SSCEXXX12S6

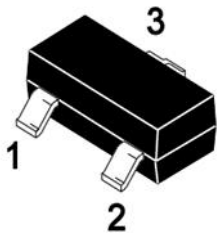
2-Line Bi-directional TVS Diode

Description

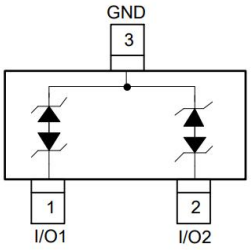
The SSCEXXX12S6 is a bi-directional TVS diode array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting sensitive semiconductor components from damage. The SSCEXXX12S6 complies with the IEC 61000-4-2 (ESD) standard with ±30kV air and ±30kV 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.

PIN configuration



SOT-23(Top view)



Circuit diagram

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: ±30KV
    - Contact discharge: ±30KV
  - -IEC61000-4-4 (EFT) 40A (5/50ns)
- ✧ RoHS Compliant

Applications

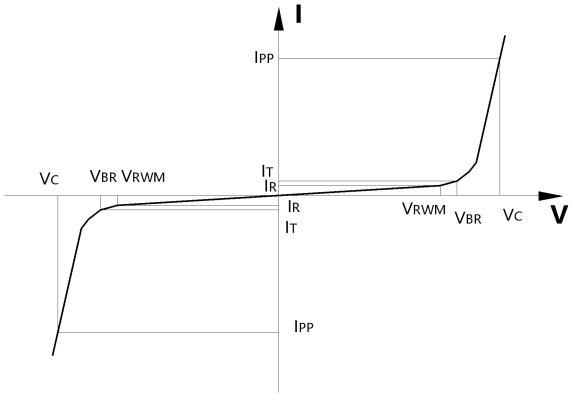
- ✧ Cellular Handsets and Accessories
- ✧ Personal Digital Assistants
- ✧ Notebooks and Handhelds
- ✧ Portable Instrumentation
- ✧ Set Top Box
- ✧ Industrial Controls
- ✧ Server and Desktop PC

Mechanical Characteristics

- ✧ Lead finish:100% matte Sn (Tin)
- ✧ Mounting position: Any
- ✧ Qualified max reflow temperature:260℃
- ✧ Device meets MSL 1 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℃

SSCE3V312S6			
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	±30 ±30	kV
T_{STG}	Storage Temperature	-55/+150	℃
T_J	Operating Temperature	-55/+125	℃
SSCE5V012S6			
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	±30 ±30	kV
T_{STG}	Storage Temperature	-55/+150	℃
T_J	Operating Temperature	-55/+125	℃
SSCE12V12S6			
Symbol	**Parameter**	**Value**	**Units**
P_{PP}	Peak Pulse Power（8/20us）	300	W
I_{PP}	Peak Pulse Current（8/20us）	10	A
V_{ESD}	ESD Rating per IEC61000-4-2: Contact Air	±30 ±30	kV
T_{STG}	Storage Temperature	-55/+150	℃
T_J	Operating Temperature	-55/+125	℃

SSCE15V12S6			
Symbol	**Parameter**	**Value**	**Units**
P_{PP}	Peak Pulse Power（8/20us）	300	W
I_{PP}	Peak Pulse Current（8/20us）	8	A
V_{ESD}	ESD Rating per IEC61000-4-2: Contact Air	±30 ±30	kV
T_{STG}	Storage Temperature	-55/+150	℃
T_J	Operating Temperature	-55/+125	℃

SSCE24V12S6			
Symbol	**Parameter**	**Value**	**Units**
P_{PP}	Peak Pulse Power（8/20us）	300	W
I_{PP}	Peak Pulse Current（8/20us）	5	A
V_{ESD}	ESD Rating per IEC61000-4-2: Contact Air	±30 ±30	kV
T_{STG}	Storage Temperature	-55/+150	℃
T_J	Operating Temperature	-55/+125	℃

SSCE36V12S6			
Symbol	**Parameter**	**Value**	**Units**
P_{PP}	Peak Pulse Power（8/20us）	300	W
I_{PP}	Peak Pulse Current（8/20us）	3	A
V_{ESD}	ESD Rating per IEC61000-4-2: Contact Air	±30 ±30	kV
T_{STG}	Storage Temperature	-55/+150	℃
T_J	Operating Temperature	-55/+125	℃

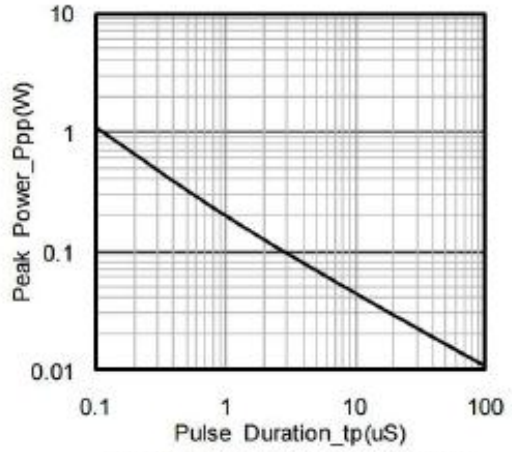
● Electrical Characteristics @T_A = 25℃

SSCE3V312S6						
Parameter	**Symbol**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
Peak Reverse Working Voltage	V_{RWM}				3.3	V
Breakdown Voltage	V_{BR}	I_T=1mA	3.8			V
Reverse Leakage Current	I_R	V_{RWM} =3.3V			1	μA
Clamping Voltage	V_C	I_{PP} =1A, tp = 8/20us		6		V
Clamping Voltage	V_C	I_{PP}=25A, tp = 8/20us			12	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz,		100		pF

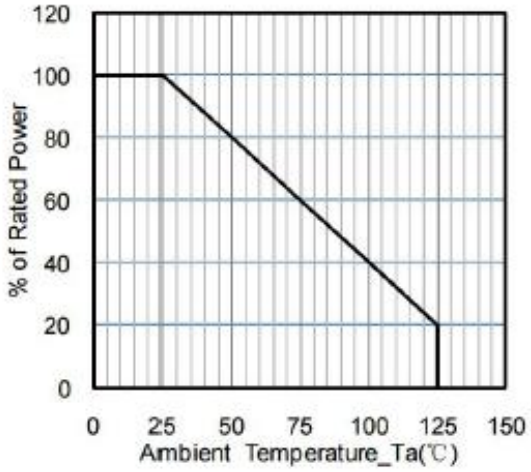
SSCE5V012S6						
Parameter	**Symbol**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
Peak Reverse Working Voltage	V_{RWM}				5.0	V
Breakdown Voltage	V_{BR}	I_T=1mA	6.0			V
Reverse Leakage Current	I_R	V_{RWM} =5V			1	μA
Clamping Voltage	V_C	I_{PP} =1A, tp = 8/20us		9.8		V
Clamping Voltage	V_C	I_{PP}=18A, tp = 8/20us			16.7	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz,		100		pF
SSCE12V12S6						
Parameter	**Symbol**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
Peak Reverse Working Voltage	V_{RWM}				12	V
Breakdown Voltage	V_{BR}	I_T=1mA	13			V
Reverse Leakage Current	I_R	V_{RWM} =12V			1	μA
Clamping Voltage	V_C	I_{PP} =1A, tp = 8/20us		19		V
Clamping Voltage	V_C	I_{PP}=10A, tp = 8/20us			30	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz,		60		pF
SSCE15V12S6						
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	μA
Clamping Voltage	V_C	I_{PP} =1A, tp = 8/20us		24		V
Clamping Voltage	V_C	I_{PP}=8A, tp = 8/20us			38.5	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz,		55		pF
SSCE24V12S6						
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	μA
Clamping Voltage	V_C	I_{PP} =1A, tp = 8/20us		35		V
Clamping Voltage	V_C	I_{PP}=5A, tp = 8/20us			65	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz,		36		pF

SSCE36V12S6						
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	μA
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

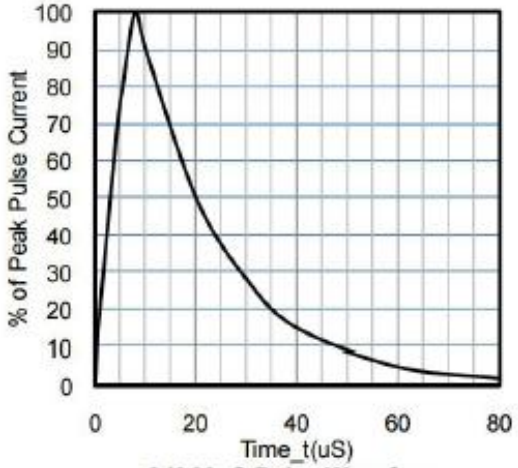
- **Typical Performance Characteristics (T_A = 25℃unless otherwise Specified)**



Peak Pulse Power vs. Pulse Time



Power Derating Curve



8 X 20uS Pulse Waveform

Package Information

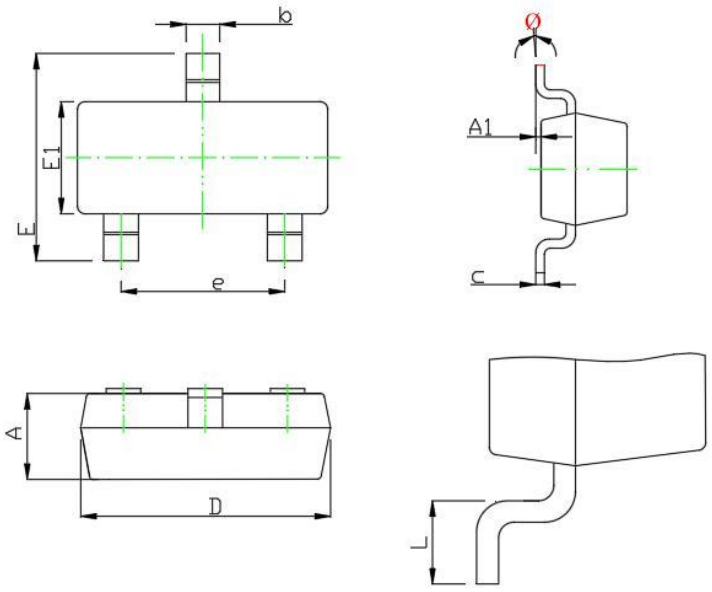
Ordering Information

Device	Making	Package	Qty per Reel	Reel Size
SSCE3V312S6	LL3	SOT-23	3000	7 Inch
SSCE5V012S6	L3B	SOT-23	3000	7 Inch
SSCE12V12S6	AB2	SOT-23	3000	7 Inch
SSCE15V12S6	BB2	SOT-23	3000	7 Inch
SSCE24V12S6	CB2	SOT-23	3000	7 Inch
SSCE36V12S6	DB2	SOT-23	3000	7 Inch

Mechanical Data

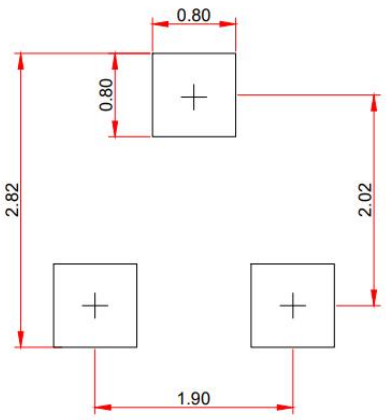
Case: SOT-23

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters		
	Min.	Typ.	Max.
A	0.90	1.00	1.15
A1	0.01	0.05	0.10
b	0.35	0.40	0.45
c	0.08	0.11	0.16
D	2.80	2.90	3.00
E	2.25	2.40	2.55
E1	1.20	1.30	1.40
e	0.80	1.90	2.00
L	0.30	0.40	0.50
θ	0°	/	8°

Recommended Pad outline (Unit: mm)



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