

## Electrostatic Discharged Protection Devices (ESD) Data Sheet

### Description

Brightking's SAT36A05L05 is designed to protect sensitive electronics from damage or latch-up due to ESD and other voltage induced transient events. It is designed for use in applications where board space is at a premium. Each device will protect up to five lines. It is unidirectional devices and may be used on lines where the signal polarities are above ground. The low profile SOT-363 package allows flexibility in the design of crowded circuit boards.

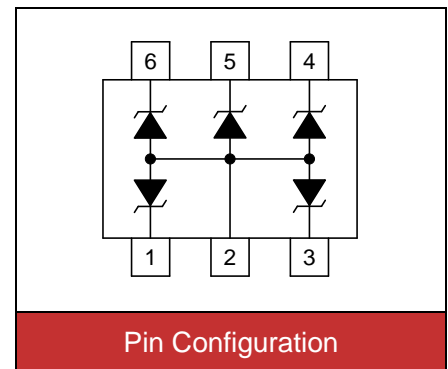


Contact : ±8kV  
Air : ±15kV



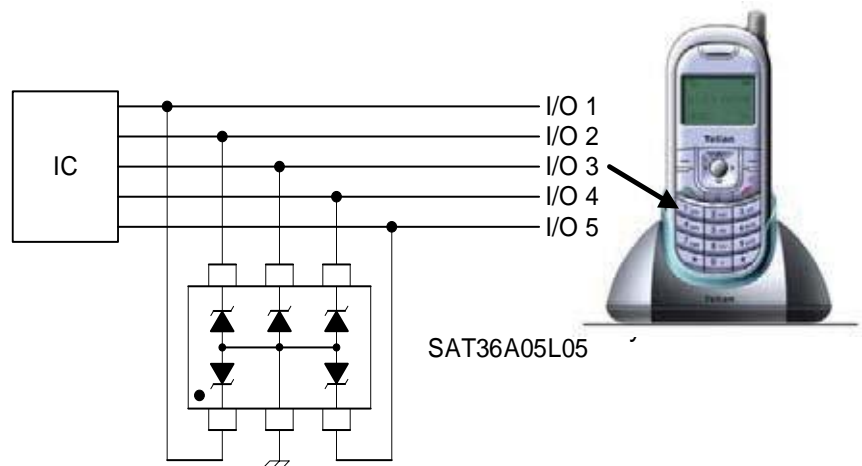
### Features

- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- SOT-363 surface mount package
- Protects five unidirectional lines
- Peak power dissipation of 100W under 8/20µs waveform
- Working voltage: 5V
- Low leakage current
- Low operating and clamping voltages
- 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: WF or 05C
- AEC-Q101 qualified



### Applications

- Cell phone handsets and accessories
- Personal digital assistants (PDA's)
- Portable instrumentation
- Set Top Box (STB)
- Servers, notebook and desktop PC
- Digital cameras



## Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20μs waveform)	P <sub>PP</sub>	100	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)

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
Off state junction capacitance	C <sub>J</sub>	0Vdc, f=1MHz Between I/O pins and GND			50	pF

Typical Characteristics Curves

Figure 1. Power Derating Curve

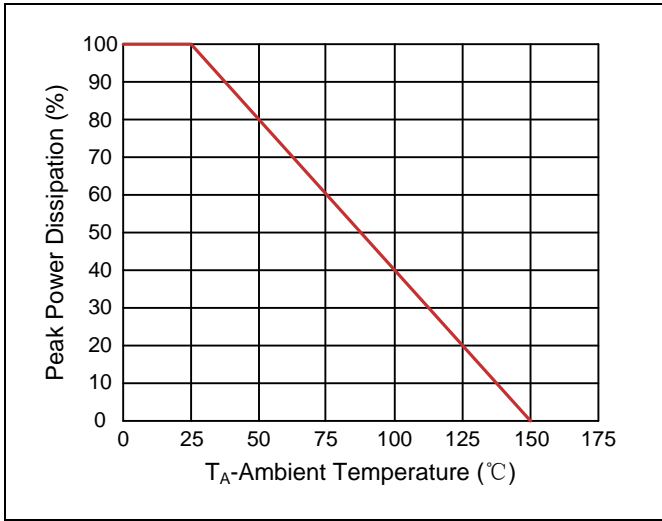


Figure 2. Pulse Waveforms

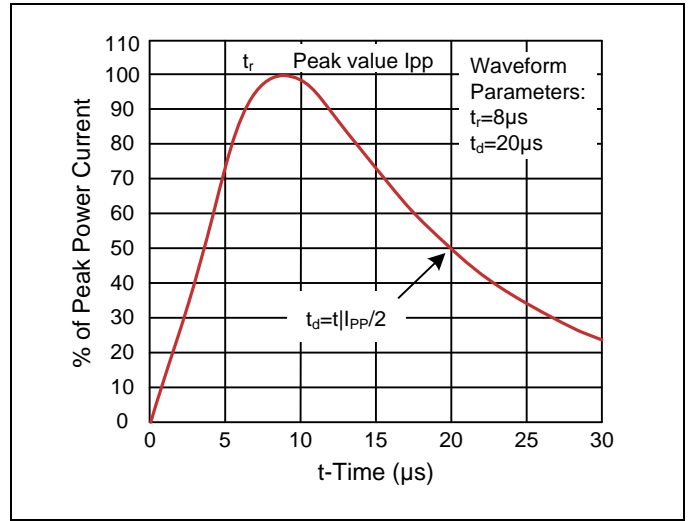


Figure 3. Non-Repetitive Peak Pulse vs. Pulse Time

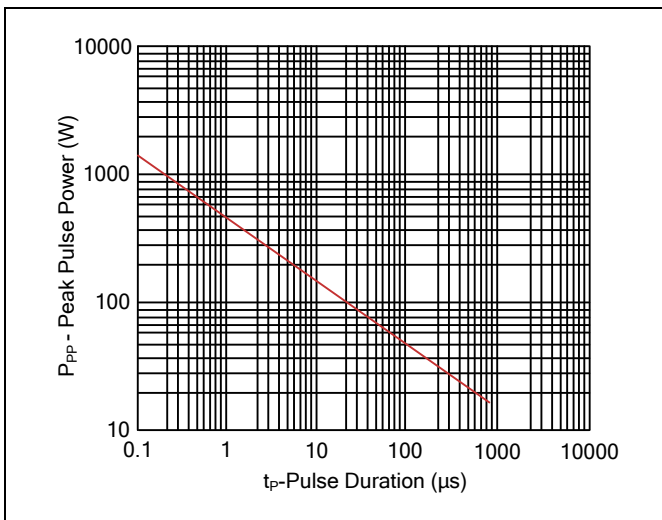
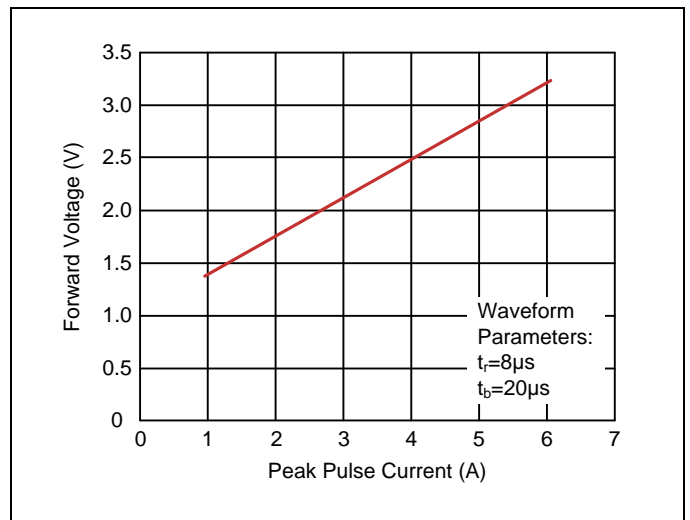
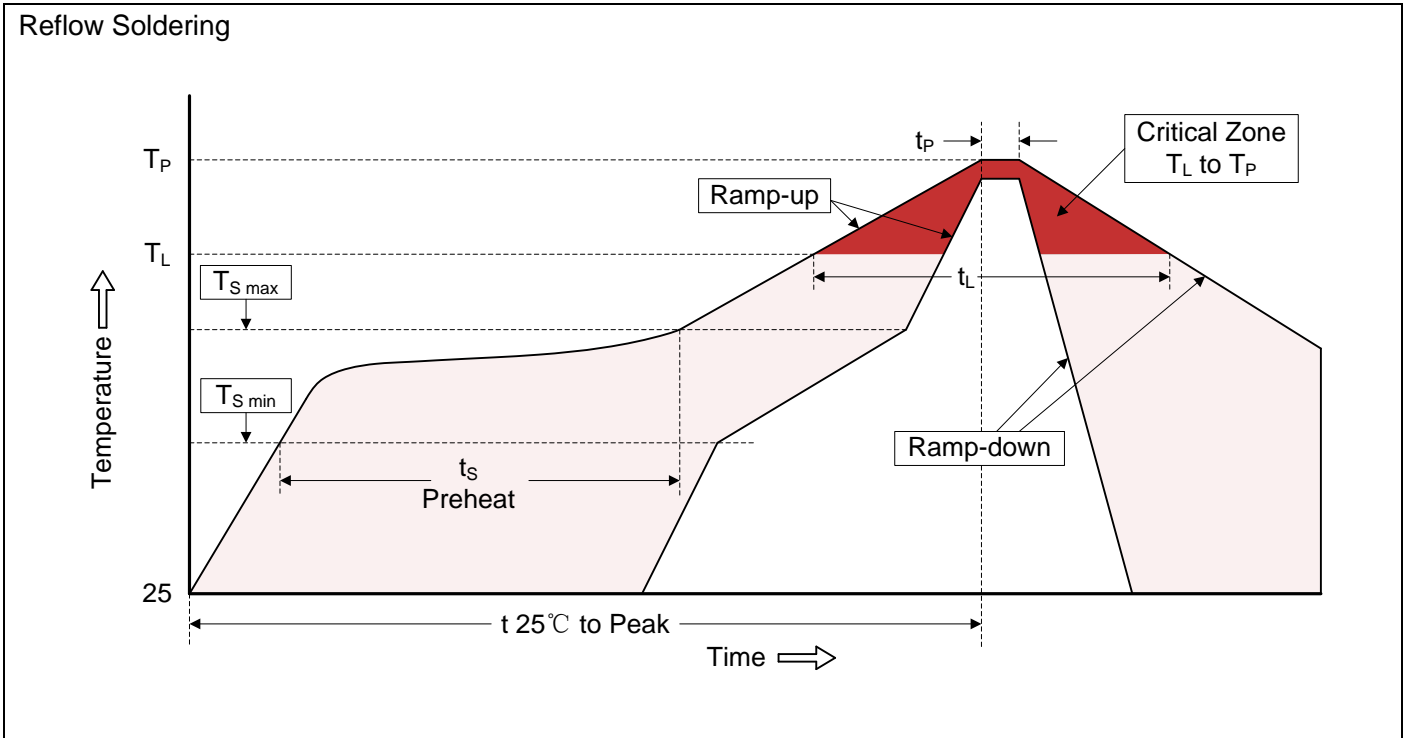


Figure 4. Forward Voltage vs. Forward Current



**Recommended Soldering Conditions**



**Recommended Conditions**

Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat -Temperature Min ( $T_{S\ min}$ ) -Temperature Max ( $T_{S\ max}$ ) -Time (min to max) ( $t_s$ )	150°C 200°C 60-180 seconds
$T_{S\ max}$ to $T_L$ -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature ( $T_L$ ) -Time ( $t_L$ )	217°C 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-363)**

Symbol	Dimension			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.85	2.15	0.073	0.085
B	1.30		0.051	
C	0.65		0.026	
D	1.90	2.30	0.075	0.091
E	1.10	1.40	0.043	0.055
F	0.15	0.30	0.006	0.012
G	-	0.10	-	0.004
H	0.25	-	0.010	-
I	0.10	0.25	0.004	0.010
J	0.80	1.00	0.031	0.039

Recommended Soldering Pad Layout

**Packaging**

Type	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		Φ1.05±0.05	
E		1.75±0.10	
F		3.50±0.10	
A		2.30±0.10	
B		2.45±0.10	
K		1.15±0.10	
t		0.25±0.05	
Reel		D	Φ178.0±2.0
		D2	Φ13.0
		W1	9.5
	Quantity: 3000PCS		

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