# 1 Characteristics

**Table 2. Absolute ratings (limiting values, at 25 °C, unless otherwise specified, anode terminals short-circuited)**

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $V_{RRM}$ | Repetitive peak reverse voltage | | 100 | V |
| $I_{F(RMS)}$ | Forward rms current | | 60 | A |
| $I_{F(AV)}$ | Average forward current, δ = 0.5 | $T_c$ = 130 °C | 30 | A |
| $I_{FSM}$ | Surge non repetitive forward current | $t_p$ = 10 ms sinusoidal | 250 | A |
| $T_{stg}$ | Storage temperature range | | -65 to + 175 | °C |
| $T_j$ (1) | Maximum operating junction temperature | | 175 | °C |

1. $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ condition to avoid thermal runaway for a diode on its own heatsink.

**Table 3. Thermal resistance**

| Symbol | Parameter | Value (max) | Unit |
|---|---|---|---|
| $R_{th(j-c)}$ | Junction to case | 1.6 | °C/W |

**Table 4. Static electrical characteristics (anode terminals short-circuited)**

| Symbol | Parameter | Test conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $I_R$ (1) | Reverse leakage current | $T_j$ = 25 °C | $V_R = V_{RRM}$ | - | - | 150 | µA |
| | | $T_j$ = 125 °C | | - | 8 | 16 | mA |
| | | $T_j$ = 125 °C | $V_R$ = 70 V | - | - | 9 | |
| $V_F$ (2) | Forward voltage drop | $T_j$ = 25 °C | $I_F$ = 5 A | - | - | 0.475 | V |
| | | $T_j$ = 125 °C | | - | 0.39 | 0.43 | |
| | | $T_j$ = 25 °C | $I_F$ = 10A | - | - | 0.585 | |
| | | $T_j$ = 125 °C | | - | 0.50 | 0.545 | |
| | | $T_j$ = 25 °C | $I_F$ = 30 A | - | | 0.95 | |
| | | $T_j$ = 125 °C | | - | 0.64 | 0.71 | |

1. Pulse test: $t_p$ = 5 ms, δ < 2%
2. Pulse test: $t_p$ = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation:

$P = 0.56 \times I_{F(AV)} + 0.005\ I_F{}^2{}_{(RMS)}$

**Figure 1. Average forward power dissipation versus average forward current**

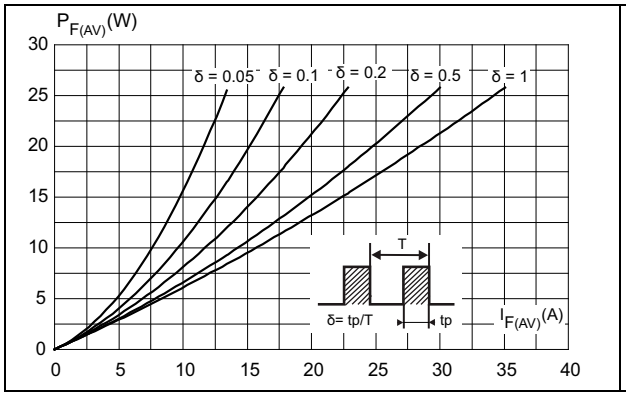



**Figure 2. Average forward current versus ambient temperature (δ = 0.5)**

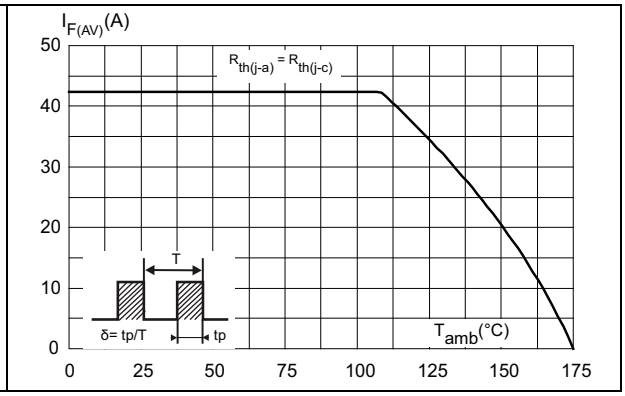



**Figure 3. Relative variation of thermal impedance junction to case versus pulse duration**

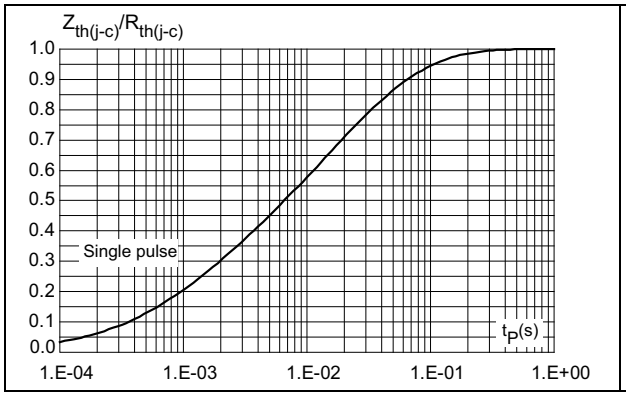



**Figure 4. Reverse leakage current versus reverse voltage applied (typical values)**

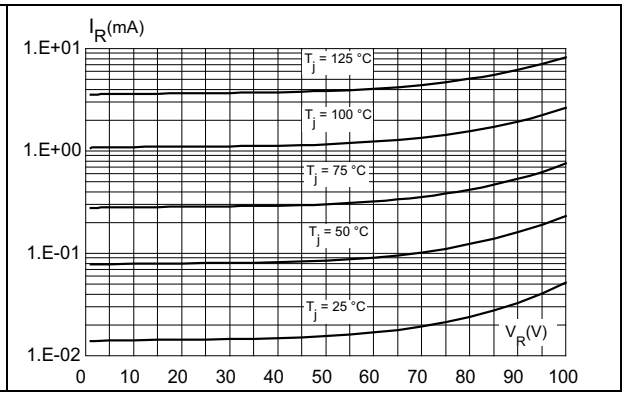



**Figure 5. Junction capacitance versus reverse voltage applied (typical values)**

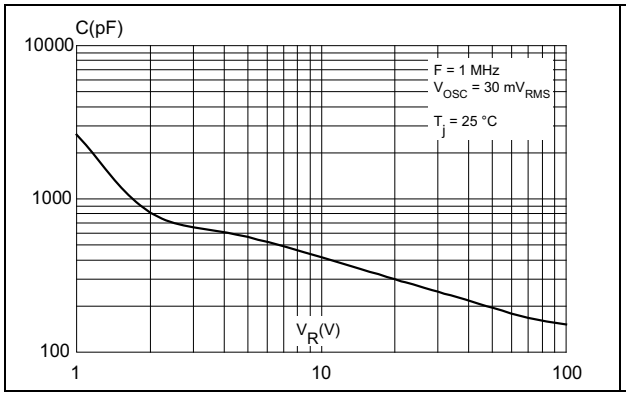
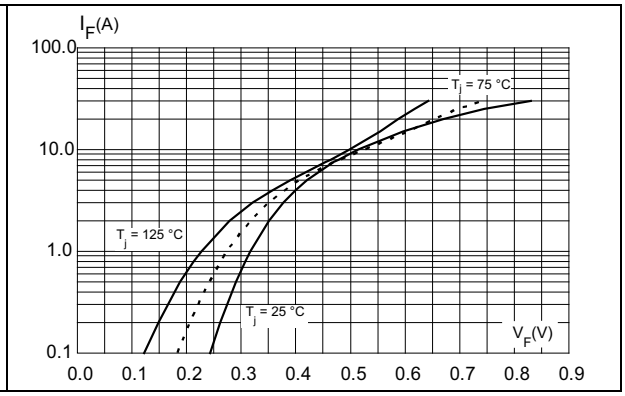



**Figure 6. Forward voltage drop versus forward current (typical values)**



# 2 Package information

- Epoxy meets UL94, V0
- Cooling method: by conduction (C)
- Recommended torque value: 0.55 N·m
- Maximum torque value: 0.77 N·m

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**Figure 7. TO-220AB dimension definitions**

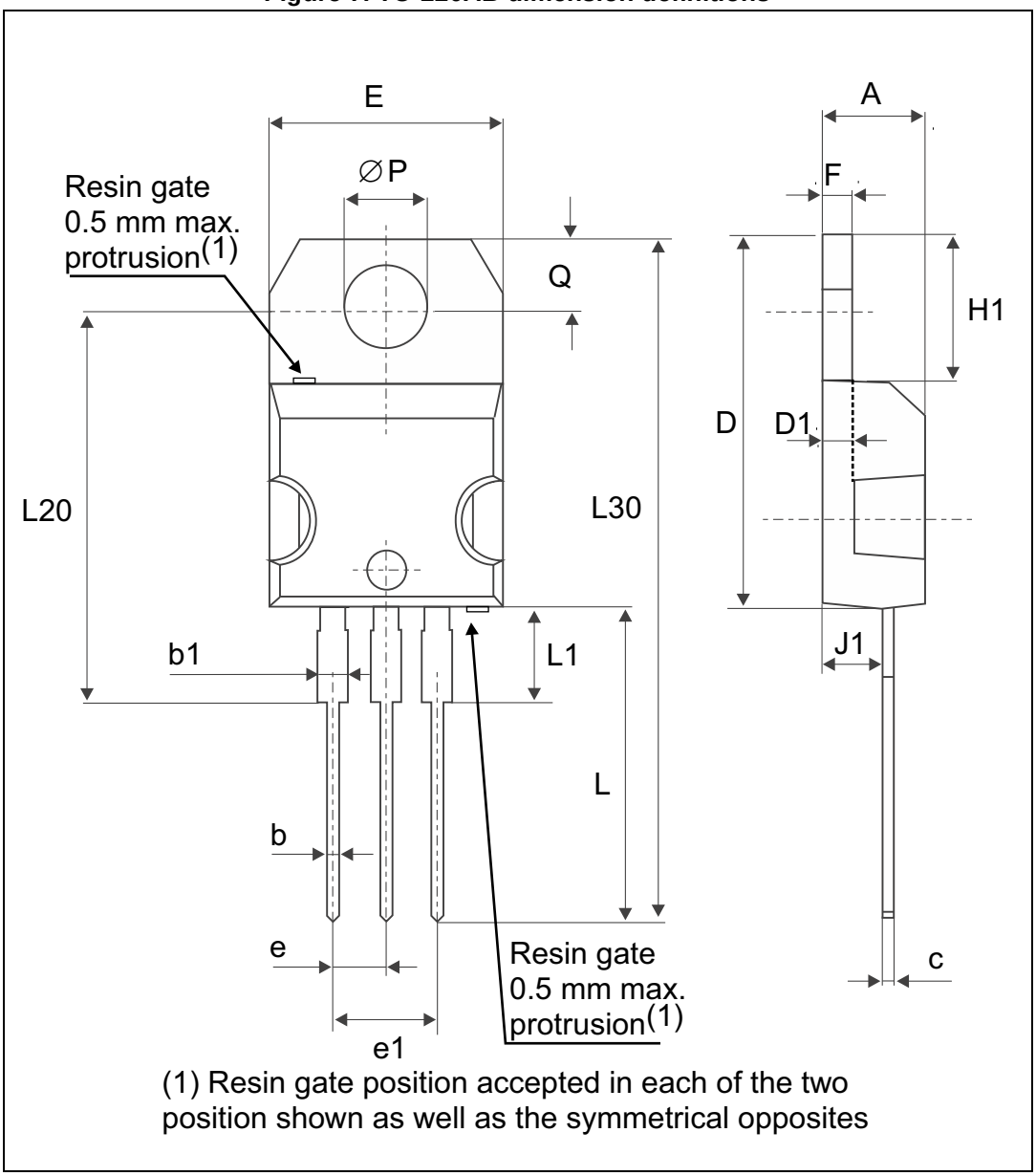

**Table 5. TO-220AB dimension values**

| Ref. | Dimensions | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 4.40 | 4.60 | 0.17 | 0.18 |
| b | 0.61 | 0.88 | 0.024 | 0.035 |
| b1 | 1.14 | 1.70 | 0.045 | 0.067 |
| c | 0.48 | 0.70 | 0.019 | 0.027 |
| D | 15.25 | 15.75 | 0.60 | 0.62 |
| D1 | 1.27 typ. | | 0.05 typ. | |
| E | 10 | 10.40 | 0.39 | 0.41 |
| e | 2.40 | 2.70 | 0.094 | 0.106 |
| e1 | 4.95 | 5.15 | 0.19 | 0.20 |
| F | 1.23 | 1.32 | 0.048 | 0.052 |
| H1 | 6.20 | 6.60 | 0.24 | 0.26 |
| J1 | 2.40 | 2.72 | 0.094 | 0.107 |
| L | 13 | 14 | 0.51 | 0.55 |
| L1 | 3.50 | 3.93 | 0.137 | 0.154 |
| L20 | 16.40 typ. | | 0.64 typ. | |
| L30 | 28.90 typ. | | 1.13 typ. | |
| ∅P | 3.75 | 3.85 | 0.147 | 0.151 |
| Q | 2.65 | 2.95 | 0.104 | 0.116 |

# 3 Ordering information

**Table 6. Ordering information**

| Order code | Marking | Package | Weight | Base qty | Delivery mode |
|---|---|---|---|---|---|
| FERD30SM100ST | FERD30SM100ST | TO-220AB | 1.9 g | 50 | Tube |

# 4 Revision history

**Table 7. Document revision history**

| Date | Revision | Changes |
|---|---|---|
| 12-Jan-2015 | 1 | Initial release. |

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