

# DATA SHEET

**ELECTROSTATIC DISCHARGE  
PROTECTION DEVICES**

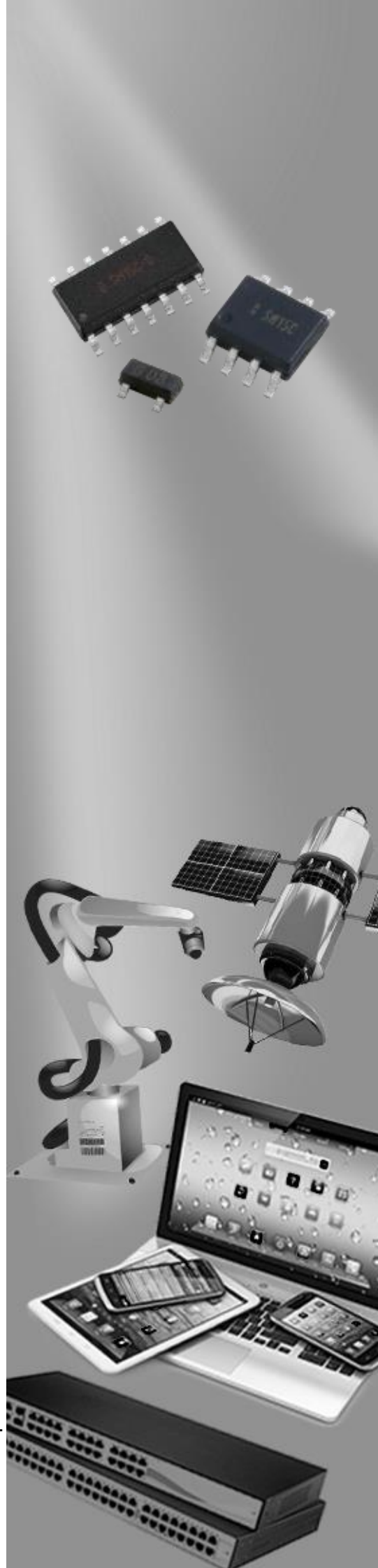
**INDUSTRIAL / CONSUMER**

SDT23C712L02

RoHS compliant & Halogen free



Product specification— March 20, 2021 V.2



## 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 handling capability to accommodate the higher transient voltage levels which may be expected in extended common mode applications.

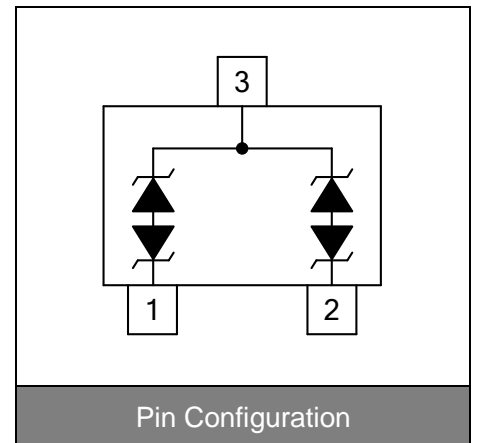


**Contact : ±30kV**  
**Air : ±30kV**



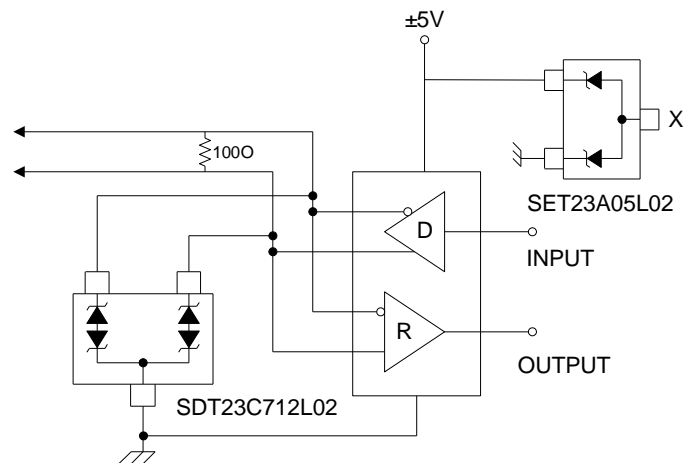
### Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- SOT-23 surface mount package
- Protects two +12V to -7V lines
- Peak power dissipation of 400W under 8/20µs 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>	±30	kV
ESD voltage (Air discharge)		±30	
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
Peak Pulse Current(tp=8/20μs)	I <sub>PP</sub>				15	A
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
Peak Pulse Current(tp=8/20μs)	I <sub>PP</sub>				15	A
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

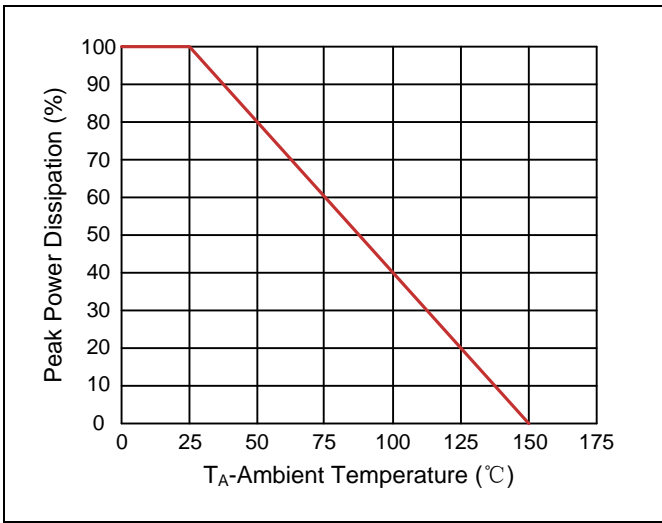


Figure 2. Pulse Waveforms

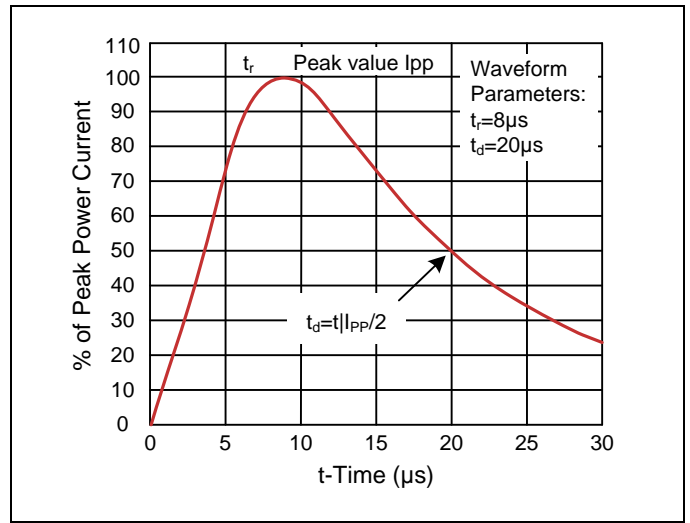


Figure 3. Non-Repetitive Peak Pulse vs. Pulse Time

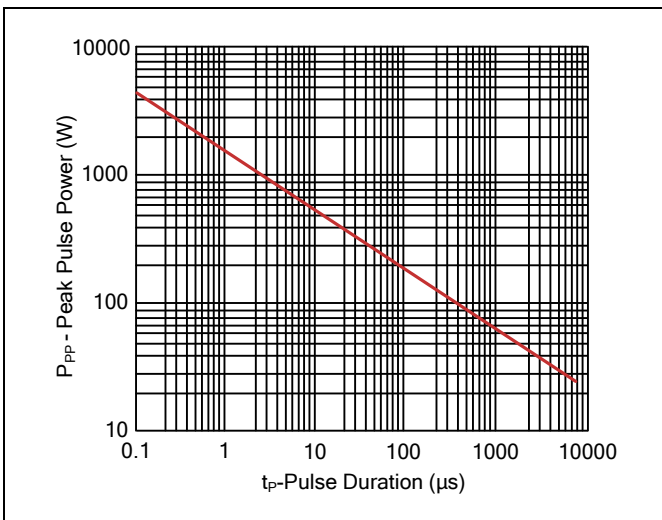
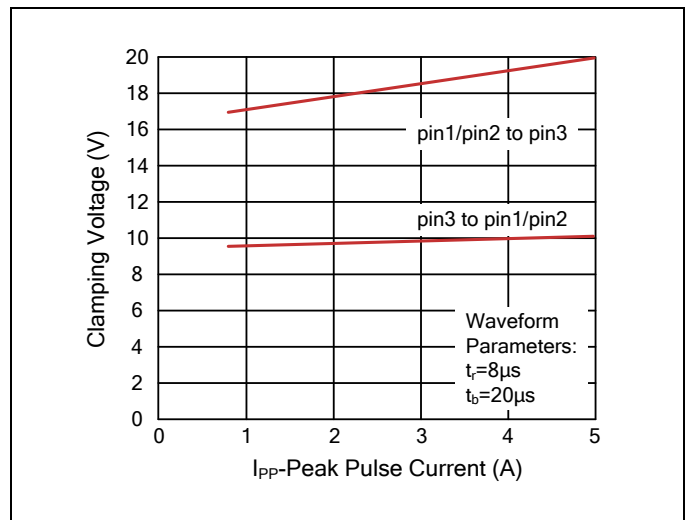
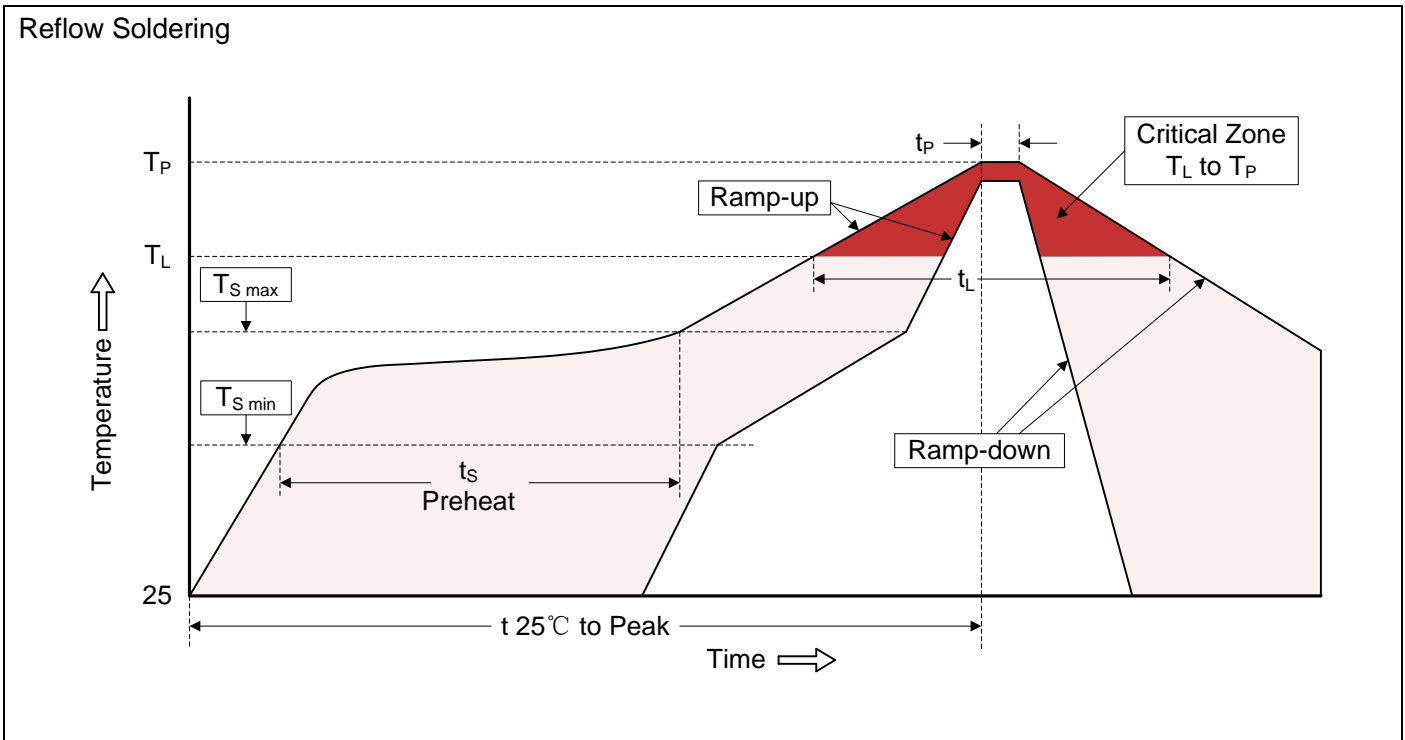


Figure 4. Clamping Voltage vs. Peak Pulse Current



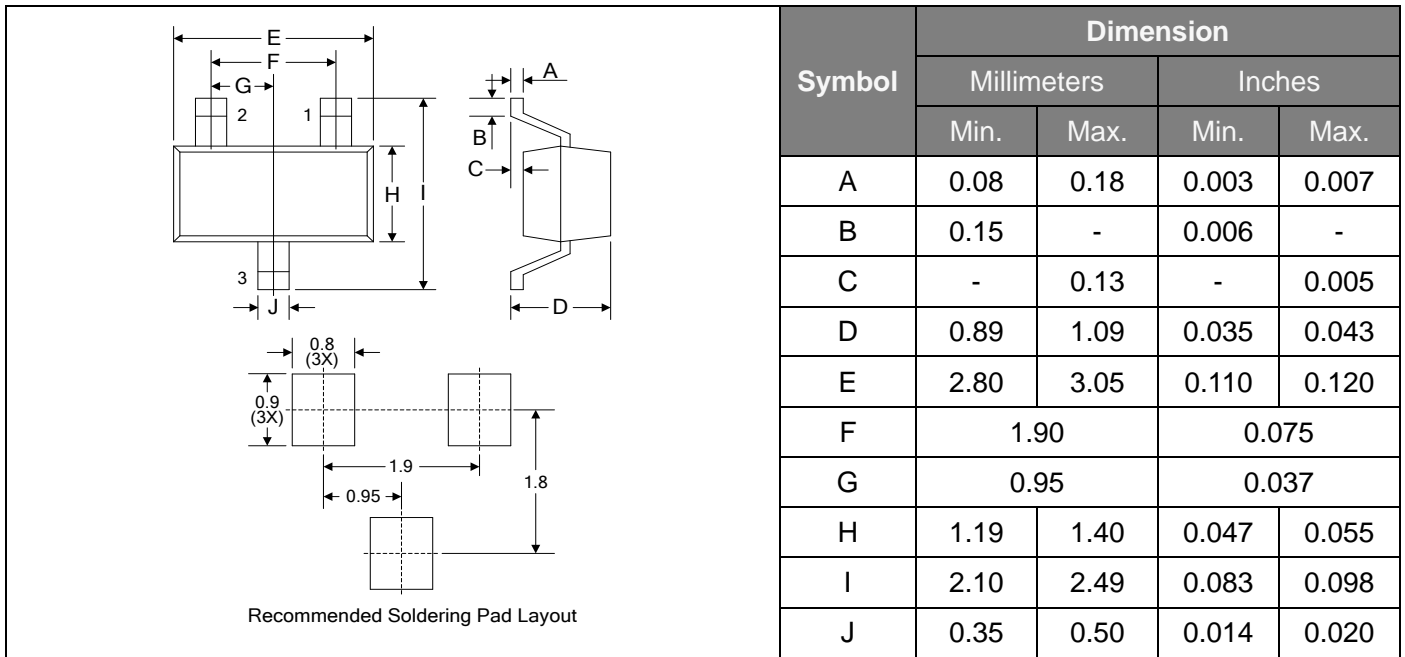
### Recommended Soldering Conditions



#### Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat	150°C
-Temperature Min ( $T_{S\ min}$ )	200°C
-Temperature Max ( $T_{S\ max}$ )	60-180 seconds
-Time (min to max) ( $t_s$ )	
$T_{S\ max}$ to $T_L$	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
-Temperature ( $T_L$ )	217°C
-Time ( $t_L$ )	60-150 seconds
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)**



**Packaging**

