SK8D

Standard power diode

Rev.02 - 26 November 2019 Product data sheet

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

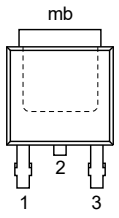
4. Quick reference data

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	1.0	V

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A	anode	 DPAK (TO252N)	
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

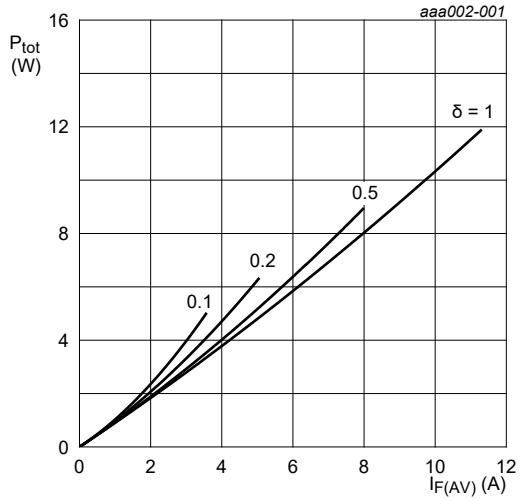
Type number	Package Name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
SK8D	TO252	SK8DJ	Reel	2500	TO252N	14-Nov-2016

7. Limiting values

Table 4. Limiting values

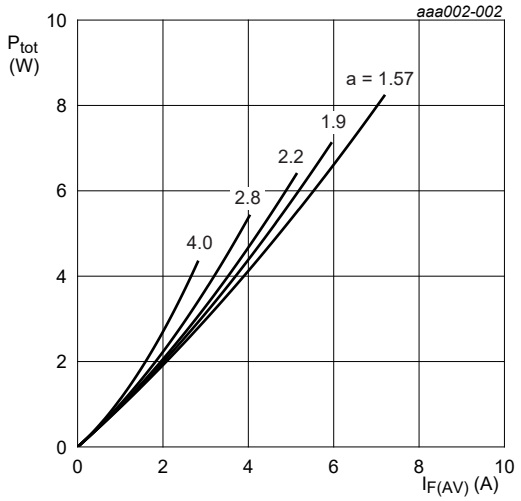
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V_{RRM}	repetitive peak reverse voltage			-	800	V
V_{RWM}	crest working reverse voltage			-	800	V
V_R	reverse voltage	DC		-	800	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; $T_{mb} \leq 132$ °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
T_{stg}	storage temperature			-55	150	°C
T_j	junction temperature			-	150	°C



$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$
$V_o = 0.870$ V; $R_s = 0.0162$ Ω

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



a = form factor = $I_{F(RMS)} / I_{F(AV)}$
$V_o = 0.870$ V; $R_s = 0.0162$ Ω

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

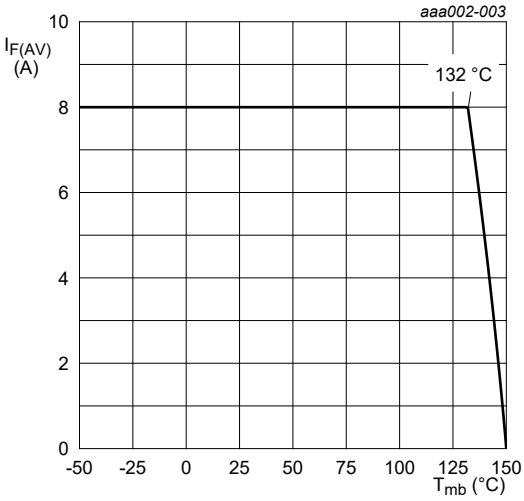


Fig. 3. Average current as a function of mounting base temperature; maximum values

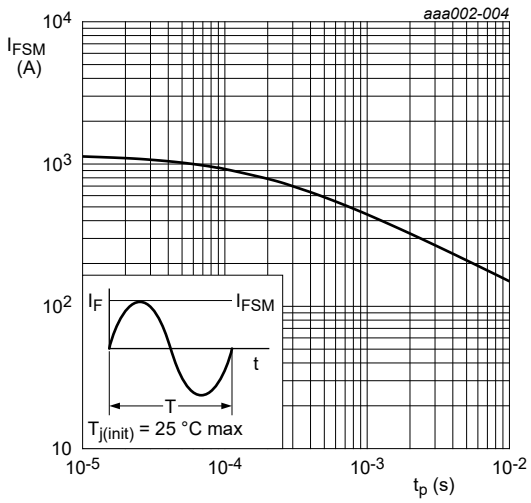


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

8. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j\text{-}mb)}$	thermal resistance from junction to mounting base	Fig. 5		-	-	2	K/W
$R_{th(j\text{-}a)}$	thermal resistance from junction to ambient free air	in free air		-	60	-	K/W

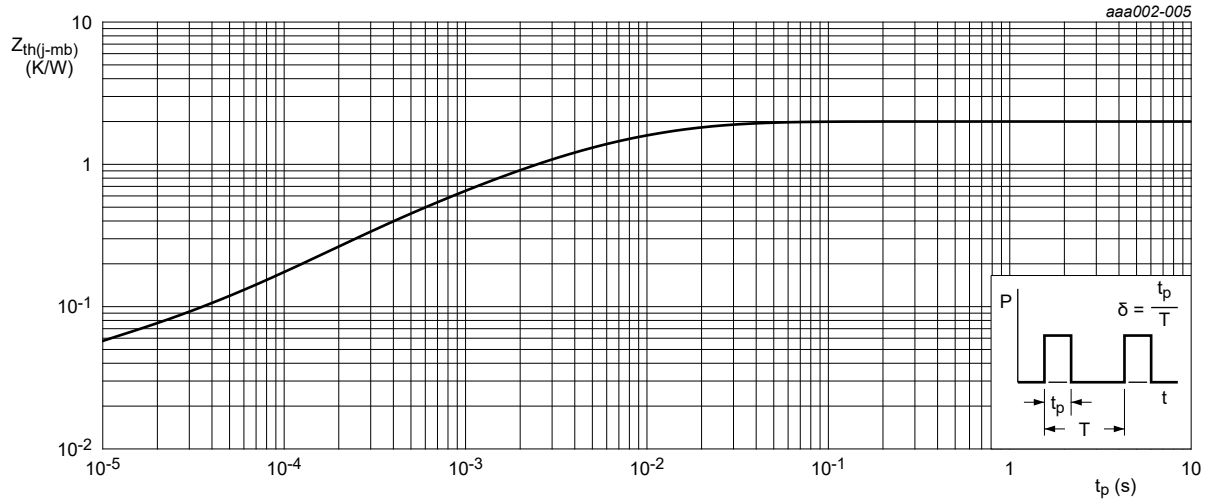
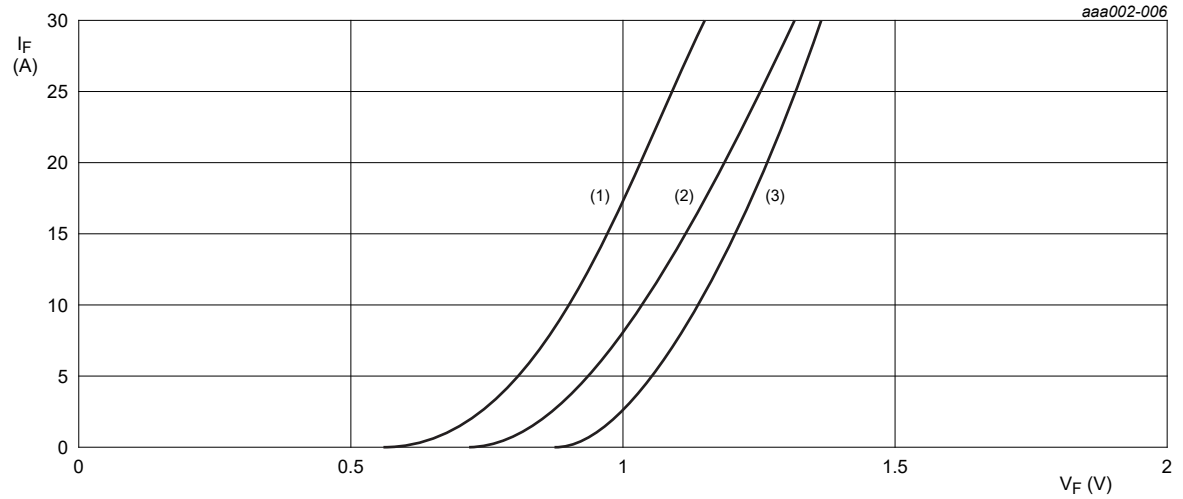


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration

9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V_F	forward voltage	I_F = 8 A; T_j = 25 °C; Fig. 6		-	0.97	1.1	V
		I_F = 8 A; T_j = 150 °C; Fig. 6		-	0.84	1.0	V
I_R	reverse current	V_R = 800 V; T_j = 25 °C		-	-	0.05	mA
		V_R = 800 V; T_j = 150 °C		-	-	0.5	mA

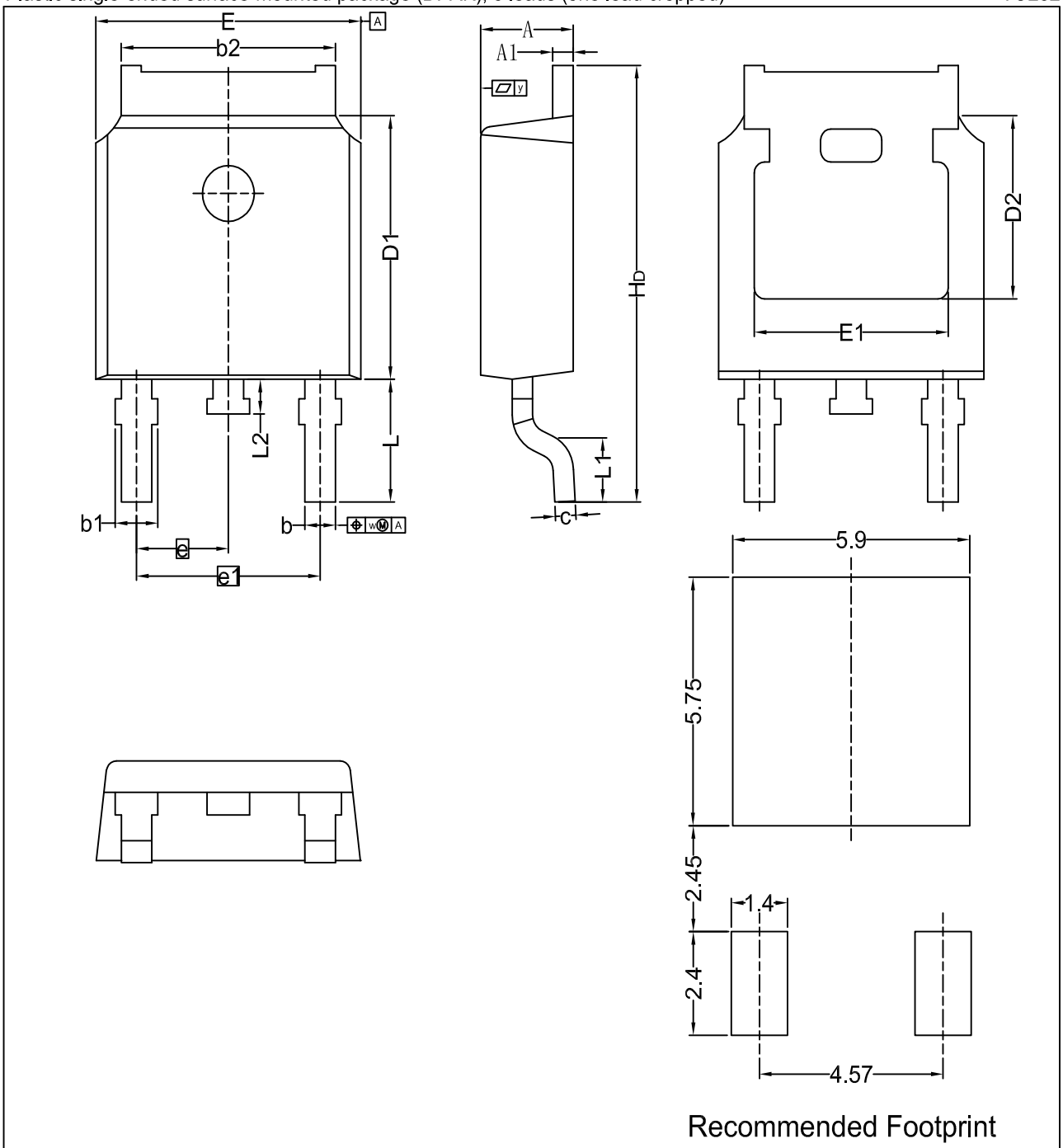


V_o = 0.870 V; R_s = 0.0162 Ω
(1) T_j = 150 °C; typical values
(2) T_j = 150 °C; maximum values
(3) T_j = 25 °C; maximum values

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

10. Package outline

Plastic single-ended surface-mounted package (DPAK); 3 leads (one lead cropped) TO252



Unit	A	A1	b	b1	b2	c	D1	D2	E	E1	e	e1	H_D	L	L1	L2	w	y
min	2.22	0.46	0.71	0.72	5.00	0.20	5.98	4.00	6.47	4.45			9.60		0.50	0.50		
mm nom											2.285	4.57		2.90 (Ref.)			0.20	
max	2.38	0.93	0.89	1.10	5.46	0.56	6.22	---	6.73	---			10.40		---	0.90		0.20

Fig. 7. Package outline DPAK (TO252N)

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