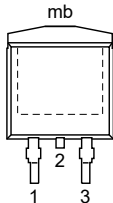
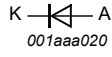


5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------------------------------|---|---|
| 1 | nc | no connection |  <p style="text-align: center;">TO263</p> |  |
| 2 | K | cathode ^[1] | | |
| 3 | A | anode | | |
| mb | mb | mounting base; connected to cathode | | |

[1] it is not possible to make connection to Pin 2 of the TO263 package

6. Ordering information

Table 3. Ordering information

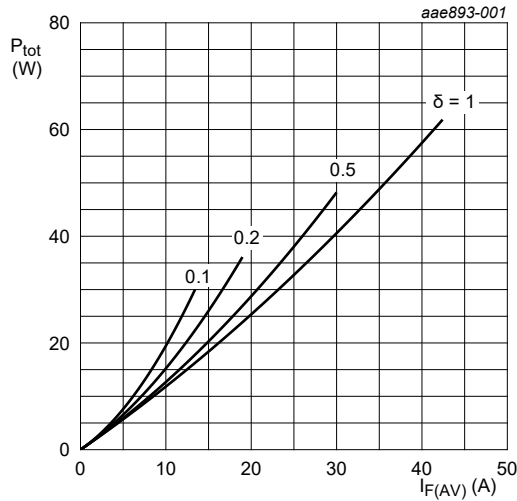
| Type number | Package Name | Orderable part number | Packing method | Small packing quantity | Package version | Package issue date |
|-------------|--------------|-----------------------|----------------|------------------------|-----------------|--------------------|
| BYV30B-600P | TO263 | BYV30B-600PJ | Reel | 800 | TO263N | 26-Sep-2016 |

7. Limiting values

Table 4. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

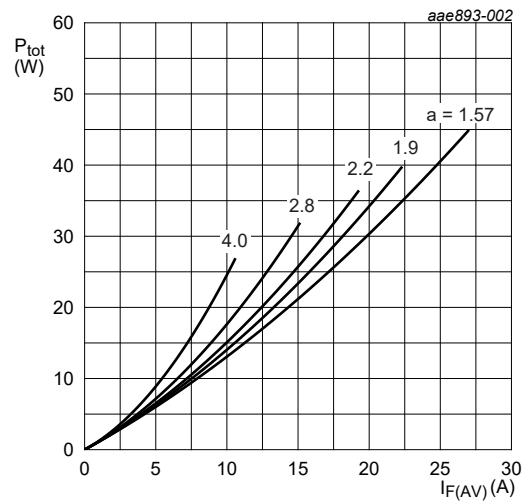
| Symbol | Parameter | Conditions | Min | Max | Unit |
|-------------|-------------------------------------|--|-----|-----|------------------|
| V_{RRM} | repetitive peak reverse voltage | | - | 600 | V |
| V_{RWM} | crest working reverse voltage | | - | 600 | V |
| V_R | reverse voltage | DC | - | 600 | V |
| $I_{F(AV)}$ | average forward current | $\delta = 0.5$; $T_{mb} \leq 122\text{ }^\circ\text{C}$; square-wave pulse; Fig. 1; Fig. 2; Fig. 3 | - | 30 | A |
| I_{FRM} | repetitive peak forward current | $\delta = 0.5$; $t_p = 25\text{ }\mu\text{s}$; $T_{mb} \leq 122\text{ }^\circ\text{C}$; square-wave pulse | - | 60 | A |
| I_{FSM} | non-repetitive peak forward current | $t_p = 10\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$; sine-wave pulse; Fig. 4 | - | 290 | A |
| | | $t_p = 8.3\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$; sine-wave pulse | - | 330 | A |
| T_{stg} | storage temperature | | -55 | 175 | $^\circ\text{C}$ |
| T_j | junction temperature | | - | 175 | $^\circ\text{C}$ |



$$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$$

$$V_o = 1.098\text{ V}; R_s = 0.0085\text{ }\Omega$$

Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values



$$a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$$

$$V_o = 1.098\text{ V}; R_s = 0.0085\text{ }\Omega$$

Fig. 2. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values

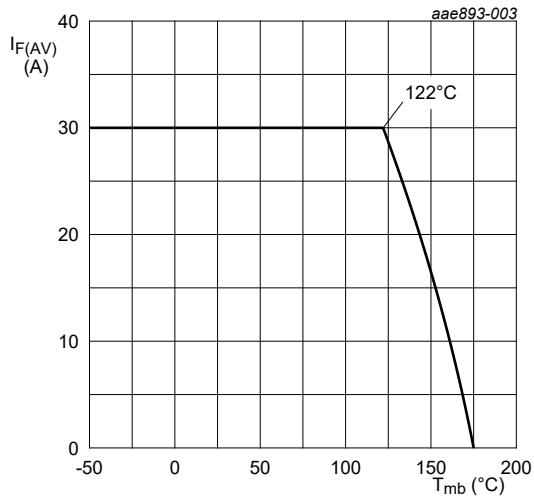


Fig. 3. Forward current as a function of mounting base temperature; maximum values

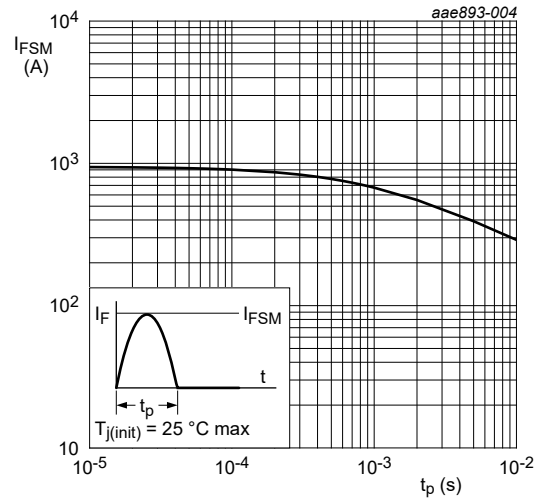


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

8. Thermal characteristics

Table 5. Thermal characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------|--|------------------------|-----|-----|-----|------|
| $R_{th(j-mb)}$ | thermal resistance from junction to mounting base | Fig. 5 | - | - | 1.1 | K/W |
| $R_{th(j-a)}$ | thermal resistance from junction to ambient free air | in free air | - | 50 | - | K/W |

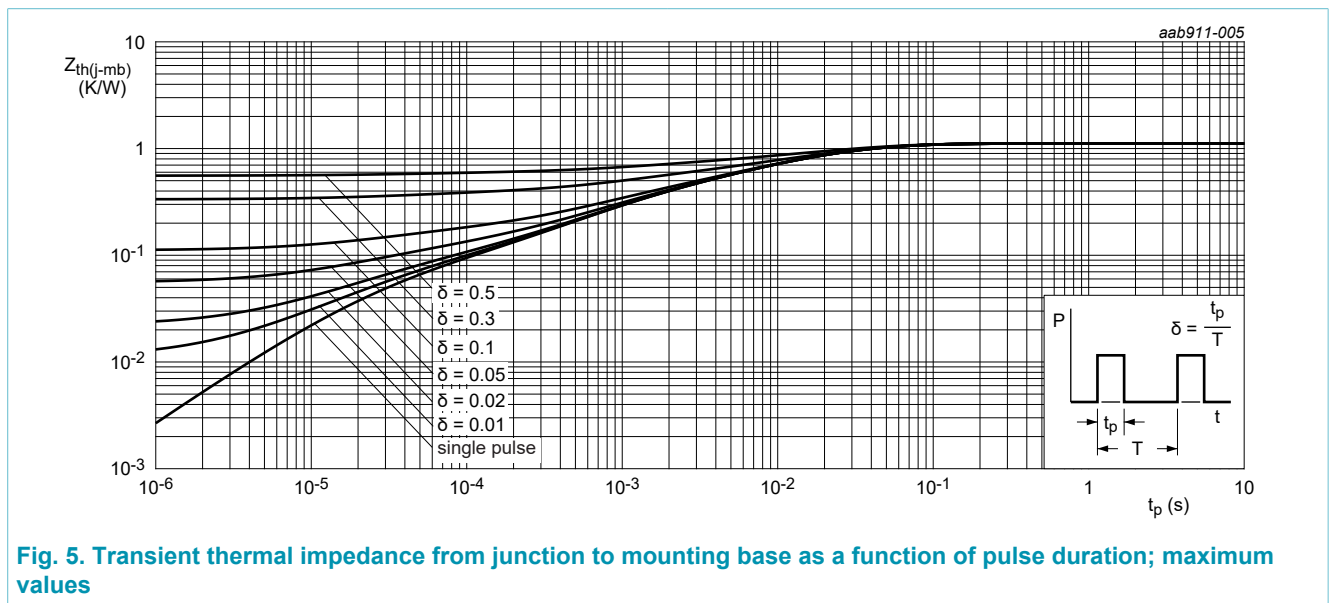
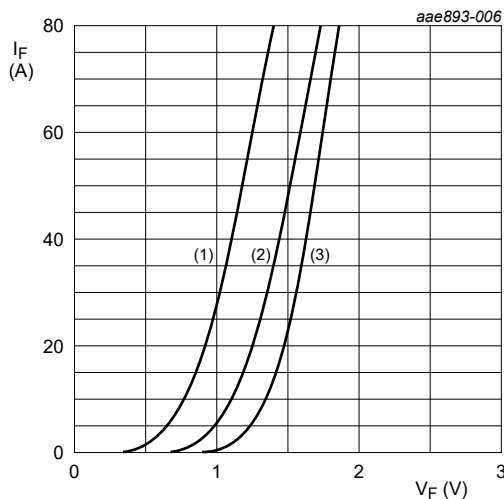


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration; maximum values

9. Characteristics

Table 6. Characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------------------------------|-------------------------------|---|-----|------|------|---------------|
| Static characteristics | | | | | | |
| V_F | forward voltage | $I_F = 30\text{ A}; T_j = 25\text{ °C}; \text{Fig. 6}$ | - | 1.18 | 1.55 | V |
| | | $I_F = 30\text{ A}; T_j = 150\text{ °C}; \text{Fig. 6}$ | - | 0.98 | 1.35 | V |
| I_R | reverse current | $V_R = 600\text{ V}; T_j = 25\text{ °C}$ | - | 2 | 10 | μA |
| | | $V_R = 600\text{ V}; T_j = 125\text{ °C}$ | - | - | 500 | μA |
| Dynamic characteristics | | | | | | |
| t_{rr} | reverse recovery time | $I_F = 1\text{ A}; V_R = 30\text{ V}; dI_F/dt = 50\text{ A}/\mu\text{s}; T_j = 25\text{ °C}; \text{Fig. 7}$ | - | 42 | 75 | ns |
| | | $I_F = 30\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A}/\mu\text{s}; T_j = 25\text{ °C}; \text{Fig. 7}$ | - | 65 | - | ns |
| | | $I_F = 30\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A}/\mu\text{s}; T_j = 125\text{ °C}; \text{Fig. 7}$ | - | 101 | - | ns |
| I_{RM} | peak reverse recovery current | $I_F = 30\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A}/\mu\text{s}; T_j = 25\text{ °C}$ | - | 8.4 | - | A |
| | | $I_F = 30\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A}/\mu\text{s}; T_j = 125\text{ °C}$ | - | 15.2 | - | A |
| Q_r | recovered charge | $I_F = 30\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A}/\mu\text{s}; T_j = 25\text{ °C}; \text{Fig. 7}$ | - | 272 | - | nC |
| | | $I_F = 30\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A}/\mu\text{s}; T_j = 125\text{ °C}; \text{Fig. 7}$ | - | 775 | - | nC |



$V_o = 1.098\text{ V}; R_s = 0.0085\ \Omega$
 (1) $T_j = 150\text{ °C};$ typical values
 (2) $T_j = 150\text{ °C};$ maximum values
 (3) $T_j = 25\text{ °C};$ maximum values

Fig. 6. Forward current as a function of forward voltage

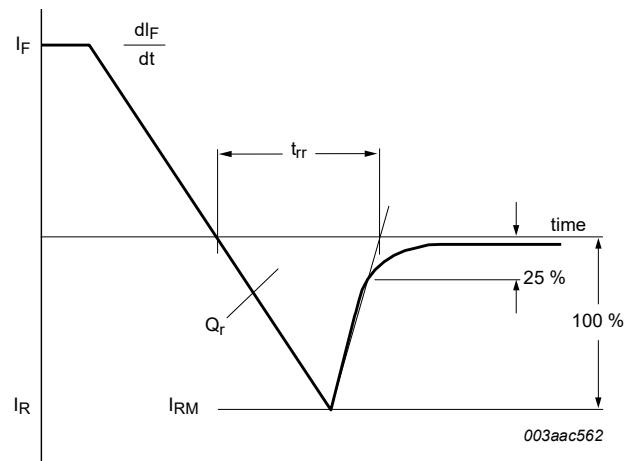


Fig. 7. Reverse recovery definitions; ramp recovery

10. Package outline

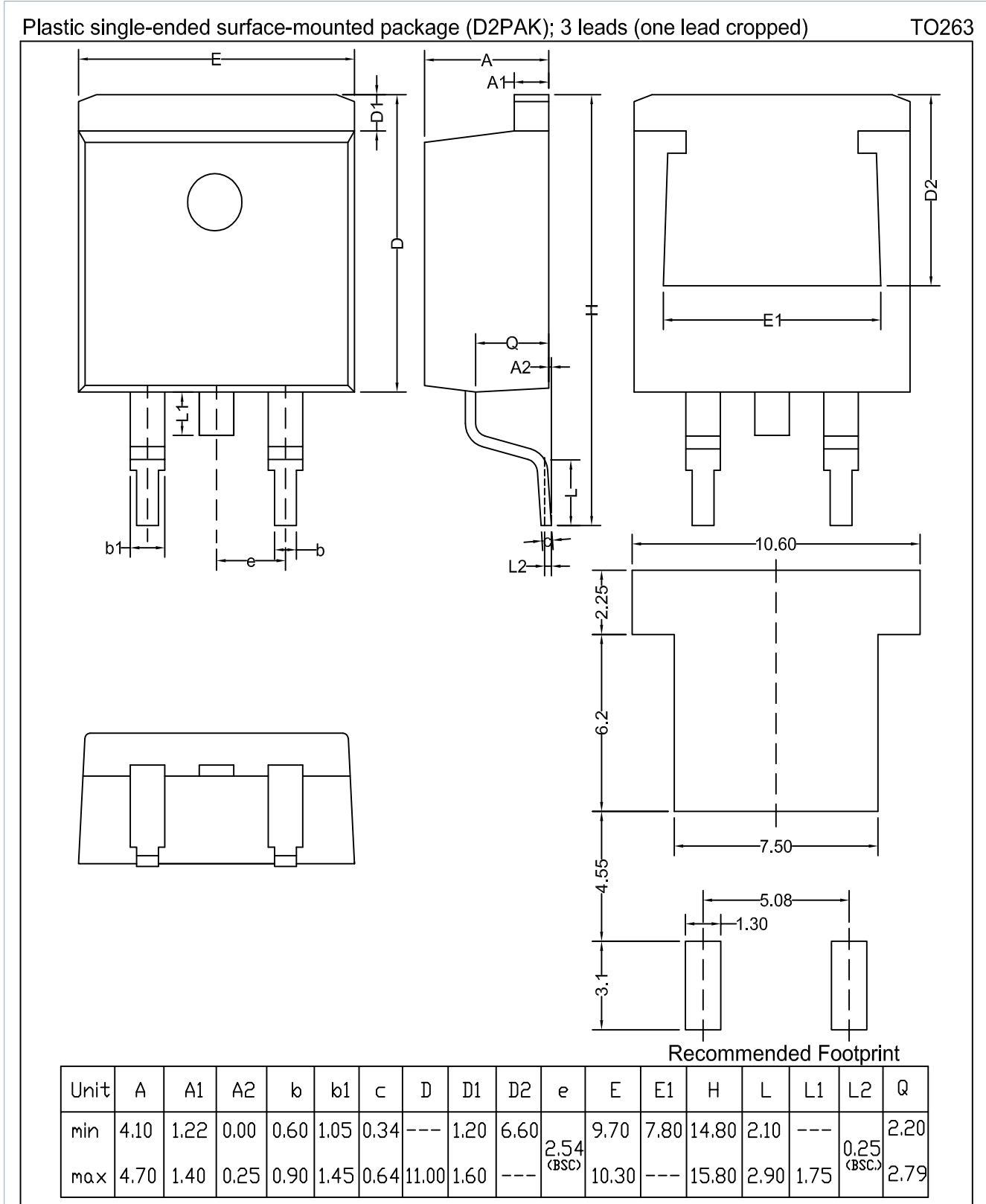


Fig. 8. Package outline TO263

11. Legal information

Data sheet status

| Document status [1][2] | Product status [3] | Definition |
|--------------------------------|--------------------|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
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12. Contents

| | |
|---------------------------------|---|
| 1. General description..... | 1 |
| 2. Features and benefits..... | 1 |
| 3. Applications..... | 1 |
| 4. Quick reference data..... | 1 |
| 5. Pinning information..... | 2 |
| 6. Ordering information..... | 2 |
| 7. Limiting values..... | 3 |
| 8. Thermal characteristics..... | 5 |
| 9. Characteristics..... | 6 |
| 10. Package outline..... | 7 |
| 11. Legal information..... | 8 |

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