2 to Pin3			0.05	μA
		V_{RWM} = 7V, Pin3 to Pin1 or Pin2			2.0	μA
Clamping Voltage	V_C	I_{PP} = 5A, t_P = 8/20μs, Pin1 or Pin2 to Pin3		19	22	V
		I_{PP} = 5A, t_P = 8/20μs, Pin3 to Pin1 or Pin2		12	15	V
Clamping Voltage	V_C	I_{PP} = 13A, t_P = 8/20μs, Pin1 or Pin2 to Pin3		23	28	V
		I_{PP} = 13A, t_P = 8/20μs, Pin3 to Pin1 or Pin2		16	20	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz		40		pF

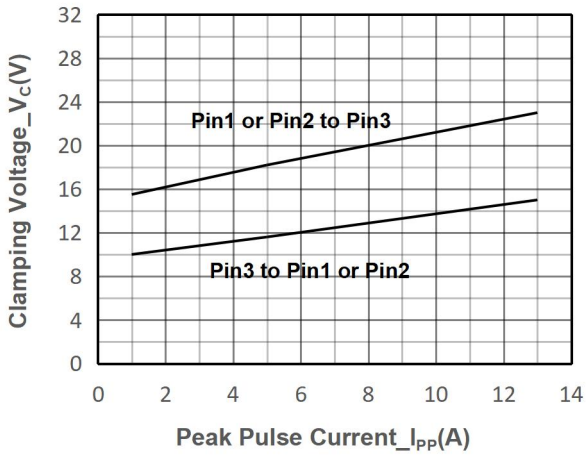
● Typical Performance Characteristics



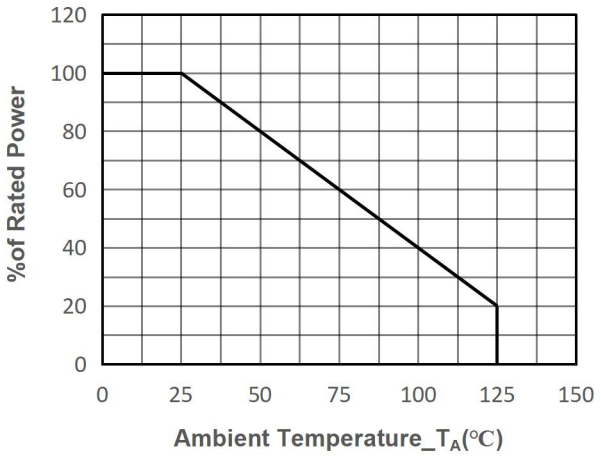
Junction Capacitance vs. Reverse Voltage



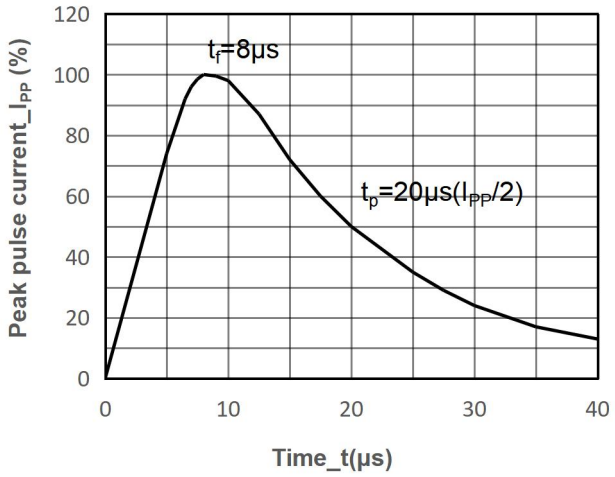
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current



Power derating vs. Ambient temperature



8/20μs Pulse Waveform

- **Package Information**

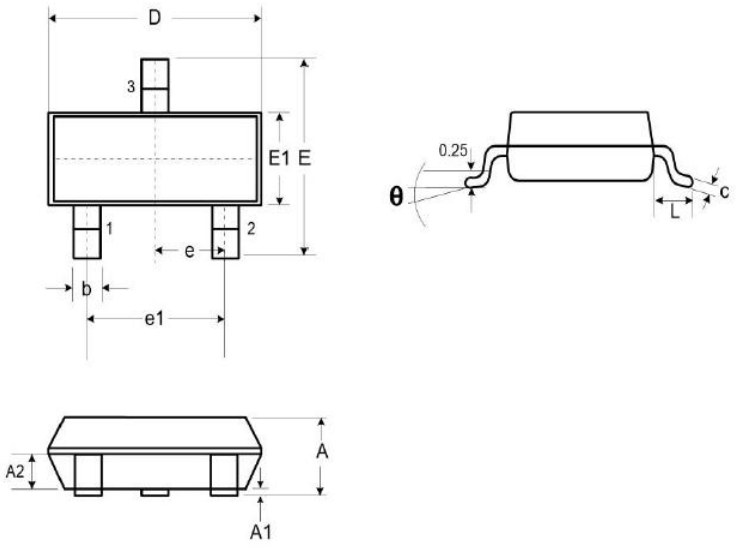
Ordering Information

Device	Package	Qty per Reel	Reel Size
SSCESM712S6	SOT-23	3000	7 Inch

Mechanical Data

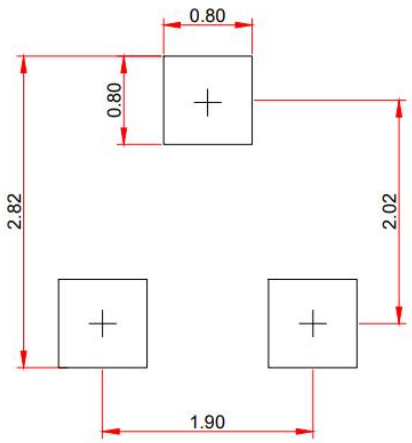
Case: SOT-23

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters		
	Min.	Typ.	Max.
A	0.89	-	1.12
A1	0.01	-	0.10
A2	0.88	0.95	1.02
b	0.30	-	0.51
c	0.08	-	0.18
D	2.80	2.90	3.04
E	2.10	2.37	2.64
E1	1.20	1.30	1.40
e	0.95		
e1	1.90		
L	0.40	0.50	0.60
L1	0.55		
N	3		
θ	0°	-	8°

Recommended Pad outline (Unit: mm)



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