

1. General description

Dual common cathode power Schottky diode designed for high frequency switched mode power supplies in a TO-263 (D2PAK) plastic package.

2. Features and benefits

- Trench structure
- High junction temperature up to 150°C
- Low forward conduction voltage
- Negligible switching losses

3. Applications

- DC to DC converters
- Freewheeling diode
- OR-ing diode
- Switched mode power supply rectifier

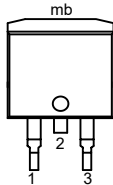
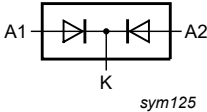
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{RRM}	repetitive peak reverse voltage		-	-	100	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; $T_{mb} \leq 117^\circ\text{C}$; square-wave pulse; per diode; Fig. 1 ; Fig. 2 ; Fig. 3	-	-	10	A
$I_{O(AV)}$	average output current	$\delta = 0.5$; $T_{mb} \leq 116^\circ\text{C}$; square-wave pulse; both diodes conducting	-	-	20	A
Static characteristics						
V_F	forward voltage	$I_F = 3\text{ A}$; $T_j = 25^\circ\text{C}$; Fig. 6 ; per diode	-	0.56	0.61	V
		$I_F = 3\text{ A}$; $T_j = 125^\circ\text{C}$; Fig. 6 ; per diode	-	0.53	0.58	V
		$I_F = 10\text{ A}$; $T_j = 25^\circ\text{C}$; Fig. 6 ; per diode	-	0.89	0.95	V
		$I_F = 10\text{ A}$; $T_j = 125^\circ\text{C}$; Fig. 6 ; per diode	-	0.73	0.8	V
I_R	reverse current	$V_R = 100\text{ V}$; $T_j = 25^\circ\text{C}$; Fig. 7 ; Fig. 8 ; per diode	-	-	50	μA
		$V_R = 100\text{ V}$; $T_j = 125^\circ\text{C}$; Fig. 7 ; Fig. 8 ; per diode	-	-	10	mA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode 1	 D2PAK (TO-263E)	
2	K	cathode		
3	A2	anode 2		
mb	K	mounting base; connected to cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
WNS20S100CB	D2PAK	plastic single-ended surface-mounted package (D2PAK); 3 leads (one lead cropped)	TO-263E

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		-	100	V
V_{RWM}	limiting crest working reverse voltage		-	100	V
V_R	limiting reverse voltage	DC	-	100	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; $T_{mb} \leq 117^\circ\text{C}$; square-wave pulse; per diode; Fig. 1; Fig. 2; Fig. 3	-	10	A
$I_{O(AV)}$	average output current	$\delta = 0.5$; $T_{mb} \leq 116^\circ\text{C}$; square-wave pulse; both diodes conducting	-	20	A
I_{FSM}	non-repetitive peak forward current	$t_p = 10\text{ ms}$; $T_{j(\text{init})} = 25^\circ\text{C}$; sine-wave pulse; per diode; Fig. 4	-	120	A
		$t_p = 8.3\text{ ms}$; $T_{j(\text{init})} = 25^\circ\text{C}$; sine-wave pulse; per diode	-	132	A
T_{stg}	storage temperature		-40	150	$^\circ\text{C}$
T_j	junction temperature		-	150	$^\circ\text{C}$

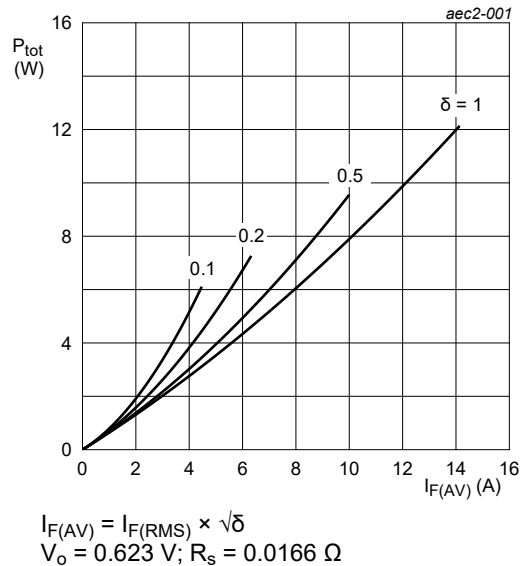


Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values; per diode

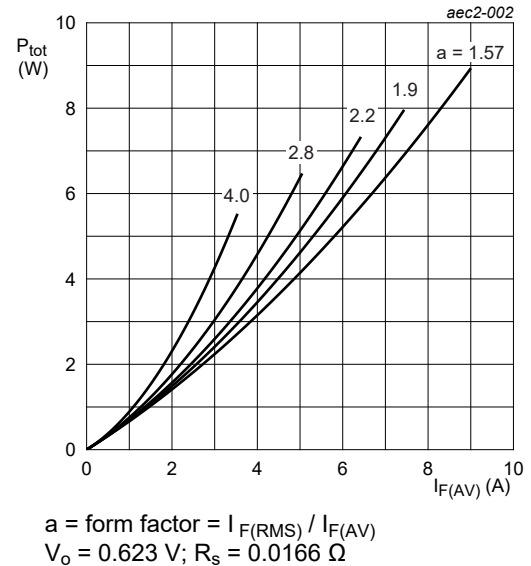


Fig. 2. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values; per diode

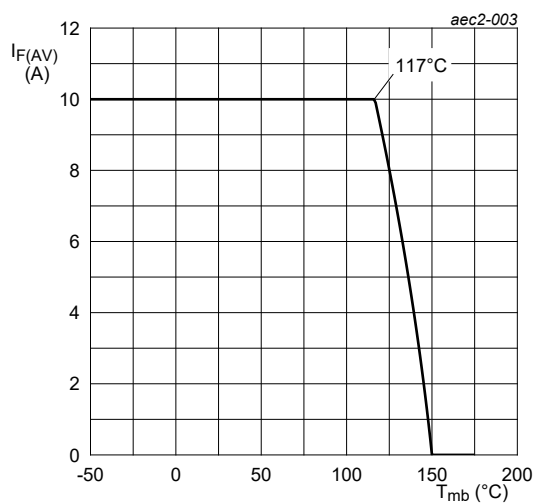


Fig. 3. Average forward current as a function of mounting base temperature; maximum values; per diode

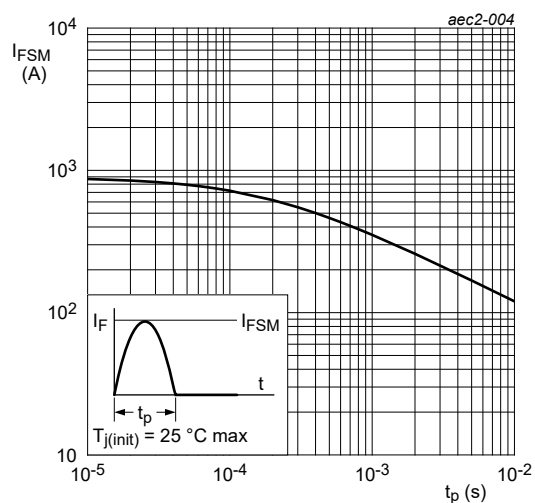


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values; per diode

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	per diode; Fig. 5	-	-	3.5	K/W
		both diodes conducting	-	-	1.8	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	-	60	-	K/W

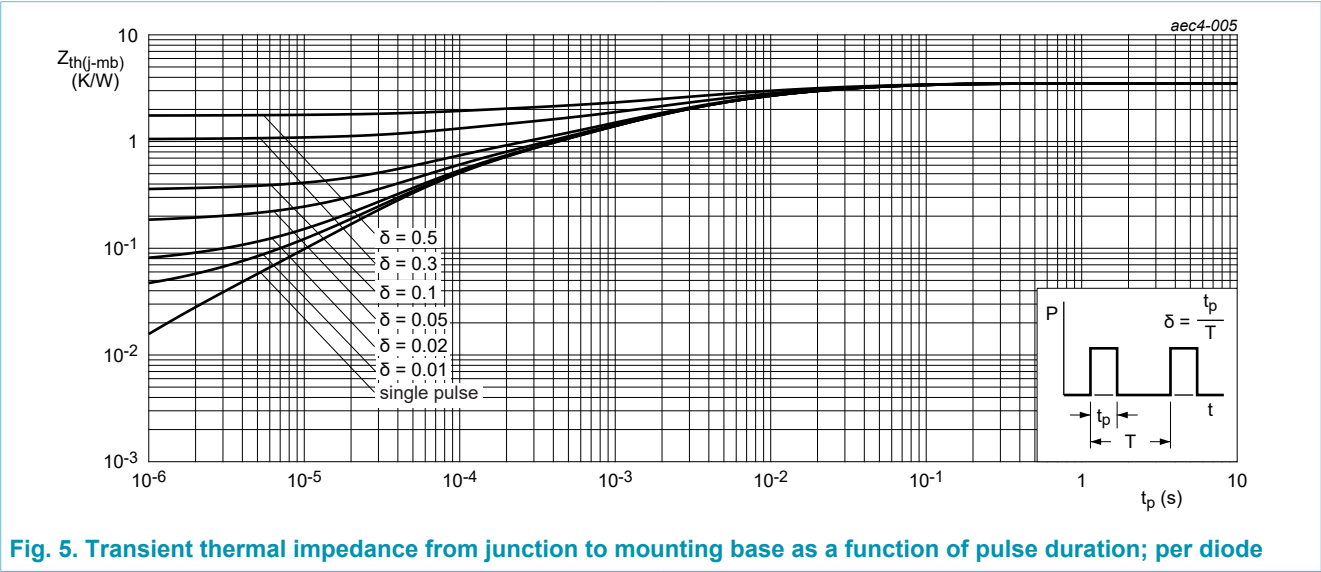


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration; per diode

9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V _F	forward voltage	I _F = 3 A; T _j = 25 °C; Fig. 6; per diode	-	0.56	0.61	V
		I _F = 3 A; T _j = 125 °C; Fig. 6; per diode	-	0.53	0.58	V
		I _F = 10 A; T _j = 25 °C; Fig. 6; per diode	-	0.89	0.95	V
		I _F = 10 A; T _j = 125 °C; Fig. 6; per diode	-	0.73	0.8	V
I _R	reverse current	V _R = 100 V; T _j = 25 °C; Fig. 7; Fig. 8; per diode	-	-	50	μA
		V _R = 100 V; T _j = 125 °C; Fig. 7; Fig. 8; per diode	-	-	10	mA

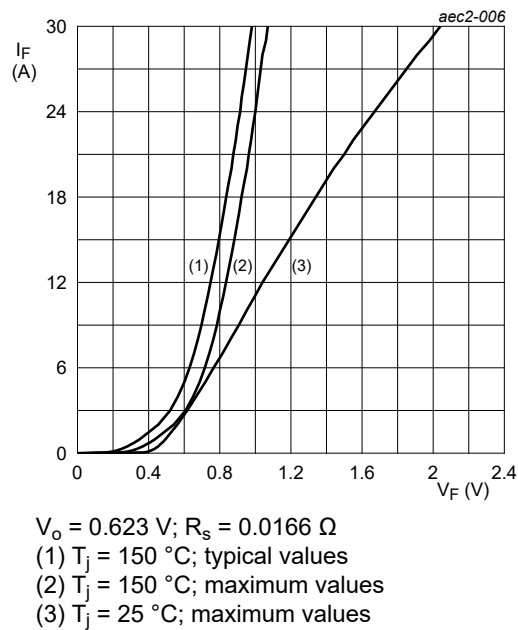


Fig. 6. Forward current as a function of forward voltage; per diode

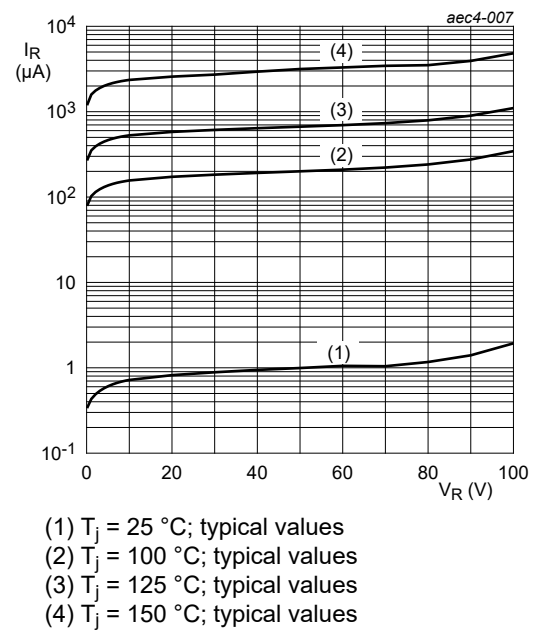


Fig. 7. Reverse leakage current as a function of reverse voltage; per diode; typical values

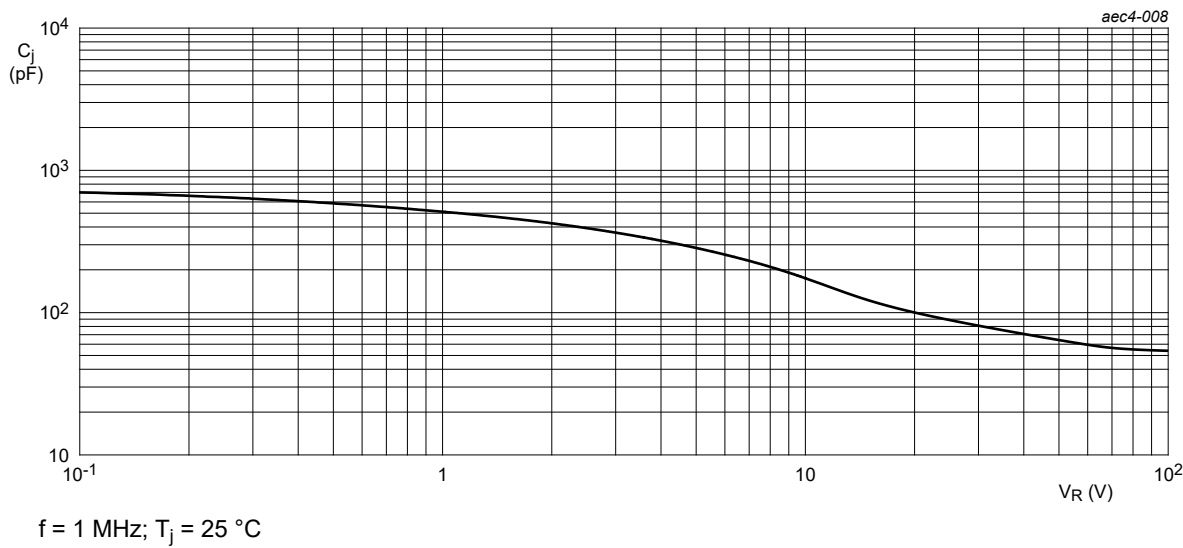
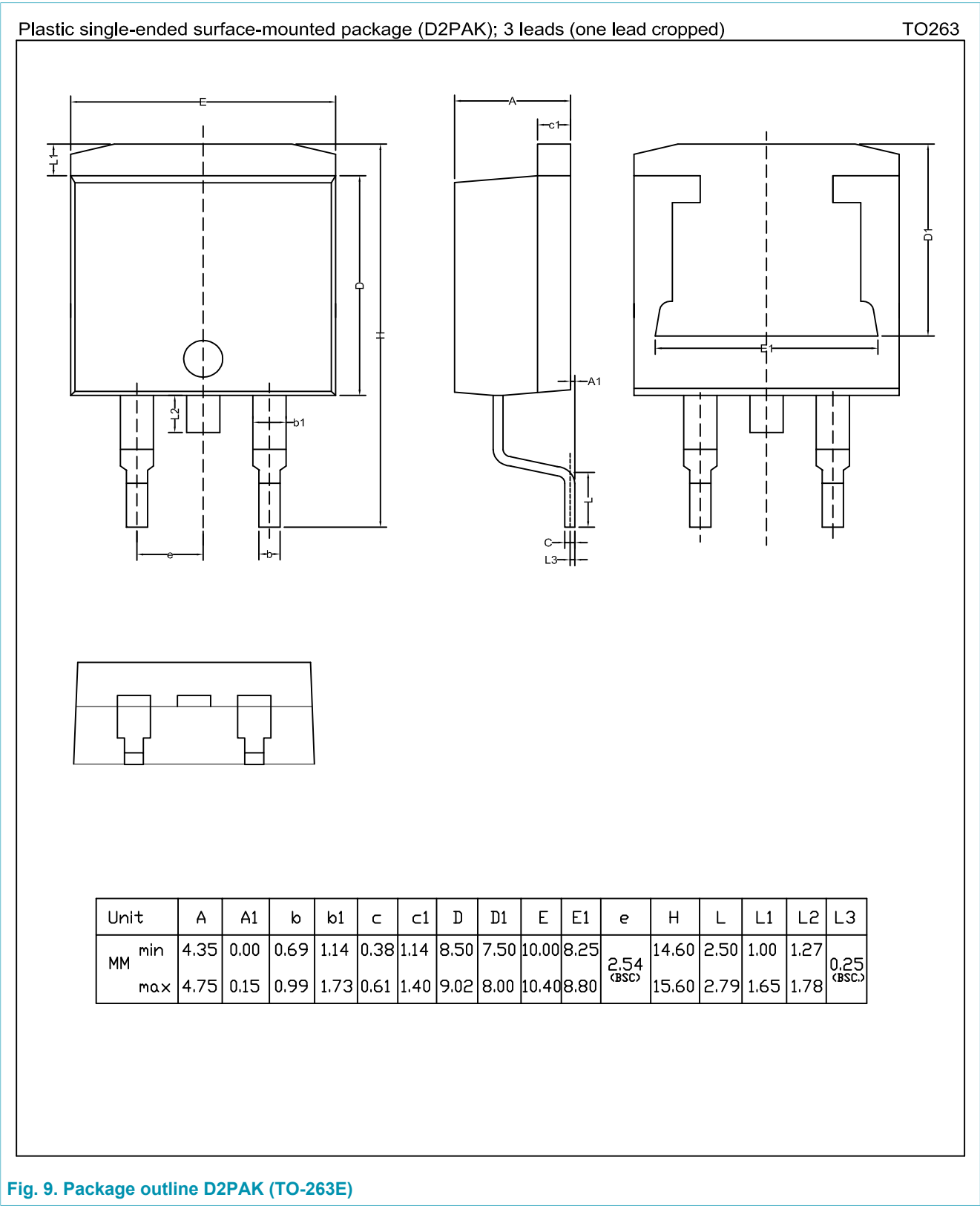


Fig. 8. Junction capacitance as a function of applied reverse voltage; per diode; typical values

10. Package outline



11. Legal information

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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.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
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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..... 8

11. Legal information..... 9

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