

## FEATURES

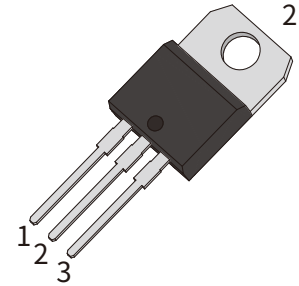
- | Glass-passivated mesa chip for reliability and uniform
- | High current output up to 16A

## APPLICATIONS

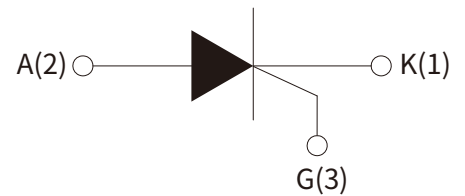
- | Motor cycle
- | Power charger
- | T-tools etc

## APPROVALS

|             |                                    |
|-------------|------------------------------------|
| <b>RoHS</b> | Compliance with 2011/65/EU         |
| <b>HF</b>   | Compliance with IEC61249-2-21:2003 |



TO-220B(Non-Ins)



Schematic Symbol

## ABSOLUTE MAXIMUM RATINGS

| Parameter                                                                  | Symbol              | Value    | Unit                   |
|----------------------------------------------------------------------------|---------------------|----------|------------------------|
| Repetitive peak off-state voltage ( $T_j=25^\circ\text{C}$ )               | $V_{\text{DRM}}$    | 600      | V                      |
| Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )                 | $V_{\text{RRM}}$    | 600      |                        |
| RMS on-state current ( $T_c=120^\circ\text{C}$ )                           | $I_{\text{T(RMS)}}$ | 16       | A                      |
| Non repetitive surge peak on-state current ( $t_p=10\text{ms}$ )           | $I_{\text{TSM}}$    | 180      |                        |
| $I^2t$ value for fusing ( $t_p=10\text{ms}$ )                              | $I^2t$              | 162      | $\text{A}^2\text{S}$   |
| Critical rate of rise of on-state current ( $I_G=2 \times I_{\text{GT}}$ ) | $di/dt$             | 50       | $\text{A}/\mu\text{s}$ |
| Peak gate current                                                          | $I_{\text{GM}}$     | 4        | A                      |
| Average gate power dissipation                                             | $P_{\text{G(AV)}}$  | 1        | W                      |
| Storage junction temperature range                                         | $T_{\text{STG}}$    | -40~+150 | $^\circ\text{C}$       |
| Operating junction temperature range                                       | $T_j$               | -40~+150 |                        |

## ELECTRICAL CHARACTERISTICS (T<sub>j</sub>=25°C unless otherwise specified)

| Symbol              | Test Condition                                                                  | Value | Unit |
|---------------------|---------------------------------------------------------------------------------|-------|------|
| I <sub>GT</sub>     | V <sub>D</sub> =12V, R <sub>L</sub> =33Ω                                        | ≤15   | mA   |
| V <sub>GT</sub>     |                                                                                 | ≤1.3  | V    |
| V <sub>GD</sub>     | V <sub>D</sub> =V <sub>DRM</sub> , R <sub>L</sub> =3.3KΩ, T <sub>j</sub> =150°C | ≥0.2  |      |
| I <sub>H</sub>      | I <sub>T</sub> =500mA                                                           | ≤50   | mA   |
| I <sub>L</sub>      | I <sub>G</sub> =1.2I <sub>GT</sub>                                              | ≤60   |      |
| dV <sub>D</sub> /dt | V <sub>D</sub> =2/3, V <sub>DRM</sub> , Gate Open, T <sub>j</sub> =150°C        | ≥200  | V/μs |

## STATIC CHARACTERISTICS

| Symbol           | Parameter                                                           |                       | Value | Unit |
|------------------|---------------------------------------------------------------------|-----------------------|-------|------|
| V <sub>TM</sub>  | I <sub>TM</sub> =32A,tp=380μs                                       | T <sub>j</sub> =25°C  | ≤1.55 | V    |
| I <sub>DRM</sub> | V <sub>D</sub> =V <sub>DRM</sub> , V <sub>R</sub> =V <sub>RRM</sub> |                       | ≤5    | uA   |
| I <sub>RRM</sub> |                                                                     | T <sub>j</sub> =150°C | ≤2    | mA   |

## THERMAL RESISTANCES

| Symbol               | Parameter            | Value | Unit |
|----------------------|----------------------|-------|------|
| R <sub>th(j-c)</sub> | Junction to case(AC) | 1.1   | °C/W |

## PARAMETER CHARACTERISTIC CURVE

FIG.1 Maximum power dissipation versus RMS on-state current

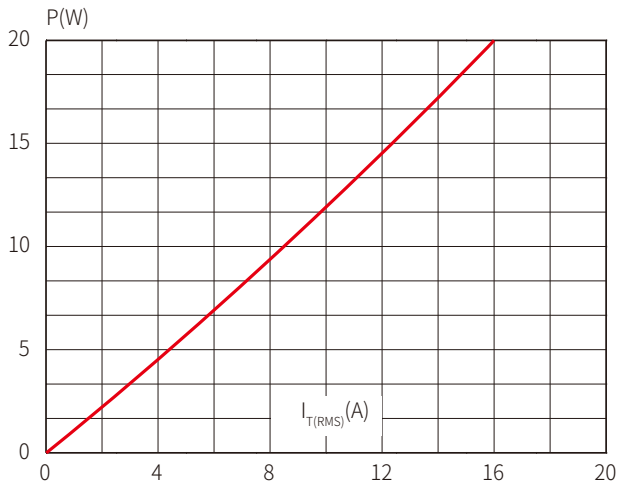


FIG.2: RMS on-state current versus case temperature

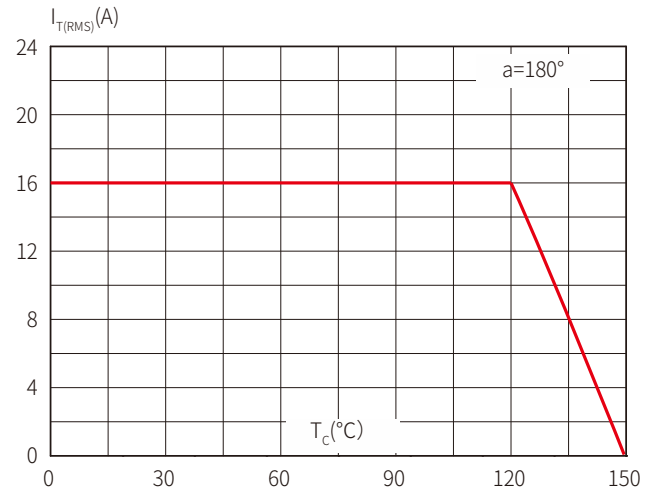


FIG.3: Surge peak on-state current versus number of cycles

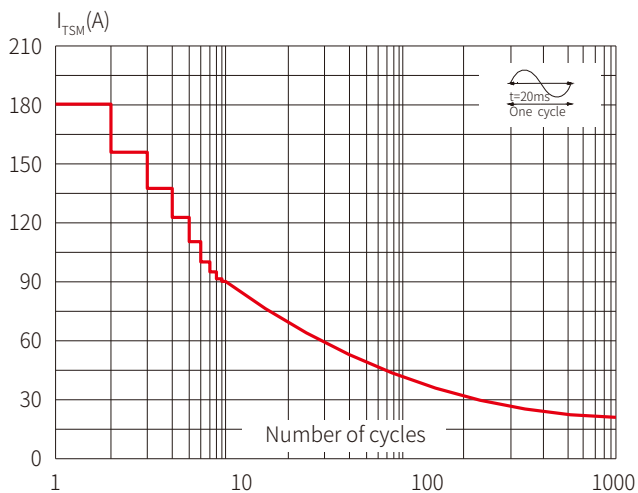
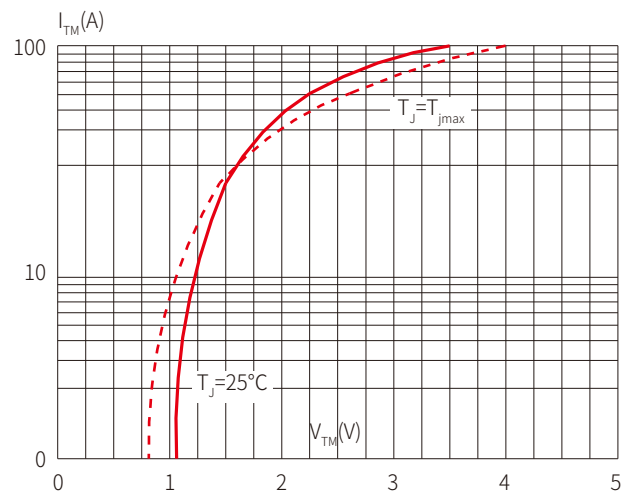
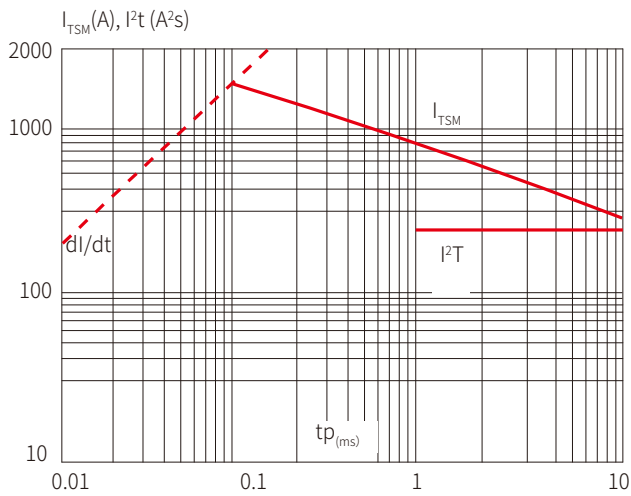


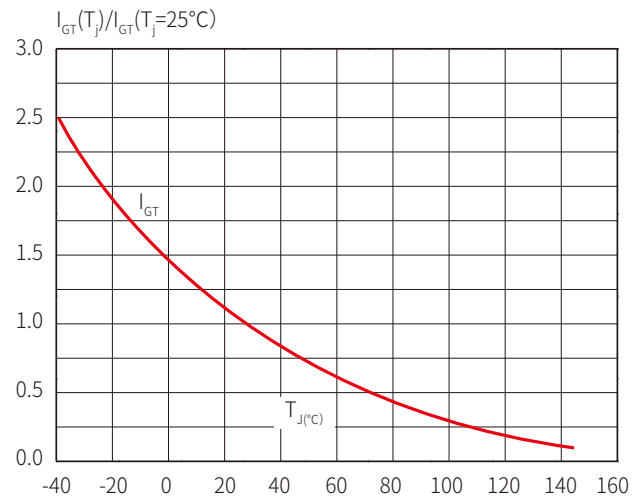
FIG.4 On-state characteristics (maximum values)



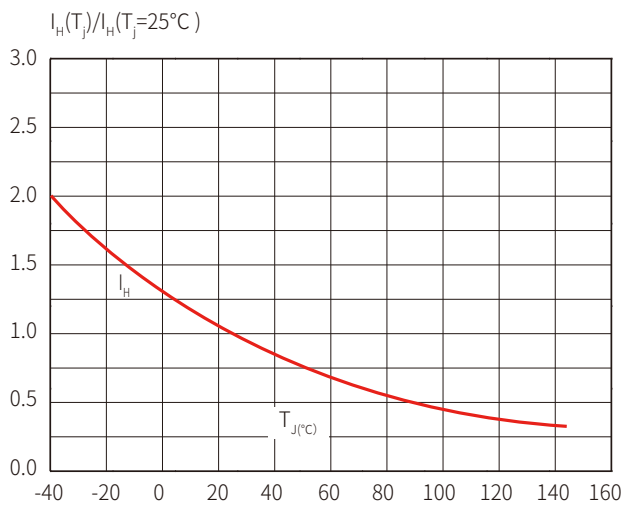
**FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$  and corresponding value of  $I^2t$  ( $dI/dt < 50\text{A}/\mu\text{s}$ )**



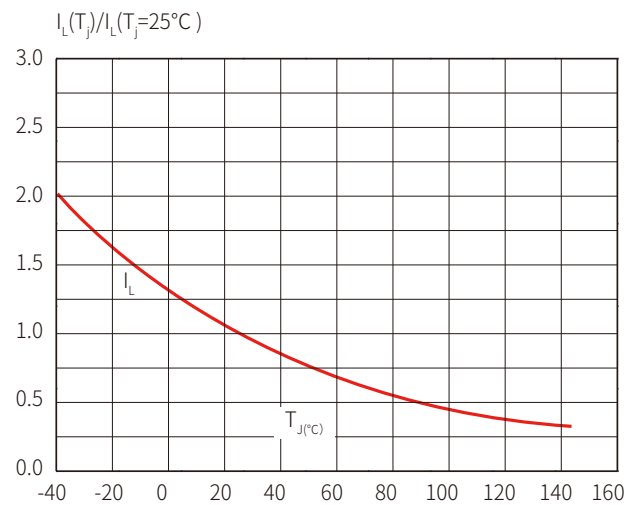
**FIG.6 Relative variations of gate trigger current, holding current and latching current versus junction temperature**



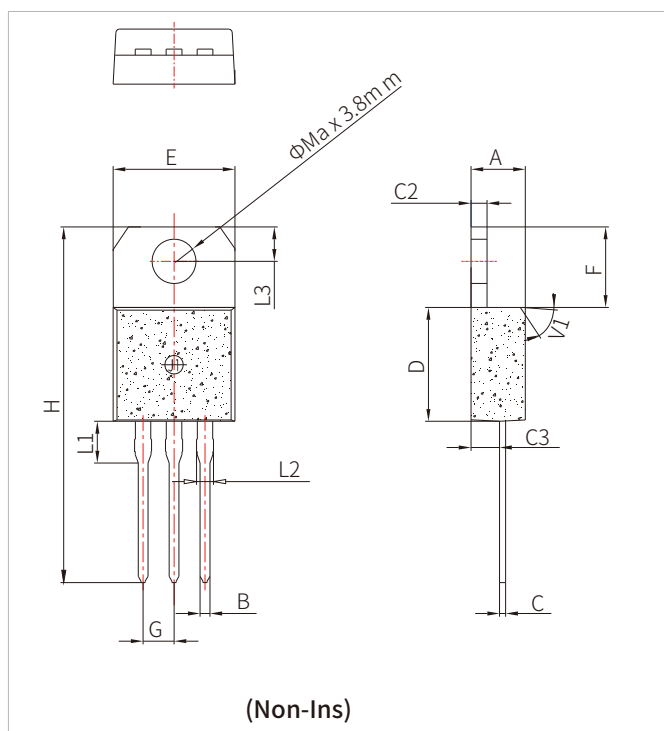
**FIG.7 Relative variations of holding current versus junction temperature**



**FIG.8 Relative variations of latching current versus junction temperature**



## TO-220B PACKAGE MECHANICAL DATA



| Ref. | Dimensions  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimeters |      |      | Inches |       |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    | 4.30        |      | 4.70 | 0.169  |       | 0.185 |
| B    | 0.61        |      | 0.88 | 0.024  |       | 0.035 |
| C    | 0.46        |      | 0.70 | 0.018  |       | 0.028 |
| C2   | 1.21        |      | 1.32 | 0.048  |       | 0.052 |
| C3   | 2.40        |      | 2.72 | 0.094  |       | 0.107 |
| D    | 8.60        |      | 9.70 | 0.339  |       | 0.382 |
| E    | 9.60        |      | 10.4 | 0.378  |       | 0.409 |
| F    | 6.20        |      | 6.60 | 0.244  |       | 0.260 |
| G    |             | 2.54 |      |        | 0.1   |       |
| H    | 28.0        |      | 29.8 | 1.102  |       | 1.173 |
| L1   |             | 3.75 |      |        | 0.148 |       |
| L2   | 1.14        |      | 1.70 | 0.045  |       | 0.067 |
| L3   | 2.65        |      | 2.95 | 0.104  |       | 0.116 |
| V1   |             | 45°  |      |        | 45°   |       |

## ORDERING INFORMATION

| Part Number | Package | Qty/pcs |           |        |
|-------------|---------|---------|-----------|--------|
|             |         | Tube    | Inner Box | Carton |
| SCB16C60    | TO-220B | 50      | 1000      | 5000   |

**Headquarters**

No.3387 Shendu Road  
Pujiang I&E Park  
Minhang Shanghai China  
201000

**Hotline**

400-021-5756

**Web**

<https://www.semiware.com>

**Sales Center**

Tel: 86-21-3463-7458  
Email: [sales18@semiware.com](mailto:sales18@semiware.com)

**Customer Service**

Tel: 86-21-5484-1001  
Email: [sales17@semiware.com](mailto:sales17@semiware.com)

**Technical Support**

Tel: 86-21-3463-7654  
Email: [fae01@semiware.com](mailto:fae01@semiware.com)

**Complaint & Suggestions**

Tel: 86-21-3463-7172  
Ext: 8868  
Email: [cs03@semiware.com](mailto:cs03@semiware.com)

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