

## DESCRIPTION

Brightking's SDT23CXXL02 series are designed to protect sensitive electronics from damage or latch-up due to ESD and other voltage-induced transient events. They are designed for use in applications where board space is at a premium. The devices will protect up to two lines. They are bidirectional devices and may be used on lines where the signal polarities are above ground. TVS diodes are solid-state devices designed specifically for transient suppression.

They feature large cross-sectional area junctions for conduction high transient currents. They offer desirable characteristics for board level protection including fast response time, low and clamping voltage, and no device degradation. The devices may be used to meet the immunity requirements of IEC61000-4-2, level 4.

The size SOT-23 package makes them ideal for use in portable electronics such as RS-422 I/Os, RS-232 I/Os, notebook computers, and servers.

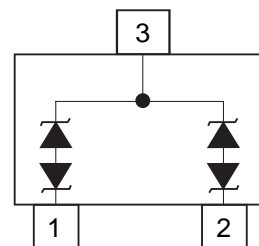


**HBM :  $\pm 8\text{kV}$**   
**Air Mode :  $\pm 15\text{kV}$**



## SPECIFICATION FEATURES

- IEC61000-4-2  $\pm 15\text{kV}$  Air,  $\pm 8\text{kV}$  contact
- SOT-23 surface mount package
- Protects bidirectional two I/O lines
- Peak power dissipation of 350W under 8/20 $\mu\text{s}$  waveform
- Working voltage: 5V, 12V & 15V
- Low leakage current
- Low operating and clamping voltages
- Solid-state silicon avalanche technology



SDT23CXXL02

## APPLICATIONS

- RS-232 and RS-422 data lines
- Microprocessor based equipment
- LAN/WAN Equipment
- Desktops PC and Servers
- Notebook, Laptop, and Palmtop Computers
- Set Top Box
- Peripherals
- Serial and Parallel ports

**MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20μs waveform)	Ppp	350	W
ESD voltage (HBM contact)	V <sub>ESD</sub>	±8	KV
ESD voltage (AIR contact)		±15	
Storage & operating temperature range	T <sub>STG</sub> ,T <sub>J</sub>	-55~+150	°C

**ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C)**

SDT23C05L02 (Marking : C05)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V <sub>RWM</sub>				5	V
Reverse breakdown voltage	V <sub>BR</sub>	I <sub>BR</sub> =1mA	6			V
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> =5V, each I/O pin			5	μA
Clamping voltage (tp=8/20μs)	V <sub>C</sub>	I <sub>PP</sub> =1A			9.8	V
Clamping voltage (tp=8/20μs)	V <sub>C</sub>	I <sub>PP</sub> =10A			18	V
Off state junction capacitance	C <sub>J</sub>	0Vdc,f=1MHZ between I/O pins and GND		150		pF

**ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C)**
**SDT23C12L02 (Marking : C12)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V <sub>RWM</sub>				12	V
Reverse breakdown voltage	V <sub>BR</sub>	I <sub>BR</sub> =1mA	13.3			V
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> =12V, each I/O pin			1	μA
Clamping voltage (tp=8/20μs)	V <sub>C</sub>	I <sub>PP</sub> =1A			19	V
Clamping voltage (tp=8/20μs)	V <sub>C</sub>	I <sub>PP</sub> =5A			32	V
Off state junction capacitance	C <sub>J</sub>	0Vdc,f=1MHZ between I/O pins and GND		65		pF

**SDT23C15L02 (Marking : C15)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V <sub>RWM</sub>				15	V
Reverse breakdown voltage	V <sub>BR</sub>	I <sub>BR</sub> =1mA	16.7			V
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> =15V, each I/O pin			1	μA
Clamping voltage (tp=8/20μs)	V <sub>C</sub>	I <sub>PP</sub> =1A			24	V
Clamping voltage (tp=8/20μs)	V <sub>C</sub>	I <sub>PP</sub> =5A			38	V
Off state junction capacitance	C <sub>J</sub>	0Vdc,f=1MHZ between I/O pins and GND		60		pF

## TYPICAL CHARACTERISTICS CURVES

Figure 1. Power Derating Curve

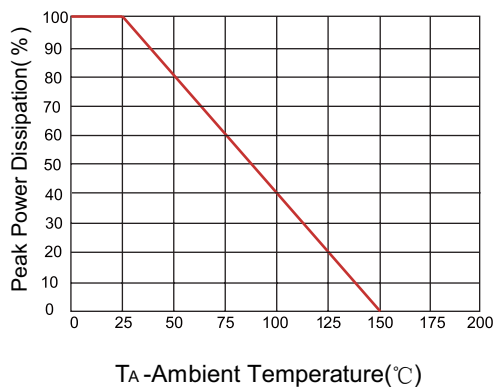


Figure 2. Pulse Waveforms

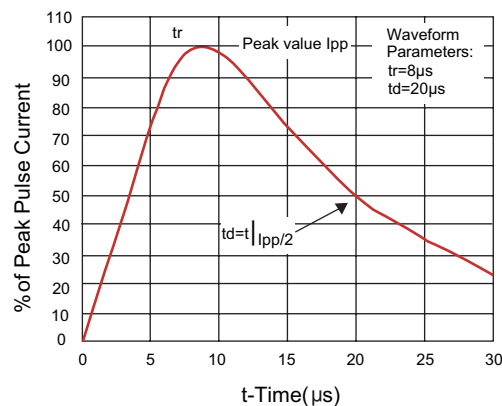


Figure 3. Non-Repetitive Peak Pulse vs Pulse Time

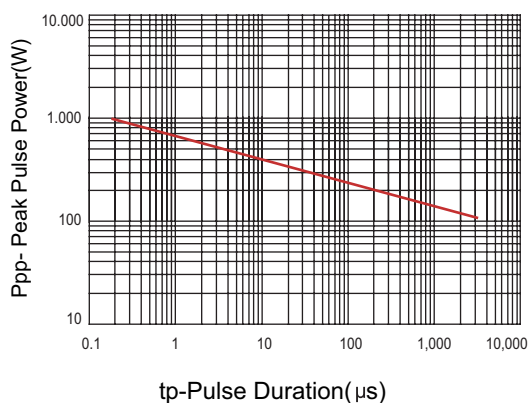


Figure 4. Normalized Capacitance vs. Reverse Voltage

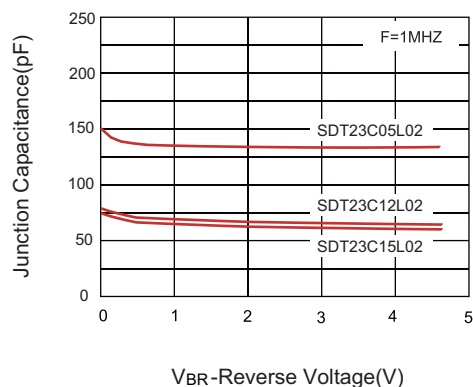


Figure 5. ESD Clamping(8kV Contact per IEC61000-4-2)

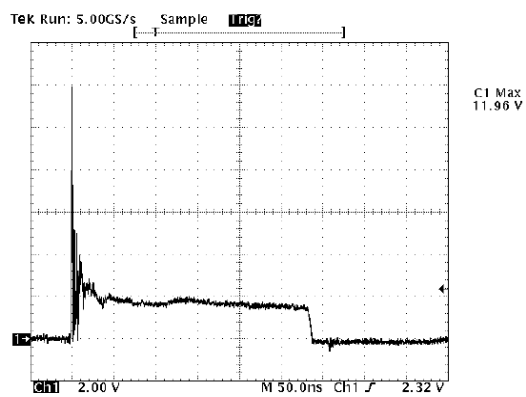
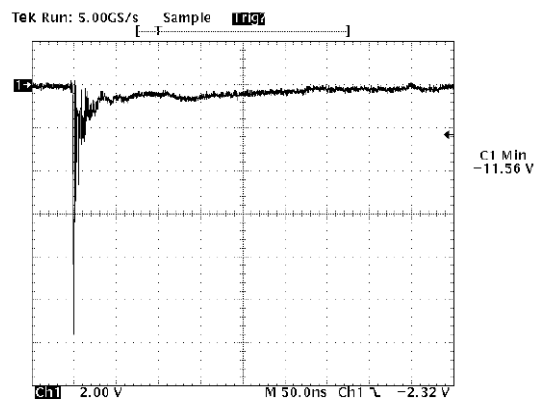
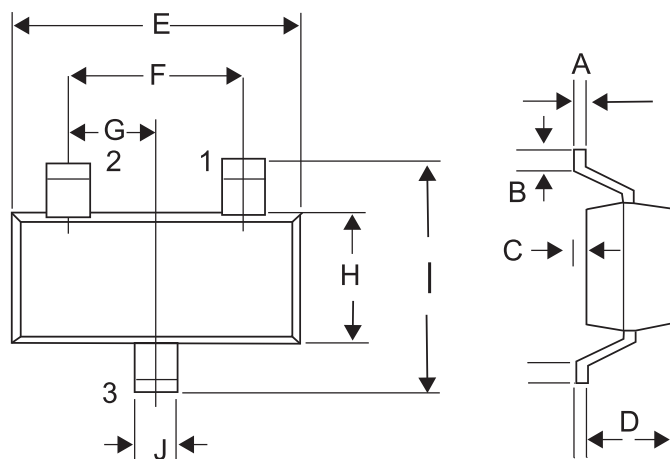


Figure 6. ESD Clamping(-8kV Contact per IEC61000-4-2)



**PACKAGE AND SUGGESTED PAD LAYOUT DIMENSION**

**SOT-23(unit:mm)**



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.003	0.007	0.08	0.18
B	0.006	-	0.15	-
C	-	0.005	-	0.13
D	0.035	0.043	0.89	1.09
E	0.110	0.120	2.80	3.05
F	0.075		1.90	
G	0.037		0.95	
H	0.047	0.055	1.19	1.40
I	0.083	0.098	2.10	2.49
J	0.014	0.020	0.35	0.50

