Schottky Diode

V_{RRM}	=	**100 V**
I_{FAV}	=	**300 A**
V_F	=	**0.88 V**

High Performance Schottky Diode
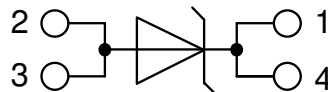Low Loss and Soft Recovery
Single Diode

Part number

DSA300I100NA
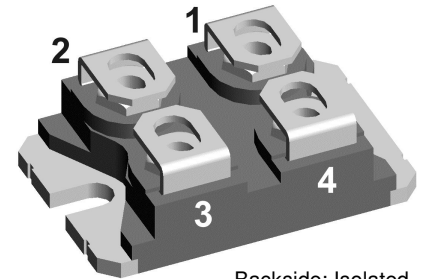
Backside: Isolated

U E72873

Features / Advantages:

● Very low Vf
● Extremely low switching losses
● Low Irm 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

Schottky | | | | | | **Ratings** | | |

Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage	T_{VJ} = 25°C				100	V
V_{RRM}	max. repetitive reverse blocking voltage	T_{VJ} = 25°C				100	V
I_R	reverse current, drain current	V_R = 100 V	T_{VJ} = 25°C			3	mA
		V_R = 100 V	T_{VJ} = 150°C			30	mA
V_F	forward voltage drop	I_F = 300 A	T_{VJ} = 25°C			0.99	V
		I_F = 600 A				1.30	V
		I_F = 300 A	T_{VJ} = 125°C			0.88	V
		I_F = 600 A				1.21	V
I_{FAV}	average forward current	T_C = 95°C rectangular d = 0.5	T_{VJ} = 150°C			300	A
V_{F0}	threshold voltage	} for power loss calculation only	T_{VJ} = 150°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°C				830	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			4.80	kA
C_J	junction capacitance	V_R = 12 V f = 1 MHz	T_{VJ} = 25°C		4.86		nF

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20171127b

Package	SOT-227B (minibloc)				Ratings		
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal [1]				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} ≤ 1 mA	3000			V
		t = 1 minute		2500			V

[1] 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

Logo → | IXYS XXXXX ®Ⓤ | ← Part No.
Zyyww   abcd
Assembly Line ↑
DateCode   Assembly Code ↑
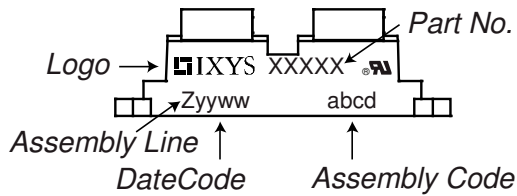
Part description

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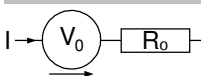I = Single Diode
100 = Reverse Voltage [V]
NA = SOT-227B (minibloc)

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 °C

I → (V₀) — [R₀] —   **Schottky**

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

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Outlines   SOT-227B (minibloc)
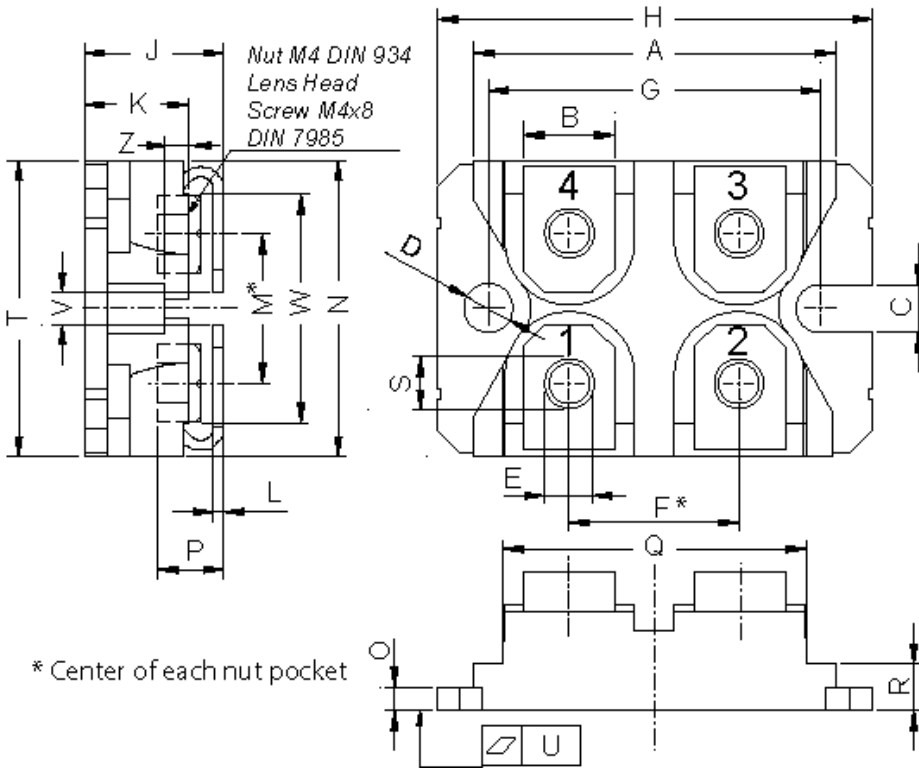
Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	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

Nut M4 DIN 934
Lens Head
Screw M4x8
DIN 7985

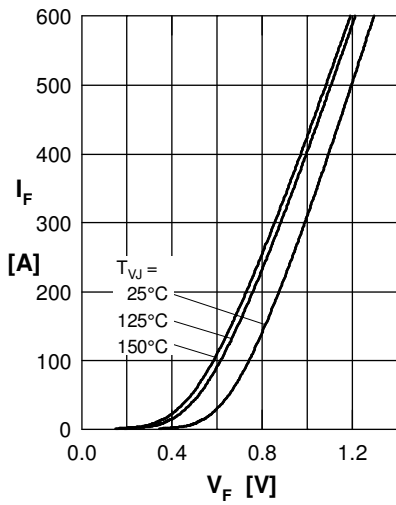* Center of each nut pocket
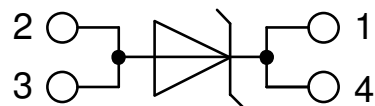
Schottky

Fig. 1 Max. forward voltage
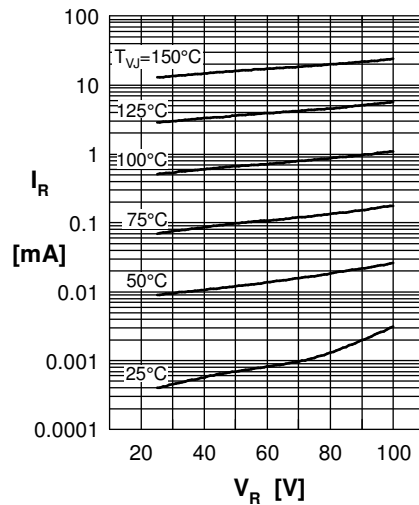drop characteristics

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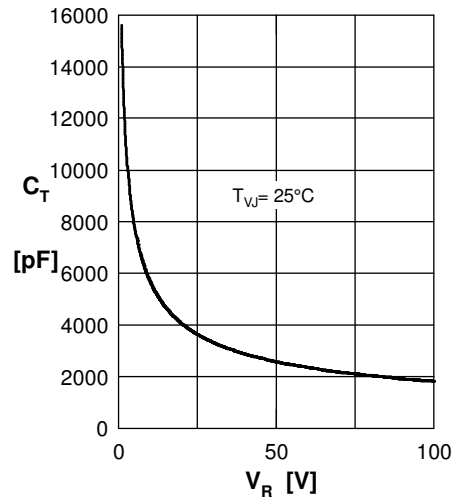I_R vs. reverse voltage V_R

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

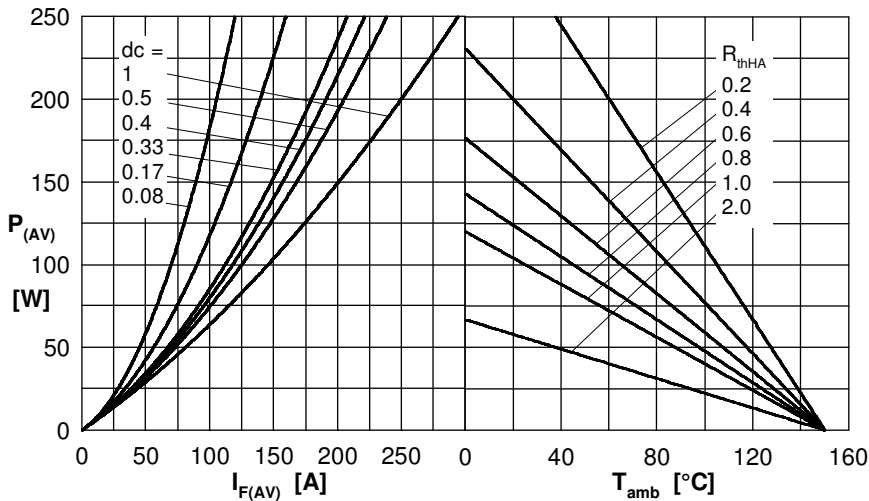Fig. 4a Power dissipation versus direct output current
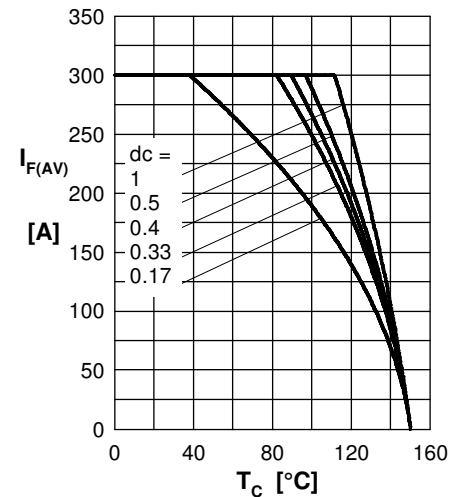Fig. 4b and ambient temperature

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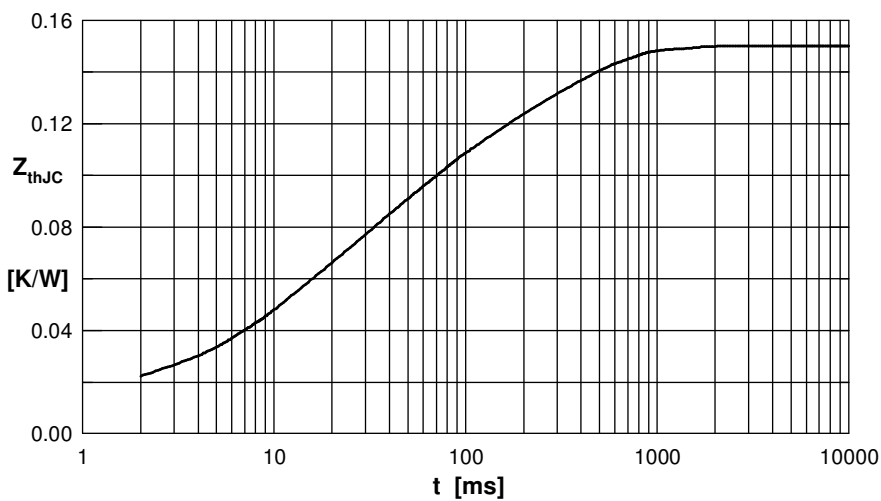$I_{F(AV)}$ vs. case temp. T_C

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

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