

## Programmable Overvoltage Protector

### G170B

#### General Description

This device is especially designed to protect Subscriber Line Interface Circuit (SLIC) against transient overvoltage. Positive overloads are clipped with 2 diodes. Negative surges are suppressed by 2 thyristors, their breakdown voltage being referenced to  $V_{BAT}$  through the gate.

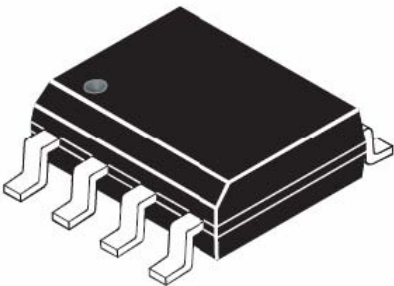
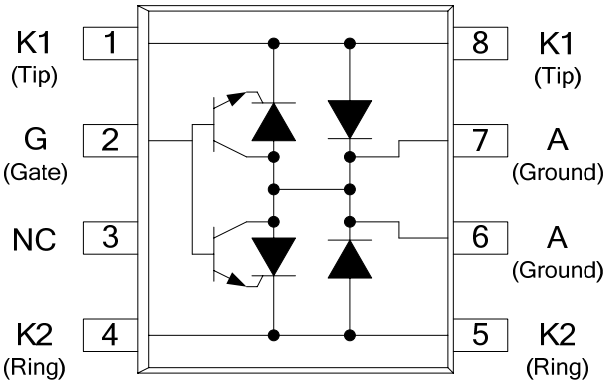
This component presents a very low gate triggering current and minimizes overvoltage stress on the SLIC.

#### Features

- Dual programmable transient suppressor
- Wide battery voltage supports
- Low gate triggering current
- High holding current
- ESD Immunity(HBM): JESD22 Class 3B,  $\geq 8KV$
- MLS: Level 1-unlimited
- Marking: G170B

#### Applications

- Switch Line Card
- Access Network Line Card
- PBX
- VoIP

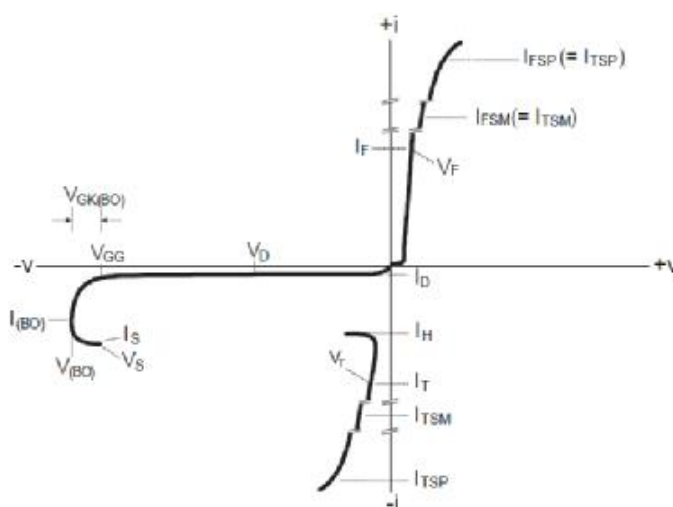
| Package                                                                                          | Device Symbol                                                                        |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  <p>SOP-8</p> |  |

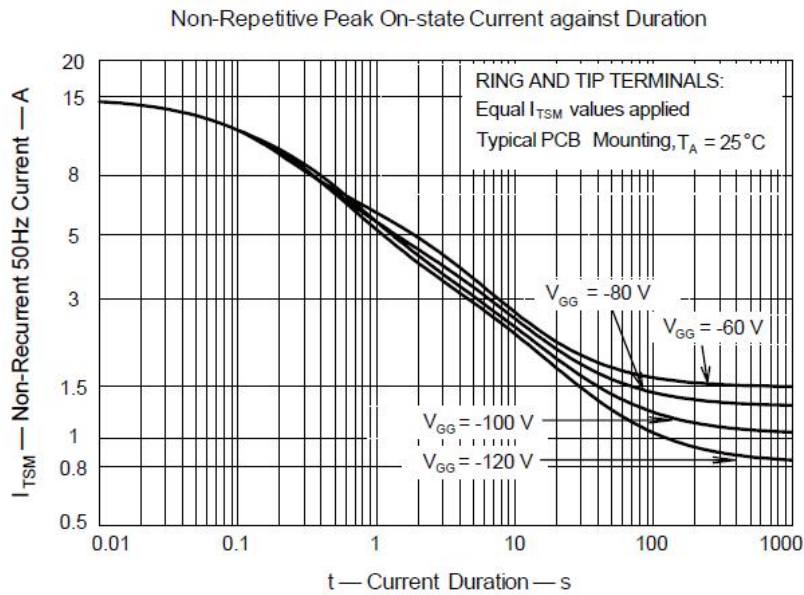
**Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ )**

| Parameter                                                                                                  | Symbol          | Value                            | Unit                 |
|------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------|----------------------|
| Non-repetitive peak on-state current<br>10/1000 $\mu\text{s}$<br>5/310 $\mu\text{s}$<br>2/10 $\mu\text{s}$ | $I_{PP}$        | 30<br>40<br>120                  | A                    |
| Non-repetitive peak on-state current (sinusoidal) 60Hz<br>0.5s<br>1s<br>5s<br>30s<br>900s                  | $I_{TSM}$       | 6.5<br>4.5<br>2.4<br>1.3<br>0.72 | A                    |
| Maximum voltage Line/Ground                                                                                | $V_{DRM}$       | -170                             | V                    |
| Maximum voltage Gate/Line                                                                                  | $V_{GKRM}$      | -167                             | V                    |
| Operating free-air temperature range                                                                       | $T_A$           | -40 to +85                       | $^{\circ}\text{C}$   |
| Storage temperature range                                                                                  | $T_{STG}$       | -40 to +150                      | $^{\circ}\text{C}$   |
| Junction temperature range                                                                                 | $T_J$           | -40 to +150                      | $^{\circ}\text{C}$   |
| Maximum lead temperature for soldering during 10s                                                          | $T_L$           | 260                              | $^{\circ}\text{C}$   |
| Junction to free air thermal resistance                                                                    | $R_{\theta JA}$ | 120                              | $^{\circ}\text{C/W}$ |

**Parameter Measurement Information**

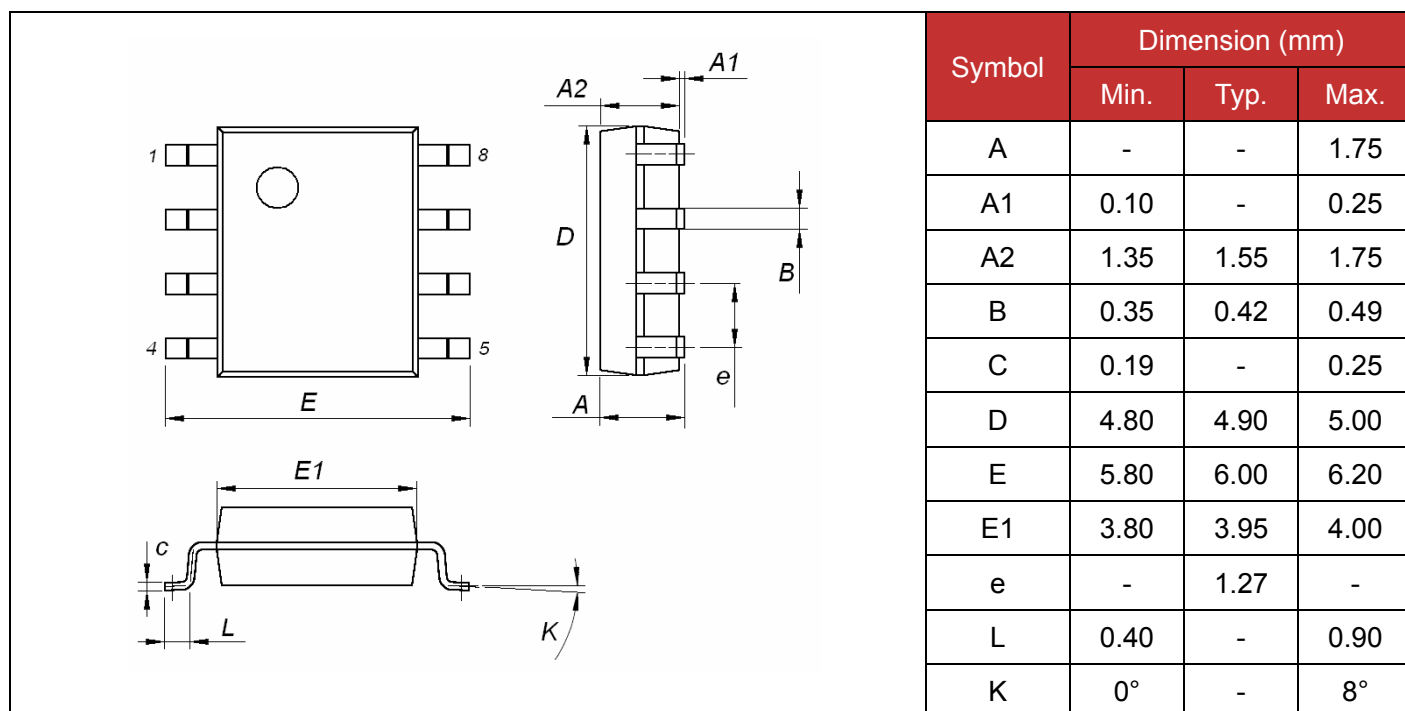
| Parameter                              | Symbol       |
|----------------------------------------|--------------|
| Off-state current                      | $I_D$        |
| Holding current                        | $I_H$        |
| Breakover voltage                      | $V_{(BO)}$   |
| Forward voltage                        | $V_F$        |
| Peak forward recovery voltage          | $V_{FRM}$    |
| Gate-cathode impulse breakover voltage | $V_{GK(BD)}$ |
| Gate reverse current                   | $I_{GKS}$    |
| Gate trigger current                   | $I_{GT}$     |
| Gate-cathode trigger voltage           | $V_{GT}$     |
| Cathode-anode off-state capacitance    | $C_{KA}$     |





| Parameter                                     | Test Conditions                                                                                                                                      | Min. | Typ. | Max.      | Unit          |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|-----------|---------------|
| $V_F$ Forward voltage                         | $I_F = 5\text{A}$ , $t_W = 200\mu\text{s}$                                                                                                           |      |      | 3         | V             |
| $V_{FRM}$ Peak forward recovery voltage       | $2/10\mu\text{s}$ , $I_F = 100\text{A}$ , $R_S = 50\Omega$ , $di/dt = 80\text{A}/\mu\text{s}$                                                        |      |      | 10        | V             |
| $I_D$ Off-state current                       | $V_D = -170\text{V}$ , $V_{GK} = 0$ $T_J = 25^\circ\text{C}$<br>$V_D = -170\text{V}$ , $V_{GK} = 0$ $T_J = 85^\circ\text{C}$                         |      |      | -5<br>-50 | $\mu\text{A}$ |
| $V_{(BO)}$ Breakover voltage                  | $2/10\mu\text{s}$ , $I_{TM} = 100\text{A}$ , $R_S = 50\Omega$ , $di/dt = 80\text{A}/\mu\text{s}$ , $V_{GG} = -100\text{V}$                           |      |      | -112      | V             |
| $I_H$ Holding current                         | $I_T = -1\text{A}$ , $di/dt = 1\text{A}/\text{ms}$ , $V_{GG} = -100\text{V}$                                                                         | -150 |      |           | mA            |
| $I_{GKS}$ Gate reverse current                | $V_{GG} = V_{GK} = -167\text{V}$ , $V_{KA} = 0$ $T_J = 25^\circ\text{C}$<br>$V_{GG} = V_{GK} = -167\text{V}$ , $V_{KA} = 0$ $T_J = 85^\circ\text{C}$ |      |      | -5<br>-50 | $\mu\text{A}$ |
| $I_{GT}$ Gate trigger current                 | $I_T = -3\text{A}$ , $t_{p(g)} \geq 20\mu\text{s}$ , $V_{GG} = -100\text{V}$                                                                         |      |      | 5         | mA            |
| $V_{GT}$ Gate-cathode trigger voltage         | $I_T = -3\text{A}$ , $t_{p(g)} \geq 20\mu\text{s}$ , $V_{GG} = -100\text{V}$                                                                         |      | 2.5  | 4         | V             |
| $C_{KA}$ Cathode-anode off- state capacitance | $f = 1\text{MHz}$ , $V_d = 1\text{V}$ , $I_G = 0$ $V_D = -3\text{V}$<br>$f = 1\text{MHz}$ , $V_d = 1\text{V}$ , $I_G = 0$ $V_D = -48\text{V}$        |      |      | 100<br>50 | pF            |

## Dimensions (SOP-8)



## Tape Package Information

