SSCTXXX21D2 Series

1-line TVS Diodes for ESD Protection

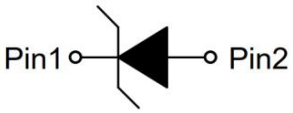
● Description

The SSCTXXX21D2 is an uni-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 SSCTXXX21D2 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 SSCTXXX21D2 an ideal choice to protect cell phone, wireless systems, and communication equipment.

● PIN configuration

SOD-323



Circuit Diagram

● Feature

- ✧ 350W peak pulse power (t_P = 8/20μs)
- ✧ SOD-323 Package
- ✧ Working voltage: 3.3V,5V,12V,15V,18V,20V,24V,36V
- ✧ Low clamping voltage
- ✧ Low capacitance
- ✧ Low leakage current
- ✧ Response Time is<1 ns
- ✧ RoHS compliant
- ✧ Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - –IEC 61000-4-4(EFT) (5/50ns)

● Applications

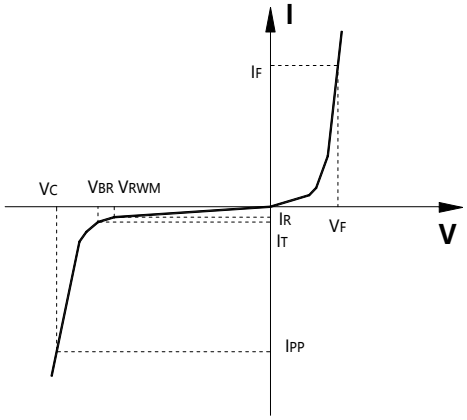
- ✧ Cell Phone Handsets and Accessories
- ✧ Microprocessor based equipment
- ✧ Personal Digital Assistants (PDAs)
- ✧ Notebooks, Desktops, and Servers
- ✧ Portable Instrumentation
- ✧ Digital Cameras
- ✧ Laptop Computers
- ✧ Peripherals

● 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
- ✧ Pin flatness: ≤3mil

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}	SSCT3V321D2	20	A
		SSCT5V021D2	17	
		SSCT12V21D2	11	
		SSCT15V21D2	10	
		SSCT18V21D2	9	
		SSCT20V21D2	8	
		SSCT24V21D2	7	
		SSCT36V21D2	5	
ESD Rating per IEC61000-4-2： Contact Air	V_{ESD}		30 30	kV
Storage Temperature	T_{STG}		-55/+150	℃
Operating Temperature	T_J		-55/+125	℃

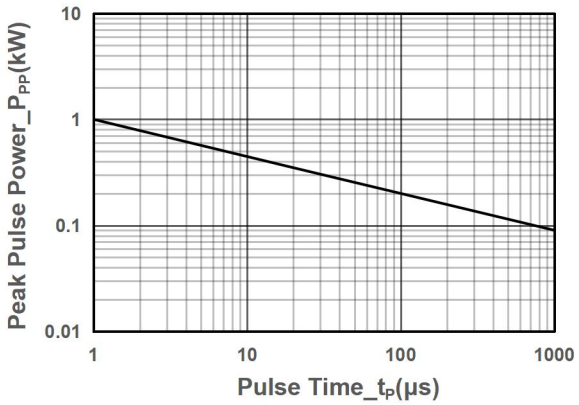
Electrical Characteristics @T_A=25℃

SSCT3V321D2						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
Reverse Working Voltage	V_{RWM}			3.3	V	
Breakdown Voltage	V_{BR}	4.0			V	I_T = 1mA
Reverse Leakage Current	I_R			40	μA	V_{RWM} = 3.3V
Clamping Voltage	V_C		6.5		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			10.5	V	I_{PP} = 20A (8 x 20μs pulse)
Junction Capacitance	C_J		450		pF	V_R = 0V, f = 1MHz

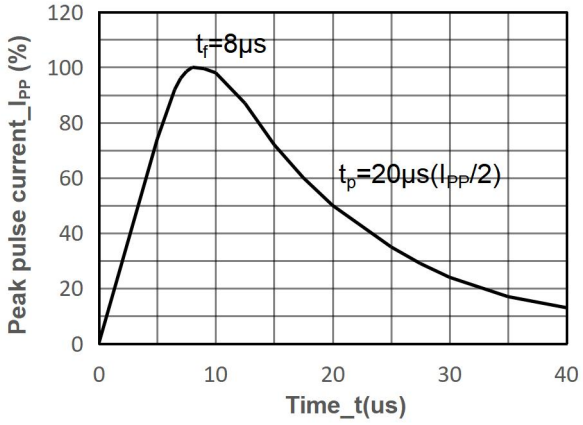
SSCT5V021D2						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6.2			V	I_T = 1mA
Reverse Leakage Current	I_R			10	μA	V_{RWM} = 5V
Clamping Voltage	V_C		9.8		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			18.6	V	I_{PP} = 17A (8 x 20μs pulse)
Junction Capacitance	C_J		300		pF	V_R = 0V, f = 1MHz
SSCT12V21D2						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
Reverse Working Voltage	V_{RWM}			12	V	
Breakdown Voltage	V_{BR}	13.3			V	I_T = 1mA
Reverse Leakage Current	I_R			1	μA	V_{RWM} = 12V
Clamping Voltage	V_C		19		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			32	V	I_{PP} = 11A (8 x 20μs pulse)
Junction Capacitance	C_J		130		pF	V_R = 0V, f = 1MHz
SSCT15V21D2						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
Reverse Working Voltage	V_{RWM}			15	V	
Breakdown Voltage	V_{BR}	16.7			V	I_T = 1mA
Reverse Leakage Current	I_R			1	μA	V_{RWM} = 15V
Clamping Voltage	V_C		17.6		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			38	V	I_{PP} = 10A (8 x 20μs pulse)
Junction Capacitance	C_J		120		pF	V_R = 0V, f = 1MHz
SSCT18V21D2						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
Reverse Working Voltage	V_{RWM}			18	V	
Breakdown Voltage	V_{BR}	20			V	I_T = 1mA
Reverse Leakage Current	I_R			1	μA	V_{RWM} = 18V
Clamping Voltage	V_C		29		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			45	V	I_{PP} = 9A (8 x 20μs pulse)
Junction Capacitance	C_J		100		pF	V_R = 0V, f = 1MHz
SSCT20V21D2						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
Reverse Working Voltage	V_{RWM}			20	V	
Breakdown Voltage	V_{BR}	22.3			V	I_T = 1mA
Reverse Leakage Current	I_R			1	μA	V_{RWM} = 20V
Clamping Voltage	V_C		35		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			50	V	I_{PP} = 8A (8 x 20μs pulse)
Junction Capacitance	C_J		90		pF	V_R = 0V, f = 1MHz

SSCT24V21D2						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
Reverse Working Voltage	V_{RWM}			24	V	
Breakdown Voltage	V_{BR}	26.7			V	I_T = 1mA
Reverse Leakage Current	I_R			1	μA	V_{RWM} = 24V
Clamping Voltage	V_C		43		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			52	V	I_{PP} = 7A (8 x 20μs pulse)
Junction Capacitance	C_J		80		pF	V_R = 0V, f = 1MHz
SSCT36V21D2						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
Reverse Working Voltage	V_{RWM}			36	V	
Breakdown Voltage	V_{BR}	40			V	I_T = 1mA
Reverse Leakage Current	I_R			1	μA	V_{RWM} = 36V
Clamping Voltage	V_C		60		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			70	V	I_{PP} = 5A (8 x 20μs pulse)
Junction Capacitance	C_J		60		pF	V_R = 0V, f = 1MHz

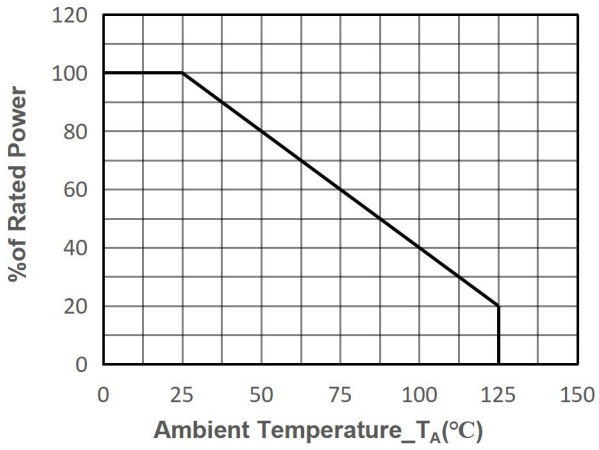
- **Typical Performance Characteristics**



Peak Pulse Power vs. Pulse Time



8/20μs Pulse Waveform



Power derating vs. Ambient temperature

● Package Information

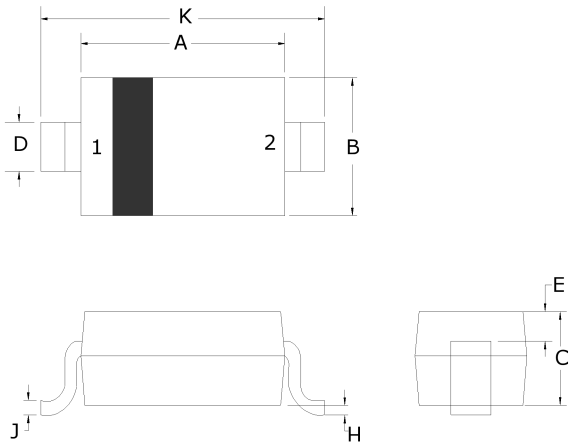
Ordering Information

Device	Package	Marking	Qty per Reel	Reel Size
SSCT3V321D2	SOD-323	03	3000	7 Inch
SSCT5V021D2	SOD-323	05	3000	7 Inch
SSCT12V21D2	SOD-323	D12	3000	7 Inch
SSCT15V21D2	SOD-323	D15	3000	7 Inch
SSCT18V21D2	SOD-323	18W	3000	7 Inch
SSCT20V21D2	SOD-323	20W	3000	7 Inch
SSCT24V21D2	SOD-323	D24	3000	7 Inch
SSCT36V21D2	SOD-323	36	3000	7 Inch

Mechanical Data

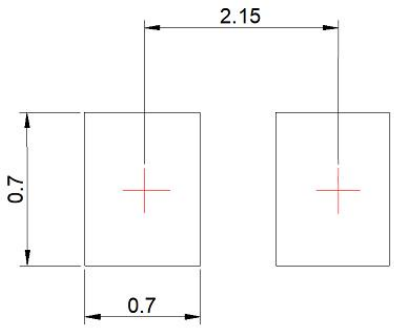
Case: SOD-323

Case Material: Molded Plastic. UL Flammability



Dim	Millimeters	
	Min	Max
A	1.60	1.80
B	1.2	1.40
C	0.80	0.90
D	0.25	0.35
E	0.15REF	
H	0	0.10
J	0.08	0.15
K	2.45	2.75

Recommended Pad outline（Unit: mm）



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