

## 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
- Low forward voltage drop, negligible switching losses
- High efficiency

## 3. Applications

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

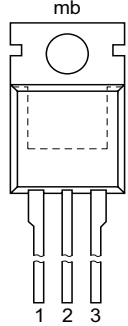
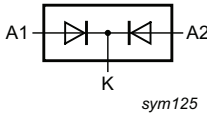
## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Notes	Values			Unit
<b>Absolute maximum rating</b>							
$V_{RRM}$	repetitive peak reverse voltage			60			V
$I_{F(AV)}$	average forward current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 116$ °C; per diode; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a>		15			A
$I_{O(AV)}$	average output current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 110$ °C; both diodes conducting		30			A
Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
<b>Static characteristics</b>							
$V_F$	forward voltage	$I_F = 15$ A; $T_j = 25$ °C; per diode; <a href="#">Fig. 6</a>		-	0.62	0.70	V
$I_R$	reverse current	$V_R = 60$ V; $T_j = 25$ °C; per diode; <a href="#">Fig. 7</a> ; <a href="#">Fig. 8</a>		-	35	100	$\mu$ A

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode 1		
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	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
WN3S3060C	TO220	WN3S3060CQ	Tube	50	SOT78	13-Jun-2008

## 7. Marking

Table 4. Marking codes

Type number	Marking codes
WN3S3060C	WN3S 3060C

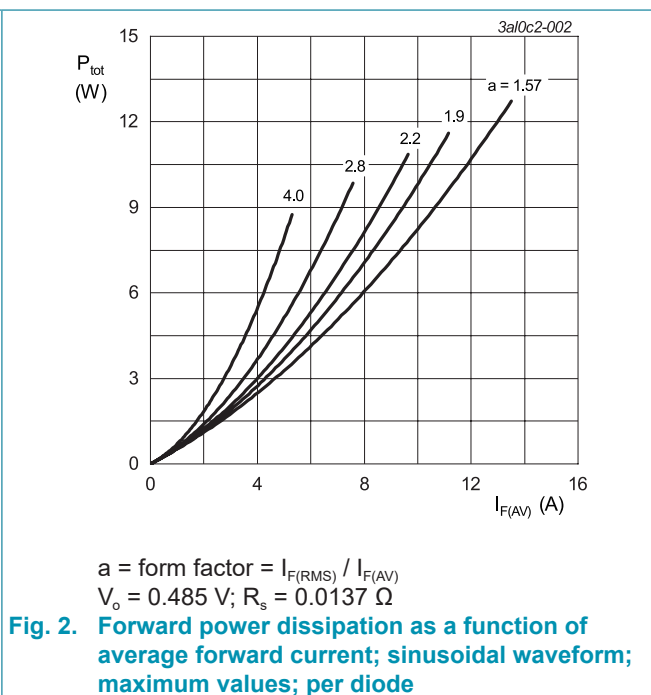
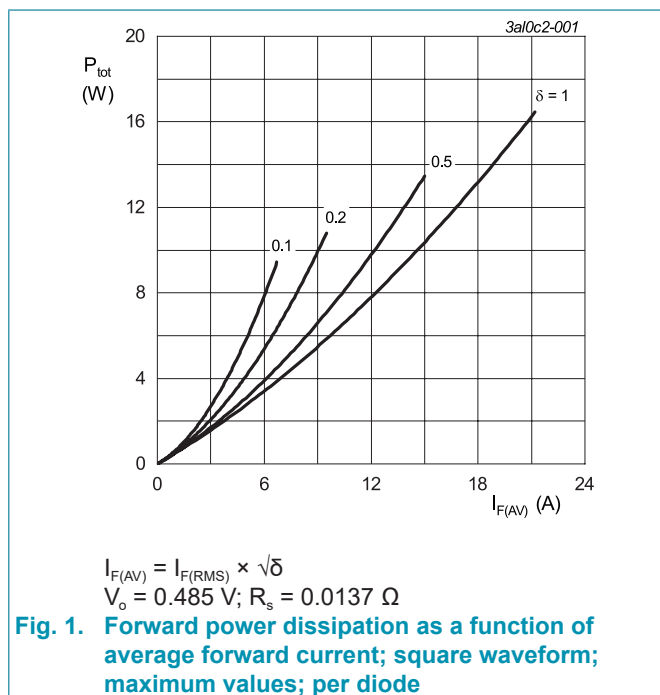
## 8. Limiting values

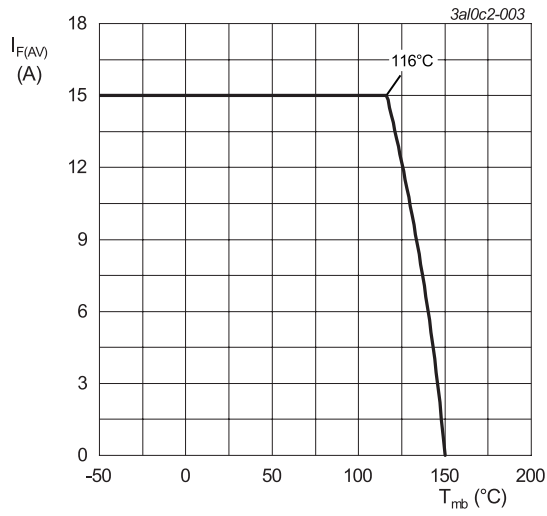
**Table 5. Limiting values**

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

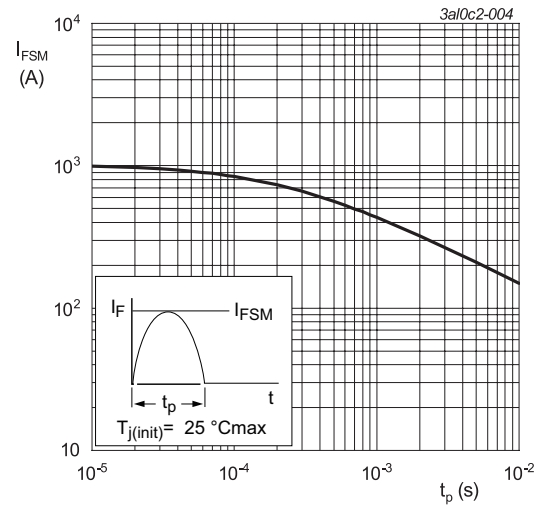
Symbol	Parameter	Conditions	Notes	Values	Unit
$V_{RRM}$	repetitive peak reverse voltage			60	V
$V_{RWM}$	crest working reverse voltage			60	V
$V_R$	reverse voltage	DC		60	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 116\text{ }^\circ\text{C}$ ; per diode; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a>		15	A
$I_{O(AV)}$	average output current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 110\text{ }^\circ\text{C}$ ; both diodes conducting		30	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; per diode; <a href="#">Fig. 4</a>		150	A
		$t_p = 8.3\text{ ms}$ ; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$ ; sine-wave pulse; per diode		165	A
$T_{stg}$	storage temperature			-40 to 150	$^\circ\text{C}$
$T_j$	junction temperature		[1]	-40 to 150	$^\circ\text{C}$

[1] The heat generated must be less than the thermal conductivity from Junction to Ambient:  $dP_{tot}/dT_j < 1/R_{th(j-a)}$





**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	Notes	Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	per diode; <a href="#">Fig. 5</a>		-	-	2.5	K/W
		both diodes conducting		-	-	1.5	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air		-	60	-	K/W

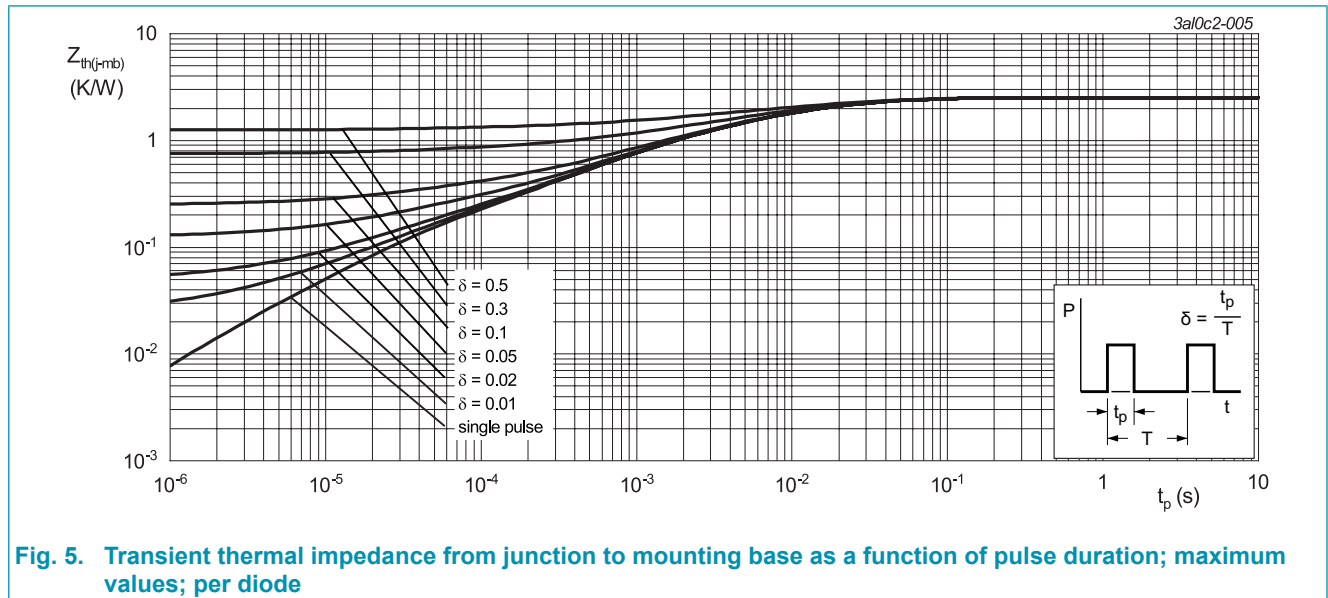
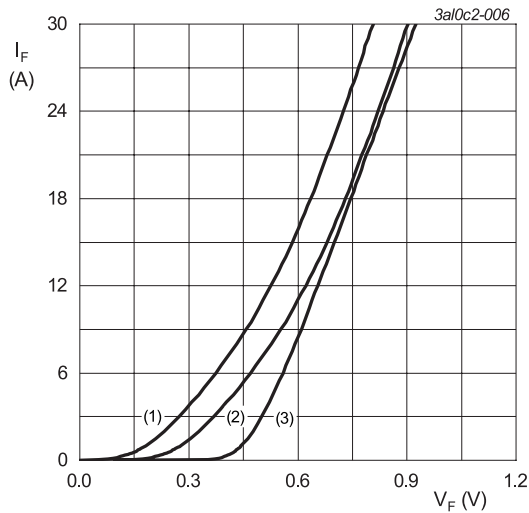


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration; maximum values; per diode

### 10. Characteristics

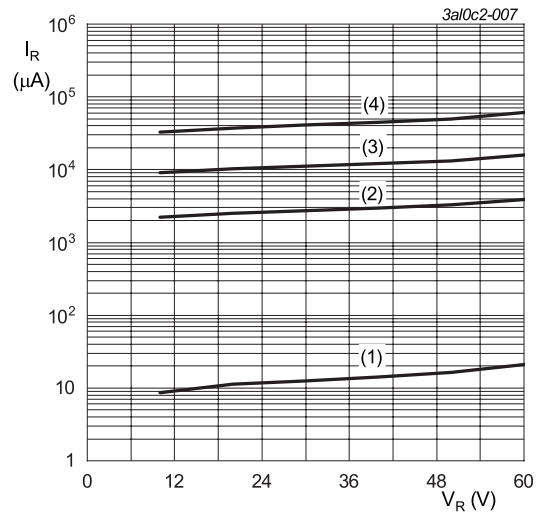
Table 7. Characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
<b>Static characteristics</b>							
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 15 A; T <sub>J</sub> = 25 °C; per diode; <a href="#">Fig. 6</a>		-	0.62	0.70	V
		I <sub>F</sub> = 15 A; T <sub>J</sub> = 125 °C; per diode; <a href="#">Fig. 6</a>		-	0.61	-	V
		I <sub>F</sub> = 3 A; T <sub>J</sub> = 125 °C; per diode; <a href="#">Fig. 6</a>		-	0.40	-	V
		I <sub>F</sub> = 3 A; T <sub>J</sub> = 125 °C; per diode; <a href="#">Fig. 6</a>		-	0.30	-	V
I <sub>R</sub>	reverse current	V <sub>R</sub> = 60 V; T <sub>J</sub> = 25 °C; per diode; <a href="#">Fig. 7</a> ; <a href="#">Fig. 8</a>		-	35	100	μA
		V <sub>R</sub> = 60 V; T <sub>J</sub> = 125 °C; per diode; <a href="#">Fig. 7</a> ; <a href="#">Fig. 8</a>		-	20	100	mA



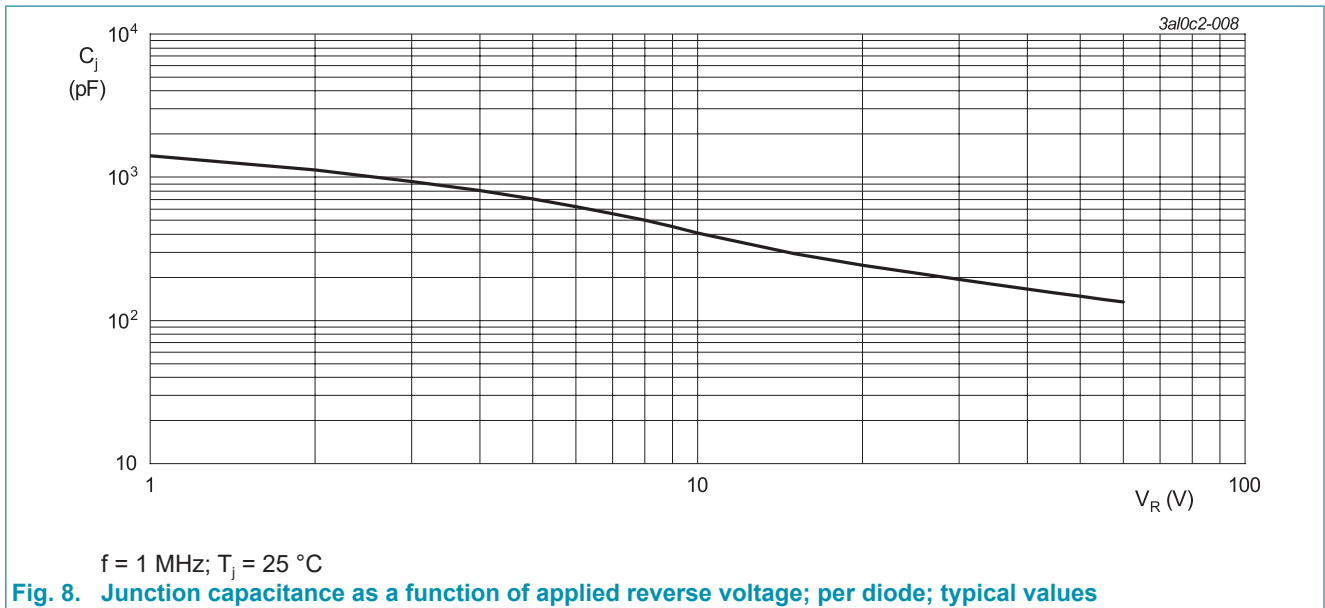
V<sub>o</sub> = 0.485 V; R<sub>s</sub> = 0.0137 Ω  
 (1) T<sub>J</sub> = 150 °C; typical values  
 (2) T<sub>J</sub> = 150 °C; maximum values  
 (3) T<sub>J</sub> = 25 °C; maximum values

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



(1) T<sub>J</sub> = 25 °C; typical values  
 (2) T<sub>J</sub> = 100 °C; typical values  
 (3) T<sub>J</sub> = 125 °C; typical values  
 (4) T<sub>J</sub> = 150 °C; typical values

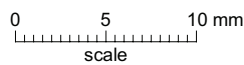
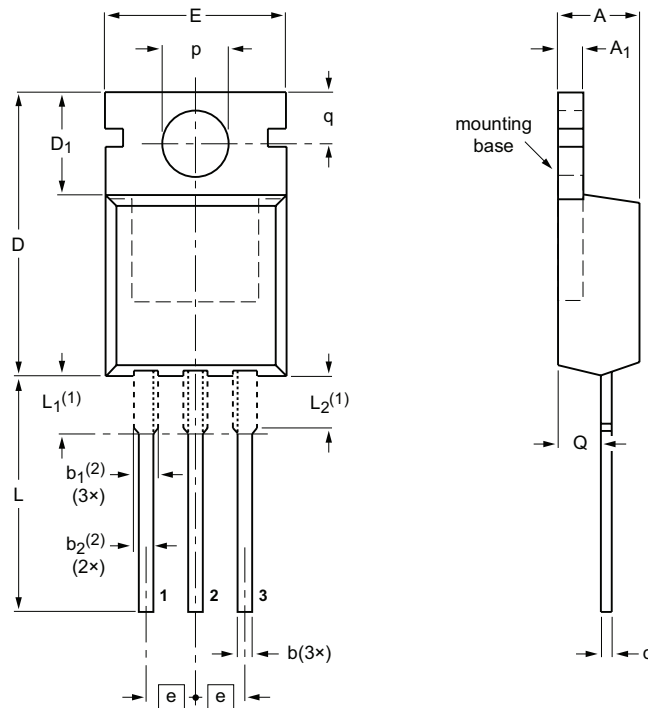
**Fig. 7. Reverse leakage current as a function of reverse voltage; per diode; typical values**



### 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 4.1	1.40 1.25	0.9 0.6	1.6 1.0	1.3 1.0	0.7 0.4	16.0 15.2	6.6 5.9	10.3 9.7	2.54	15.0 12.8	3.30 2.79	3.0	3.8 3.5	3.0 2.7	2.6 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.
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