

## 2-Channel Voltage Clamp Ultra-High Current & Ultra-Low Leakage Current Transient Voltage Suppressor

### General Description

GG0333SAG is a 2-channel voltage clamp ultra-high current & ultra-low leakage current transient voltage suppressor. Each channel has a pair of ESD discharge current steering diodes which are used for steering positive/negative discharging current to positive/negative voltage clamp pins. This device integrates an ultra-low leakage current Zener diode whose leakage current is lower than 1.0 $\mu$ A. Generally, the negative clamp pin of GG0333SAG is connected to GND plane for protecting power supply of the desired circuit because the positive discharging current flows to GND through the Zener diode. GG0333SAG is suitable for high-speed data line protection.



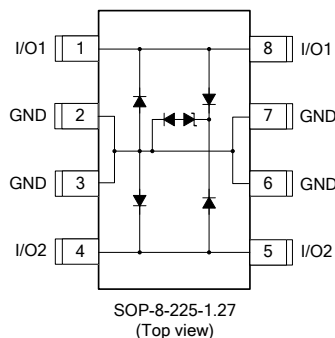
### Features

- 2 channels of ESD protection
- Provides ESD protection to IEC61000-4-2
  - $\pm 30$ kV air discharge
  - $\pm 30$ kV contact discharge
- Inputs to GND capacitance: no higher than 25pF
- Channel I/O to I/O capacitance: no higher than 12pF
- Low leakage current
- High peak current
- SOP-8-225-1.27 package
- 3.3V Low operating voltage.

### Applications

- Low voltage interfaces;
- T3/E3 interfaces;
- 10 / 100M Ethernet;
- Set top box interfaces;
- ISDN S/T interfaces;
- ISDN-U interfaces.

### Pin Configuration



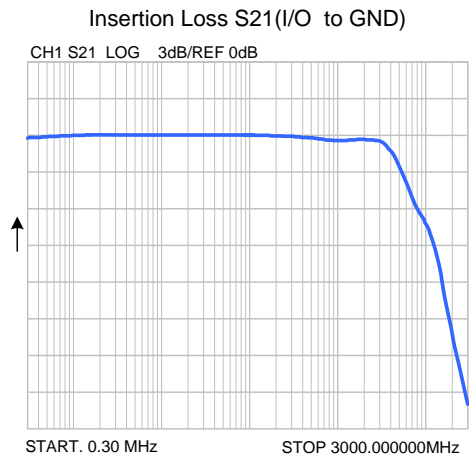
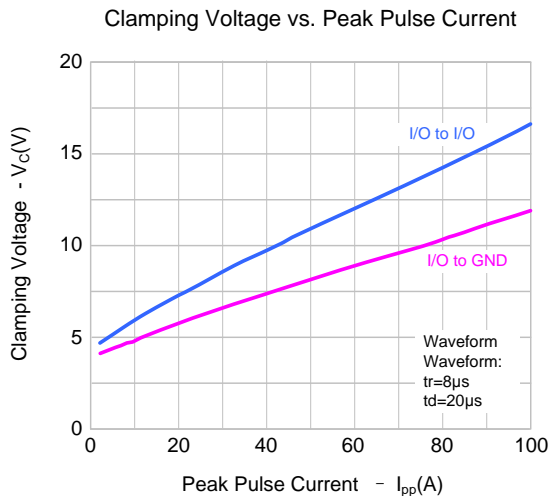
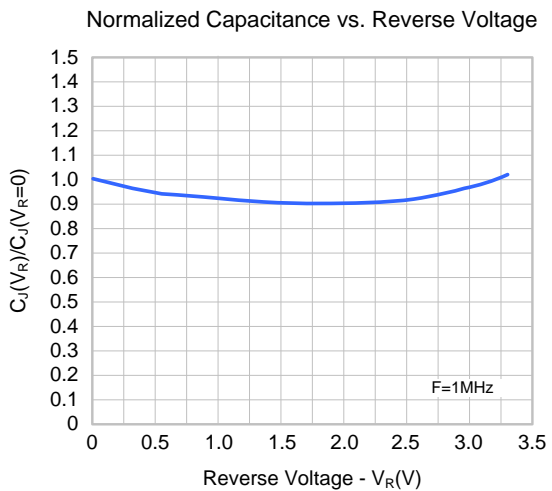
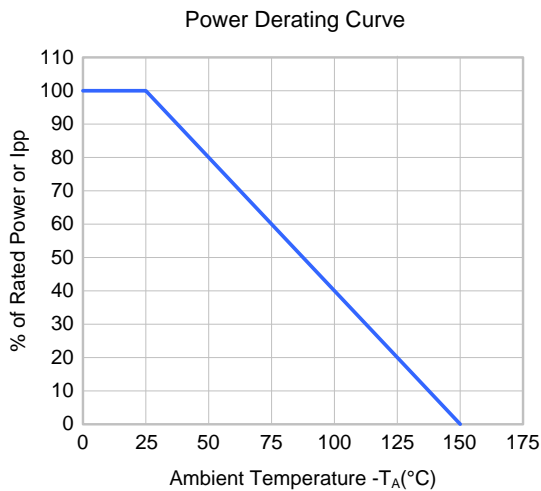
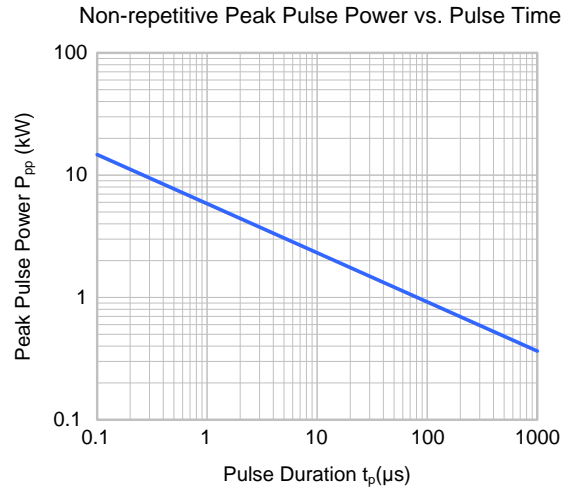
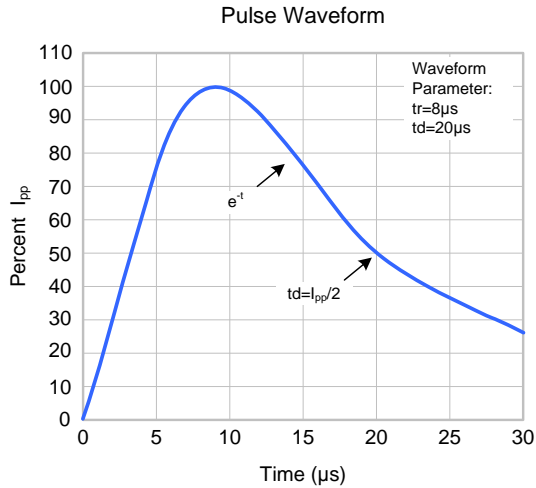
### Absolute Maximum Ratings

Characteristics		Symbol	Rating	Unit
Peak Pulse Power(8/20 $\mu$ s)		P <sub>PP</sub>	1800	W
Peak Pulse Current(8/20 $\mu$ s)		I <sub>PP</sub>	100	A
Maximum ESD	IEC61000-4-2(Air)	V <sub>ESD1</sub>	$\pm$ 30kV	kV
Withstand Capability	IEC61000-4-2(Contact)	V <sub>ESD2</sub>	$\pm$ 30kV	kV
Operating Temperature Range		T <sub>opr</sub>	-55 ~ +125	$^{\circ}$ C
Storage Temperature Range		T <sub>stg</sub>	-55 ~ +150	$^{\circ}$ C

### Electrical Characteristics (T<sub>amb</sub>=25 $^{\circ}$ C)

Characteristics	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V <sub>RWM</sub>	Any I/O pin to GND	--	--	3.3	V
Reverse Breakdown Voltage	V <sub>BR</sub>	Any I/O pin to GND; I <sub>t</sub> =1mA	3.8	--	--	V
Reverse Leakage Current	I <sub>R</sub>	V <sub>RWM</sub> =3.3V; T=25 $^{\circ}$ C; Any I/O pin to GND	--	--	1	$\mu$ A
Positive Clamping Voltage	V <sub>C1</sub>	I <sub>PP</sub> =5A, t <sub>p</sub> =8/20 $\mu$ S; Positive pulse; Any I/O pin to GND	--	5.5	7	V
Positive Clamping Voltage	V <sub>C1</sub>	I <sub>PP</sub> =25A, t <sub>p</sub> =8/20 $\mu$ S; Positive pulse; Any I/O pin to GND	--	11.5	15	V
Positive Clamping Voltage	V <sub>C1</sub>	I <sub>PP</sub> =100A, t <sub>p</sub> =8/20 $\mu$ S; Positive pulse; Any I/O pin to GND	--	15	20	V
Negative Clamping Voltage	V <sub>C2</sub>	I <sub>PP</sub> =5A, t <sub>p</sub> =8/20 $\mu$ S; Negative pulse; Any I/O pin to GND	--	1.4	--	V
Negative Clamping Voltage	V <sub>C2</sub>	I <sub>PP</sub> =25A, t <sub>p</sub> =8/20 $\mu$ S; Negative pulse; Any I/O pin to GND	--	4.6	--	V
Negative Clamping Voltage	V <sub>C2</sub>	I <sub>PP</sub> =100A, t <sub>p</sub> =8/20 $\mu$ S; Negative pulse; Any I/O pin to GND	--	8.0	--	V
Junction Capacitance Between Channel	C <sub>J1</sub>	V <sub>R</sub> =0V, f=1MHz; Between I/O pins	--	12	15	pF
Junction Capacitance Between I/O And GND	C <sub>J2</sub>	V <sub>R</sub> =0V, f=1MHz; Any I/O pin to GND	--	--	25	pF

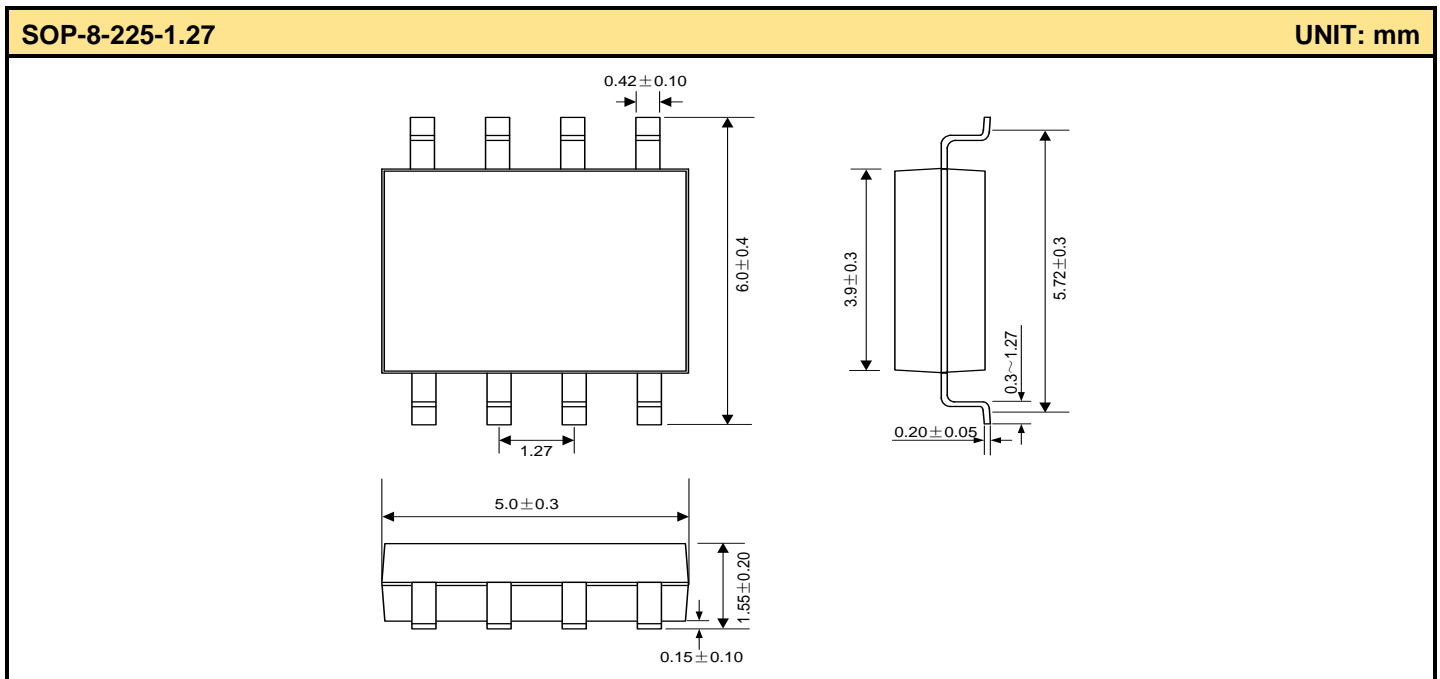
**Typical Characteristics**



### Ordering Information

Part No	Package	Marking	Material	Packing
GG0333SAG	SOP-8-225-1.27	0333SAG	Halogen free	Tube
GG0333SAGTR	SOP-8-225-1.27	0333SAG	Halogen free	Tape&Reel

### Package Outline



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