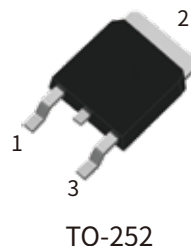


## FEATURES

- | Direct interfacing to logic level ICs
- | Direct interfacing to low power gate drive circuits
- | High blocking voltage capability
- | Planar passivated for voltage ruggedness and reliability
- | Triggering in all four quadrant



## APPLICATIONS

- | General purpose motor control circuits
- | Phase control operations in light dimmers and motor speed controllers
- | Home appliances



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      | V                      |
| RMS on-state current ( $T_c=100^\circ\text{C}$ )                           |              | $I_{\text{T(RMS)}}$ | 4        | A                      |
| Non repetitive surge peak on-state current (full cycle, $F=50\text{Hz}$ )  |              | $I_{\text{TSM}}$    | 35       |                        |
| $I^2t$ value for fusing ( $t_p=10\text{ms}$ )                              |              | $I^2t$              | 6.1      | $\text{A}^2\text{S}$   |
| Critical rate of rise of on-state current ( $I_G=2 \times I_{\text{GT}}$ ) | I - II - III | $di/dt$             | 50       | $\text{A}/\mu\text{s}$ |
|                                                                            | IV           |                     | 10       |                        |
| Peak gate current                                                          |              | $I_{\text{GM}}$     | 2        | A                      |
| Average gate power dissipation                                             |              | $P_{\text{G(AV)}}$  | 0.5      | W                      |
| Peak gate power                                                            |              | $P_{\text{GM}}$     | 5        | W                      |
| Operating junction temperature range                                       |              | $T_j$               | -40~+125 | $^\circ\text{C}$       |
| Storage junction temperature range                                         |              | $T_{\text{STG}}$    | -40~+150 |                        |

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

| Symbol              | Test Condition                                                                  | Quadrant              | Value |      |      | Unit |
|---------------------|---------------------------------------------------------------------------------|-----------------------|-------|------|------|------|
|                     |                                                                                 |                       | D     | E    | F    |      |
| I <sub>GT</sub>     | V <sub>D</sub> =12V                                                             | I - II - III          | ≤5    | ≤10  | ≤25  | mA   |
|                     |                                                                                 | IV                    | ≤10   | ≤25  | ≤70  |      |
| V <sub>GT</sub>     |                                                                                 | ALL                   | ≤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> =125°C |                       | ≥0.2  |      |      | V    |
| I <sub>H</sub>      | I <sub>T</sub> =100mA                                                           |                       | ≤15   | ≤25  | ≤30  | mA   |
| I <sub>L</sub>      | I <sub>G</sub> =1.2I <sub>GT</sub>                                              | I - III               | ≤20   | ≤30  | ≤40  |      |
|                     |                                                                                 | II - IV               | ≤35   | ≤45  | ≤60  |      |
| dV <sub>D</sub> /dt | V <sub>D</sub> =67%V <sub>DRM</sub> , T <sub>j</sub> =125°C                     |                       | ≥50   | ≥100 | ≥150 | V/μs |
| V <sub>TM</sub>     | I <sub>TM</sub> =5.5A, tp=380μs                                                 |                       | ≤1.6  |      |      | V    |
| I <sub>DRM</sub>    | V <sub>D</sub> =V <sub>DRM</sub> , V <sub>R</sub> =V <sub>RRM</sub>             | T <sub>j</sub> =25°C  | ≤5    |      |      | uA   |
| I <sub>RRM</sub>    |                                                                                 | T <sub>j</sub> =125°C | ≤0.5  |      |      | mA   |

## THERMAL RESISTANCES

| Symbol               | Parameter            | Value | Unit |
|----------------------|----------------------|-------|------|
| R <sub>th(j-c)</sub> | Junction to case(AC) | 2.8   | °C/W |

## PARAMETER CHARACTERISTIC CURVE

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

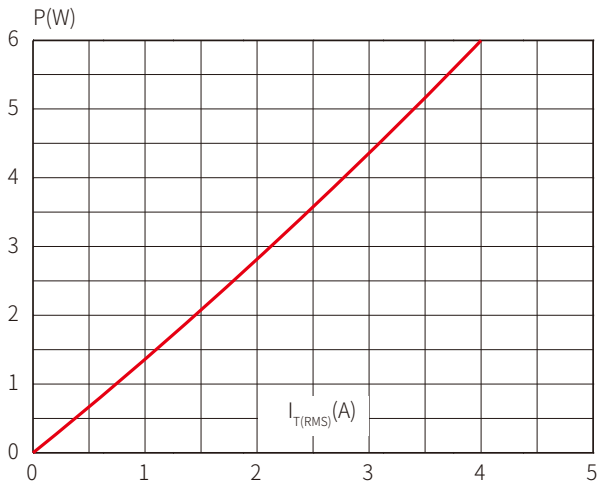


FIG.2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35 $\mu$ m)

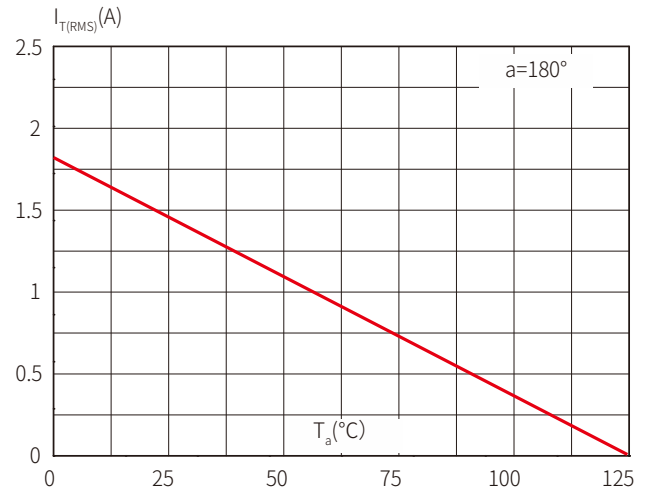


FIG.3: Surge peak on-state current versus number of cycles

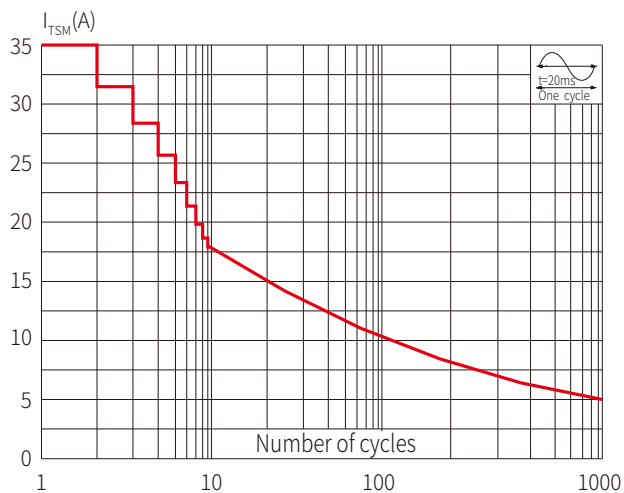


FIG.4 On-state characteristics (maximum values)

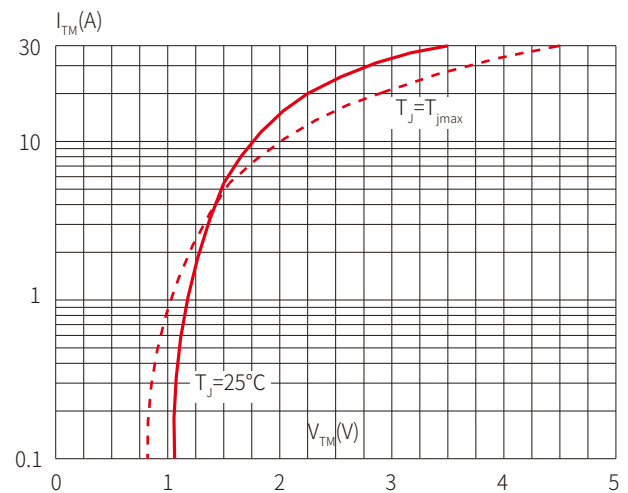


**FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$  and corresponding value of  $I^2t$  ( $dI/dt < 50\text{A}/\mu\text{s}$ )**

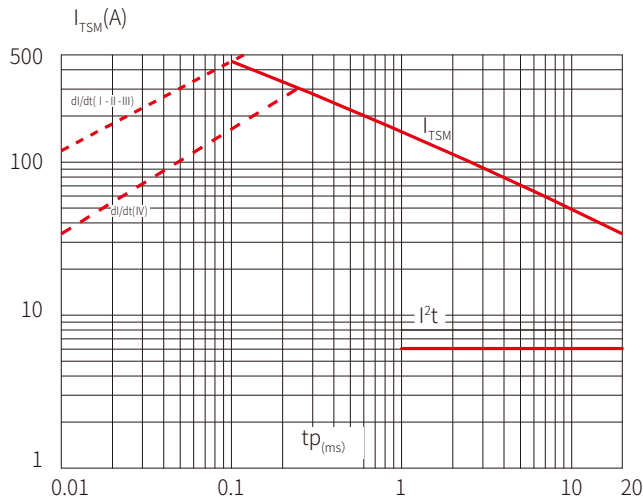


**FIG.6 Relative variations of gate trigger current versus junction temperature**

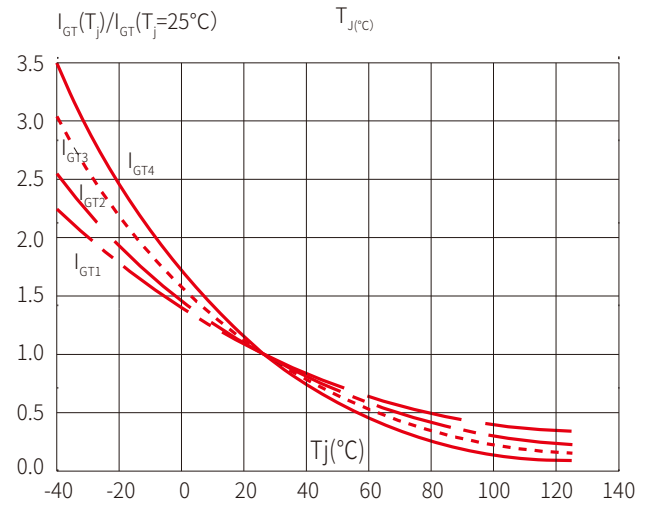


**FIG.7 Relative variations of holding current versus junction temperature**

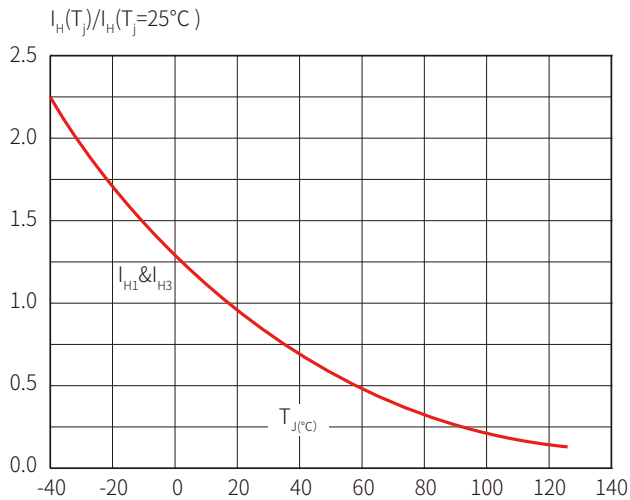
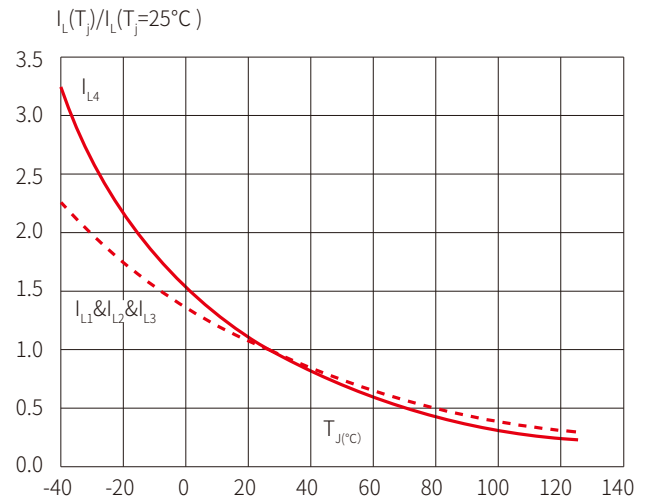
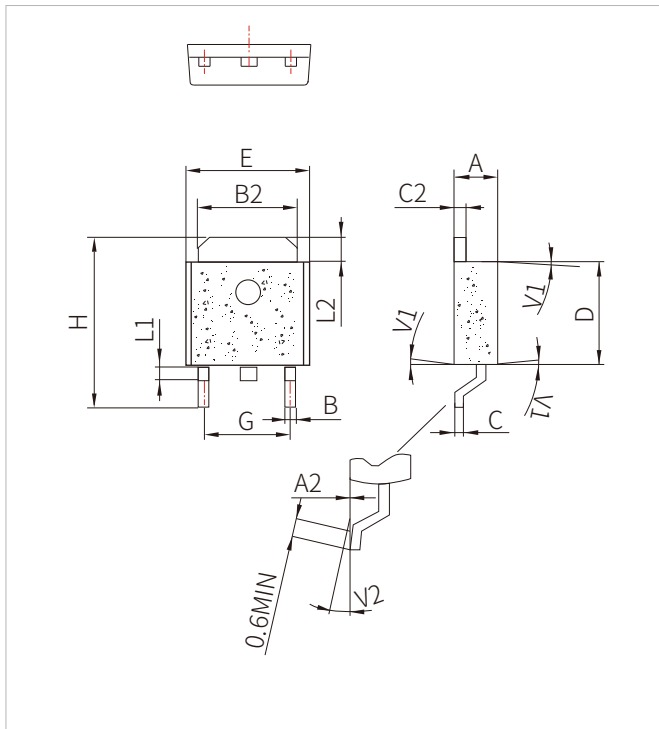


**FIG.8 Relative variations of latching current versus junction temperature**



## TO-252 PACKAGE MECHANICAL DATA



| Ref. | Dimensions  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimeters |      |      | Inches |       |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    | 2.10        |      | 2.50 | 0.083  |       | 0.098 |
| A2   | 0.03        |      | 0.23 | 0.001  |       | 0.009 |
| B    | 0.50        |      | 1.00 | 0.020  |       | 0.039 |
| B2   | 5.10        |      | 5.40 | 0.200  |       | 0.213 |
| C    | 0.45        |      | 0.62 | 0.018  |       | 0.024 |
| C2   | 0.48        |      | 0.62 | 0.019  |       | 0.024 |
| D    | 5.30        |      | 6.40 | 0.209  |       | 0.252 |
| E    | 6.10        |      | 6.80 | 0.240  |       | 0.268 |
| G    | 4.40        |      | 4.70 | 0.173  | 0.1   | 0.185 |
| H    | 9.35        |      | 10.7 | 0.368  |       | 0.421 |
| L1   | 1.30        |      | 1.70 | 0.051  | 0.143 | 0.067 |
| L2   | 1.37        |      | 1.50 | 0.054  |       | 0.059 |
| V1   |             | 4°   |      |        | 0.130 |       |
| V2   | 0°          |      | 8°   | 0°     |       | 8°    |

## ORDERING INFORMATION

| Part Number      | Package | QTY/Reel | Reel Size |
|------------------|---------|----------|-----------|
| BT136S-800D(E/F) | TO-252  | 2500PCS  | 13"       |

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