

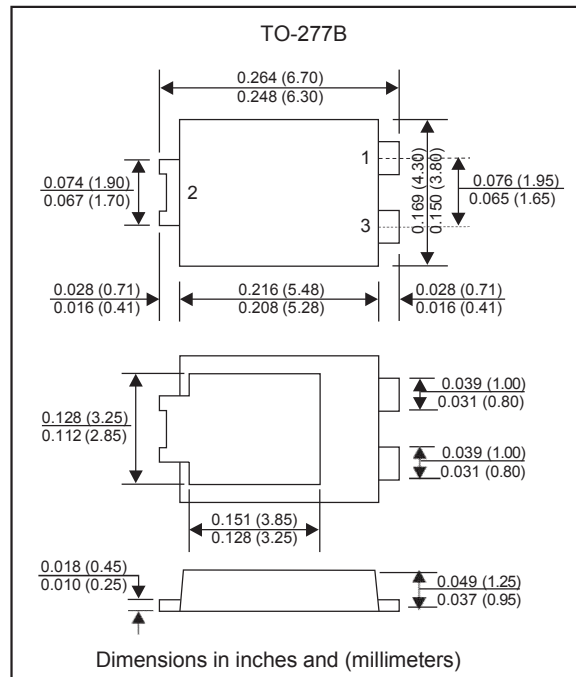
Features

- ◆ The plastic package carries Underwriters Laboratory Flammability Classification 94V-0
- ◆ For surface mounted applications
- ◆ Metal silicon junction, majority carrier conduction
- ◆ Low power loss, high efficiency
- ◆ Built-in strain relief, ideal for automated placement
- ◆ High forward surge current capability
- ◆ High temperature soldering guaranteed:
260°C/10 seconds at terminals
- ◆ Compliant to RoHS Directive 2011/65/EU
- ◆ Compliant to Halogen-free

Mechanical data

- ◆ **Case:** JEDEC TO-277B molded plastic body
- ◆ **Terminals:** Solder plated, solderable per MIL-STD-750, Method 2026
- ◆ **Polarity:** Color band denotes cathode end
- ◆ **Mounting Position:** Any

Package outline



Maximum ratings (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | ST2045L | Unit |
|--|------------------------------------|-------------|------------------|
| DC Blocking Voltage Working Peak Reverse Voltage Repetitive Peak Reverse Voltage | V_{DC} V_{RWM} V_{RRM} | 45 | V |
| RMS Reverse Voltage | V_{RMS} | 32 | V |
| Average Forward Rectified Current | $I_{F(AV)}$ | 20.0 | A |
| Peak Forward Surge Current, 8.3ms Half Sine-wave ($T_A=25^\circ\text{C}$) | I_{FSM} | 280 | A |
| Operating junction temperature range | T_J | -55 to +150 | $^\circ\text{C}$ |
| Storage temperature range | T_{STG} | -55 to +150 | $^\circ\text{C}$ |

Electrical Characteristics (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Test Conditions | Symbol | MIN. | TYP. | MAX. | Unit |
|-----------------|---|--------|------|------|------|------|
| Forward voltage | $I_F=20\text{A}, T_J=25^\circ\text{C}$ | V_F | - | 0.47 | 0.5 | V |
| | $I_F=20\text{A}, T_J=125^\circ\text{C}$ | V_F | - | - | 0.46 | V |
| Reverse current | $V_R=45\text{V}, T_J=25^\circ\text{C}$ | I_R | - | - | 0.2 | mA |
| | $V_R=45\text{V}, T_J=125^\circ\text{C}$ | | - | - | 50 | |

Thermal characteristics

| PARAMETER | SYMBOLS | ST2045L | UNITS |
|---|-----------------|---------|-----------------------------|
| Typical thermal resistance junction to ambient | $R_{\theta JA}$ | 80 | $^\circ\text{C} / \text{W}$ |
| Typical thermal resistance junction to terminal | $R_{\theta JL}$ | 10 | $^\circ\text{C} / \text{W}$ |

Rating and characteristic curves

FIG.1: FORWARD CURRENT DERATING CURVE

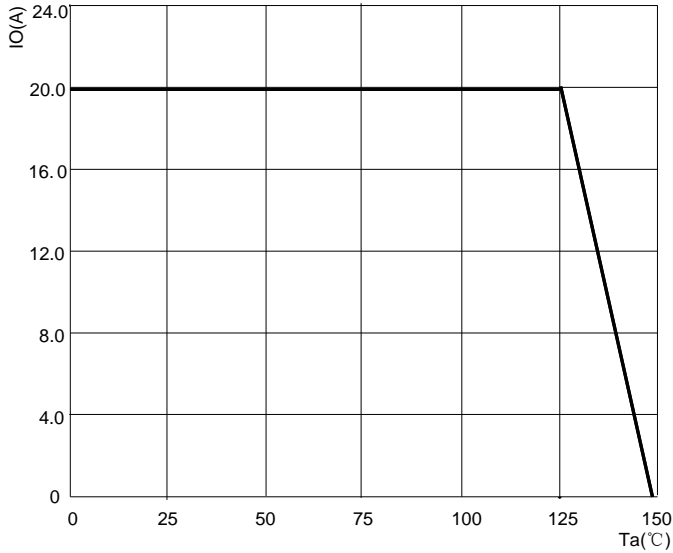


FIG.2: MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

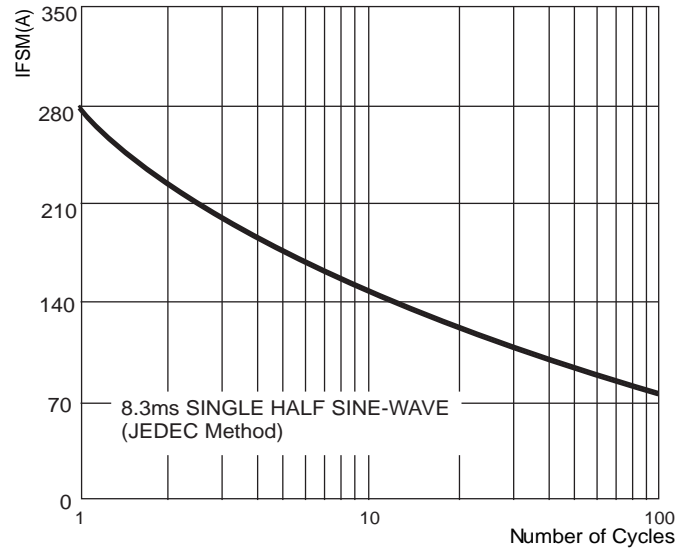


FIG.3: INSTANTANEOUS FORWARD CHARACTERISTICS

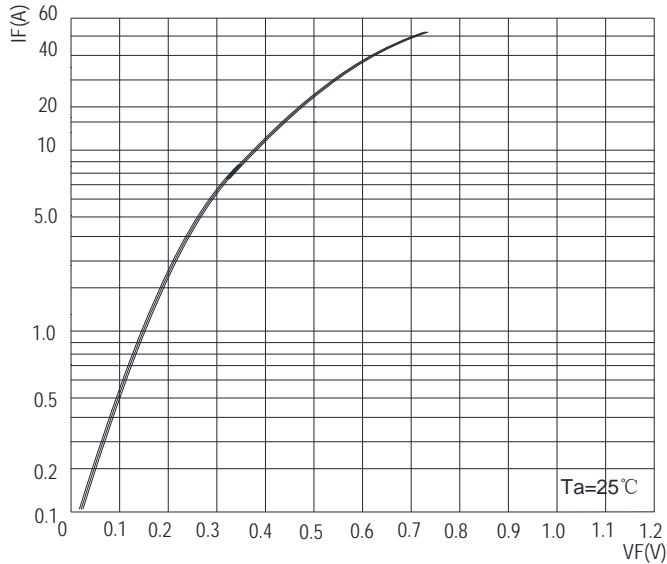
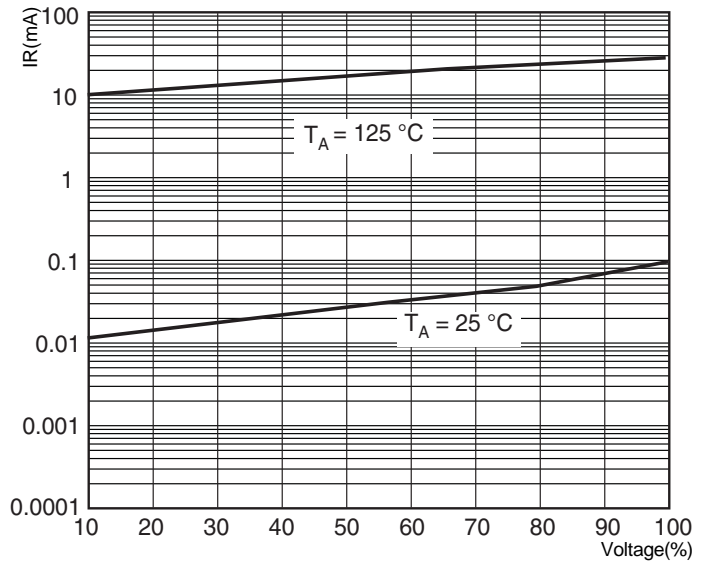


FIG.4: TYPICAL REVERSE CHARACTERISTICS



Pinning information

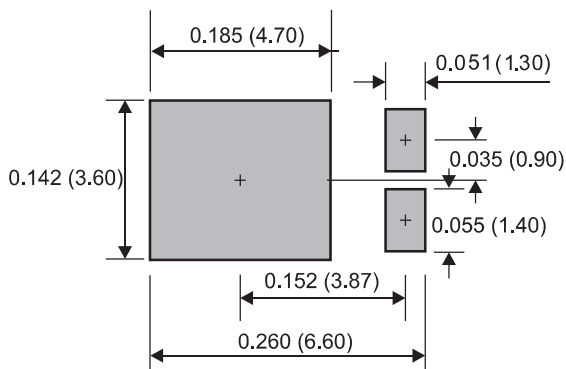
| Pin | Simplified outline | Symbol |
|--|--------------------|--------|
| Pin3 cathode Pin1 anode Pin2 anode | | |

Marking

| Type number | Marking code |
|-------------|--------------|
| ST2045L | |

Suggested solder pad layout

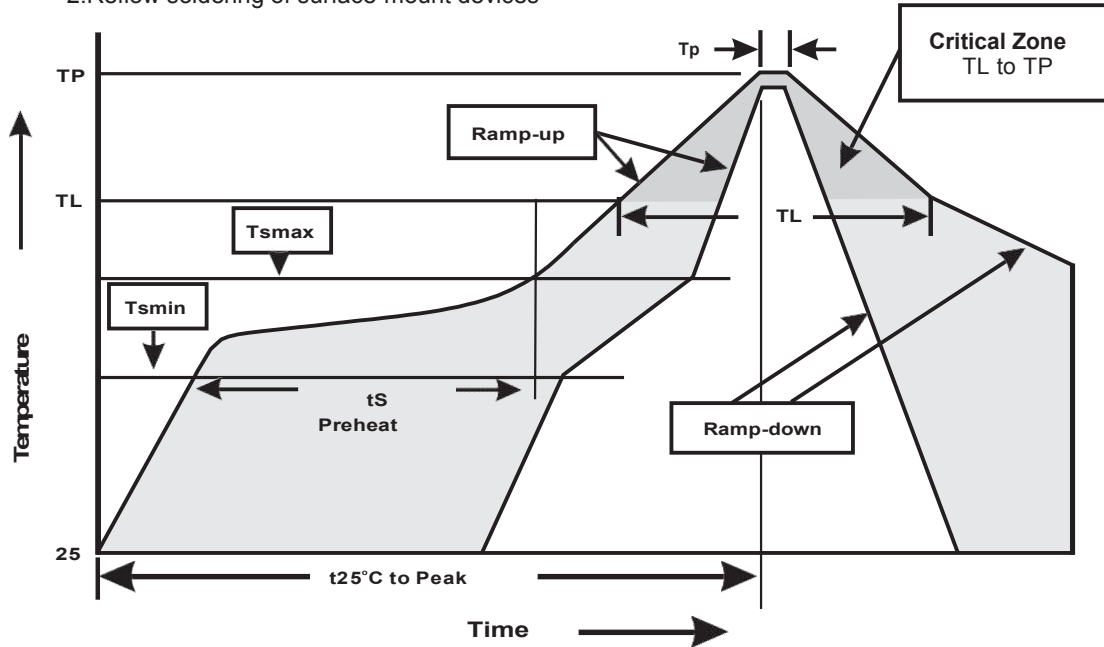
TO-277B



Dimensions in inches and (millimeters)

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

| Profile Feature | Soldering Condition |
|---|-----------------------------|
| Average ramp-up rate(T _L to T _P) | <3°C/sec |
| Preheat -Temperature Min(T _{sm}) -Temperature Max(T _{smax}) -Time(min to max)(t _s) | 150°C 200°C 60~120sec |
| T _{smax} to T _L -Ramp-upRate | <3°C/sec |
| Time maintained above: -Temperature(T _L) -Time(t _L) | 217°C 60~260sec |
| Peak Temperature(T _P) | 255°C-0/+5°C |
| Time within 5°C of actual Peak Temperature(t _p) | 10~30sec |
| Ramp-down Rate | <6°C/sec |
| Time 25°C to Peak Temperature | <6minutes |