



## SSCEXXX11S6

### 1-Line Uni-directional TVS Diode

#### ● Description

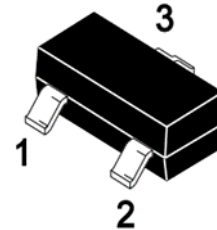
The SSCEXXX11S6 is a uni-directional TVS diode array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting sensitive semiconductor components from damage. The SSCEXXX11S6 complies with the IEC 61000-4-2 (ESD) standard with  $\pm 30\text{kV}$  air and  $\pm 30\text{kV}$  contact discharge.

It is assembled into a lead-free SOT-23 package. It is designed to protect components which are connected to data and transmission lines from voltage surges.

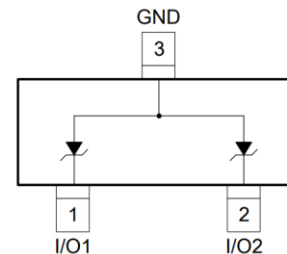
#### ● Features

- ✧ 300W peak pulse power (8/20us)
- ✧ Package: SOT-23
- ✧ Protects two uni-directional line(s)
- ✧ Ultra low leakage: nA level
- ✧ Stand-off Voltage: 3.3 V-36V
- ✧ Ultra low clamping voltage
- ✧ Complies with following standards:
  - IEC61000-4-2(ESD)  
Air discharge:  $\pm 30\text{KV}$   
Contact discharge:  $\pm 30\text{KV}$
  - IEC61000-4-4 (EFT) 40A (5/50ns)
- ✧ RoHS Compliant

#### ● PIN configuration



**SOT-23(Top view)**



**Circuit diagram**

#### ● Applications

- ✧ Cellular Handsets and Accessories
- ✧ Personal Digital Assistants
- ✧ Notebooks and Handhelds
- ✧ Portable Instrumentation
- ✧ Set Top Box
- ✧ Industrial Controls
- ✧ Server and Desktop PC

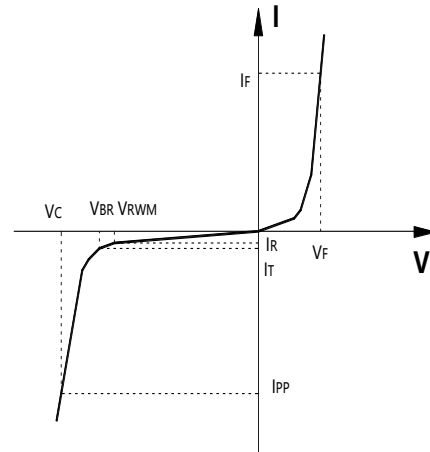
#### ● Mechanical Characteristics

- ✧ Lead finish: 100% matte Sn (Tin)
- ✧ Mounting position: Any
- ✧ Qualified max reflow temperature:  $260^{\circ}\text{C}$
- ✧ Device meets MSL 1 requirements
- ✧ Pure tin plating: 7 ~ 17  $\mu\text{m}$



● **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 @TA = 25°C**

SSCE3V311S6			
Symbol	Parameter	Value	Units
$P_{PP}$	Peak Pulse Power (8/20us)	300	W
$I_{PP}$	Peak Pulse Current (8/20us)	25	A
$V_{ESD}$	ESD Rating per IEC61000-4-2:	Contact Air	$\pm 30$ $\pm 30$ KV
$T_{STG}$	Storage Temperature	-55/+150	°C
$T_J$	Operating Temperature	-55/+125	°C
SSCE5V011S6			
Symbol	Parameter	Value	Units
$P_{PP}$	Peak Pulse Power (8/20us)	300	W
$I_{PP}$	Peak Pulse Current (8/20us)	18	A
$V_{ESD}$	ESD Rating per IEC61000-4-2:	Contact Air	$\pm 30$ $\pm 30$ KV
$T_{STG}$	Storage Temperature	-55/+150	°C
$T_J$	Operating Temperature	-55/+125	°C
SSCE12V11S6			
Symbol	Parameter	Value	Units
$P_{PP}$	Peak Pulse Power (8/20us)	300	W
$I_{PP}$	Peak Pulse Current (8/20us)	12	A
$V_{ESD}$	ESD Rating per IEC61000-4-2:	Contact Air	$\pm 30$ $\pm 30$ KV
$T_{STG}$	Storage Temperature	-55/+150	°C
$T_J$	Operating Temperature	-55/+125	°C



# SSCEXXX11S6

SSCE15V11S6			
Symbol	Parameter	Value	Units
P <sub>PP</sub>	Peak Pulse Power (8/20us)	300	W
I <sub>PP</sub>	Peak Pulse Current (8/20us)	10	A
V <sub>ESD</sub>	ESD Rating per IEC61000-4-2: Contact Air	±30 ±30	KV
T <sub>STG</sub>	Storage Temperature	-55/+150	°C
T <sub>J</sub>	Operating Temperature	-55/+125	°C
SSCE24V11S6			
Symbol	Parameter	Value	Units
P <sub>PP</sub>	Peak Pulse Power (8/20us)	300	W
I <sub>PP</sub>	Peak Pulse Current (8/20us)	5	A
V <sub>ESD</sub>	ESD Rating per IEC61000-4-2: Contact Air	±30 ±30	KV
T <sub>STG</sub>	Storage Temperature	-55/+150	°C
T <sub>J</sub>	Operating Temperature	-55/+125	°C
SSCE36V11S6			
Symbol	Parameter	Value	Units
P <sub>PP</sub>	Peak Pulse Power (8/20us)	300	W
I <sub>PP</sub>	Peak Pulse Current (8/20us)	4	A
V <sub>ESD</sub>	ESD Rating per IEC61000-4-2: Contact Air	±30 ±30	KV
T <sub>STG</sub>	Storage Temperature	-55/+150	°C
T <sub>J</sub>	Operating Temperature	-55/+125	°C

● **Electrical Characteristics @TA = 25°C**

SSCE3V311S6						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	V <sub>RWM</sub>				3.3	V
Breakdown Voltage	V <sub>BR</sub>	I <sub>T</sub> =1mA	4.0			V
Reverse Leakage Current	I <sub>R</sub>	V <sub>RWM</sub> =3.3V			1	μA
Clamping Voltage	V <sub>C</sub>	I <sub>PP</sub> =1A, tP = 8/20us		7.5		V
Clamping Voltage	V <sub>C</sub>	I <sub>PP</sub> =25A, tP = 8/20us			14	V
Junction Capacitance	C <sub>J</sub>	V <sub>R</sub> = 0V, f = 1MHz,			240	pF
SSCE5V011S6						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	V <sub>RWM</sub>				5.0	V
Breakdown Voltage	V <sub>BR</sub>	I <sub>T</sub> =1mA	6.0			V

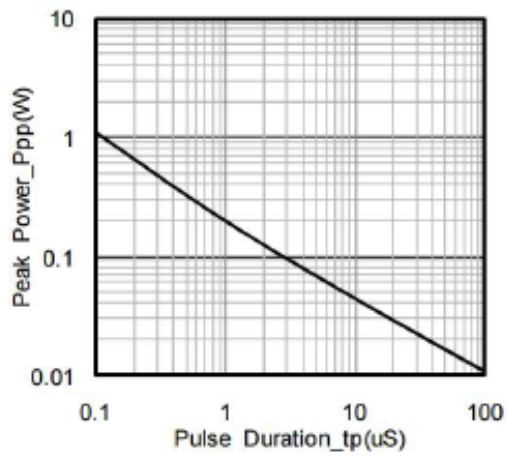


# SSCEXXX11S6

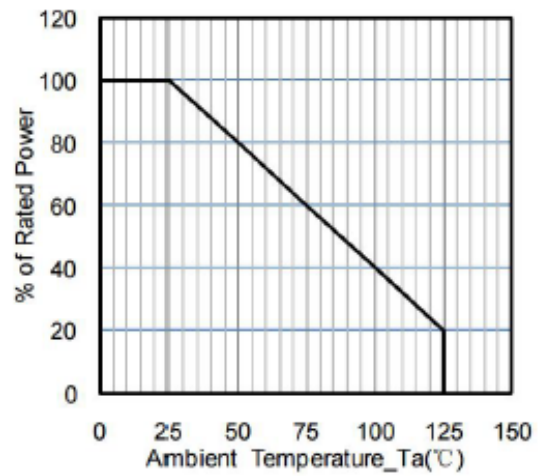
Reverse Leakage Current	$I_R$	$V_{RWM} = 5V$			1	$\mu A$
Clamping Voltage	$V_C$	$I_{PP} = 1A, tP = 8/20us$		9.8		V
Clamping Voltage	$V_C$	$I_{PP} = 18A, tP = 8/20us$			16.7	V
Junction Capacitance	$C_J$	$V_R = 0V, f = 1MHz,$			180	pF
<b>SSCE12V11S6</b>						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	$V_{RWM}$				12	V
Breakdown Voltage	$V_{BR}$	$I_T = 1mA$	13.3			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 12V$			1	$\mu A$
Clamping Voltage	$V_C$	$I_{PP} = 1A, tP = 8/20us$		19		V
Clamping Voltage	$V_C$	$I_{PP} = 10A, tP = 8/20us$			25	V
Junction Capacitance	$C_J$	$V_R = 0V, f = 1MHz,$			60	pF
<b>SSCE15V11S6</b>						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	$V_{RWM}$				15	V
Breakdown Voltage	$V_{BR}$	$I_T = 1mA$	16.7			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 15V$			1	$\mu A$
Clamping Voltage	$V_C$	$I_{PP} = 1A, tP = 8/20us$		24		V
Clamping Voltage	$V_C$	$I_{PP} = 5A, tP = 8/20us$			35	V
Junction Capacitance	$C_J$	$V_R = 0V, f = 1MHz,$			55	pF
<b>SSCE24V11S6</b>						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	$V_{RWM}$				24	V
Breakdown Voltage	$V_{BR}$	$I_T = 1mA$	26.7			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 24V$			1	$\mu A$
Clamping Voltage	$V_C$	$I_{PP} = 1A, tP = 8/20us$		35		V
Clamping Voltage	$V_C$	$I_{PP} = 5A, tP = 8/20us$			55	V
Junction Capacitance	$C_J$	$V_R = 0V, f = 1MHz,$			36	pF
<b>SSCE36V11S6</b>						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	$V_{RWM}$				36	V
Breakdown Voltage	$V_{BR}$	$I_T = 1mA$	40			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 36V$			1	$\mu A$
Clamping Voltage	$V_C$	$I_{PP} = 1A, tP = 8/20us$		60		V
Clamping Voltage	$V_C$	$I_{PP} = 3A, tP = 8/20us$			75	V
Junction Capacitance	$C_J$	$V_R = 0V, f = 1MHz,$			30	pF



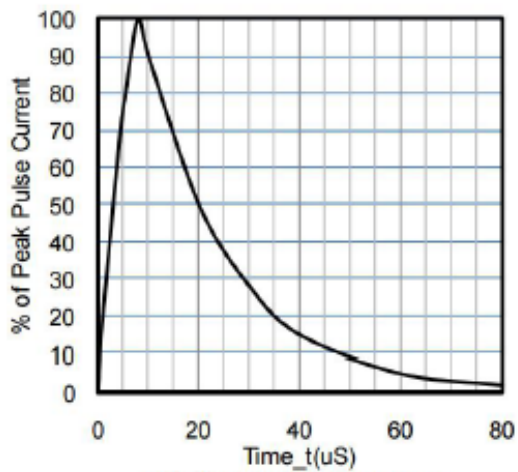
- Typical Performance Characteristics (TA = 25°C unless otherwise Specified)



Peak Pulse Power vs. Pulse Time



Power Derating Curve



8 X 20uS Pulse Waveform



- **Package Information**

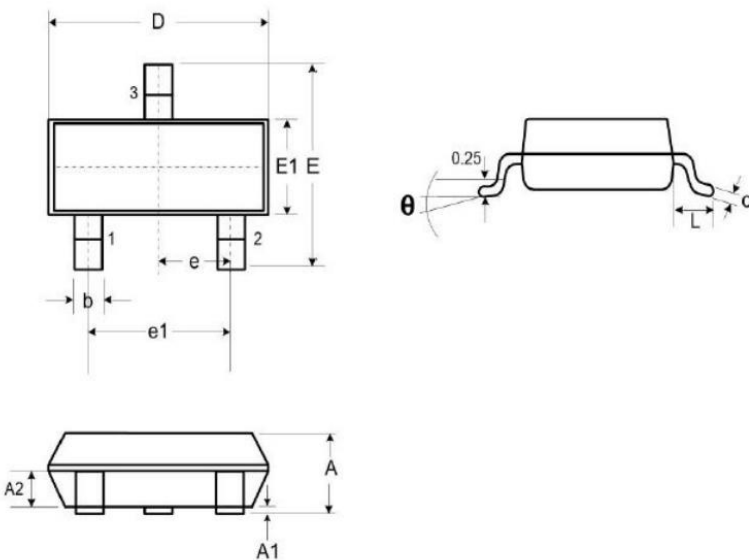
### Ordering Information

Device	Making	Package	Qty per Reel	Reel Size
SSCE3V311S6	3M2	SOT-23	3000	7 Inch
SSCE5V011S6	5M2	SOT-23	3000	7 Inch
SSCE12V11S6	AM2	SOT-23	3000	7 Inch
SSCE15V11S6	BM2	SOT-23	3000	7 Inch
SSCE24V11S6	CM2	SOT-23	3000	7 Inch
SSCE36V11S6	DM2	SOT-23	3000	7 Inch

### Mechanical Data

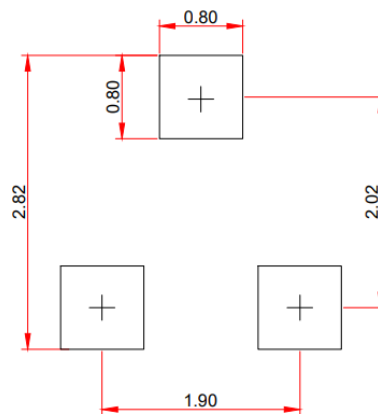
Case: SOT-23

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
e1	1.90		
e	0.95		
L	0.40	0.50	0.60
L1	0.55		
N	3		

### Recommended Pad outline (Unit: mm)





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