

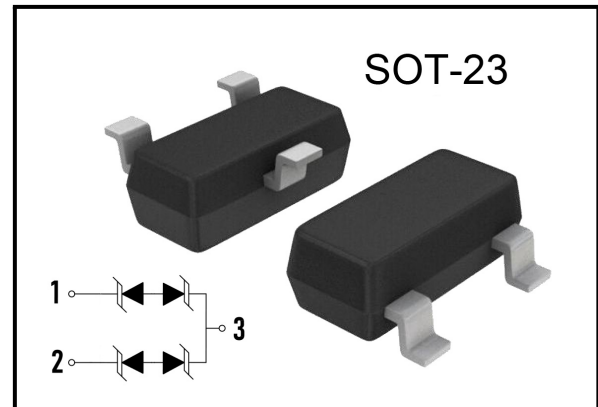
BNPSM712

ESD Protection Diode

Features

- 680Watts peak pulse power ($t_p = 8/20\mu s$)
- Protects -7V to 12V lines
- Solid-state silicon-avalanche technology
- Low clamping Voltage
- Low leakage current
- IEC 61000-4-2 $\pm 30kV$ contact ; $\pm 30kV$ air
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 35A(1 or 2 to 3)(8/20 μs)
- IEC 61000-4-5 (Lightning) 40A(3 to 1 or 2)(8/20 μs)

Package



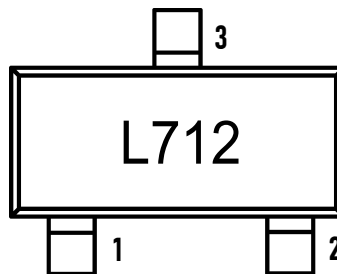
Applications

- Dataline
- Automatic Teller Machines
- Net works
- Power line
- RS485

Mechanical Characteristics

- SOT-23 package
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel
- RoHS/WEEE Compliant

Marking



Ordering information

Order code	Package	Base qty	Delivery mode
BNPSM712	SOT-23	3k	Tape and reel

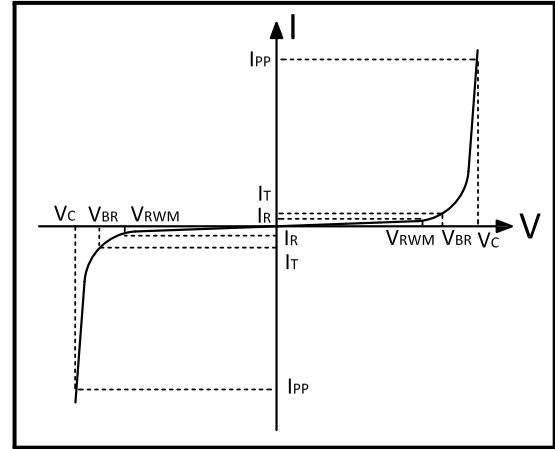


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ESD Protection Diode

Electrical Parameters ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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



Note: 8/20us pulse Waveform.

Absolute Maximum Rating

Rating	Symer	Value	Units
Peak Pulse Power ($t_p = 8/20\mu\text{s}$)	P_{PP}	680	Watts
Peak Pulse Current ($t_p = 8/20\mu\text{s}$)	I_{PP}	35(1 or 2 to 3) 40(3 to 1 or 2)	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	30 30	KV
Lead Soldering Temperature	T_L	260(10seconds)	$^\circ\text{C}$
Junction Temperature	T_J	-55 to + 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to + 150	$^\circ\text{C}$

Electrical Characteristics

Parameter	Symer	Conditions	Pins 1 to 3 and 2 to 3 (12V TVS)			Pins 3 to 1 and 3 to 2 (7V TVS)			Units
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Reverse Stand-Off Voltage	V_{RWM}	Pin3 to 1 and Pin3 to 2	—	—	—	—	—	7	V
		Pin1 to 3 and Pin2 to 3	—	—	12	—	—	—	
Reverse Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	13.3	—	—	7.5	—	—	V
Reverse Leakage Current	I_R	$V_R = V_{RWM}$	—	—	1	—	—	1	uA
Clamping Voltage	V_C	$I_{PP} = 35\text{A}$, $t_p = 8/20\mu\text{s}$	—	21	24	—	13	16	V
		$I_{PP} = 40\text{A}$, $t_p = 8/20\mu\text{s}$	—	—	—	—	14	17	
Junction Capacitance	C_j	$V_R = 0\text{V}$, $f = 1\text{MHz}$	—	65	75	—	65	75	pF



Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

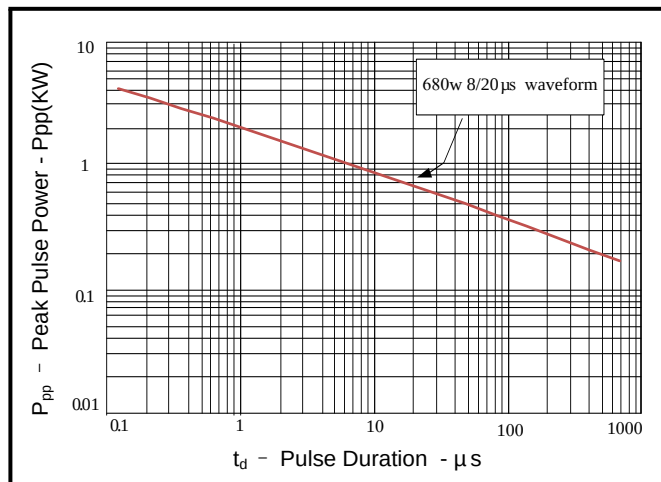


Figure 2: Power Derating Curve

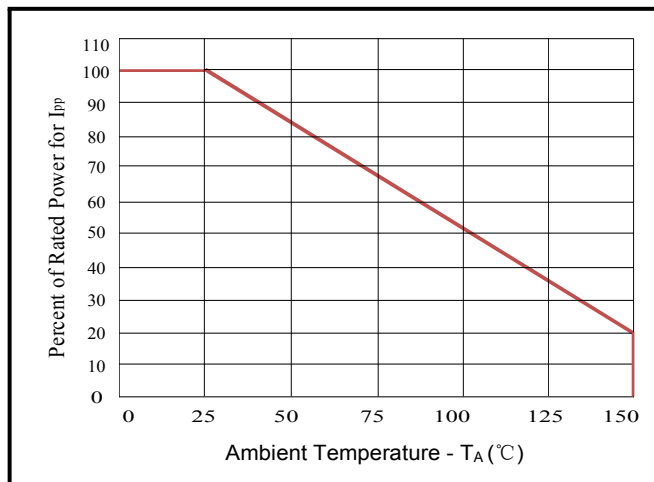


Figure 3: Pulse Waveform

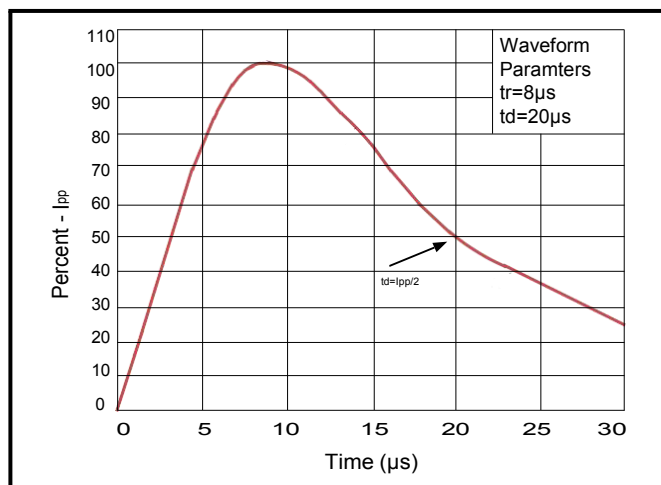
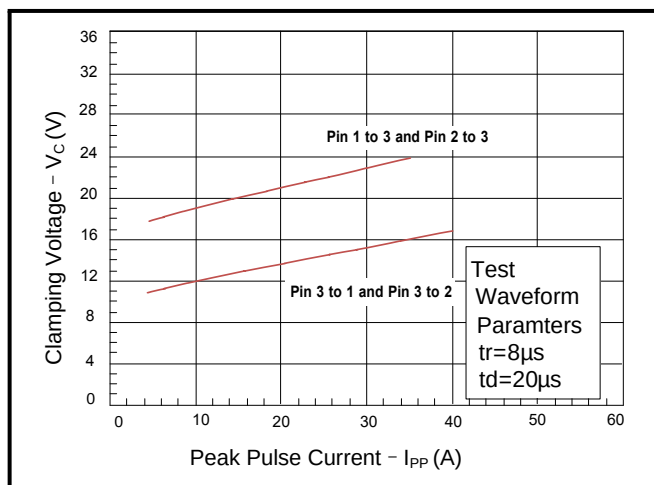


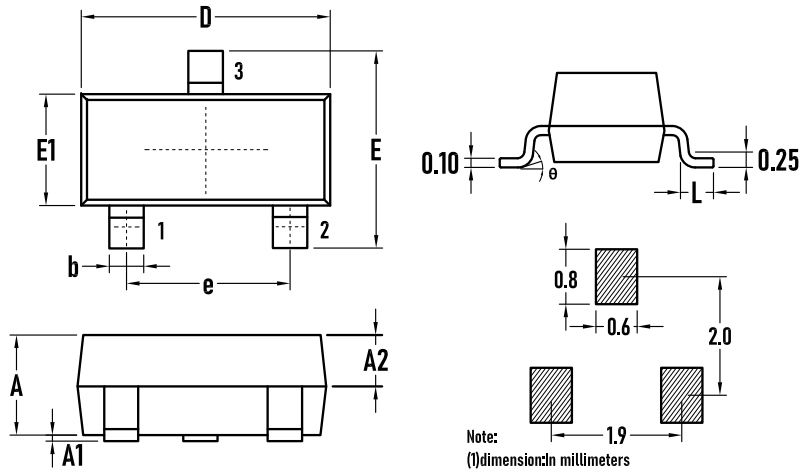
Figure 4: Clamping Voltage vs. IPP



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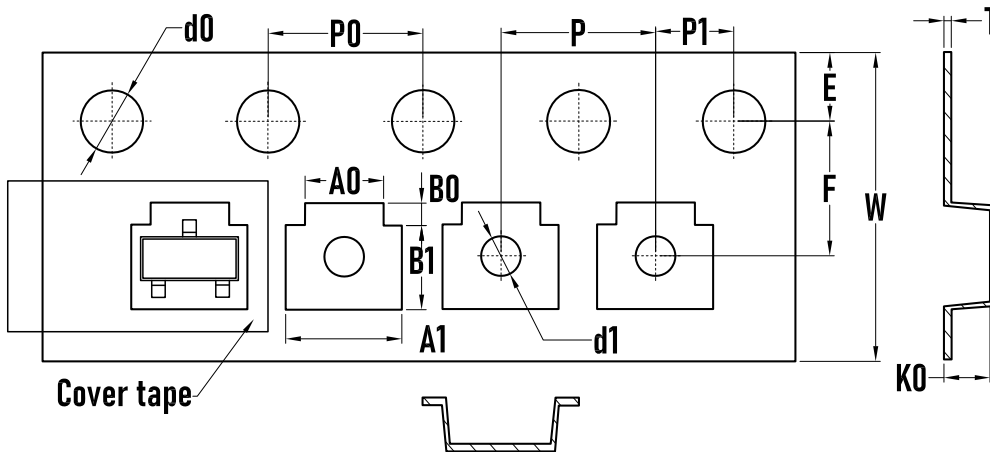
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Outline Drawing - SOT-23



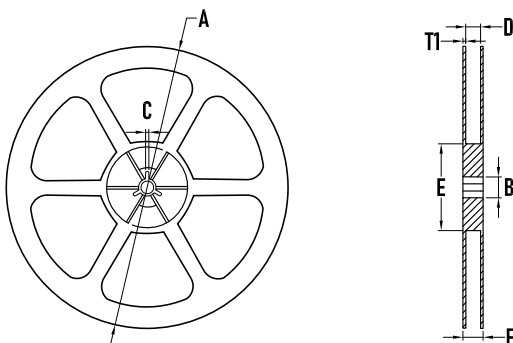
SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.90	1.00	1.10
A1	0.01	—	0.10
A2	0.50	0.60	0.70
D	2.80	2.90	3.00
b	0.25	0.35	0.45
E	2.10	2.30	2.50
E1	1.20	1.30	1.40
e	1.80	1.90	2.00
L	0.25	0.35	0.45
θ	0	—	8°

Packaging Tape - SOT-23



SYMBOL	MILLIMETER
A0	2.10±0.10
A1	3.10±0.10
B0	0.65±0.10
B1	2.75±0.10
d0	1.55±0.10
d1	1.00±0.05
E	1.75±0.10
F	3.50±0.10
K0	1.10±0.10
P	4.00±0.10
P0	4.00±0.10
P1	2.00±0.10
W	8.00±0.30
T	0.20 ±0.05

Packaging Reel



SYMBOL	MILLIMETER
A	177.8±0.2
B	3.1
C	13.50
D	9.6±0.3
E	75±0.2
F	12.3±0.3
T1	1.0±0.2
Quantity	3000PCS

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Specifications are subject to change without notice.
Please refer to <http://www.born-tw.com> for current information.

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