

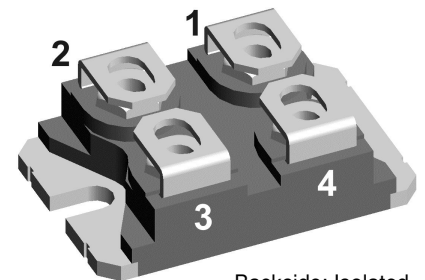
# Schottky Diode

$$\begin{aligned} V_{RRM} &= 100 \text{ V} \\ I_{FAV} &= 300 \text{ A} \\ V_F &= 0.88 \text{ V} \end{aligned}$$

High Performance Schottky Diode  
Low Loss and Soft Recovery  
Single Diode

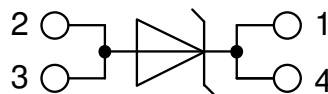
Part number

**DSA300I100NA**



Backside: Isolated

 E72873



## Features / Advantages:

- Very low  $V_f$
- Extremely low switching losses
- Low  $I_{rm}$  values
- Improved thermal behaviour
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching

## Applications:

- Rectifiers in switch mode power supplies (SMPS)
- Free wheeling diode in low voltage converters

## Package: SOT-227B (minibloc)

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Base plate: Copper internally DCB isolated
- Advanced power cycling

## Terms and Conditions of Usage

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact your local sales office.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office.

Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend

- to perform joint risk and quality assessments;

- the conclusion of quality agreements;

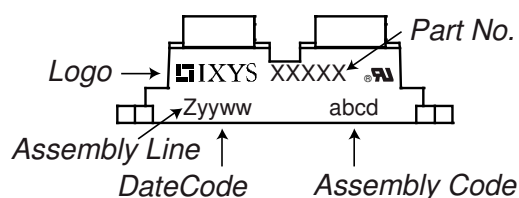
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

Schottky				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				100	V
$V_{RRM}$	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				100	V
$I_R$	reverse current, drain current	$V_R = 100\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			3	mA
		$V_R = 100\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$			30	mA
$V_F$	forward voltage drop	$I_F = 300\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			0.99	V
		$I_F = 600\text{ A}$				1.30	V
		$I_F = 300\text{ A}$	$T_{VJ} = 125^{\circ}\text{C}$			0.88	V
		$I_F = 600\text{ A}$				1.21	V
$I_{FAV}$	average forward current	$T_C = 95^{\circ}\text{C}$ rectangular $d = 0.5$	$T_{VJ} = 150^{\circ}\text{C}$			300	A
$V_{F0}$	threshold voltage	} for power loss calculation only		$T_{VJ} = 150^{\circ}\text{C}$		0.53	V
$r_F$	slope resistance					1.09	mΩ
$R_{thJC}$	thermal resistance junction to case					0.15	K/W
$R_{thCH}$	thermal resistance case to heatsink				0.10		K/W
$P_{tot}$	total power dissipation	$T_C = 25^{\circ}\text{C}$				830	W
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$	$T_{VJ} = 45^{\circ}\text{C}$			4.80	kA
$C_J$	junction capacitance	$V_R = 12\text{ V}$ $f = 1\text{ MHz}$	$T_{VJ} = 25^{\circ}\text{C}$		4.86		nF

Package SOT-227B (minibloc)				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>				150	A
$T_{VJ}$	virtual junction temperature			-40		150	°C
$T_{op}$	operation temperature			-40		125	°C
$T_{stg}$	storage temperature			-40		150	°C
Weight					30		g
$M_D$	mounting torque			1.1		1.5	Nm
$M_T$	terminal torque			1.1		1.5	Nm
$d_{Spp/App}$	creepage distance on surface   striking distance through air	terminal to terminal	10.5	3.2			mm
$d_{Spb/Apb}$		terminal to backside	8.6	6.8			mm
$V_{ISOL}$	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000			V
		t = 1 minute		2500			V

<sup>1)</sup>  $I_{RMS}$  is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2). In case of (1) and a product with multiple pins for one chip-potential, the current capability can be increased by connecting the pins as one contact.

### Product Marking



### Part description

D = Diode  
 S = Schottky Diode  
 A = low VF  
 300 = Current Rating [A]  
 I = Single Diode  
 100 = Reverse Voltage [V]  
 NA = SOT-227B (minibloc)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSA300I100NA	DSA300I100NA	Tube	10	509813

Similar Part	Package	Voltage class
DSA300I45NA	SOT-227B (minibloc)	45
DSA300I200NA	SOT-227B (minibloc)	200

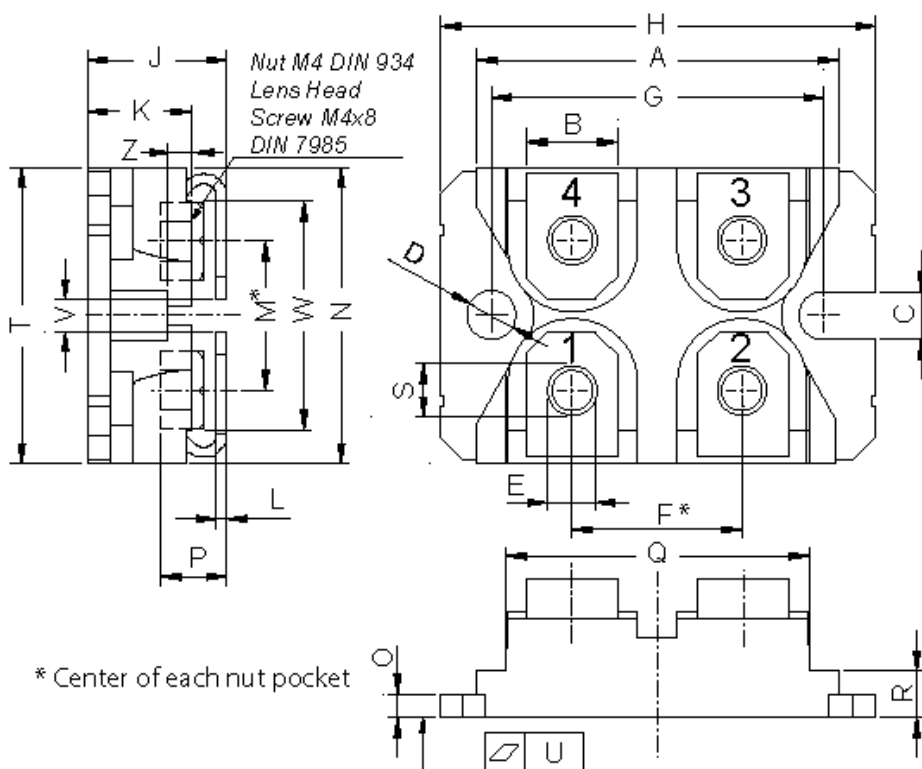
### Equivalent Circuits for Simulation

\* on die level

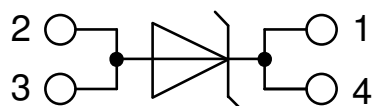
$T_{VJ} = 150^\circ\text{C}$

		Schottky	
$V_{0\max}$	threshold voltage	0.53	V
$R_{0\max}$	slope resistance *	0.25	mΩ

## Outlines SOT-227B (minibloc)



Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.167
S	4.55	4.85	0.179	0.191
T	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Z	2.50	2.70	0.098	0.106



## Schottky

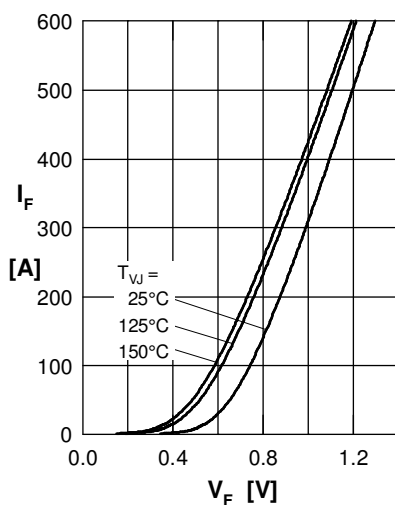


Fig. 1 Max. forward voltage drop characteristics

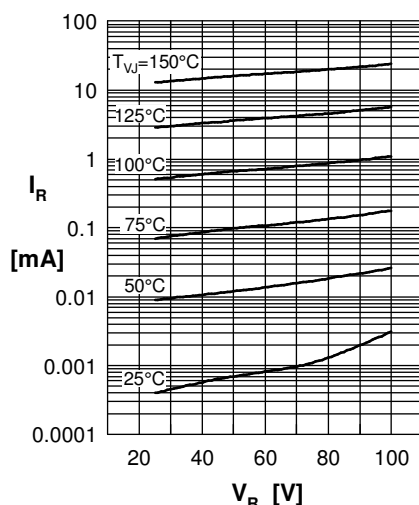


Fig. 2 Typ. reverse current  $I_R$  vs. reverse voltage  $V_R$

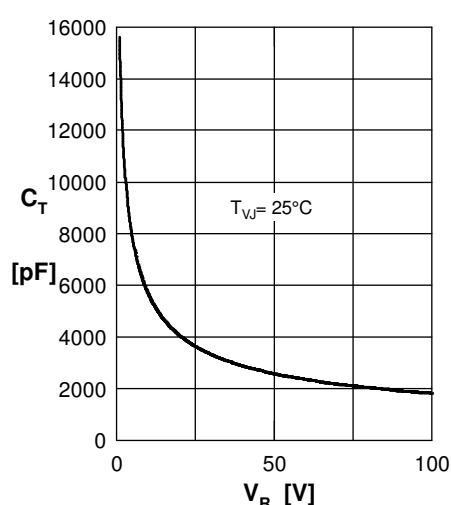


Fig. 3 Typ. junction capacitance  $C_T$  vs. reverse voltage  $V_R$

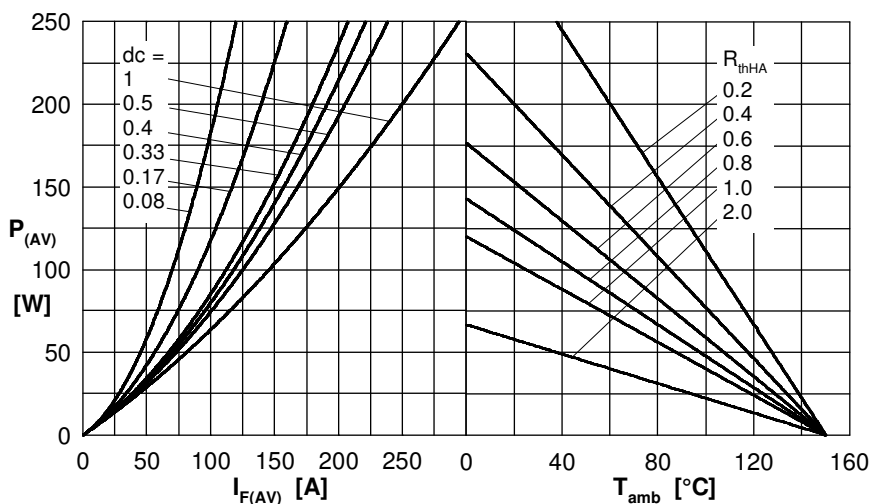


Fig. 4a Power dissipation versus direct output current  
Fig. 4b and ambient temperature

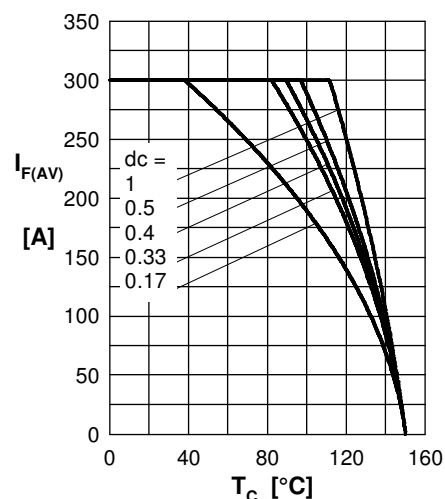


Fig. 5 Average forward current  $I_{F(AV)}$  vs. case temp.  $T_C$

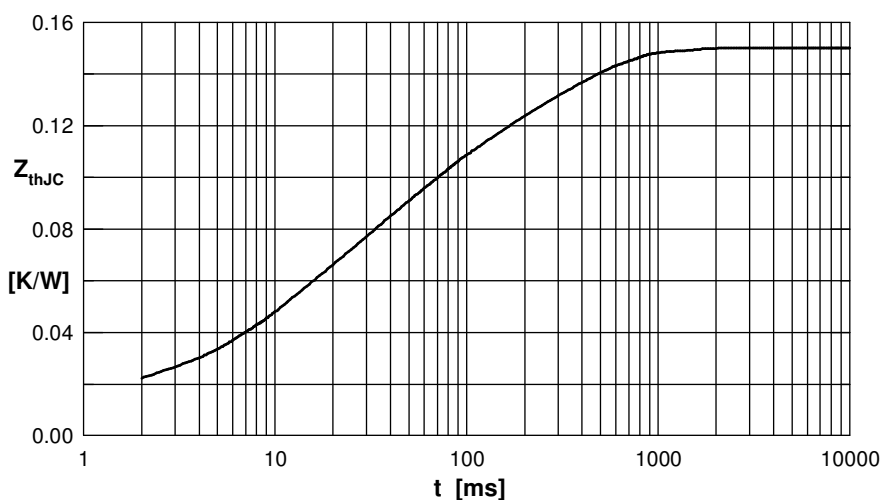


Fig. 6 Transient thermal impedance junction to case

$R_{thi}$ [K/W]	$t_i$ [s]
0.017	0.01
0.013	0.00001
0.02	0.01
0.05	0.045
0.05	0.3