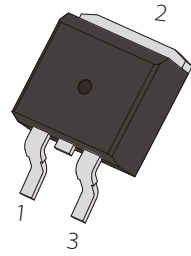


FEATURES

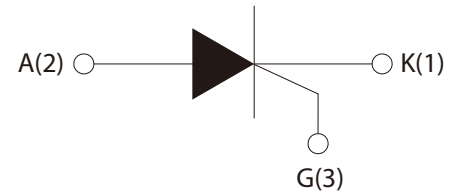
- | Glass-passivated mesa chip for reliability and uniform
- | High current output up to 20A
- | RoHS (2002/95/EC) compliant packages



TO-263

APPLICATIONS

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



Schematic Symbol

APPROVALS

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

ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|--|---------------------|----------|------------------------|
| Repetitive peak off-state voltage ($T_j=25^\circ\text{C}$) | V_{DRM} | 800 | V |
| Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$) | V_{RRM} | 800 | |
| RMS on-state current ($T_c=80^\circ\text{C}$) | $I_{\text{T(RMS)}}$ | 20 | A |
| Non repetitive surge peak on-state current ($t_p=10\text{ms}$) | I_{TSM} | 250 | |
| I^2t value for fusing ($t_p=10\text{ms}$) | I^2t | 312.5 | A^2S |
| 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_{GM} | 4 | A |
| Average gate power dissipation | $P_{\text{G(AV)}}$ | 1 | W |
| Storage junction temperature range | T_{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} | $V_D=12\text{V}, R_L=33\Omega$ | ≤ 25 | mA |
| V_{GT} | | ≤ 1.3 | V |
| V_{GD} | $V_D=V_{DRM}, R_L=3.3\text{K}\Omega, T_j=150^{\circ}\text{C}$ | ≥ 0.2 | |
| I_H | $I_T=500\text{mA}$ | ≤ 60 | mA |
| I_L | $I_G=1.2I_{GT}$ | ≤ 70 | |
| dV_D/dt | $V_D=2/3V_{DRM}$, Gate Open, $T_j=150^{\circ}\text{C}$ | ≥ 200 | V/ μs |

STATIC CHARACTERISTICS

| Symbol | Parameter | Value | Unit | |
|-----------|---|---------------------------|----------|--------------------------|
| V_{TM} | $I_{TM}=40\text{A}, t_p=380\mu\text{s}$ | ≤ 1.55 | V | |
| I_{DRM} | $V_D=V_{DRM}, V_R=V_{RRM}$ | | | $T_j=25^{\circ}\text{C}$ |
| I_{RRM} | | $T_j=150^{\circ}\text{C}$ | ≤ 4 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|----------------------|-------|-----------------------------|
| $R_{th(j-c)}$ | Junction to case(AC) | 2.5 | $^{\circ}\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | Junction to ambient | 45 | $^{\circ}\text{C}/\text{W}$ |

PARAMETER CHARACTERISTIC CURVE

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

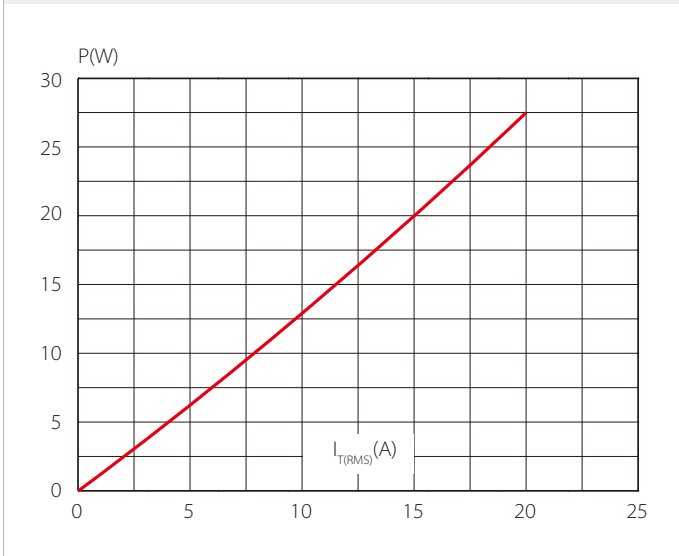


FIG.2: RMS on-state current versus ambient temperature (printed circuit board FR4,copper thickness:35 μ m)(full cycle)

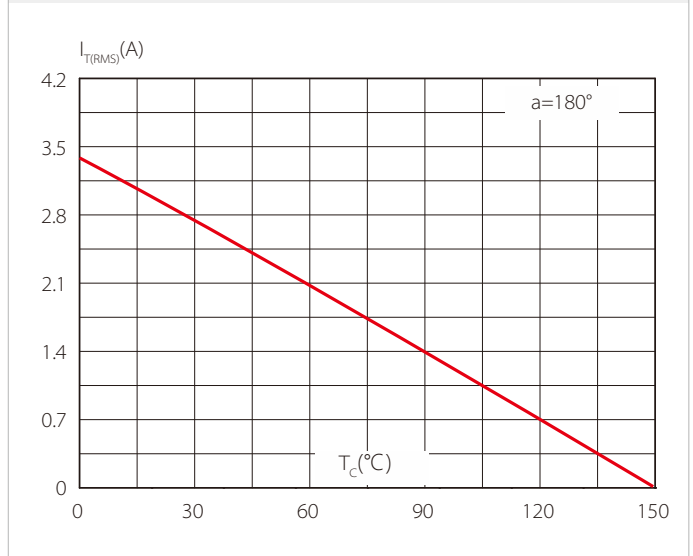


FIG.3: Surge peak on-state current versus number of cycles

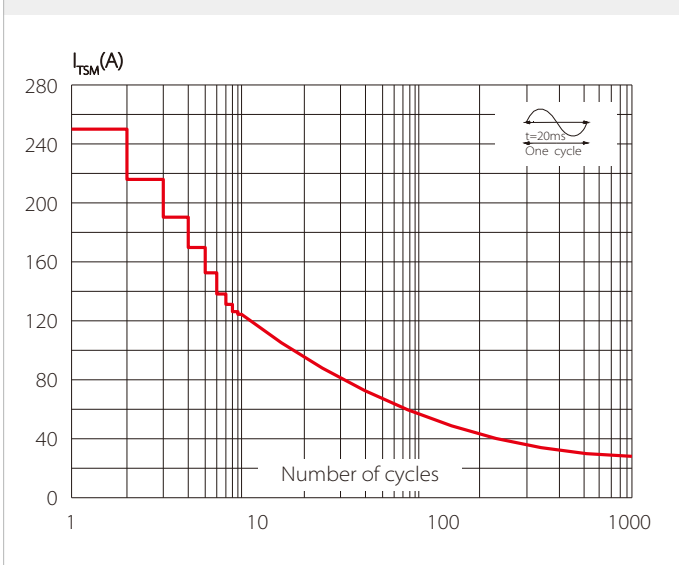


FIG.4 On-state characteristics (maximum values)

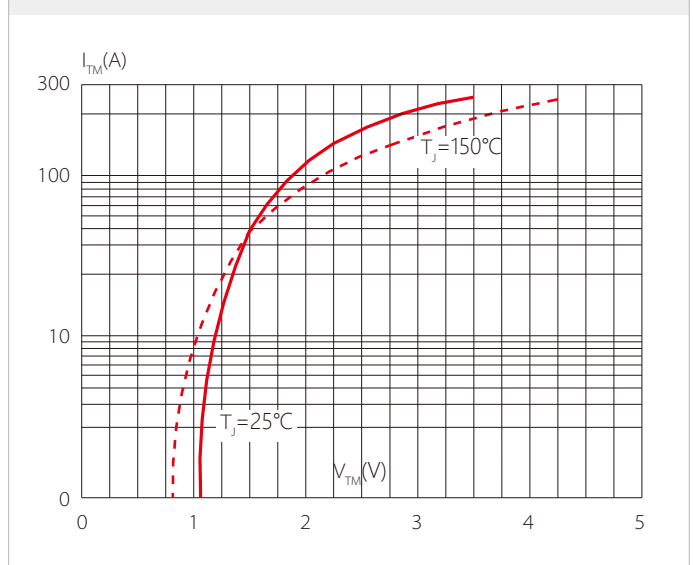


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$ and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

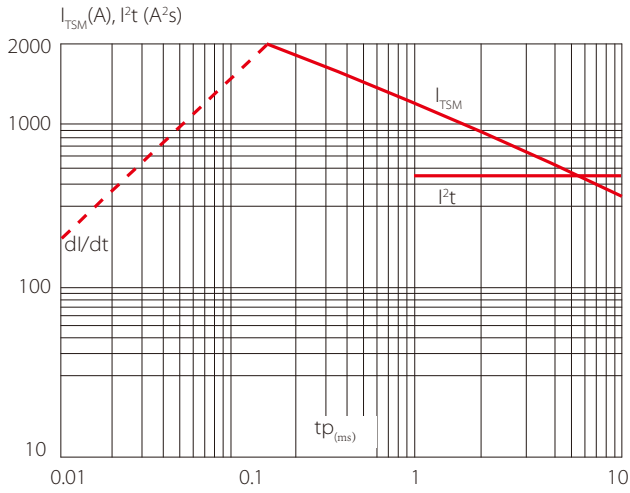


FIG.6 Relative variations of gate trigger current, holding current and latching current versus junction temperature

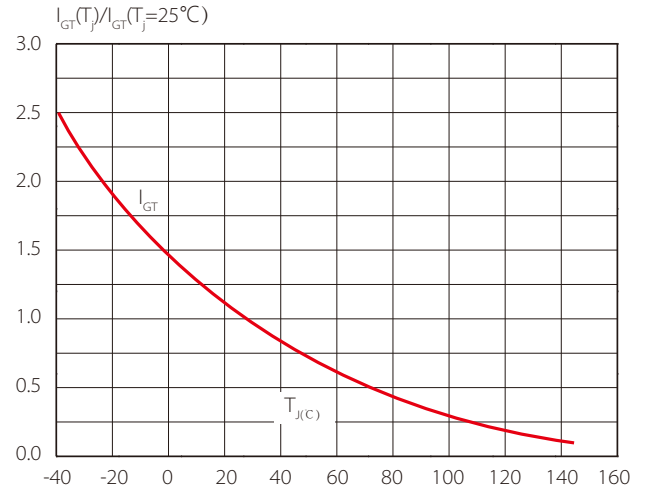


FIG.7 Relative variations of holding current versus junction temperature

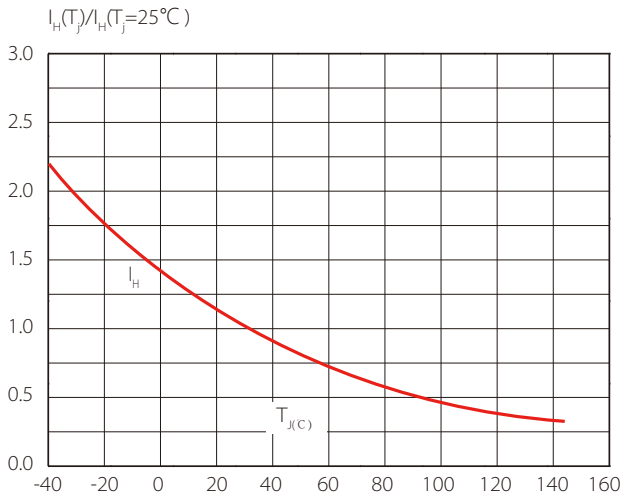
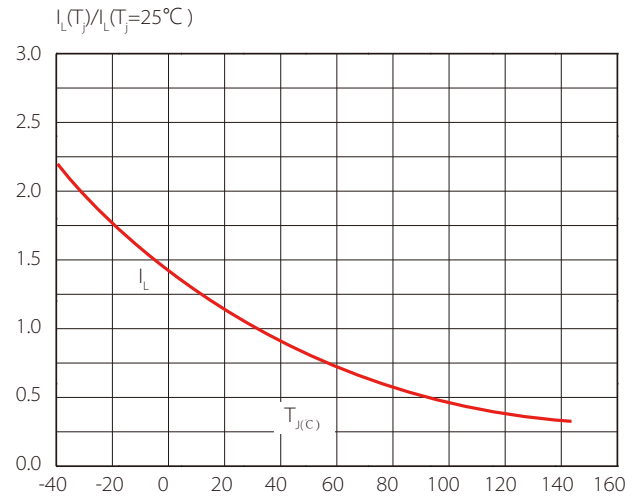
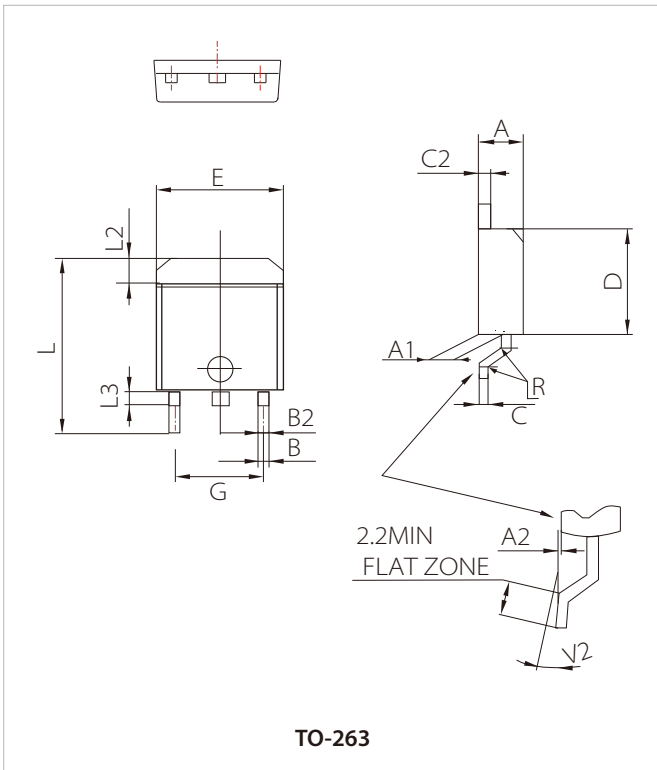


FIG.8 Relative variations of latching current versus junction temperature



PACKAGE MECHANICAL DATA



| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.30 | | 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 |
|-------------|---------|----------|-----------|
| SCE20C80 | TO-263 | 800CS | 13" |

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

Customer Service

Tel: 86-21-5484-1001
Email: sales17@semiware.com

Technical Support

Tel: 86-21-3463-7654
Email: fae01@semiware.com

Complaint & Suggestions

Tel: 86-21-3463-7172
Ext: 8868
Email: cs03@semiware.com

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