

1. General description

Dual common cathode power Schottky diode designed for high frequency switched mode power supplies in a TO-220 plastic package.

2. Features and benefits

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

3. Applications

- DC to DC converters
- Freewheeling diode
- OR-ing diode

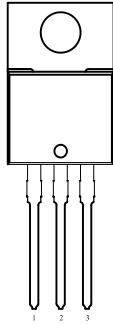
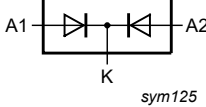
4. Quick reference data

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	$\delta = 0.5$; $T_{mb} \leq 128$ °C; square-wave pulse; per diode; Fig. 1 ; Fig. 2 ; Fig. 3	-	-	20	A
$I_{O(AV)}$	average output current	$\delta = 0.5$; $T_{mb} \leq 126$ °C; square-wave pulse; both diodes conducting	-	-	40	A
Static characteristics						
V_F	forward voltage	$I_F = 5$ A; $T_j = 25$ °C; Fig. 6 ; per diode	-	0.48	-	V
		$I_F = 5$ A; $T_j = 125$ °C; Fig. 6 ; per diode	-	0.41	-	V
		$I_F = 20$ A; $T_j = 25$ °C; Fig. 6 ; per diode	-	0.71	0.78	V
		$I_F = 20$ A; $T_j = 125$ °C; Fig. 6 ; per diode	-	0.64	0.71	V
I_R	reverse current	$V_R = 100$ V; $T_j = 25$ °C; Fig. 7 ; Fig. 8 ; per diode	-	-	50	μ A
		$V_R = 100$ V; $T_j = 125$ °C; Fig. 7 ; Fig. 8 ; per diode	-	-	30	mA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode 1	 <p style="text-align: center;">TO-220E</p>	
2	K	cathode		
3	A2	anode 2		
mb	K	mounting base; connected to cathode		

6. Ordering information

Table 3. Ordering information

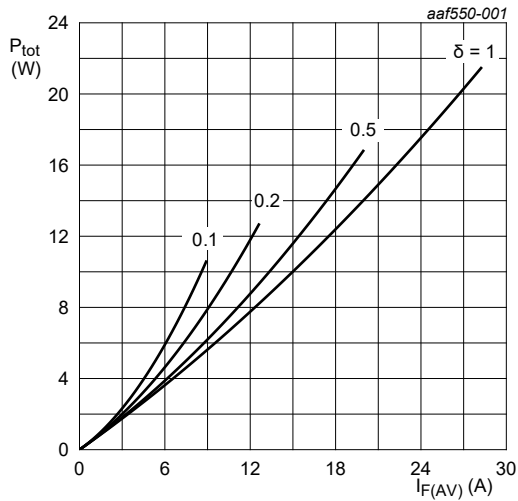
Type number	Package		Version
	Name	Description	
WNS40100C	TO-220E	plastic single-ended package; heatsink mounted; 1 mounting hole; 3-lead TO-220AB	TO-220E

7. Limiting values

Table 4. Limiting values

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

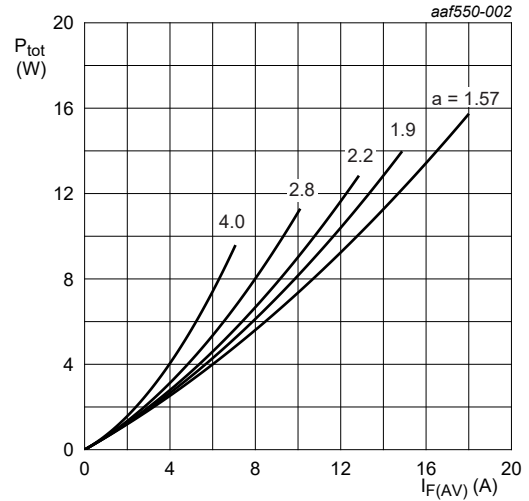
Symbol	Parameter	Conditions	Min	Max	Unit
V _{RRM}	repetitive peak reverse voltage		-	100	V
V _{RWM}	limiting crest working reverse voltage		-	100	V
V _R	limiting reverse voltage	DC	-	100	V
I _{F(AV)}	average forward current	δ = 0.5 ; T _{mb} ≤ 128 °C; square-wave pulse; per diode; Fig. 1; Fig. 2; Fig. 3	-	20	A
I _{O(AV)}	average output current	δ = 0.5 ; T _{mb} ≤ 126 °C; square-wave pulse; both diodes conducting	-	40	A
I _{FSM}	non-repetitive peak forward current	t _p = 10 ms; T _{j(init)} = 25 °C; sine-wave pulse; per diode; Fig. 4	-	330	A
		t _p = 8.3 ms; T _{j(init)} = 25 °C; sine-wave pulse; per diode	-	363	A
T _{stg}	storage temperature		-40	150	°C
T _j	junction temperature		-	150	°C



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

$$V_o = 0.562 \text{ V}; R_s = 0.0070 \text{ } \Omega$$

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



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

$$V_o = 0.562 \text{ V}; R_s = 0.0070 \text{ } \Omega$$

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

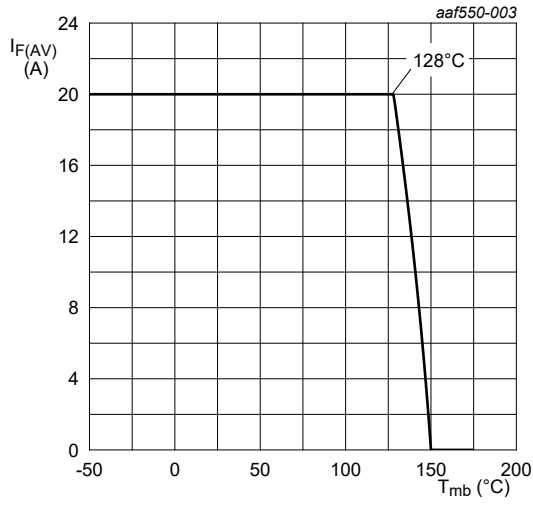


Fig. 3. Average forward current as a function of mounting base temperature; maximum values; per diode

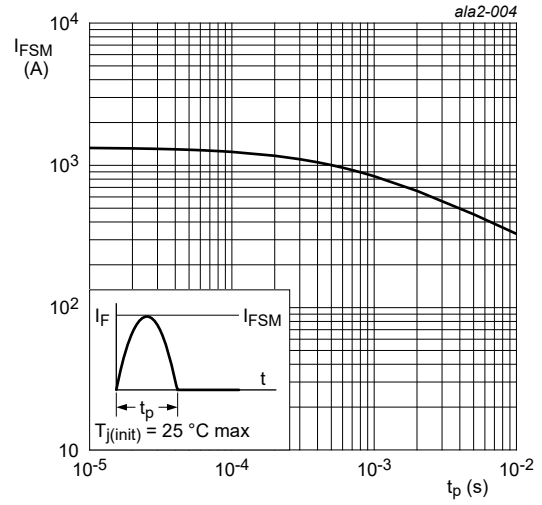


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values; per diode

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	-	-	1.3	K/W
		both diodes conducting	-	-	0.7	K/W
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	-	60	-	K/W

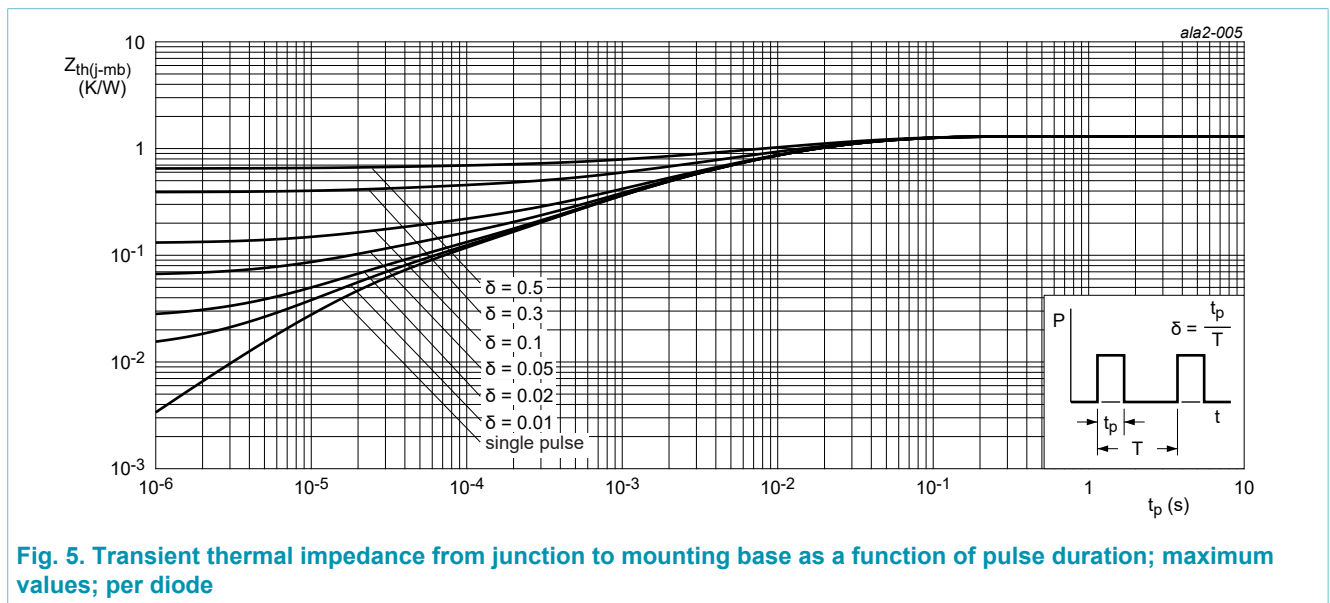
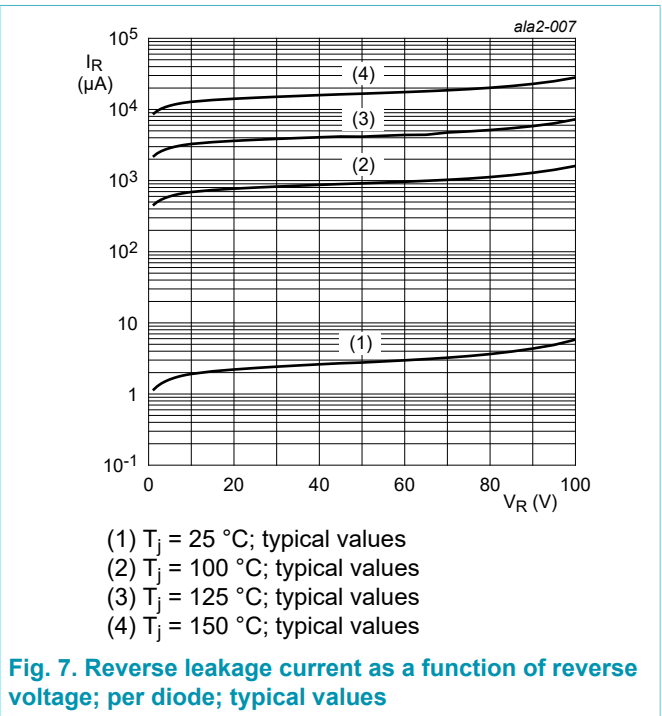
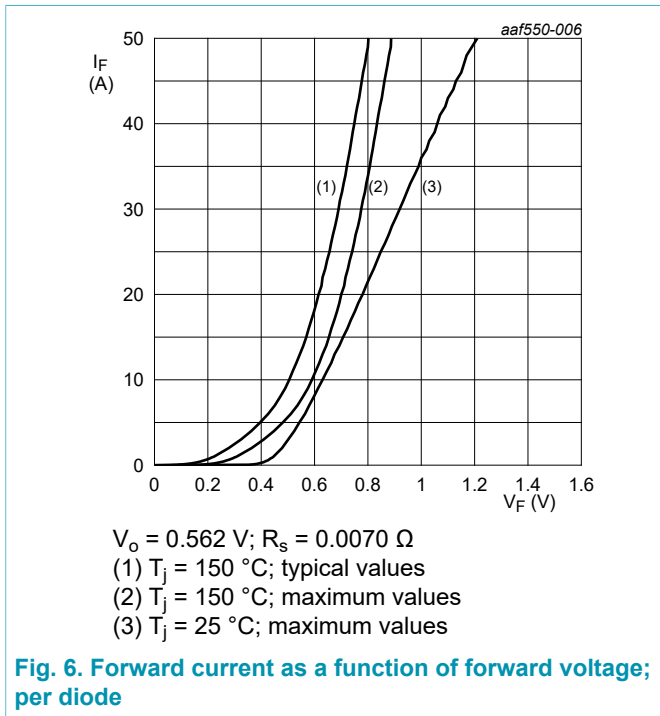


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration; maximum values; per diode

9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V_F	forward voltage	$I_F = 5\text{ A}; T_j = 25\text{ °C};$ Fig. 6; per diode	-	0.48	-	V
		$I_F = 5\text{ A}; T_j = 125\text{ °C};$ Fig. 6; per diode	-	0.41	-	V
		$I_F = 20\text{ A}; T_j = 25\text{ °C};$ Fig. 6; per diode	-	0.71	0.78	V
		$I_F = 20\text{ A}; T_j = 125\text{ °C};$ Fig. 6; per diode	-	0.64	0.71	V
I_R	reverse current	$V_R = 100\text{ V}; T_j = 25\text{ °C};$ Fig. 7; Fig. 8; per diode	-	-	50	μA
		$V_R = 100\text{ V}; T_j = 125\text{ °C};$ Fig. 7; Fig. 8; per diode	-	-	30	mA



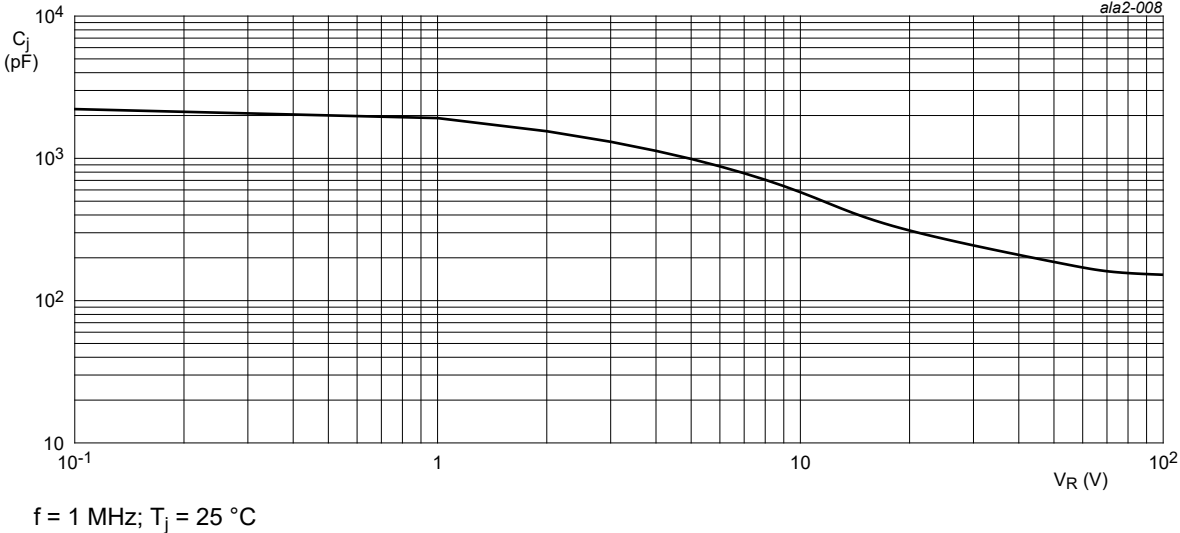
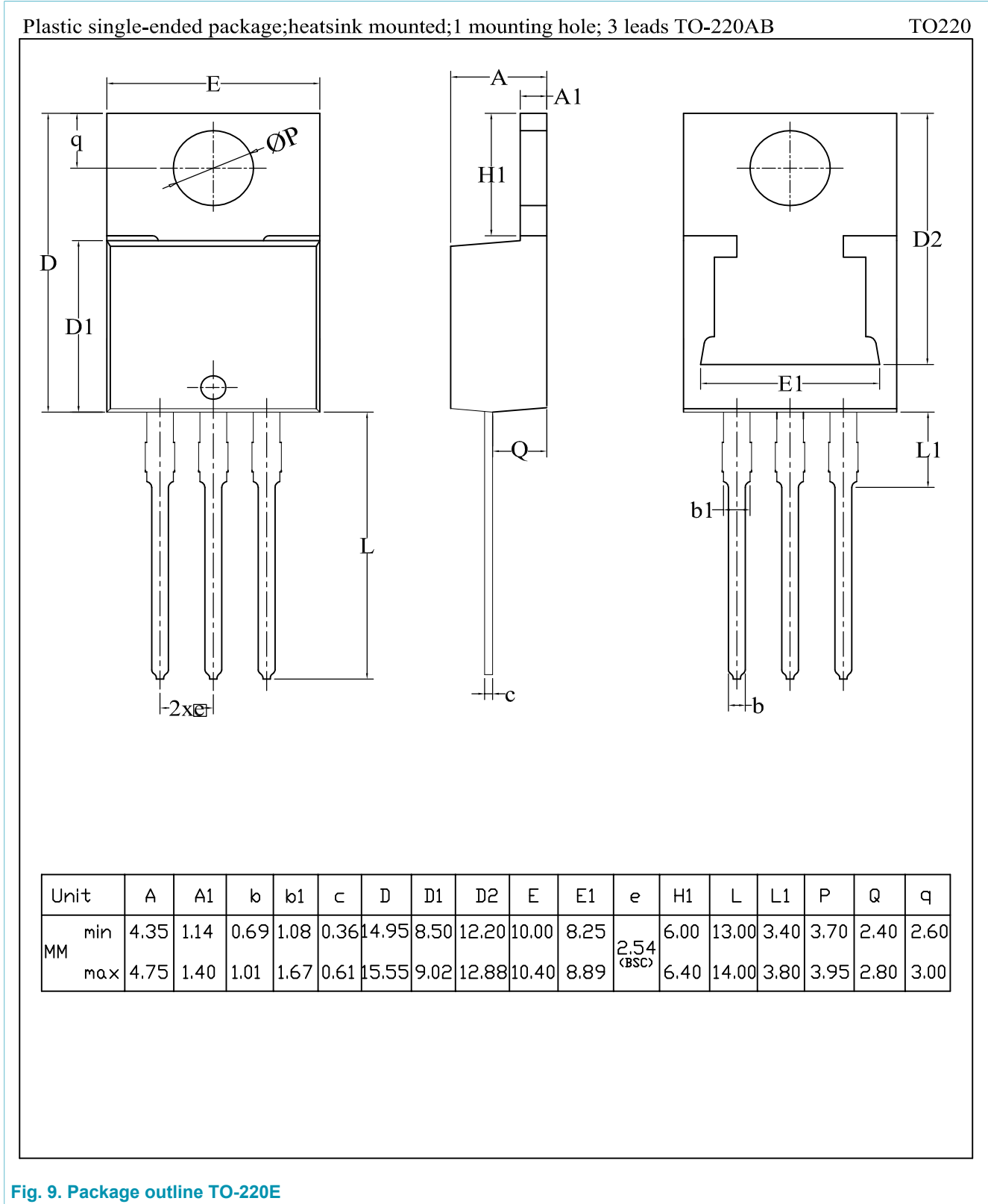


Fig. 8. Junction capacitance as a function of applied reverse voltage; per diode; typical values

10. Package outline



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.
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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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