

## FEATURES

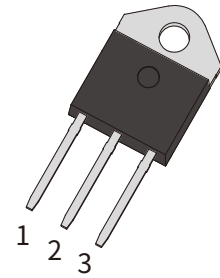
- | Glass-passivated mesa chip for reliability and uniform
- | High current output up to 40A

## APPLICATIONS

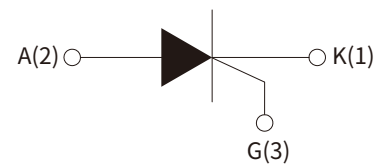
- | Motor cycle
- | Power charger
- | T-tools etc

## APPROVALS

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



TO-3P



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 ( $T_c=90^\circ\text{C}$ )                           | $I_{\text{T(RMS)}}$ | 40       | A                      |
| Non repetitive surge peak on-state current ( $t_p=10\text{ms}$ )          | $I_{\text{TSM}}$    | 460      |                        |
| $I^2t$ value for fusing ( $t_p=10\text{ms}$ )                             | $I^2t$              | 1060     | $\text{A}^2\text{S}$   |
| Critical rate of rise of on-state current ( $I_G=2 \cdot I_{\text{GT}}$ ) | $di/dt$             | 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~+125 |                        |

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

| Symbol    | Test Condition                                                | Value      | Unit             |
|-----------|---------------------------------------------------------------|------------|------------------|
| $I_{GT}$  | $V_D=12\text{V}, R_L=33\Omega$                                | $\leq 35$  | mA               |
| $V_{GT}$  |                                                               | $\leq 1.5$ | V                |
| $V_{GD}$  | $V_D=V_{DRM}, R_L=3.3\text{k}\Omega, T_j=150^{\circ}\text{C}$ | $\geq 0.2$ |                  |
| $I_H$     | $I_T=500\text{mA}$                                            | $\leq 75$  | mA               |
| $I_L$     | $I_G=1.2I_{GT}$                                               | $\leq 90$  |                  |
| $dV_D/dt$ | $V_D=2/3, V_{DRM}$ Gate Open, $T_j=150^{\circ}\text{C}$       | $\geq 200$ | V/ $\mu\text{s}$ |

## STATIC CHARACTERISTICS

| Symbol           | Parameter                                                           |                       | Value | Unit |
|------------------|---------------------------------------------------------------------|-----------------------|-------|------|
| V <sub>TM</sub>  | I <sub>TM</sub> =80A,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> |                       | ≤10   | uA   |
| I <sub>RRM</sub> |                                                                     | T <sub>j</sub> =150°C | ≤4    | mA   |

## THERMAL RESISTANCES

| Symbol        | Parameter            | Value | Unit                 |
|---------------|----------------------|-------|----------------------|
| $R_{th(j-c)}$ | Junction to case(AC) | 0.6   | $^{\circ}\text{C/W}$ |

## PARAMETER CHARACTERISTIC CURVE

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

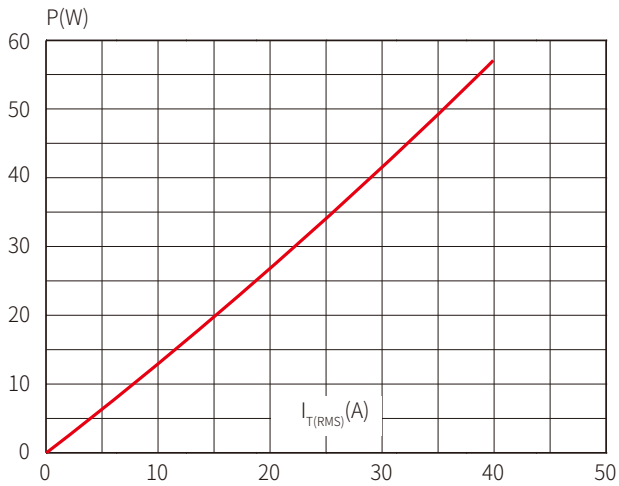


FIG.2: RMS on-state current versus case temperature

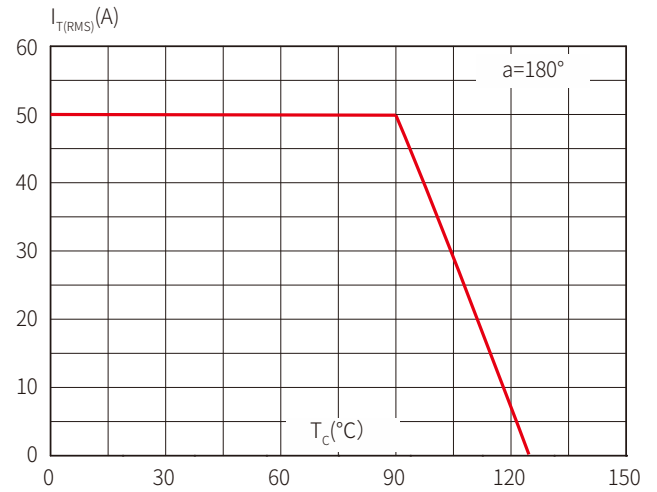


FIG.3: Surge peak on-state current versus number of cycles

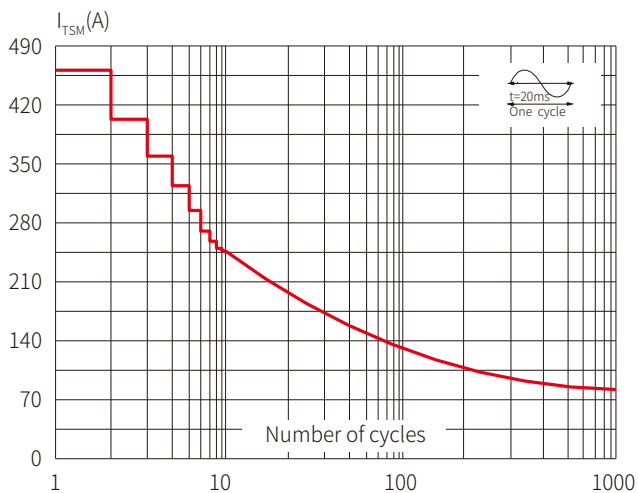
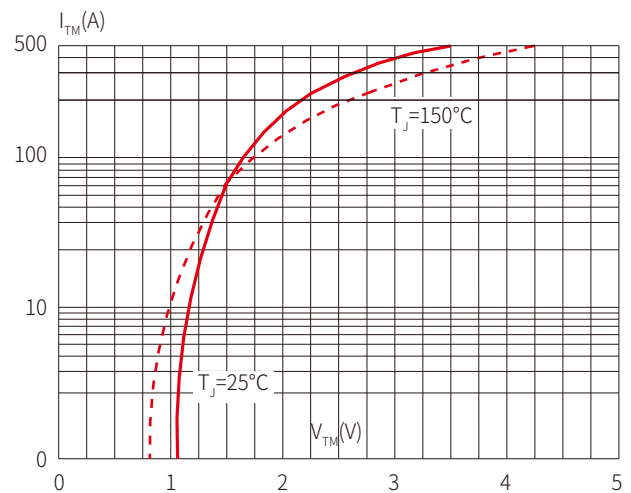
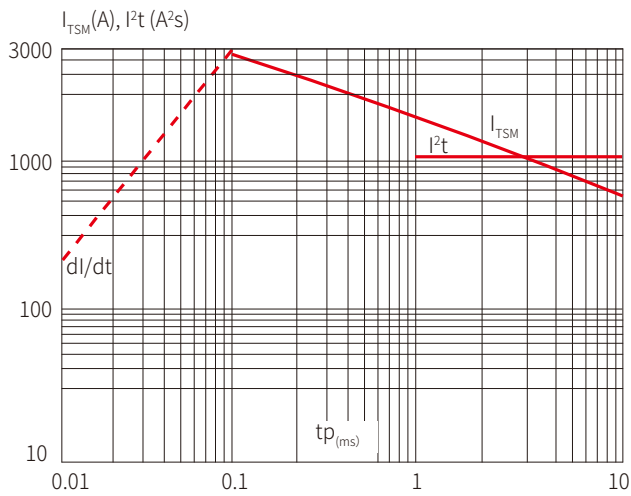


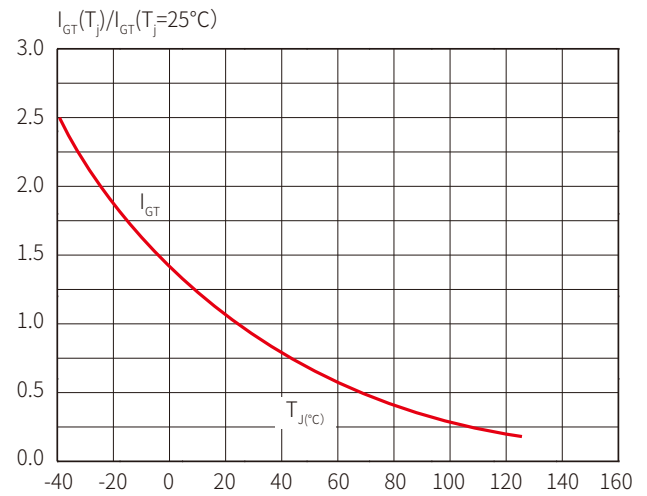
FIG.4 On-state characteristics (maximum values)



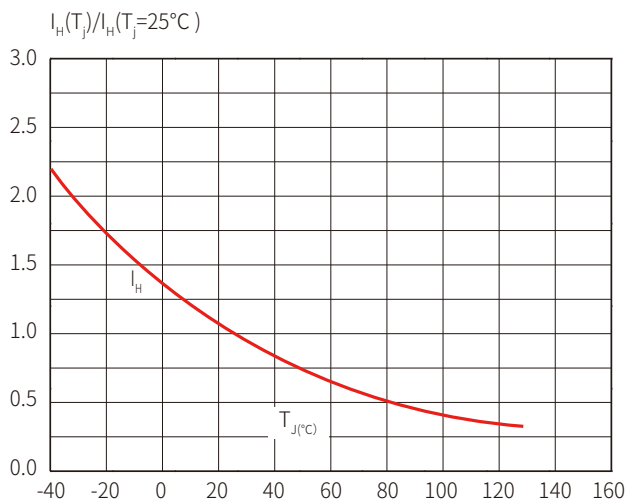
**FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$  and corresponding value of  $I^2t$  ( $di/dt < 50\text{A}/\mu\text{s}$ )**



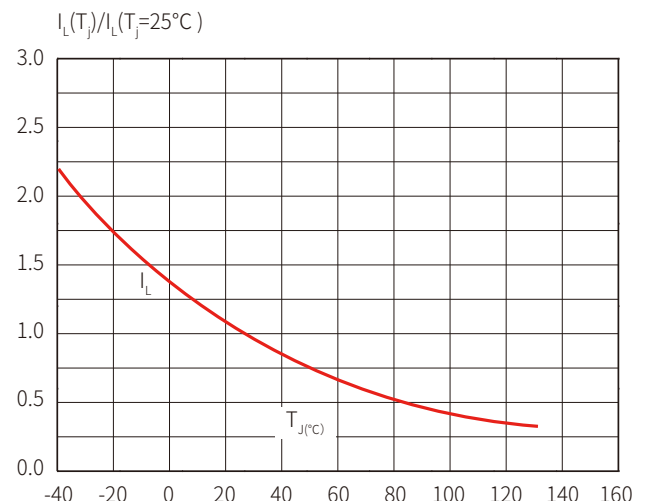
**FIG.6 Relative variations of gate trigger current, holding current and latching current versus junction temperature**



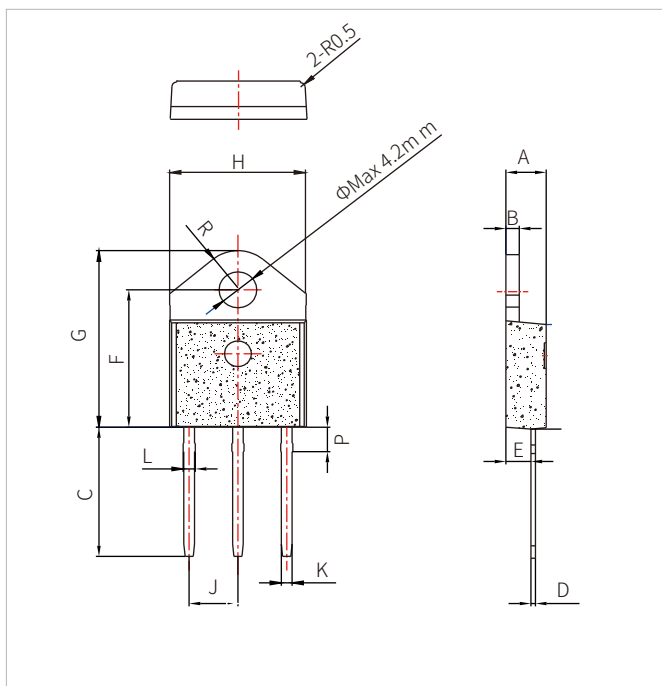
**FIG.7 Relative variations of holding current versus junction temperature**



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



## TO-3P PACKAGE MECHANICAL DATA



| Ref. | Dimensions  |      |       |        |       |       |
|------|-------------|------|-------|--------|-------|-------|
|      | Millimeters |      |       | Inches |       |       |
|      | Min.        | Typ. | Max.  | Min.   | Typ.  | Max.  |
| A    | 4.30        |      | 4.70  | 0.169  |       | 0.185 |
| B    | 1.40        |      | 1.60  | 0.056  |       | 0.063 |
| C    | 14.35       |      | 15.60 | 0.565  |       | 0.614 |
| D    | 0.50        |      | 0.70  | 0.020  |       | 0.028 |
| E    | 2.70        |      | 2.90  | 0.106  |       | 0.114 |
| F    | 15.70       |      | 16.60 | 0.618  |       | 0.654 |
| G    | 20.40       |      | 21.10 | 0.803  |       | 0.831 |
| H    | 15.00       |      | 15.60 | 0.591  |       | 0.614 |
| J    | 5.40        |      | 5.65  | 0.213  |       | 0.222 |
| K    | 1.10        |      | 1.40  | 0.043  |       | 0.055 |
| L    | 1.20        |      | 1.50  | 0.047  |       | 0.059 |
| P    | 2.80        |      | 3.80  | 0.110  |       | 0.150 |
| R    |             | 4.35 |       |        | 0.171 |       |

## ORDERING INFORMATION

| Part Number | Package | Qty/pcs |           |        |
|-------------|---------|---------|-----------|--------|
|             |         | Tube    | Inner Box | Carton |
| SCZ40C60    | TO-3P   | 30      | 450       | 3600   |

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