

## 1. General description

Dual common cathode power Schottky diode designed for high frequency switched mode power supplies in a TO220 plastic package.



## 2. Features and benefits

- Trench structure
- High junction temperature up to 150°C
- High efficiency
- Low forward voltage drop, negligible switching losses

## 3. Applications

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

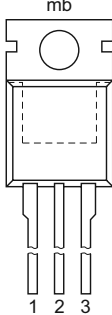
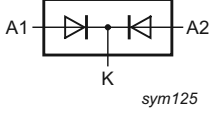
## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values			Unit
<b>Absolute maximum rating</b>						
$V_{RRM}$	repetitive peak reverse voltage		100			V
$I_{F(AV)}$	average forward current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 134$ °C; per diode; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a>	20			A
$I_{O(AV)}$	average output current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 131$ °C; both diodes conducting	40			A
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_F$	forward voltage	$I_F = 10$ A; $T_j = 25$ °C; prediode; <a href="#">Fig. 6</a>	-	0.54	0.59	V
		$I_F = 10$ A; $T_j = 125$ °C; prediode; <a href="#">Fig. 6</a>	-	0.5	0.56	V
		$I_F = 20$ A; $T_j = 25$ °C; prediode; <a href="#">Fig. 6</a>	-	0.67	0.71	V
		$I_F = 20$ A; $T_j = 125$ °C; prediode; <a href="#">Fig. 6</a>	-	0.63	0.68	V
$I_R$	reverse current	$V_R = 100$ V; $T_j = 25$ °C; <a href="#">Fig. 7</a>	-	-	50	$\mu$ A
		$V_R = 100$ V; $T_j = 125$ °C; <a href="#">Fig. 7</a>	-	-	30	mA

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A	anode 1		 sym125
2	K	cathode		
3	A	anode 2		
mb	mb	mounting base; connected to cathode		

## 6. Ordering information

Table 3. Ordering information

Type number	Package name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
WN3S40H100C	TO220	WN3S40H100CQ	Tube	50	SOT78	13-Jun-2008

## 7. Marking

Table 4. Marking codes

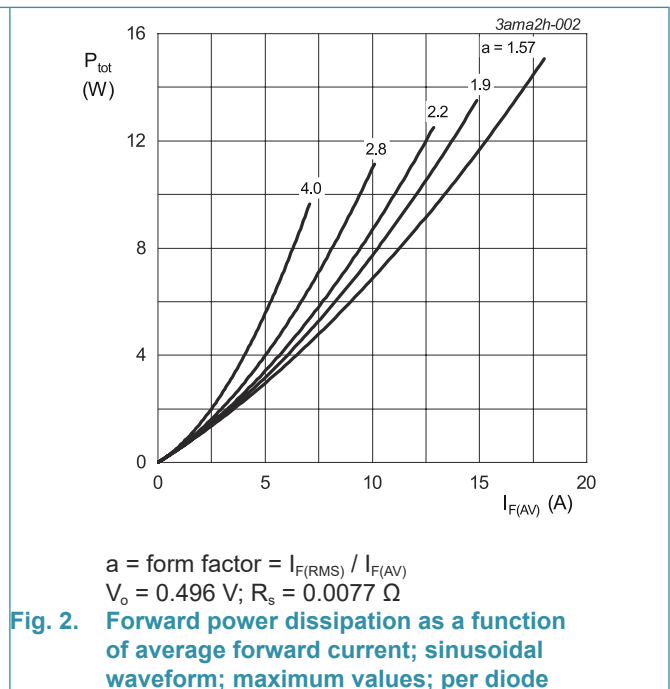
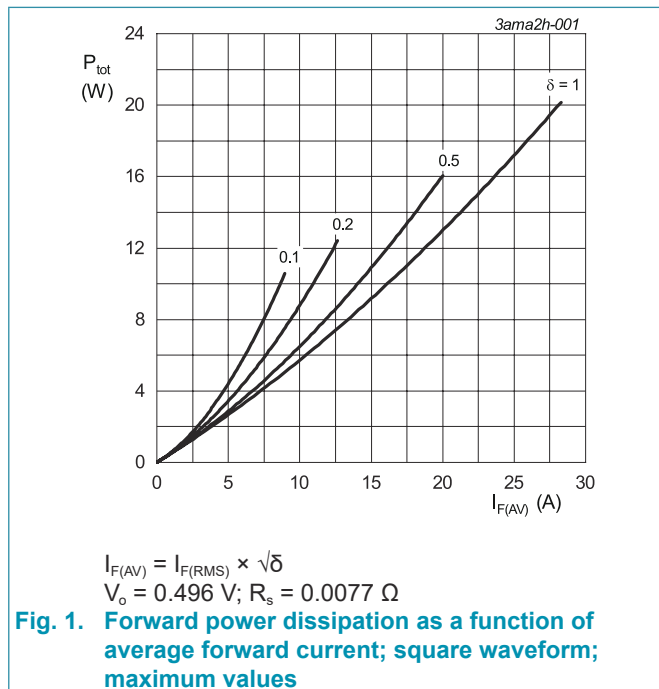
Type number	Marking codes
WN3S40H100C	WN3S 40H100C

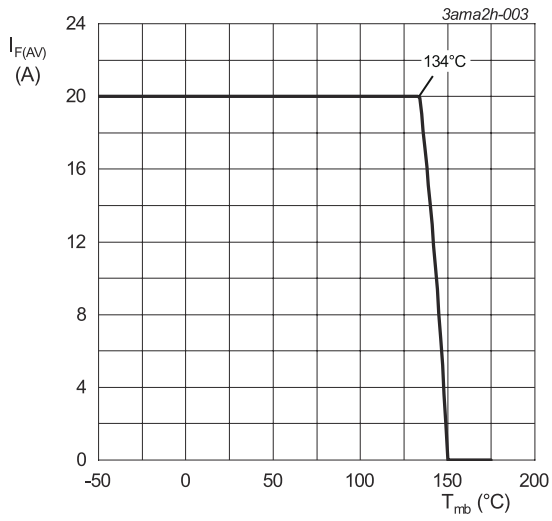
## 8. Limiting values

**Table 5. Limiting values**

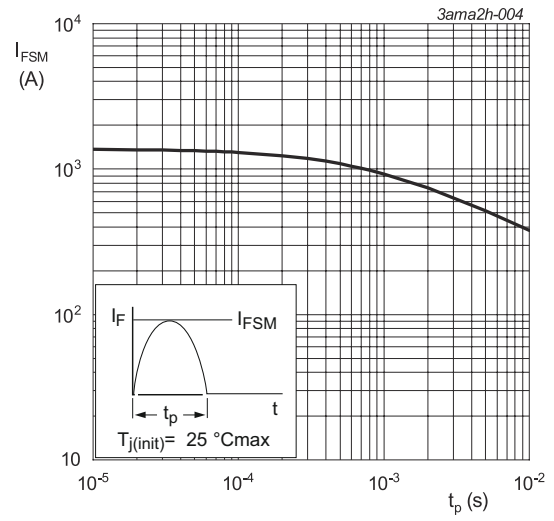
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Values	Unit
$V_{RRM}$	repetitive peak reverse voltage		100	V
$V_{RWM}$	crest working reverse voltage		100	V
$V_R$	reverse voltage	DC	100	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 134$ °C; per diode; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a>	20	A
$I_{O(AV)}$	average output current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 131$ °C; 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; <a href="#">Fig. 4</a>	380	A
		$t_p = 8.3$ ms; $T_{j(init)} = 25$ °C; sine-wave pulse; per diode	418	A
$T_{stg}$	storage temperature		-40 to 150	°C
$T_j$	junction temperature		150	°C





**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**

### 9. Thermal characteristics

Table 6. 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	K/W
		both diodes conducting	-	-	0.6	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air	-	60	-	K/W

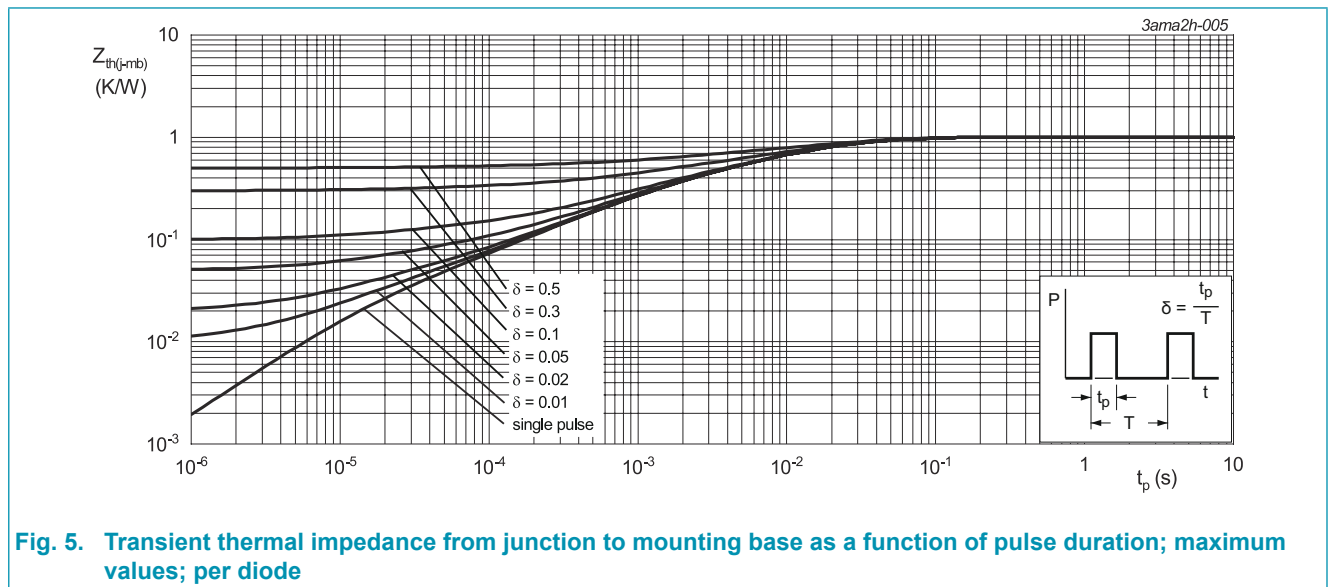
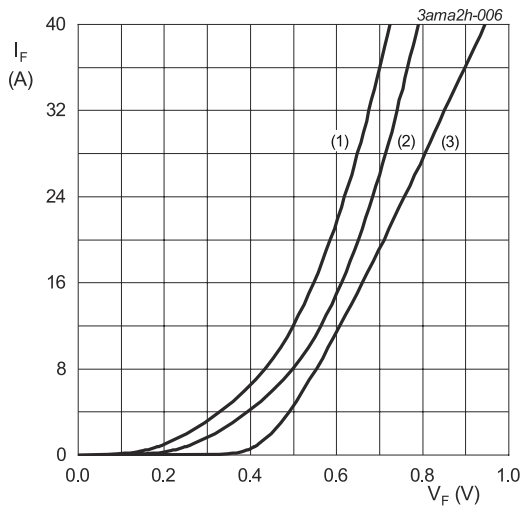


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration; maximum values; per diode

### 10. Characteristics

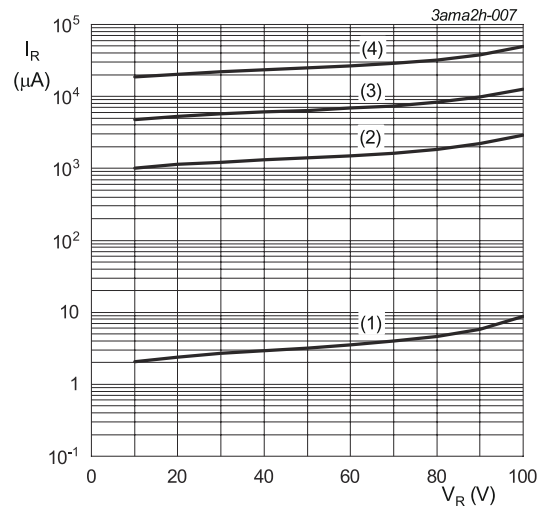
Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_F$	forward voltage	$I_F = 10\text{ A}; T_J = 25\text{ °C};$ prediode; <a href="#">Fig. 6</a>	-	0.54	0.59	V
		$I_F = 10\text{ A}; T_J = 125\text{ °C};$ prediode; <a href="#">Fig. 6</a>	-	0.5	0.56	V
		$I_F = 20\text{ A}; T_J = 25\text{ °C};$ prediode; <a href="#">Fig. 6</a>	-	0.67	0.71	V
		$I_F = 20\text{ A}; T_J = 125\text{ °C};$ prediode; <a href="#">Fig. 6</a>	-	0.63	0.68	V
$I_R$	reverse current	$V_R = 100\text{ V}; T_J = 25\text{ °C};$ prediode; <a href="#">Fig. 7</a> ; <a href="#">Fig. 8</a>	-	-	50	$\mu\text{A}$
		$V_R = 100\text{ V}; T_J = 125\text{ °C};$ prediode; <a href="#">Fig. 7</a> ; <a href="#">Fig. 8</a>	-	-	30	mA



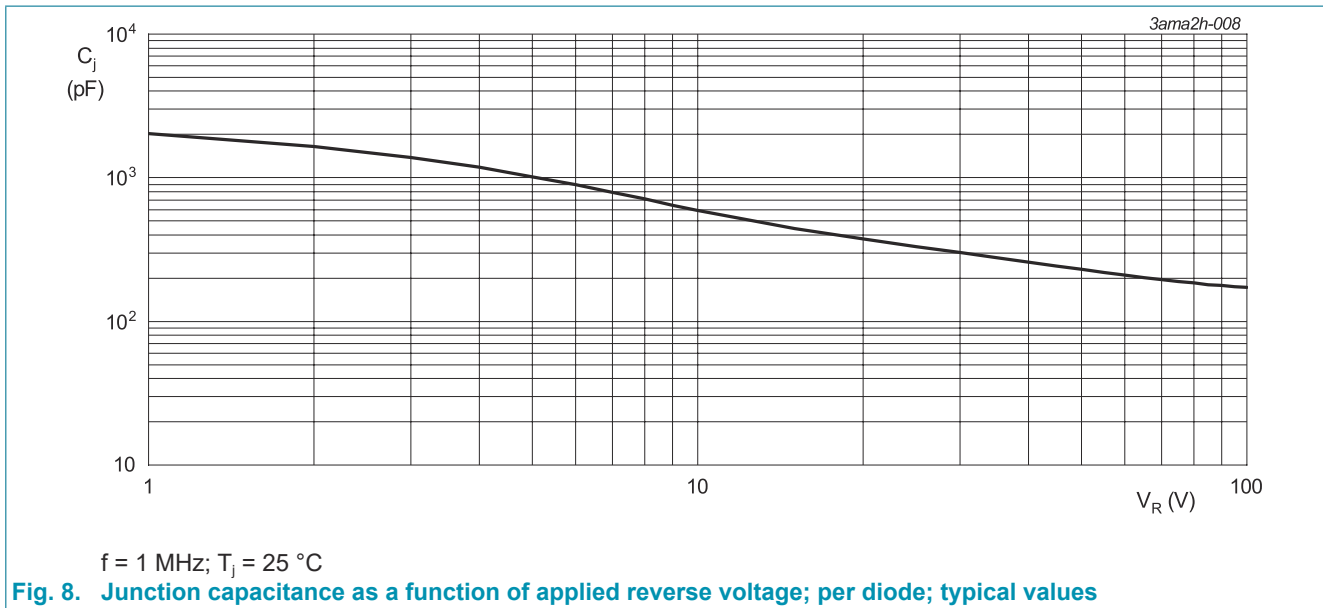
$V_o = 0.496\text{ V}; R_s = 0.0077\ \Omega$   
 (1)  $T_J = 150\text{ °C};$  typical values  
 (2)  $T_J = 150\text{ °C};$  maximum values  
 (3)  $T_J = 25\text{ °C};$  maximum values

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



(1)  $T_J = 25\text{ °C};$  typical values  
 (2)  $T_J = 100\text{ °C};$  typical values  
 (3)  $T_J = 125\text{ °C};$  typical values  
 (4)  $T_J = 150\text{ °C};$  typical values

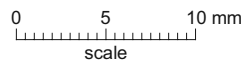
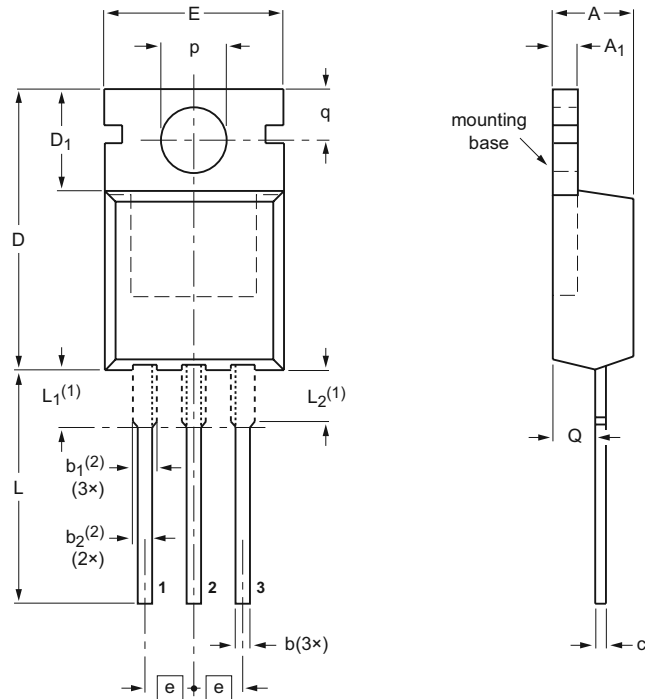
Fig. 7. Reverse leakage current as a function of reverse voltage; per diode; typical value



### 11. Package outline

Plastic single-ended package; heatsink mounted; 1 mounting hole; 3-lead TO-220AB

SOT78



**DIMENSIONS (mm are the original dimensions)**

UNIT	A	A <sub>1</sub>	b	b <sub>1</sub> (2)	b <sub>2</sub> (2)	c	D	D <sub>1</sub>	E	e	L	L <sub>1</sub> (1)	L <sub>2</sub> (1) max.	p	q	Q
mm	4.7	1.40	0.9	1.6	1.3	0.7	16.0	6.6	10.3	2.54	15.0	3.30	3.0	3.8	3.0	2.6
	4.1	1.25	0.6	1.0	1.0	0.4	15.2	5.9	9.7		12.8	2.79		3.5	2.7	2.2

**Notes**

- 1. Lead shoulder designs may vary.
- 2. Dimension includes excess dambar.

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
SOT78		3-lead TO-220AB	SC-46		08-04-23 08-06-13



## 12. 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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