

## Electrostatic Discharged Protection Devices (ESD) Data Sheet

### Description

Brightking's SDT23C712L02 component is designed for asymmetrical (12V to -7V) protection in multi-point data transmission standard RS-485 applications. It may be used to protect devices from transient voltages resulting from electrostatic discharge (ESD), electrical fast transients (EFT), and lightning. It features 400W ( $t_p=8/20\mu s$ ) of power handing capability to accommodate the higher transient voltage levels which may be expected in extended common mode applications.

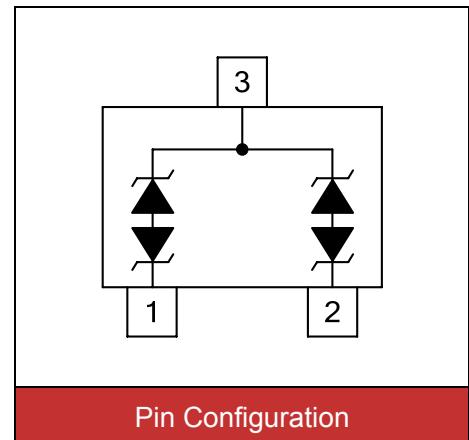


Contact: ±8kV  
Air : ±15kV



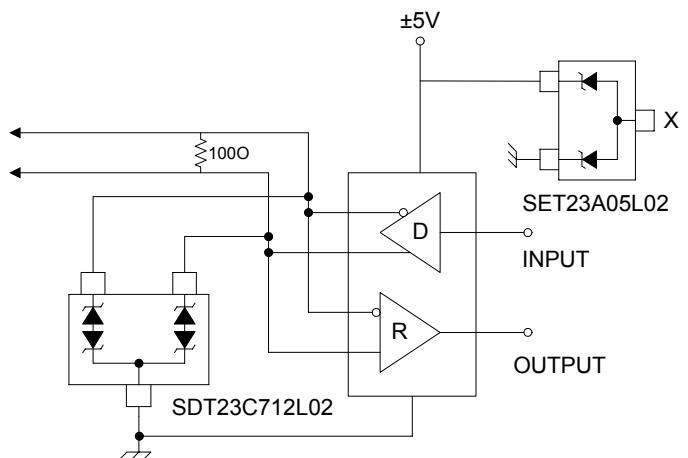
### Features

- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- SOT-23 surface mount package
- Protects two +12V to -7V lines
- Peak power dissipation of 400W under 8/20 $\mu s$  waveform
- Low leakage current
- Low clamping voltage
- Solid-state silicon avalanche technology
- Lead Free/RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270°C
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: B 712



### Applications

- Protection of RS-485 transceiver with extended Common-mode range
- Security Systems
- Automatic Teller Machines
- HFC Systems
- Networks



**Maximum Ratings**

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20μs waveform)	P <sub>PP</sub>	400	W
ESD voltage (Contact discharge)	V <sub>ESD</sub>	±8	kV
ESD voltage (Air discharge)		±15	
Storage & operating temperature range	T <sub>STG</sub> , T <sub>J</sub>	-55~+150	°C

**Electrical Characteristics (T<sub>J</sub>=25°C)**

Pin 1 to Pin3 and Pin2 to Pin3

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			1	μA
Clamping voltage (tp=8/20μs)	V <sub>C</sub>	I <sub>PP</sub> =5A			20	V
Off state junction capacitance	C <sub>J</sub>	0Vdc,f=1MHz Between I/O pins and GND			75	pF

Pin 3 to Pin1 and Pin3 to Pin2

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V <sub>RWM</sub>				7	V
Reverse breakdown voltage	V <sub>BR</sub>	I <sub>BR</sub> =1mA	7.5			V
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> =7V			20	μA
Clamping voltage (tp=8/20μs)	V <sub>C</sub>	I <sub>PP</sub> =5A			10	V
Off state junction capacitance	C <sub>J</sub>	0Vdc,f=1MHz Between I/O pins and GND			75	pF

## Typical Characteristics Curves

Figure 1. Power Derating Curve

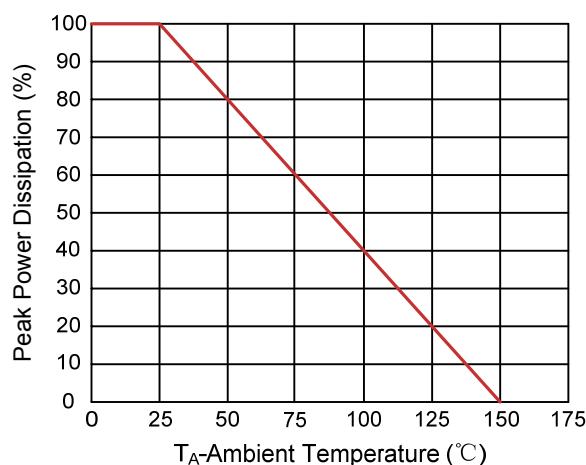


Figure 2. Pulse Waveforms

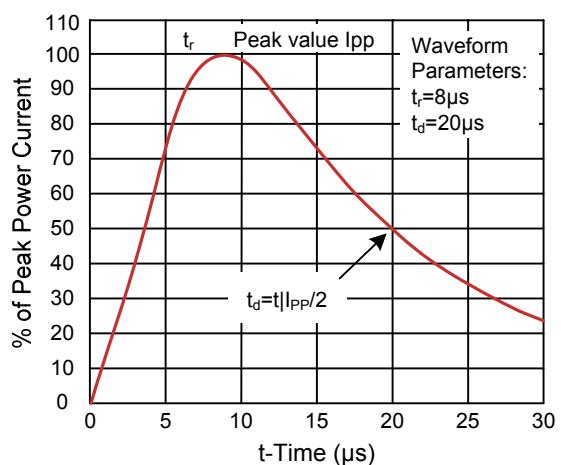


Figure 3. Non-Repetitive Peak Pulse vs. Pulse Time

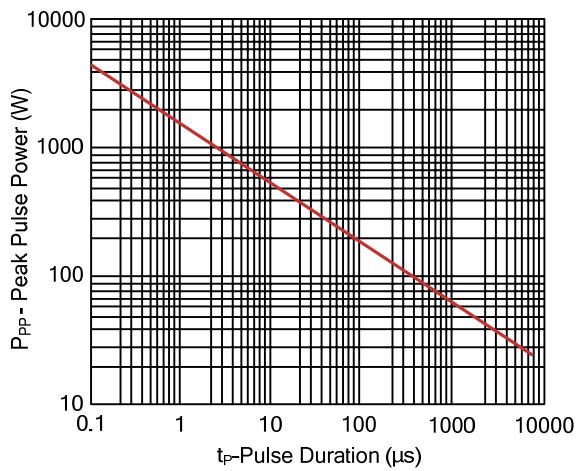
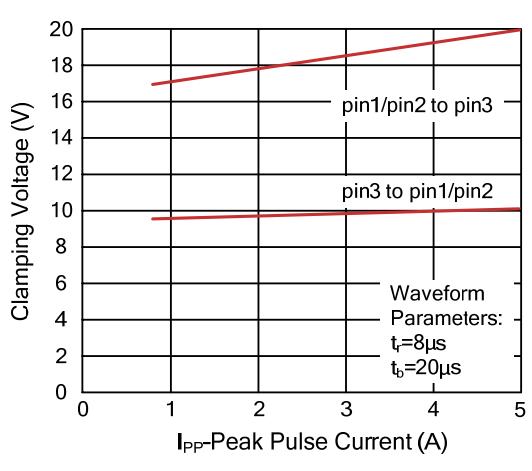
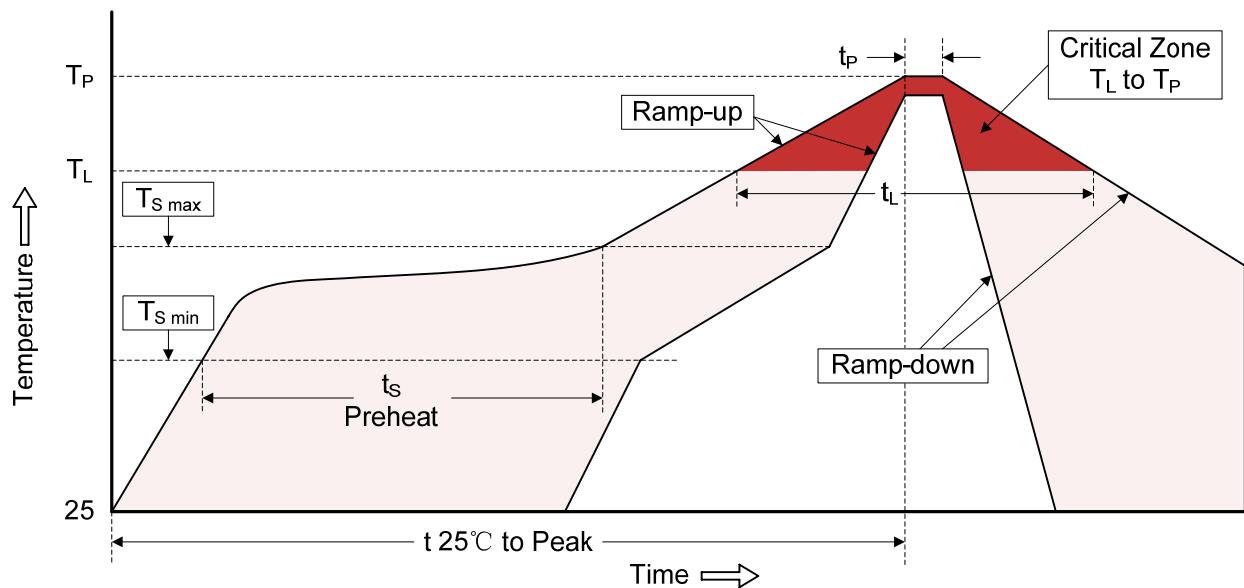


Figure 4. Clamping Voltage vs. Peak Pulse Current



## Recommended Soldering Conditions

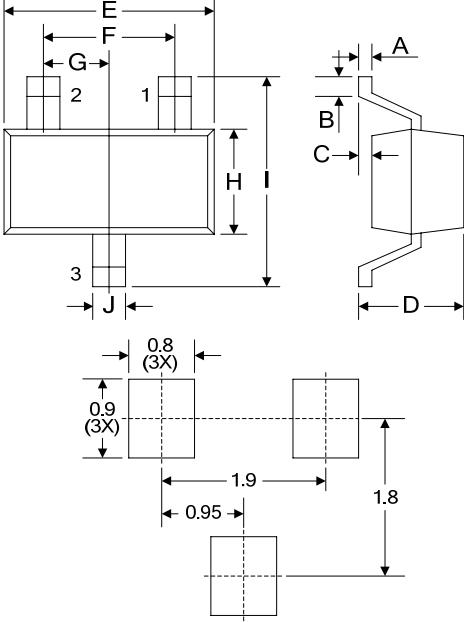
### Reflow Soldering



### Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat <ul style="list-style-type: none"> <li>-Temperature Min (<math>T_{S\ min}</math>)</li> <li>-Temperature Max (<math>T_{S\ max}</math>)</li> <li>-Time (min to max) (<math>t_s</math>)</li> </ul>	<ul style="list-style-type: none"> <li>150°C</li> <li>200°C</li> <li>60-180 seconds</li> </ul>
$T_{S\ max}$ to $T_L$ <ul style="list-style-type: none"> <li>-Ramp-up Rate</li> </ul>	3°C/second max.
Time maintained above: <ul style="list-style-type: none"> <li>-Temperature (<math>T_L</math>)</li> <li>-Time (<math>t_L</math>)</li> </ul>	<ul style="list-style-type: none"> <li>217°C</li> <li>60-150 seconds</li> </ul>
Peak Temperature ( $T_P$ )	260°C
Time within 5°C of actual Peak Temperature ( $t_P$ )	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

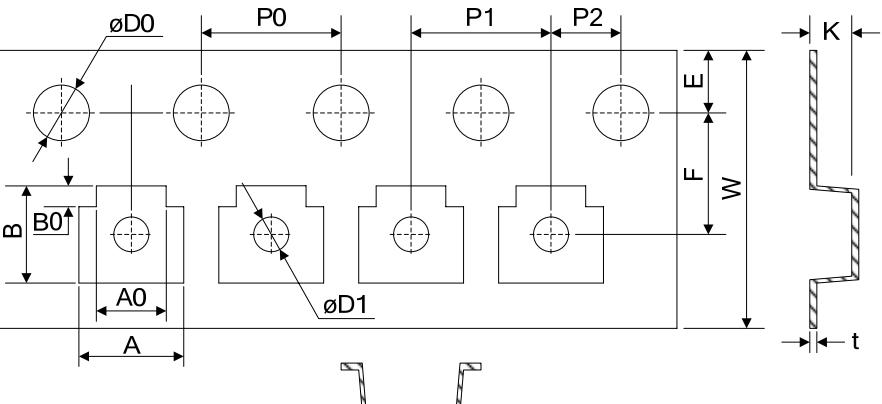
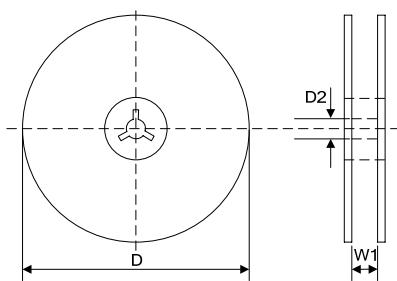
Dimensions (SOT-23)



The technical drawing shows the physical dimensions of the SOT-23 package. It includes top and side views with labeled dimensions A through J. Below the main drawing is a detailed 'Recommended Soldering Pad Layout' showing the internal structure of the package with pads labeled 1, 2, and 3.

Symbol	Dimension			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.08	0.18	0.003	0.007
B	0.15	-	0.006	-
C	-	0.13	-	0.005
D	0.89	1.09	0.035	0.043
E	2.80	3.05	0.110	0.120
F	1.90		0.075	
G	0.95		0.037	
H	1.19	1.40	0.047	0.055
I	2.10	2.49	0.083	0.098
J	0.35	0.50	0.014	0.020

Packaging

Tape	 <p>The technical drawing shows the dimensions for the tape used in the reel. It includes top and side views with labeled dimensions A through K and t.</p>	<table border="1"> <thead> <tr> <th>Symbol</th> <th>Dimension (mm)</th> </tr> </thead> <tbody> <tr> <td>W</td> <td>8.00±0.30</td> </tr> <tr> <td>P0</td> <td>4.00±0.10</td> </tr> <tr> <td>P1</td> <td>4.00±0.10</td> </tr> <tr> <td>P2</td> <td>2.00±0.10</td> </tr> <tr> <td>D0</td> <td>Φ1.55±0.10</td> </tr> <tr> <td>D1</td> <td>Φ1.00±0.05</td> </tr> <tr> <td>E</td> <td>1.75±0.10</td> </tr> <tr> <td>F</td> <td>3.50±0.10</td> </tr> <tr> <td>A</td> <td>3.10±0.10</td> </tr> <tr> <td>A0</td> <td>2.10±0.10</td> </tr> <tr> <td>B</td> <td>2.75±0.10</td> </tr> <tr> <td>B0</td> <td>0.65±0.10</td> </tr> <tr> <td>K</td> <td>1.10±0.10</td> </tr> <tr> <td>t</td> <td>0.20±0.05</td> </tr> </tbody> </table>	Symbol	Dimension (mm)	W	8.00±0.30	P0	4.00±0.10	P1	4.00±0.10	P2	2.00±0.10	D0	Φ1.55±0.10	D1	Φ1.00±0.05	E	1.75±0.10	F	3.50±0.10	A	3.10±0.10	A0	2.10±0.10	B	2.75±0.10	B0	0.65±0.10	K	1.10±0.10	t	0.20±0.05
Symbol	Dimension (mm)																															
W	8.00±0.30																															
P0	4.00±0.10																															
P1	4.00±0.10																															
P2	2.00±0.10																															
D0	Φ1.55±0.10																															
D1	Φ1.00±0.05																															
E	1.75±0.10																															
F	3.50±0.10																															
A	3.10±0.10																															
A0	2.10±0.10																															
B	2.75±0.10																															
B0	0.65±0.10																															
K	1.10±0.10																															
t	0.20±0.05																															
Reel	 <p>The technical drawing shows the dimensions for the reel. It includes a top view of the reel with labeled D and D2, and a side view with labeled W1.</p>	<table border="1"> <tbody> <tr> <td>D</td> <td>Φ178.0±2.0</td> </tr> <tr> <td>D2</td> <td>Φ13.0</td> </tr> <tr> <td>W1</td> <td>9.5</td> </tr> <tr> <td>Quantity:</td> <td>3000PCS</td> </tr> </tbody> </table>	D	Φ178.0±2.0	D2	Φ13.0	W1	9.5	Quantity:	3000PCS																						
D	Φ178.0±2.0																															
D2	Φ13.0																															
W1	9.5																															
Quantity:	3000PCS																															

# X-ON Electronics

Largest Supplier of Electrical and Electronic Components

***Click to view similar products for ESD Suppressors / TVS Diodes category:***

***Click to view products by Yageo manufacturer:***

Other Similar products are found below :

[60KS200C](#) [D18V0L1B2LP-7B](#) [D5V0F4U5P5-7](#) [DESD5V0U1BB-7](#) [NTE4902](#) [P4KE27CA](#) [P6KE11CA](#) [P6KE39CA-TP](#) [P6KE8.2A](#)  
[SA110CA](#) [SA60CA](#) [SA64CA](#) [SMBJ12CATR](#) [SMBJ33CATR](#) [SMBJ8.0A](#) [ESD101-B1-02ELS](#) [E6327](#) [ESD105-B1-02EL](#) [E6327](#) [ESD112-B1-02EL](#) [E6327](#) [ESD119B1W01005E6327XTSA1](#) [ESD5V0L1B02VH6327XTSA1](#) [ESD7451N2T5G](#) [19180-510](#) [CPDT-5V0USP-HF](#)  
[3.0SMCJ33CA-F](#) [3.0SMCJ36A-F](#) [HSPC16701B02TP](#) [D3V3Q1B2DLP3-7](#) [D55V0M1B2WS-7](#) [DESD5V0U1BL-7B](#) [DRTR5V0U4SL-7](#)  
[SCM1293A-04SO](#) [ESD200-B1-CSP0201](#) [E6327](#) [SM12-7](#) [SMF8.0A-TP](#) [SMLJ45CA-TP](#) [CEN955 W/DATA](#) [82350120560](#) [VESD12A1A-HD1-GS08](#) [CPDUR5V0R-HF](#) [CPDQC5V0U-HF](#) [CPDQC5V0USP-HF](#) [CPDQC5V0-HF](#) [D1213A-01LP4-7B](#) [D1213A-02WL-7](#)  
[MMAD1108/TR13](#) [5KP100A](#) [5KP15A](#) [5KP18A](#) [5KP48A](#) [5KP90A](#)