

## FEATURES

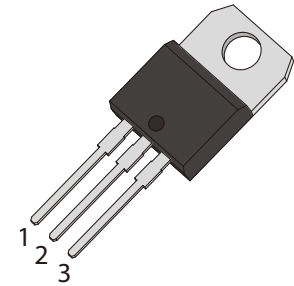
- | Glass-passivated mesa chip for reliability and uniform
- | High current output up to 16A
- | RoHS (2002/95/EC) compliant packages

## APPLICATIONS

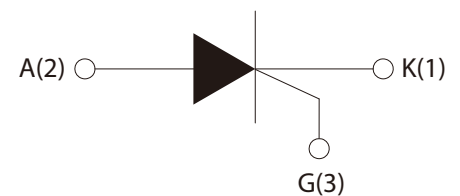
- | Motor cycle
- | Power charger
- | T-tools etc

## APPROVALS

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



TO-220A



Schematic Symbol

## ABSOLUTE MAXIMUM RATINGS

| Parameter  | Symbol              | Value    | Unit                   |
|--|---------------------|----------|------------------------|
| Repetitive peak off-state voltage ( $T_j=25^\circ\text{C}$ )     | $V_{\text{DRM}}$    | 800      | V                      |
| Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )       | $V_{\text{RRM}}$    | 800      |                        |
| RMS on-state current ( $T_c=100^\circ\text{C}$ )                 | $I_{\text{T(RMS)}}$ | 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 ( $I_G=2*I_{GT}$ )     | $d/d_t$             | 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~+125 |                        |

## ELECTRICAL CHARACTERISTICS ( $T_j=25^\circ\text{C}$ unless otherwise specified)

| Symbol    | Test Condition                                       | Value      | Unit             |
|-----------|--|------------|------------------|
| $I_{GT}$  | $V_D=12V, R_L=33\Omega$                              | $\leq 15$  | mA               |
| $V_{GT}$  |  | $\leq 1.3$ | V                |
| $V_{GD}$  | $V_D=V_{DRM}, R_L=3.3K\Omega, T_j=150^\circ\text{C}$ | $\geq 0.2$ |                  |
| $I_H$     | $I_T=500\text{mA}$                                   | $\leq 50$  | mA               |
| $I_L$     | $I_G=1.2I_{GT}$                                      | $\leq 60$  |                  |
| $dV_D/dt$ | $V_D=2/3V_{DRM}$ Gate Open, $T_j=150^\circ\text{C}$  | $\geq 200$ | V/ $\mu\text{s}$ |

## STATIC CHARACTERISTICS

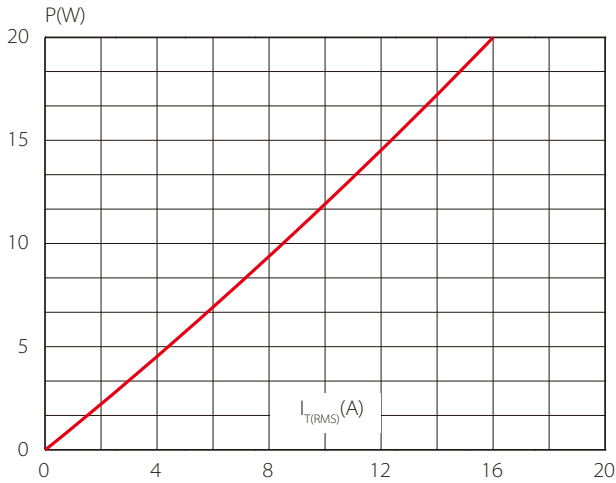
| Symbol    | Parameter                               | Value                   | Unit     |
|-----------|---|-------------------------|----------|
| $V_{TM}$  | $I_{TM}=32\text{A}, t_p=380\mu\text{s}$ | $\leq 1.55$             | V        |
| $I_{DRM}$ | $V_D=V_{DRM}, V_R=V_{RRM}$              |                         |          |
| $I_{RRM}$ |   | $T_j=150^\circ\text{C}$ | $\leq 2$ |

## THERMAL RESISTANCES

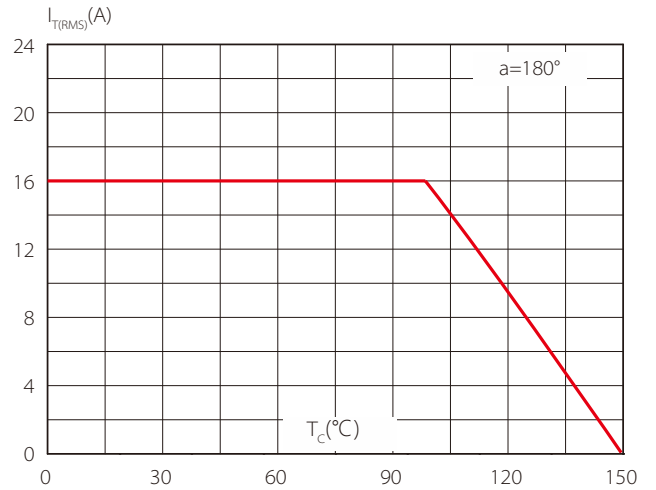
| Symbol        | Parameter            | Value | Unit                      |
|---------------|----------------------|-------|---------------------------|
| $R_{th(j-c)}$ | Junction to case(AC) | 2.4   | $^\circ\text{C}/\text{W}$ |

## PARAMETER CHARACTERISTIC CURVE

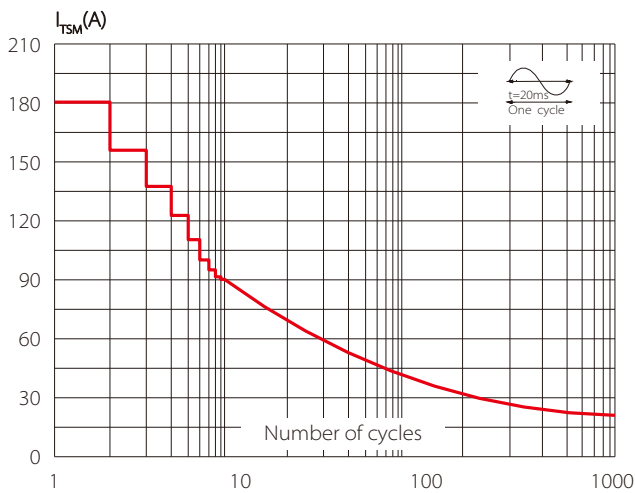
**FIG.1 Maximum power dissipation versus RMS on-state current**



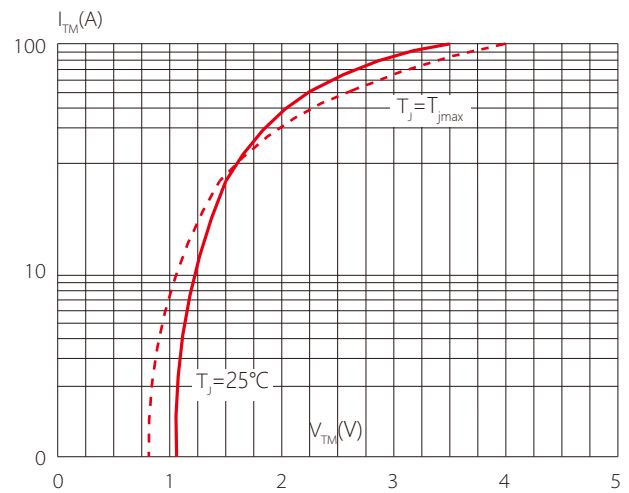
**FIG.2: RMS on-state current versus case temperature**



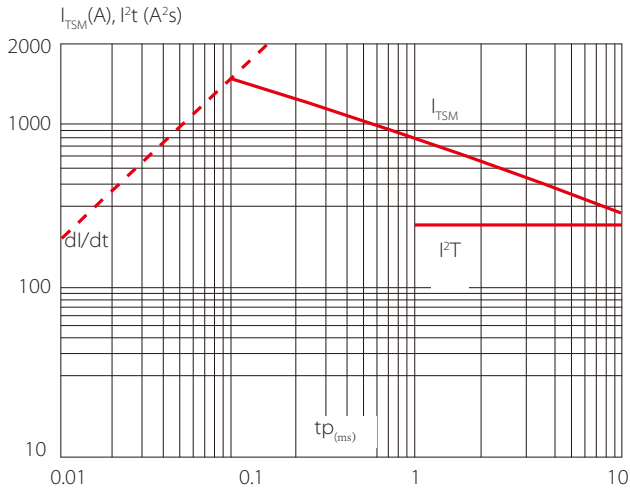
**FIG.3: Surge peak on-state current versus number of cycles**



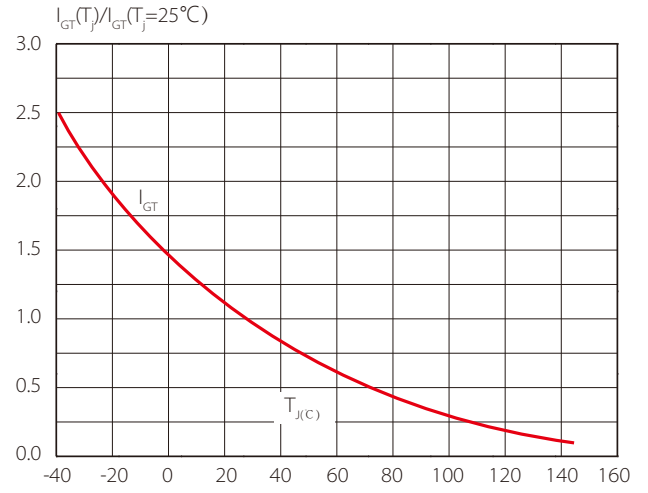
**FIG.4 On-state characteristics (maximum values)**



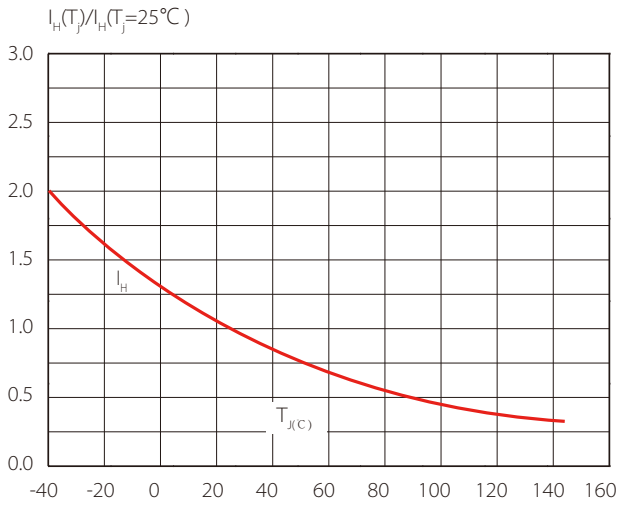
**FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$  and corresponding value of  $I^2t$  ( $di/dt < 50\text{A}/\mu\text{s}$ )**



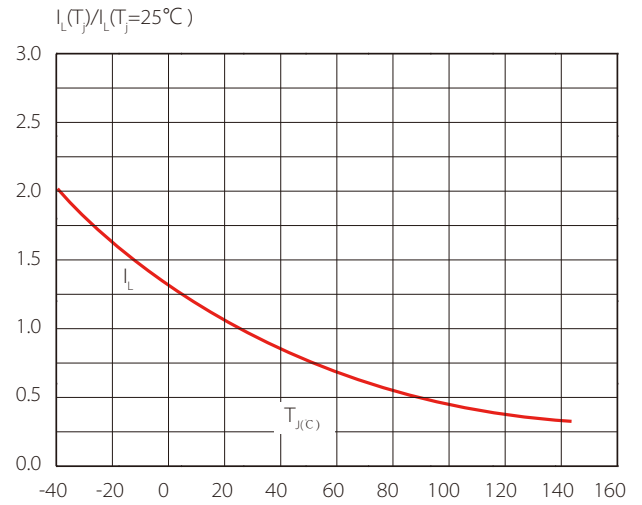
**FIG.6 Relative variations of gate trigger current, holding current and latching current versus junction temperature**



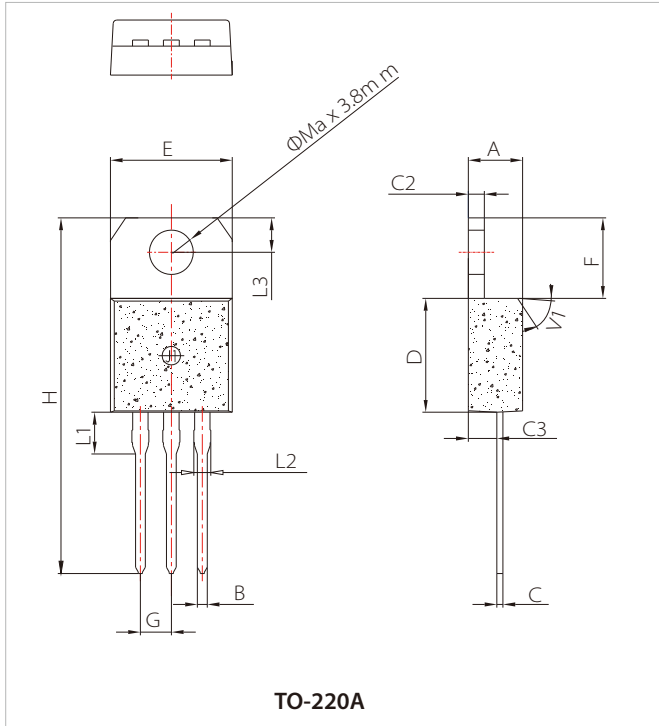
**FIG.7 Relative variations of holding current versus junction temperature**



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



## PACKAGE MECHANICAL DATA



| Ref. | Dimensions  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimeters |      |      | Inches |       |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    | 4.40        |      | 4.60 | 0.173  |       | 0.181 |
| 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 |
| SCA16C80    | TO-220A | 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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