File Number 1692

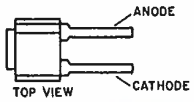
# SGT03U13, SGT06U13, SGT23U13

## Unidirectional Transient Surge Suppressors

**Features:**
- *Clamping voltages - 33V, 60V, or 230V*
- *300A peak transient surge current*
- *130 mA minimum holding current*
- *Subnanosecond clamping action*
- *Low on-state voltage*

**Applications:**
- *Telecommunications equipment*
- *Data and voice lines*
- *Computer modems*
- *Alarm systems*

**TERMINAL DESIGNATIONS**




92CS 40367

**MODIFIED TO-202**

RCA SURGECTORs are designed to protect telecommunication equipment, data links, alarm systems, power supplies and other sensitive electrical circuits from damage that could be caused by switching transients, lightning strikes, load changes, commutation spikes, and line crosses.

These RCA SURGECTORs are monolithic compound structures consisting of a thyristor whose gate region contains a special diffused section which acts as a zener diode. This zener diode section permits anode voltage turn-on of the structure. Initial clamping by the zener diode section and fast turn-on by the thyristor provide excellent voltage limiting even on very fast rise-time transients. The thyristor also features very high holding current allowing the SURGECTOR to recover to it's high impedance off-state after the transient. The SURGECTOR's normal off-state condition in the forward blocking mode is a high-impedance, low-leakage state that prevents loading of the telecommunication line.

**MAXIMUM RATINGS,** *Absolute-Maximum Values:*

| | | SGT03U13 | SGT06U13 | SGT23U13 | |
|---|---|---|---|---|---|
| Continuous Off-State Voltage | $V_{DM}$ | 30 | 58 | 225 | V |
| | $V_{RM}$ | 1 | 1 | 1 | V |
| Transient Peak Surge Current | $I_{TSM}$ | | | | |
| 1μs x 2μs* | | 300 | | | A |
| 6μs x 400μs | | 125 | | | A |
| 10μs x 560μs | | 90 | | | A |
| 10μs x 1000μs | | 75 | | | A |
| One Half Cycle, 50-60 Hz** | | 60 | | | A |
| One Second, 50-60 Hz, Halfwave | | 30 | | | A |
| Operating Temperature | $T_A$ | -40 to +85 | | | °C |
| Storage Temperature | $T_{stg}$ | -40 to +150 | | | °C |

*Unit designed not to fail open below 450A.
**One every 30 seconds maximum.

SURGECTORs

## SGT03U13, SGT06U13, SGT23U13

**ELECTRICAL CHARACTERISTICS, At Case Temperature ($T_C$ = 25°C) unless otherwise specified**

| CHARACTERISTIC | | LIMITS | | | UNITS |
|---|---|---|---|---|---|
| | | MIN. | TYP. | MAX. | |
| Off-State Current At Maximum Rated $V_{DM}$ | $I_{DM}$ | | | | |
| $T_A$ = 25°C | | — | — | 50 | nA |
| $T_A$ = 85°C | | — | — | 10 | μA |
| Reverse Current $V_{RM}$ = 1 V | $I_{RM}$ | | | | |
| $T_A$ = 25°C | | — | — | 1 | mA |
| $T_A$ = 85°C | | — | — | 10 | mA |
| Clamping Voltage, $I_Z$ = 100 μA | $V_Z$ | | | | |
| SGT03U13 | | 33 | — | — | V |
| SGT06U13 | | 60 | — | — | V |
| SGT23U13 | | 230 | — | — | V |
| Breakover Voltage, $D_V/D_T$ = 100V/μs | $V_{BO}$ | | | | |
| SGT03U13 | | — | — | 50 | V |
| SGT06U13 | | — | — | 85 | V |
| SGT23U13 | | — | — | 275 | V |
| Holding Current | $I_H$ | 130 | — | — | mA |
| On-State Voltage, $I_T$ = 10A | $V_T$ | — | — | 2 | V |
| Main Terminal Capacitance | $C_O$ | — | 90 | — | pF |

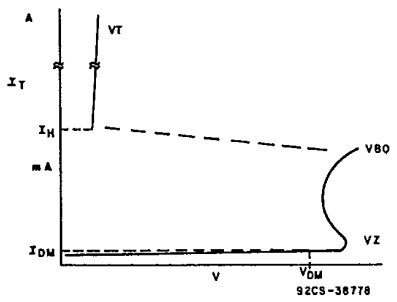



*Fig. 1 - Typical volt-ampere characteristics.*

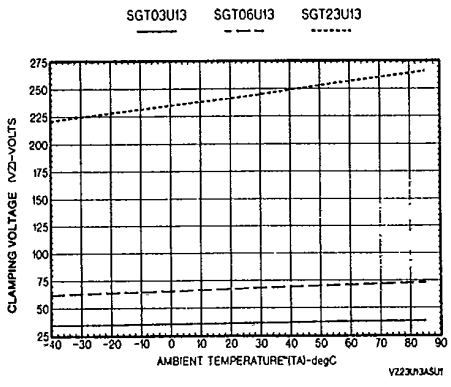



*Fig. 2 - Typical clamping voltage vs. temperature.*

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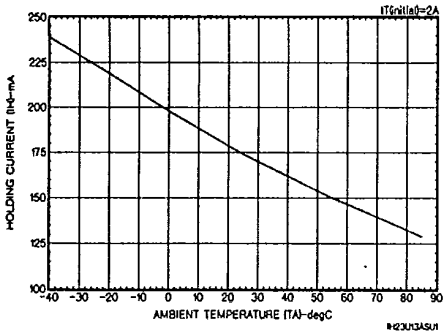


*Fig. 3 - Typical holding current vs. temperature.*

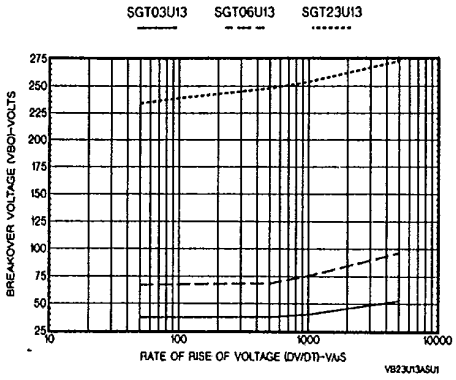


*Fig. 4 - Typical $V_{BO}$ vs. $D_V/D_T$.*