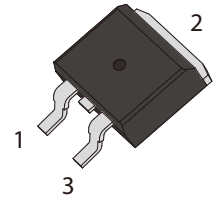


FEATURES

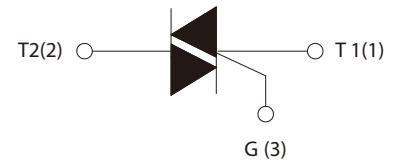
- | Direct interfacing to logic level ICs
- | Direct interfacing to low power gate drive circuits
- | High blocking voltage capability
- | Planar passivated for voltage ruggedness and reliability
- | Triggering in all four quadrant



TO-263

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_{DRM} | 600 | V |
| Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$) | V_{RRM} | 600 | V |
| RMS on-state current ($T_c=95^\circ\text{C}$) | $I_{\text{T(RMS)}}$ | 4 | A |
| Non repetitive surge peak on-state current (full cycle, $F=50\text{Hz}$) | I_{TSM} | 35 | |
| I^2t value for fusing ($t_p=10\text{ms}$) | I^2t | 6.1 | A^2S |
| Critical rate of rise of on-state current ($I_G=2*I_{GT}$) | I - II - III | 50 | $\text{A}/\mu\text{s}$ |
| | IV | 10 | |
| Peak gate current | I_{GM} | 2 | A |
| Average gate power dissipation | $P_{\text{G(AV)}}$ | 0.5 | W |
| Peak gate power | P_{GM} | 5 | W |
| Operating junction temperature range | T_j | -40~+125 | $^\circ\text{C}$ |
| Storage junction temperature range | T_{STG} | -40~+150 | |

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

| Symbol | Test Condition | Quadrant | Value | | | | Unit |
|-----------|---|-------------------------|------------|-----------|------------|------------|------------------|
| | | | T | D | E | F | |
| I_{GT} | $V_D=12\text{V}$ | I - II - III | ≤ 5 | ≤ 5 | ≤ 10 | ≤ 25 | mA |
| | | IV | ≤ 5 | ≤ 10 | ≤ 25 | ≤ 70 | |
| V_{GT} | | ALL | ≤ 1.3 | | | | V |
| V_{GD} | $V_D=V_{DRM}, R_L=3.3\text{K}\Omega, T_j=125^\circ\text{C}$ | | ≥ 0.2 | | | | V |
| I_H | $I_T=100\text{mA}$ | | ≤ 5 | ≤ 15 | ≤ 25 | ≤ 30 | mA |
| I_L | $I_G=1.2I_{GT}$ | I - III | ≤ 10 | ≤ 20 | ≤ 30 | ≤ 40 | |
| | | II - IV | ≤ 15 | ≤ 35 | ≤ 45 | ≤ 60 | |
| dV_D/dt | $V_D=67\%V_{DRM}, T_j=125^\circ\text{C}$ | | ≥ 20 | ≥ 50 | ≥ 100 | ≥ 150 | V/ μs |
| V_{TM} | $I_{TM}=5.5\text{A}, t_p=380\mu\text{s}$ | | ≤ 1.6 | | | | V |
| I_{DRM} | $V_D=V_{DRM}, V_R=V_{RRM}$ | $T_j=25^\circ\text{C}$ | ≤ 5 | | | | μA |
| I_{RRM} | | $T_j=125^\circ\text{C}$ | ≤ 0.5 | | | | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|----------------------|-------|---------------------------|
| $R_{th(j-c)}$ | Junction to case(AC) | 3.8 | $^\circ\text{C}/\text{W}$ |

PARAMETER CHARACTERISTIC CURVE

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

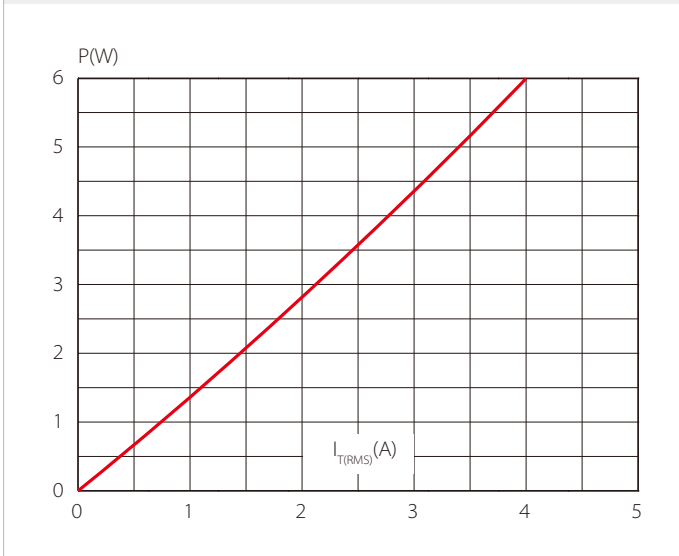


FIG.2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35 μ m)

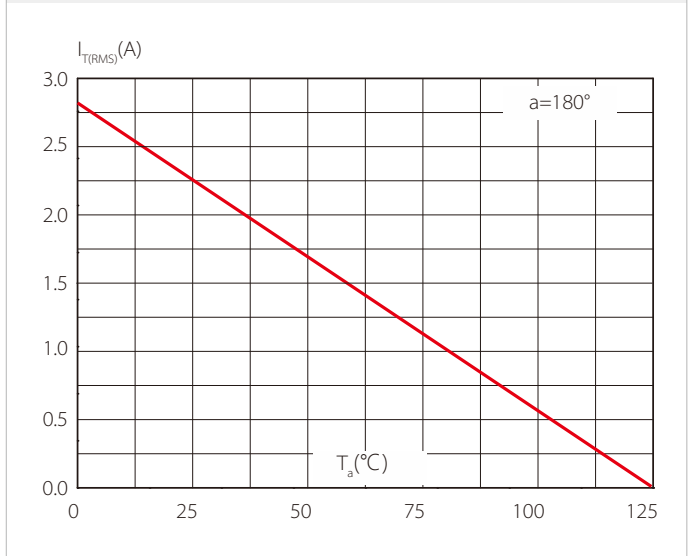


FIG.3: Surge peak on-state current versus number of cycles

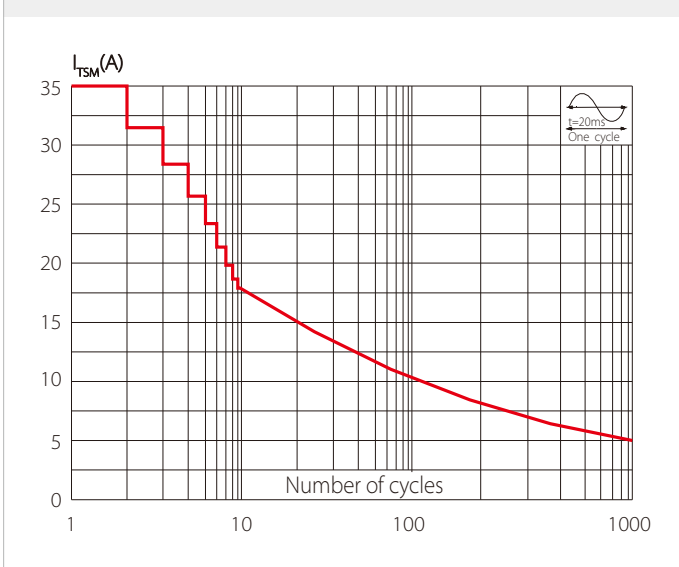


FIG.4 On-state characteristics (maximum values)

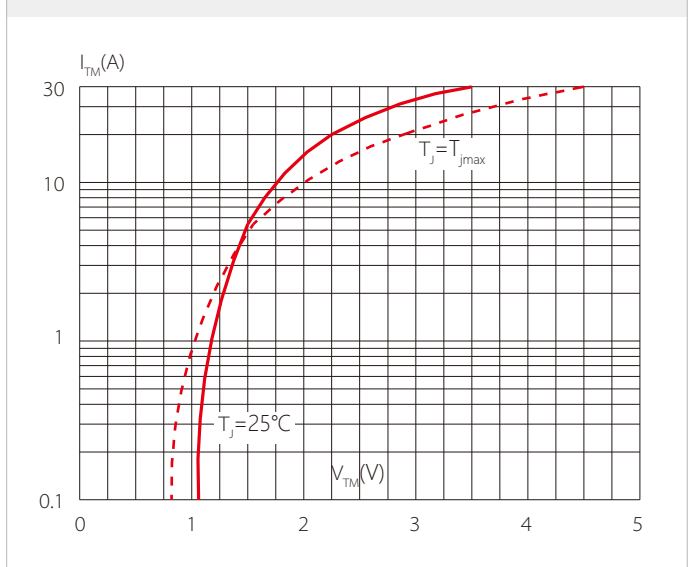


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

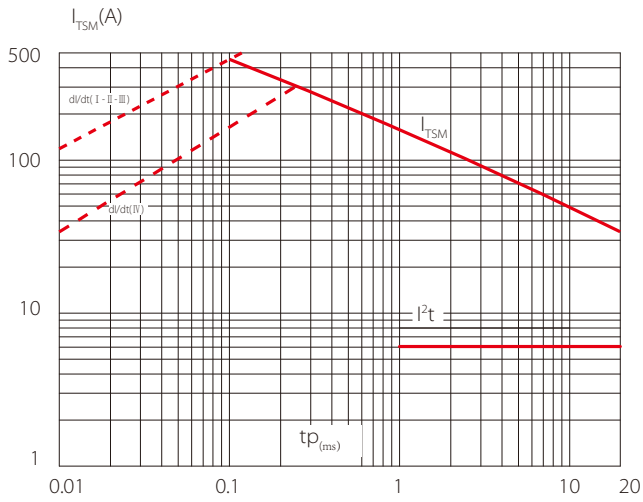


FIG.6 Relative variations of gate trigger current versus junction temperature

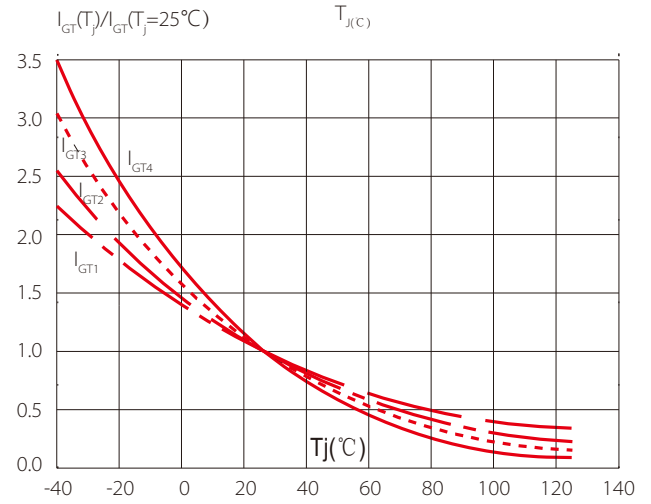


FIG.7 Relative variations of holding current versus junction temperature

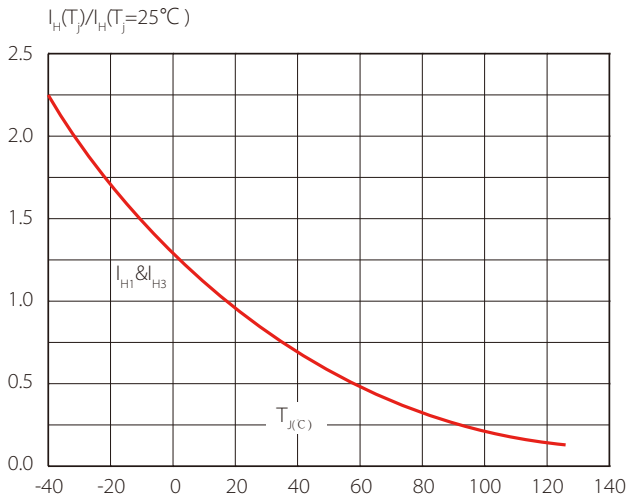
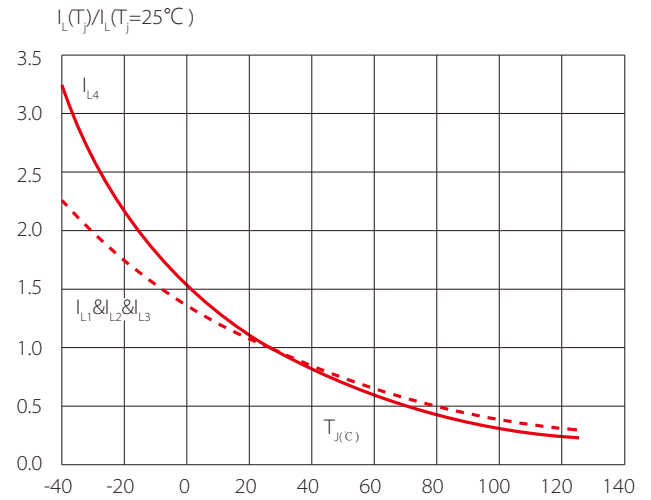
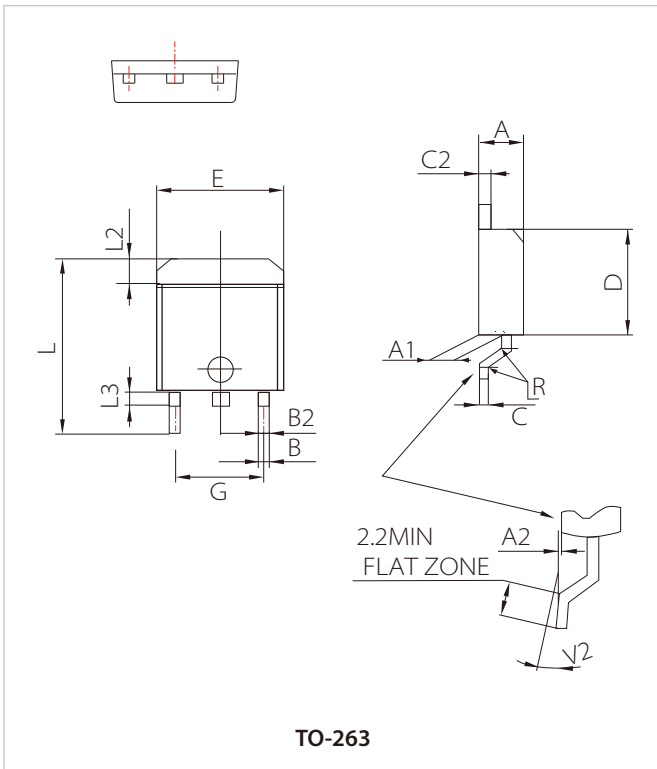


FIG.8 Relative variations of latching current versus junction temperature



PACKAGE MECHANICAL DATA



| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.30 | | 4.60 | 0.169 | | 0.181 |
| A1 | 2.49 | | 2.69 | 0.098 | | 0.106 |
| A2 | 0.03 | | 0.23 | 0.001 | | 0.009 |
| B | 0.70 | | 0.93 | 0.027 | | 0.037 |
| B2 | 1.25 | 1.40 | | 0.048 | 0.055 | |
| C | 0.45 | | 0.60 | 0.017 | | 0.024 |
| C2 | 1.21 | | 1.36 | 0.047 | | 0.054 |
| D | 8.95 | | 9.35 | 0.352 | | 0.368 |
| E | 10.00 | | 10.28 | 0.392 | | 0.405 |
| G | 4.88 | | 5.28 | 0.192 | | 0.208 |
| L | 15.00 | | 15.85 | 0.590 | | 0.624 |
| L2 | 1.27 | | 1.40 | 0.050 | | 0.055 |
| L3 | 1.40 | | 1.75 | 0.055 | | 0.069 |
| R | | 0.40 | | | 0.016 | |
| V2 | 0° | | 8° | 0° | | 8° |

ORDERING INFORMATION

| Part Number | Package | QTY/Reel | Reel Size |
|-----------------|---------|----------|-----------|
| STE4Q60T(D/E/F) | TO-263 | 800CS | 13" |

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