

## 12A Standard SCRs

### Product Summary

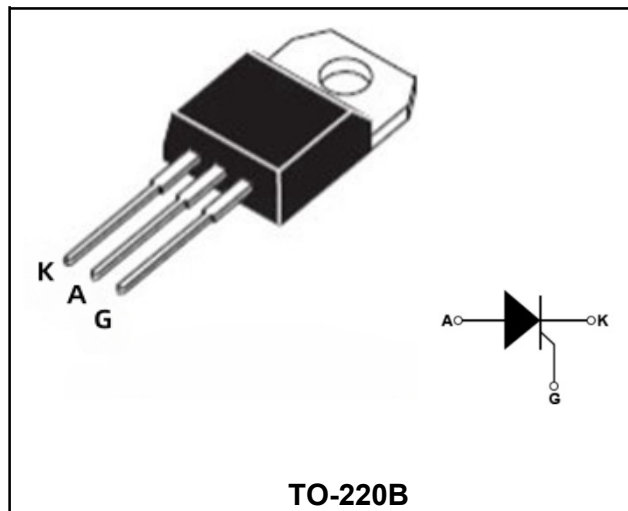
| Symbol            | Value        | Unit |
|-------------------|--------------|------|
| $I_{T(RMS)}$      | 12           | A    |
| $V_{DRM} V_{RRM}$ | 600/800/1000 | V    |
| $V_{TM}$          | 1.6          | V    |

### Features

With high ability to withstand the shock loading of large current, Provide high dv/dt rate with strong resistance to electromagnetic interference.

### Application

Power charger, T-tools, massager, solid state relay, AC Motor speed regulation and so on.



### Absolute maximum ratings (Ta=25°C unless otherwise noted)

| Parameter                                                             | Symbol       | Value        | Unit             |
|-----------------------------------------------------------------------|--------------|--------------|------------------|
| Repetitive peak off-state voltage                                     | $V_{DRM}$    | 600/800/1000 | V                |
| Repetitive peak reverse voltage                                       | $V_{RRM}$    | 600/800/1000 | V                |
| RMS on-state current                                                  | $I_{T(RMS)}$ | 12           | A                |
| Non repetitive surge peak on-state current (full cycle, F=50Hz)       | $I_{TSM}$    | 120          | A                |
| $I^2t$ value for fusing ( $t_p=10ms$ )                                | $I^2t$       | 72           | A <sup>2</sup> s |
| Critical rate of rise of on-state current ( $I_G = 2 \times I_{GT}$ ) | $di_T/dt$    | 50           | A/ $\mu$ s       |
| Peak gate current                                                     | $I_{GM}$     | 2            | A                |
| Average gate power dissipation                                        | $P_G (AV)$   | 0.5          | W                |
| Junction Temperature                                                  | $T_J$        | -40~+125     | °C               |
| Storage Temperature                                                   | $T_{STG}$    | -40 ~+150    | °C               |

**Electrical characteristics (TA=25°C, unless otherwise noted)**

| Parameter                                    | Symbol    | Test Condition                                | Value |     |     | Unit       |
|----------------------------------------------|-----------|-----------------------------------------------|-------|-----|-----|------------|
|                                              |           |                                               | Min   | typ | Max |            |
| Gate trigger current                         | $I_{GT}$  | $V_D=12V, I_T=0.1A, T_j=25^\circ C$ , Fig. 6  | -     | -   | 15  | mA         |
| Gate trigger voltage                         | $V_{GT}$  | $V_D=12V, I_T=0.1A, T_j=25^\circ C$           | -     | -   | 1.0 | V          |
| Gate non-trigger voltage                     | $V_{GD}$  | $V_D = V_{DRM} T_j=125^\circ C$               | 0.2   | -   | -   | V          |
| Holding current                              | $I_H$     | $V_D=12V, I_{GT}=0.1A, T_j=25^\circ C$ ,      | -     |     | 30  | mA         |
| latching current                             | $I_L$     | $V_D=12V, I_{GT}=0.1A, T_j=25^\circ C$ ,      | -     |     | 40  | mA         |
| Critical-rate of rise of commutation voltage | $dV_D/dt$ | $V_D=67\%V_{DRM}$ Gate Open $T_j=125^\circ C$ | 200   | -   | -   | V/ $\mu s$ |

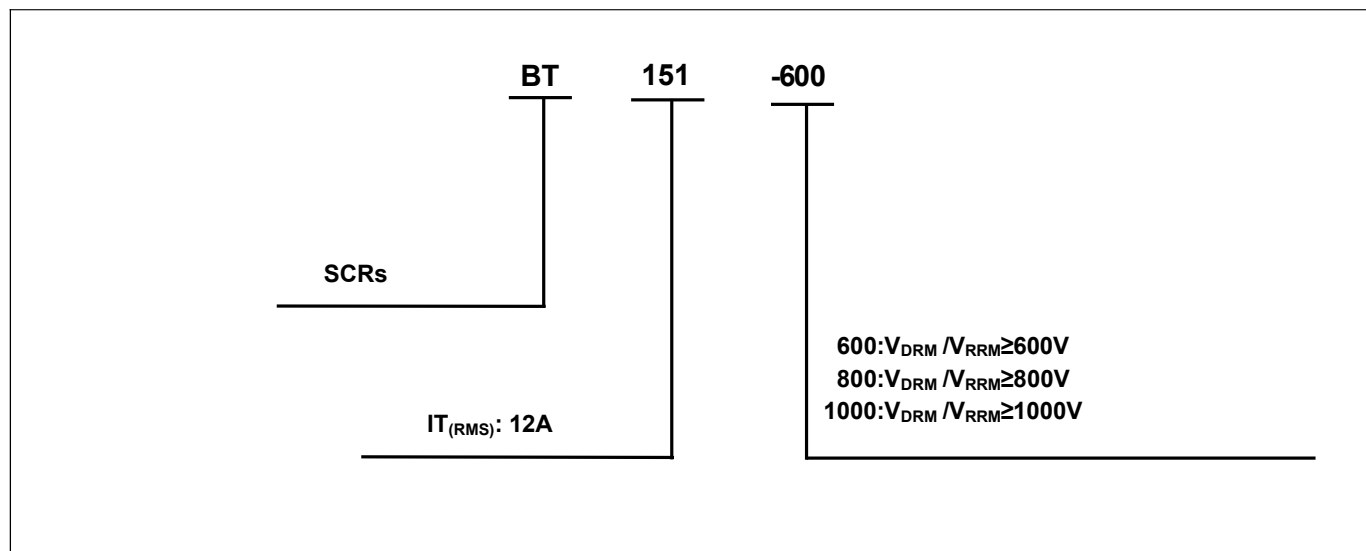
**STATIC CHARACTERISTICS**

|                                   |           |                                            |                   |   |     |            |
|-----------------------------------|-----------|--------------------------------------------|-------------------|---|-----|------------|
| Forward "on" voltage              | $V_{TM}$  | $I_T = 23A$ $t_p=380\mu s, T_j=25^\circ C$ | -                 | - | 1.6 | V          |
| Repetitive Peak Off-State Current | $I_{DRM}$ | $V_D=V_{DRM}/V_{RRM}$                      | $T_j=25^\circ C$  | - | -   | 10 $\mu A$ |
| Repetitive Peak Reverse Current   | $I_{RRM}$ |                                            | $T_j=125^\circ C$ | - | -   | 1 mA       |

**THERMAL RESISTANCES**

|                    |               |                     |      |     |              |
|--------------------|---------------|---------------------|------|-----|--------------|
| Thermal resistance | $R_{th(j-c)}$ | Junction to case    | TYP. | 1.3 | $^\circ C/W$ |
|                    | $R_{th(j-a)}$ | Junction to ambient | TYP. | 60  | $^\circ C/W$ |

**Ordering Information**



Typical Characteristics

FIG.1: Maximum power dissipation versus RMS on-state current (full cycle)

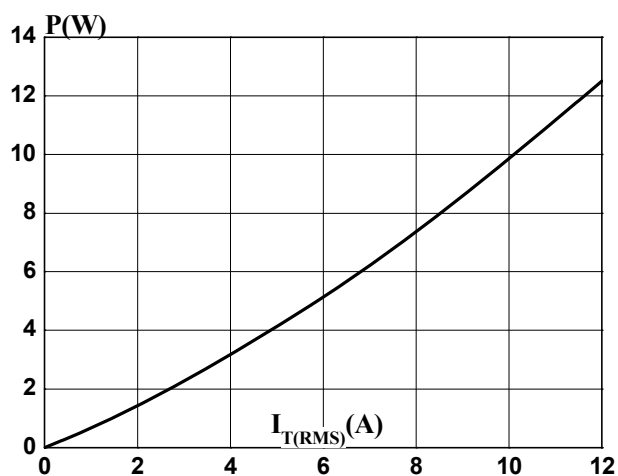


FIG.2: RMS on-state current versus case temperature (full cycle)

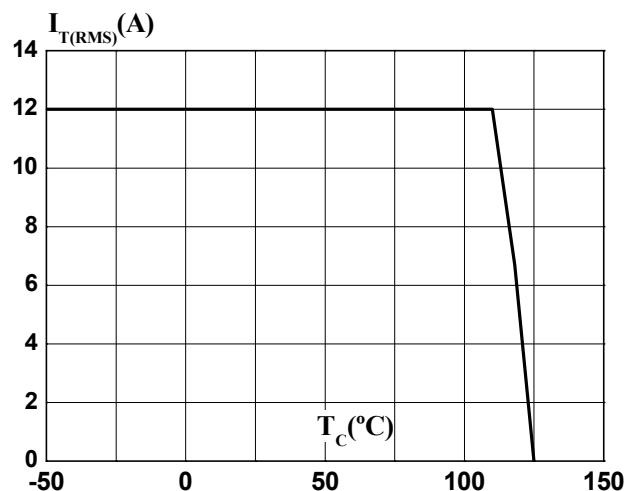


FIG.3: Surge peak on-state current versus number of cycles

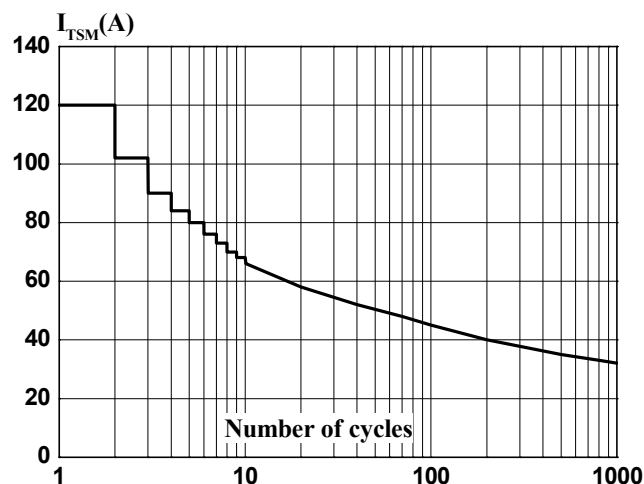


FIG.4: On-state characteristics (maximum values)

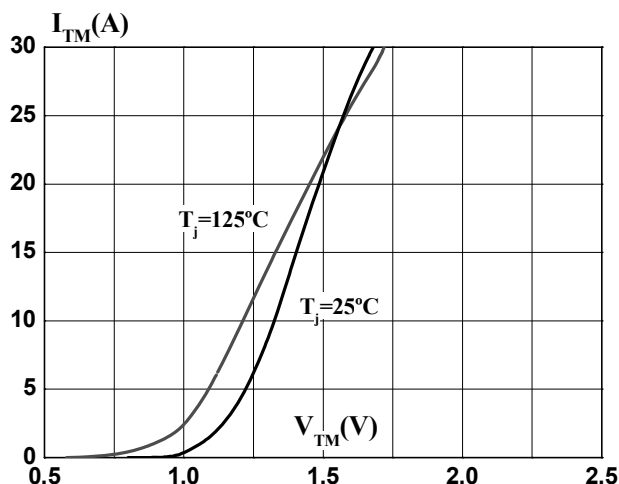


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10ms$

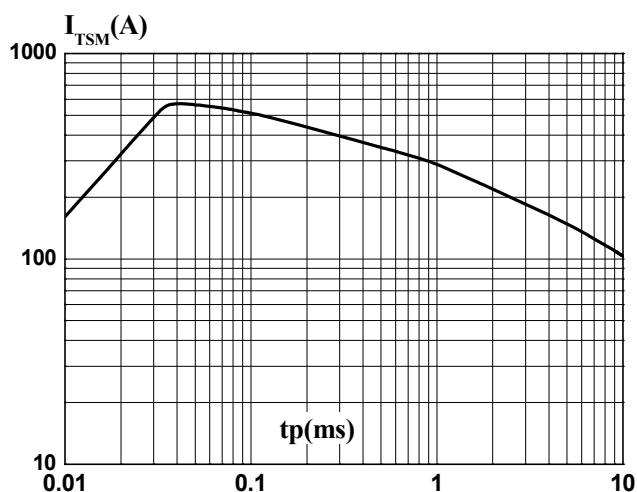
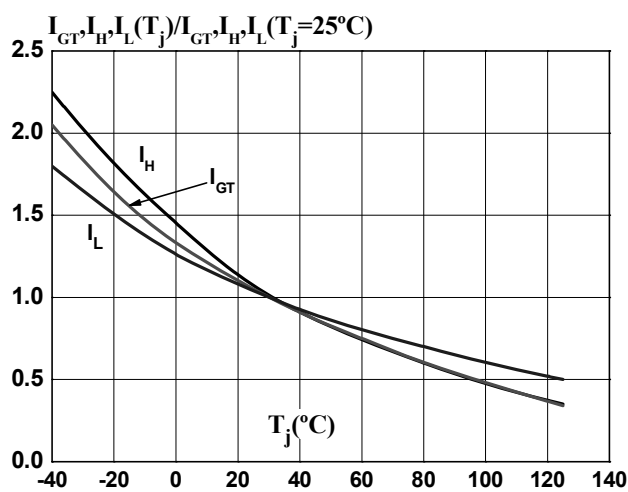
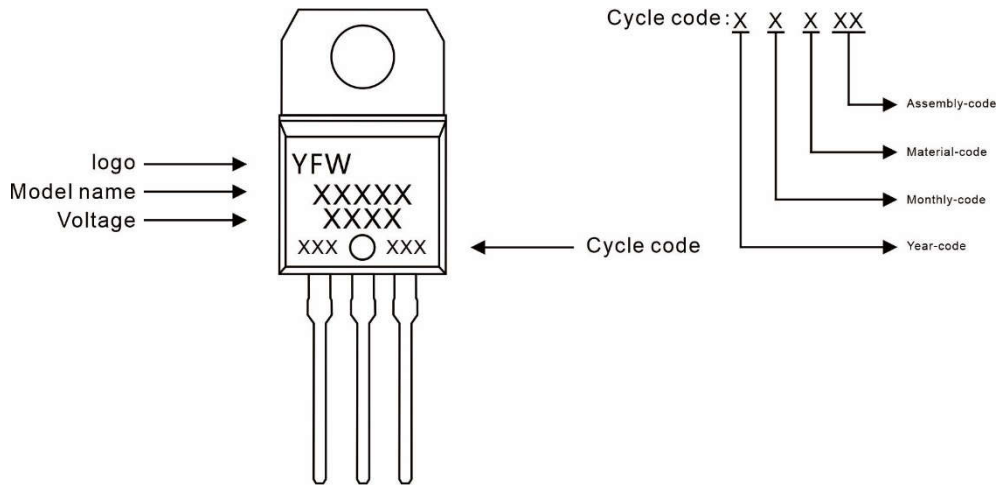


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



### Marking Diagram



### Ordering information

| Model name | Package | Unit Weight   | Base Quantity | Packing Quantity           |
|------------|---------|---------------|---------------|----------------------------|
| BT151      | TO-220B | 0.07oz(1.96g) | 50pcs/tube    | 1000PCS/Box 5000PCS/Carton |

### Package Dimensions

#### TO-220B(Non Insulated)

| (Non Insulated) |        | Millimeter |       | Inches |       |
|-----------------|--------|------------|-------|--------|-------|
|                 |        | Min.       | Max.  | Min.   | Max.  |
|                 | Symbol |            |       |        |       |
|                 | A      | 9.80       | 10.40 | 0.386  | 0.409 |
|                 | B      | 2.65       | 3.10  | 0.104  | 0.122 |
|                 | C      | 14.80      | 16.10 | 0.583  | 0.634 |
|                 | D      | 0.70       | 0.92  | 0.028  | 0.036 |
|                 | D1     | 1.18       | 1.42  | 0.047  | 0.056 |
|                 | E      | 2.40       | 2.70  | 0.095  | 0.106 |
|                 | L      | 2.80       | 4.20  | 0.11   | 0.17  |
|                 | L1     | 13.05      | 13.60 | 0.514  | 0.535 |
|                 | H      | 5.85       | 6.82  | 0.23   | 0.27  |
|                 | K      | 2.35       | 2.75  | 0.093  | 0.108 |
|                 | T      | 4.38       | 4.61  | 0.172  | 0.181 |
|                 | T1     | 1.15       | 1.36  | 0.045  | 0.054 |
|                 | T2     | 0.35       | 0.65  | 0.014  | 0.026 |
|                 | ΦR     | 3.75       | 3.95  | 0.148  | 0.156 |

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