

1. General description

Standard recovery power diode in a TO252 (DPAK) surface-mountable plastic package.

2. Features and benefits

- Low forward voltage drop
- High inrush current capability
- Surface-mountable package, ideally suited for automated assembly

3. Applications

- Input rectifier
- Bypass diode in PFC
- Snubber circuit

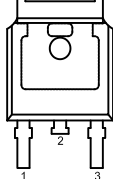
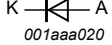
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_R	reverse voltage	DC	-	-	800	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; $T_{mb} \leq 132$ °C; square-wave pulse; Fig. 1 ; Fig. 1 ; Fig. 3	-	-	8	A
I_{FSM}	non-repetitive peak forward current	$t_p = 10$ ms; $T_{j(init)} = 25$ °C; sine-wave pulse; Fig. 4	-	-	150	A
		$t_p = 8.3$ ms; $T_{j(init)} = 25$ °C; sine-wave pulse	-	-	165	A
Static characteristics						
V_F	forward voltage	$I_F = 8$ A; $T_j = 25$ °C; Fig. 6	-	0.97	1.1	V
		$I_F = 8$ A; $T_j = 150$ °C; Fig. 6	-	0.84	1.1	V

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A	anode	 <p style="text-align: center;">DPAK (TO252N)</p>	 <p style="text-align: center;">001aaa020</p>
2	K	cathode ^[1]		
3	A	anode		
mb	K	mounting base; connected to cathode		

[1] It is not possible to connect to pin 2 of the TO252 package.

6. Ordering information

Table 3. Ordering information

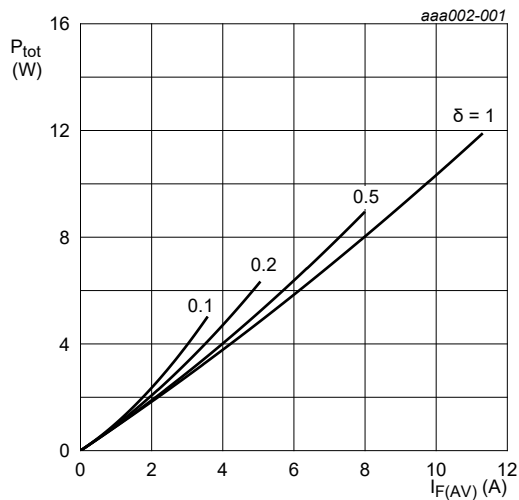
Type number	Package		
	Name	Description	Version
SK8D	DPAK	plastic single-ended surface-mounted package (DPAK); 3 leads (one lead cropped)	TO252N

7. Limiting values

Table 4. Limiting values

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

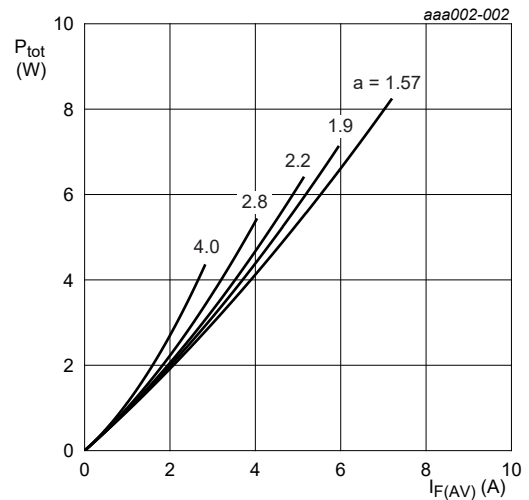
Symbol	Parameter	Conditions	Min	Max	Unit
V_{RRM}	repetitive peak reverse voltage		-	800	V
V_{RWM}	crest working reverse voltage		-	800	V
V_R	reverse voltage	DC	-	800	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; $T_{mb} \leq 132\text{ }^\circ\text{C}$; square-wave pulse; Fig. 1 ; Fig. 1 ; Fig. 3	-	8	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	-	150	A
		$t_p = 8.3\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$; sine-wave pulse	-	165	A
T_{stg}	storage temperature		-55	150	$^\circ\text{C}$
T_j	junction temperature		-	150	$^\circ\text{C}$



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

$$V_o = 0.870\text{ V}; R_s = 0.0162\ \Omega$$

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



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

$$V_o = 0.870\text{ V}; R_s = 0.0162\ \Omega$$

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

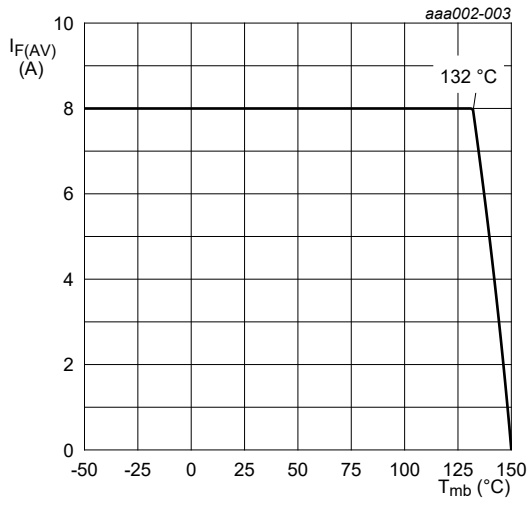


Fig. 3. Average current as a function of mounting base temperature; maximum values

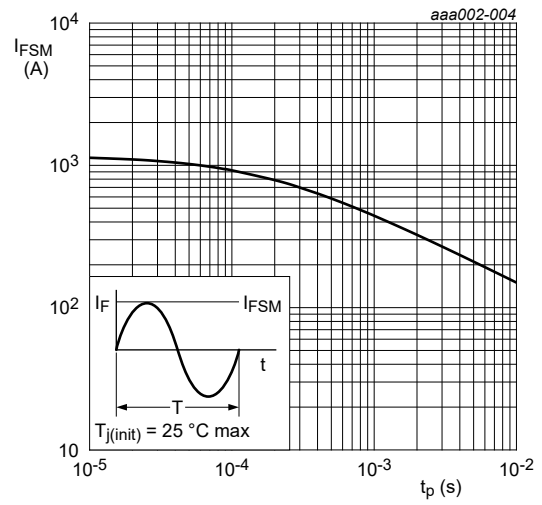


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

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	-	-	2	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air	-	60	-	K/W

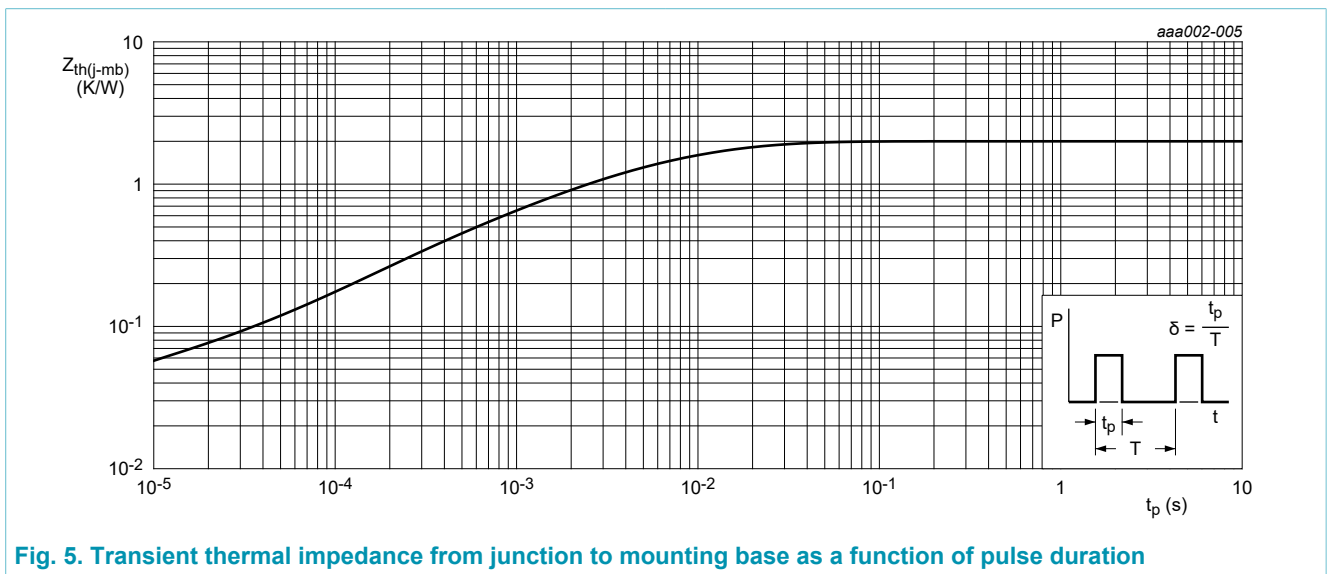


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration

9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V_F	forward voltage	$I_F = 8 \text{ A}; T_j = 25 \text{ }^\circ\text{C}; \text{ Fig. 6}$	-	0.97	1.1	V
		$I_F = 8 \text{ A}; T_j = 150 \text{ }^\circ\text{C}; \text{ Fig. 6}$	-	0.84	1.1	V
I_R	reverse current	$V_R = 800 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$	-	-	0.05	mA
		$V_R = 800 \text{ V}; T_j = 150 \text{ }^\circ\text{C}$	-	-	0.5	mA

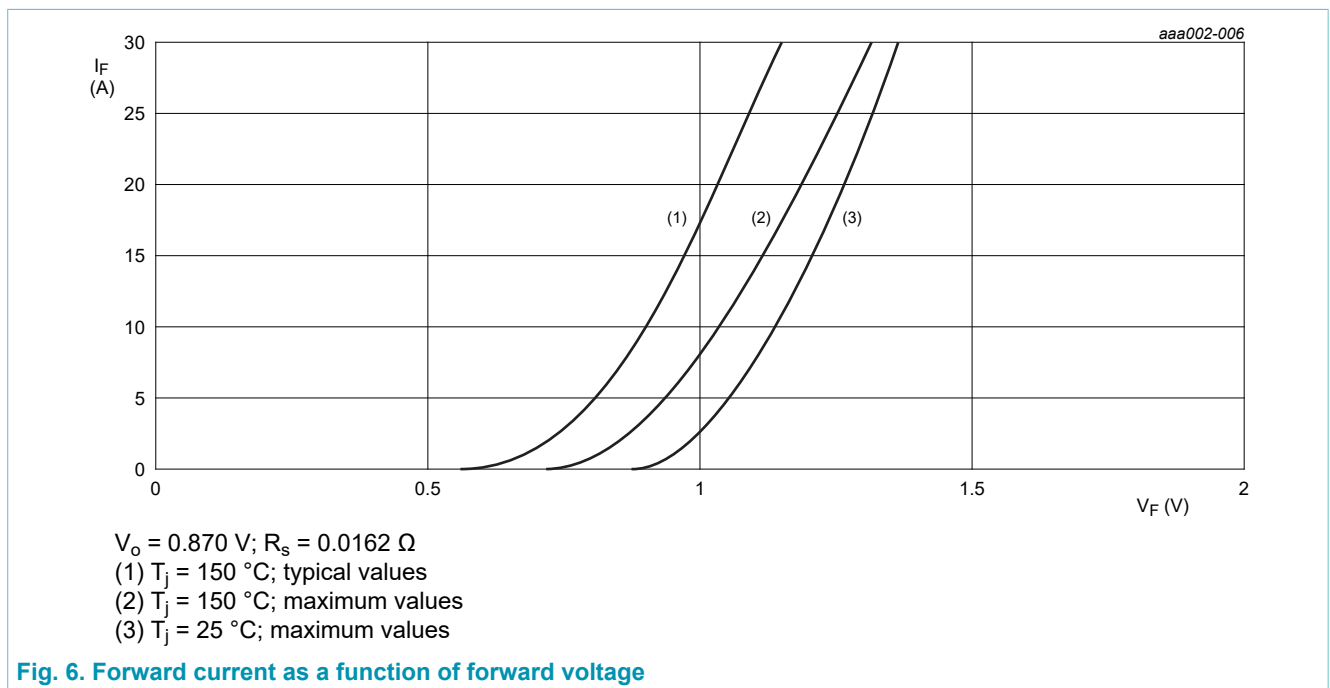


Fig. 6. Forward current as a function of forward voltage

10. Package outline

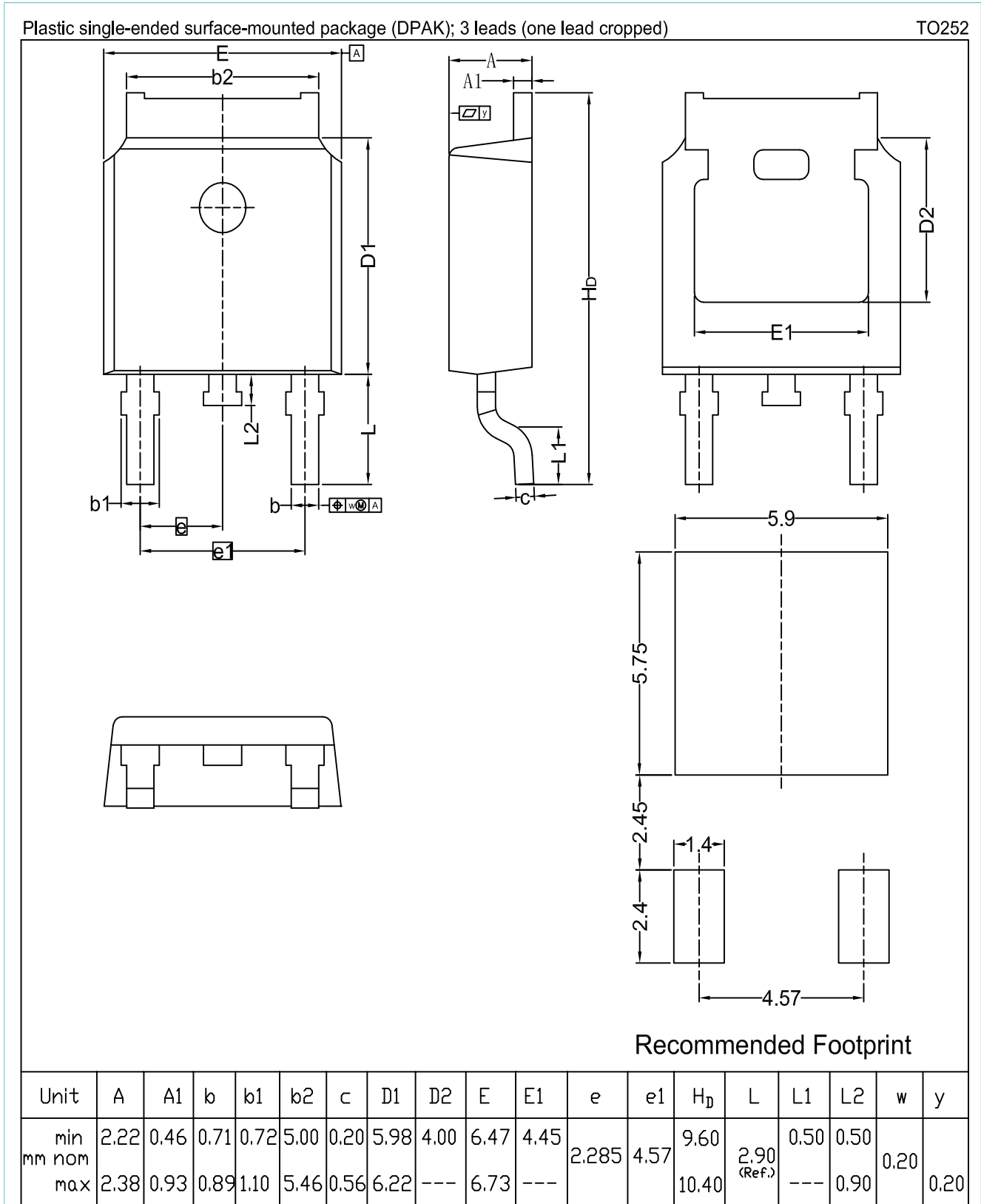


Fig. 7. Package outline DPAK (TO252N)

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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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