SSCTXXX22D2 Series

3.3V~24V Ultra Low Capacitance bi-directional TVS Diode

Description

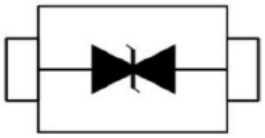
The SSCTXXX22D2 is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines.

The SSCTXXX22D2 complies with the IEC 61000-4-2 (ESD) standard with ±30kV air and ±30kV contact discharge. It is assembled into a leadfree SOD-323 package. The small size, low capacitance and high ESD surge protection make SSCTXXX22D2 an ideal choice to protect cell phone, wireless systems, and communication equipment.

Feature

- 350W peak pulse power (t_P = 8/20us)
- SOD-323 Package
- Working voltage: 3.3V,5V,12V,15V,24V,36V
- Low clamping voltage
- Low capacitance
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - – IEC61000-4-4 (EFT) 40A (5/50ns)

PIN configuration



Top view

Applications

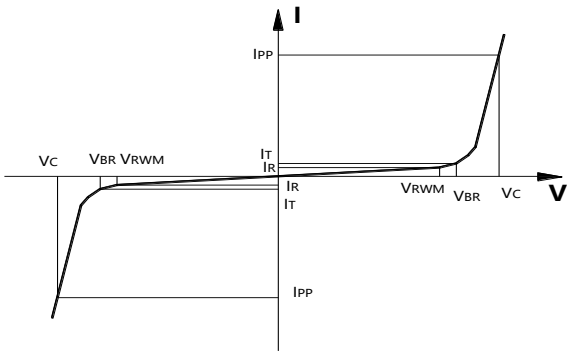
- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Networking and Telecom
- Serial and Parallel Ports.
- Peripherals

Mechanical data

- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Qualified max reflow temperature:260℃
- Device meets MSL 3 requirements
- Moisture Sensitivity: Level 3 per J-STD-020

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	Junction Capacitance



Absolute maximum rating @TA=25℃

SSCT3V322D2			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (tp=8/20μs waveform)	P_{PPP}	350	W
Peak Pulse Current (tp=8/20μs waveform)	I_{PP}	20	A
ESD Rating per IEC61000-4-2： Contact Air	V_{ESD}	30 30	KV
Operating Temperature Range	T_J	-55 ~ 125	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃
SSCT5V022D2			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (tp=8/20μs waveform)	P_{PPP}	350	W
Peak Pulse Current (tp=8/20μs waveform)	I_{PP}	17	A
ESD Rating per IEC61000-4-2： Contact Air	V_{ESD}	30 30	KV
Operating Temperature Range	T_J	-55 ~ 125	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃
SSCT12V22D2			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (tp=8/20μs waveform)	P_{PPP}	350	W
Peak Pulse Current (tp=8/20μs waveform)	I_{PP}	11	A
ESD Rating per IEC61000-4-2： Contact Air	V_{ESD}	30 30	KV
Operating Temperature Range	T_J	-55 ~ 125	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃

SSCT15V22D2			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (tp=8/20μs waveform)	P_{PPP}	350	W
Peak Pulse Current (tp=8/20μs waveform)	I_{PP}	10	A
ESD Rating per IEC61000-4-2： Contact Air	V_{ESD}	30 30	KV
Operating Temperature Range	T_J	-55 ~ 125	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃

SSCT24V22D2			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (tp=8/20μs waveform)	P_{PPP}	350	W
Peak Pulse Current (tp=8/20μs waveform)	I_{PP}	7	A
ESD Rating per IEC61000-4-2： Contact Air	V_{ESD}	30 30	KV
Operating Temperature Range	T_J	-55 ~ 125	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃

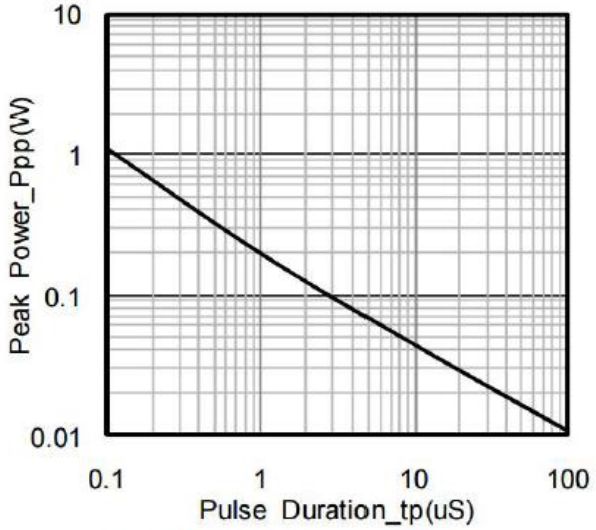
SSCT36V22D2			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (tp=8/20μs waveform)	P_{PPP}	350	W
Peak Pulse Current (tp=8/20μs waveform)	I_{PP}	5	A
ESD Rating per IEC61000-4-2： Contact Air	V_{ESD}	30 30	KV
Operating Temperature Range	T_J	-55 ~ 125	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃

● Electrical Characteristics @TA=25℃

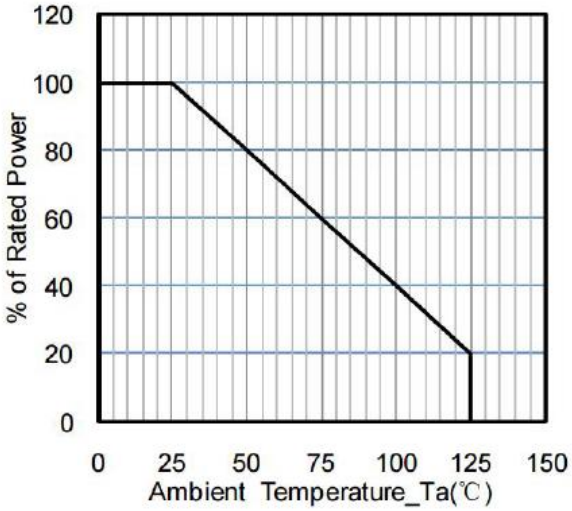
SSCT3V322D2						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			3.3	V	
Breakdown Voltage	V_{BR}	4.0			V	IT = 1mA
Reverse Leakage Current	I_R			40	uA	VRWM = 3.3V
Clamping Voltage	V_C		7		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	V_C			19	V	IPP = 20A (8 x 20uS pulse)
Junction Capacitance	C_J		450		pF	VR = 0V, f = 1MHz

SSCT5V022D2						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6.2			V	I_T = 1mA
Reverse Leakage Current	I_R			10	uA	V_{RWM} = 5V
Clamping Voltage	V_C		9.8		V	I_{PP} = 1A (8 x 20us pulse)
Clamping Voltage	V_C			21	V	I_{PP} = 17A (8 x 20us pulse)
Junction Capacitance	C_J		200		pF	V_R = 0V, f = 1MHz
SSCT12V22D2						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			12	V	
Breakdown Voltage	V_{BR}	13.3			V	I_T = 1mA
Reverse Leakage Current	I_R			1	uA	V_{RWM} = 12V
Clamping Voltage	V_C		19		V	I_{PP} = 1A (8 x 20us pulse)
Clamping Voltage	V_C			32	V	I_{PP} = 11A (8 x 20us pulse)
Junction Capacitance	C_J		75		pF	V_R = 0V, f = 1MHz
SSCT15V22D2						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			15	V	
Breakdown Voltage	V_{BR}	16.7			V	I_T = 1mA
Reverse Leakage Current	I_R			1	uA	V_{RWM} = 15V
Clamping Voltage	V_C		24		V	I_{PP} = 1A (8 x 20us pulse)
Clamping Voltage	V_C			38	V	I_{PP} = 10A (8 x 20us pulse)
Junction Capacitance	C_J		68		pF	V_R = 0V, f = 1MHz
SSCT24V22D2						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			24	V	
Breakdown Voltage	V_{BR}	26.7			V	I_T = 1mA
Reverse Leakage Current	I_R			1	uA	V_{RWM} = 24V
Clamping Voltage	V_C		43		V	I_{PP} = 1A (8 x 20us pulse)
Clamping Voltage	V_C			52	V	I_{PP} = 7A (8 x 20us pulse)
Junction Capacitance	C_J		57		pF	V_R = 0V, f = 1MHz
SSCT36V22D2						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			36	V	
Breakdown Voltage	V_{BR}	40			V	I_T = 1mA
Reverse Leakage Current	I_R			1	uA	V_{RWM} = 36V
Clamping Voltage	V_C		63		V	I_{PP} = 1A (8 x 20us pulse)
Clamping Voltage	V_C			80	V	I_{PP} = 5A (8 x 20us pulse)
Junction Capacitance	C_J		35		pF	V_R = 0V, f = 1MHz

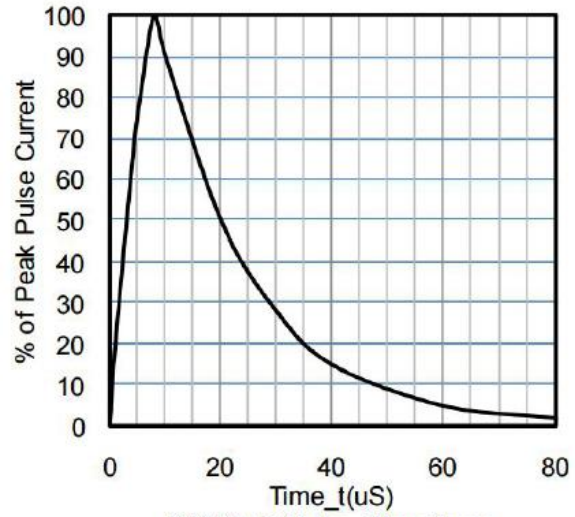
- **Typical Performance Characteristics**



Peak Pulse Power vs. Pulse Time



Power Derating Curve



8 X 20uS Pulse Waveform

- **Package Information**

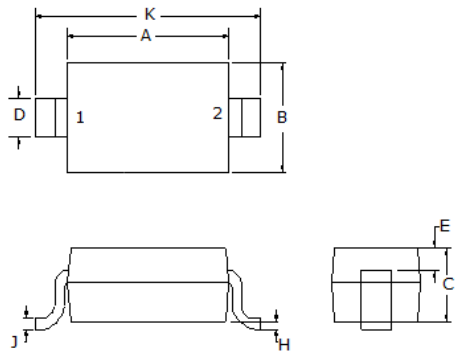
Ordering Information

Device	Making	Package	Qty per Reel	Reel Size
SSCT3V322D2	03B	SOD-323	3000	7 Inch
SSCT5V022D2	05B	SOD-323	3000	7 Inch
SSCT12V22D2	12B	SOD-323	3000	7 Inch
SSCT15V22D2	15B	SOD-323	3000	7 Inch
SSCT24V22D2	24B	SOD-323	3000	7 Inch
SSCT36V22D2	36B	SOD-323	3000	7 Inch

Mechanical Data

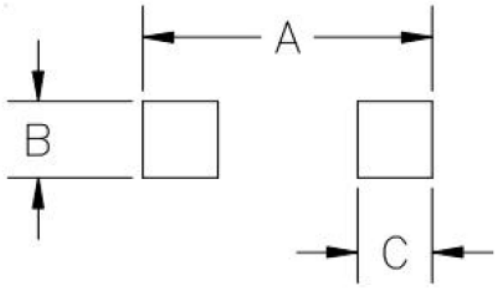
Case: SOD-323

Case Material: Molded Plastic. UL Flammability



Dim	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
A	1.50	1.80	0.060	0.071
B	1.2	1.40	0.045	0.054
C	-	1.10	-	0.043
D	0.30	0.40	0.012	0.016
H	-	0.10	-	0.004
J	0.10	0.25	0.004	0.010
K	2.30	2.70	0.090	0.107

Recommended Pad outline



Dim	Dimensions	
	Millimeter	Inches
A	3.15	0.120
B	0.80	0.031
C	0.80	0.031

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