preliminary

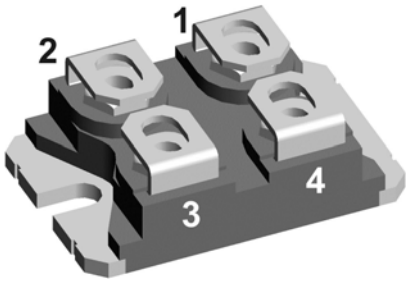
Schottky Diode Gen ²

V_{RRM} = 300 V
I_{FAV} = 300 A
V_F = 0.94 V

High Performance Schottky Diode
Low Loss and Soft Recovery
Single Diode

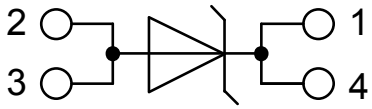
Part number

DSA300I200NA



Backside: Isolated

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

preliminary

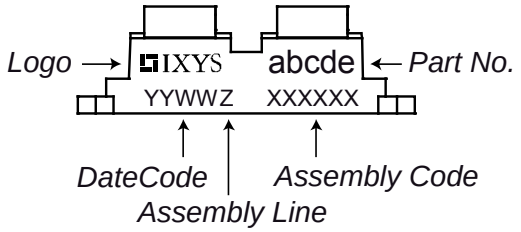
Schottky				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			300	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			300	V
I_R	*reverse current, drain current*	V_R = 300 V	T_{VJ} = 25°C			3	mA
		V_R = 300 V	T_{VJ} = 150°C			30	mA
V_F	*forward voltage drop*	I_F = 300 A	T_{VJ} = 25°C			1.03	V
		I_F = 600 A				1.29	V
		I_F = 300 A	T_{VJ} = 125°C			0.94	V
		I_F = 600 A				1.26	V
I_{FAV}	*average forward current*	T_C = 95°C	T_{VJ} = 150°C			300	A
		rectangular d = 0.5					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			0.61	V
r_F	*slope resistance* }					1.05	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 = 24 V f = 1 MHz	T_{VJ} = 25°C		2.22		nF

preliminary

Package SOT-227B (minibloc)					Ratings			
Symbol	Definition	Conditions			min.	typ.	max.	Unit
I_{RMS}	*RMS current*	per terminal [1]					150	A
T_{stg}	*storage temperature*				-40		150	°C
T_{VJ}	*virtual junction 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
V_{ISOL}	*isolation voltage*	t = 1 second	50/60 Hz, RMS; I_{ISOL} ≤ 1 mA		3000			V
		t = 1 minute			2500			V
$d_{Spp/App}$	*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

[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



Part number

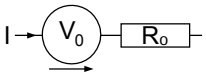
D = Diode
S = Schottky Diode
A = low VF
300 = Current Rating [A]
I = Single Diode
200 = Reverse Voltage [V]
NA = SOT-227B (minibloc)

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSA300I200NA	DSA300I200NA	Tube	10	511258

Similar Part	Package	Voltage class
DSA300I45NA	SOT-227B (minibloc)	45
DSA300I100NA	SOT-227B (minibloc)	100

Equivalent Circuits for Simulation

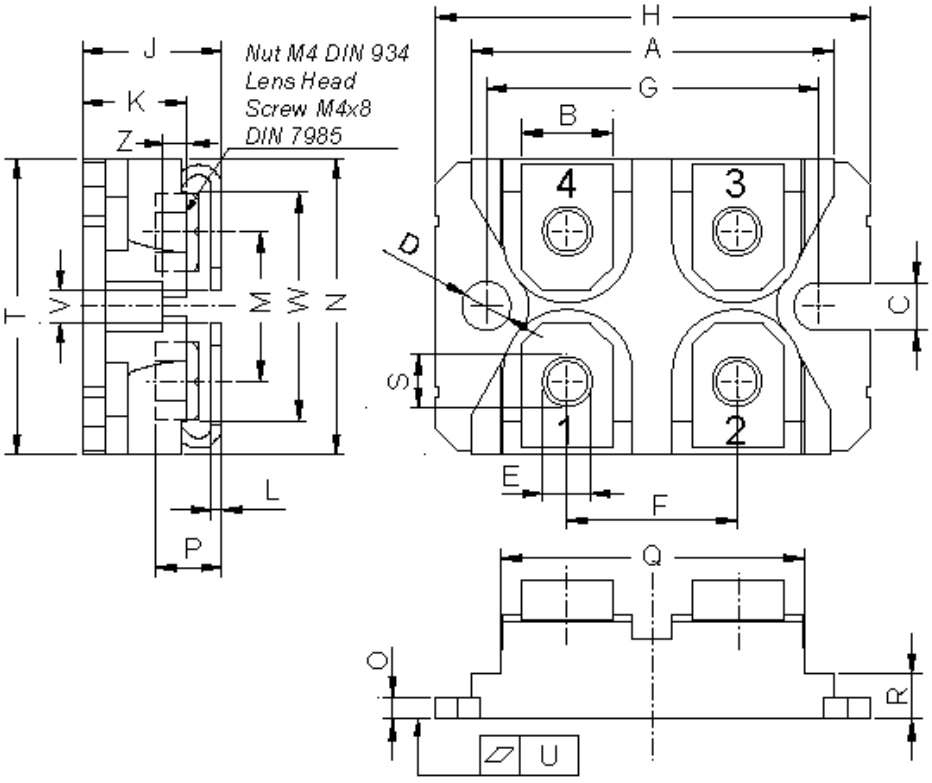
** on die level* T_{VJ} = 150°C



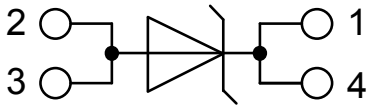
Schottky

$V_{0\,max}$	*threshold voltage*	0.61	V
$R_{0\,max}$	*slope resistance **	0.21	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

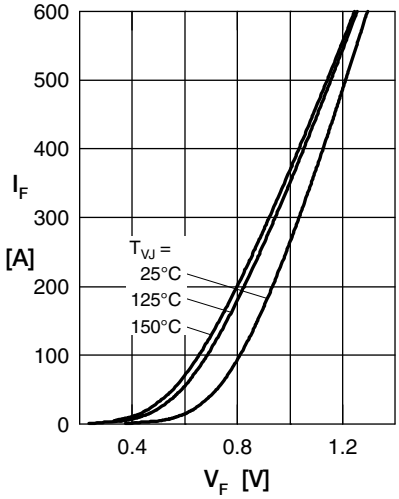


Fig. 1 Max. forward voltage drop characteristics

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

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

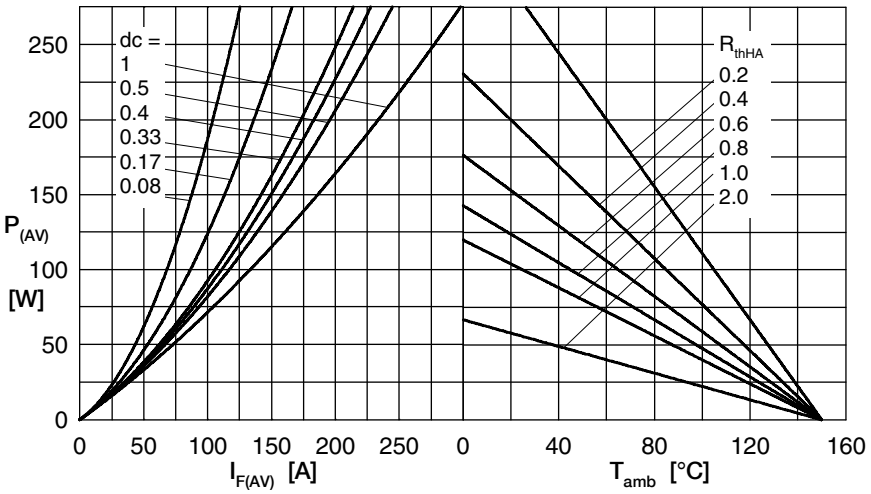


Fig. 4a Power dissipation versus direct output current
Fig. 4b and ambient temperature

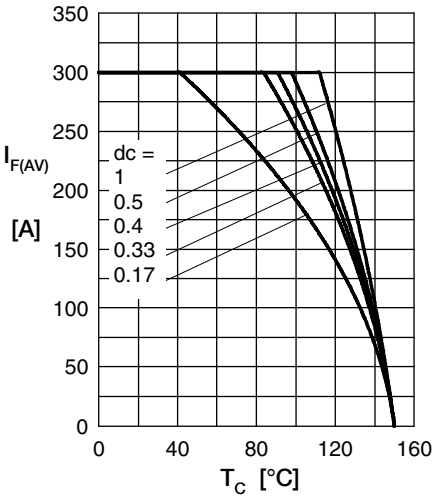
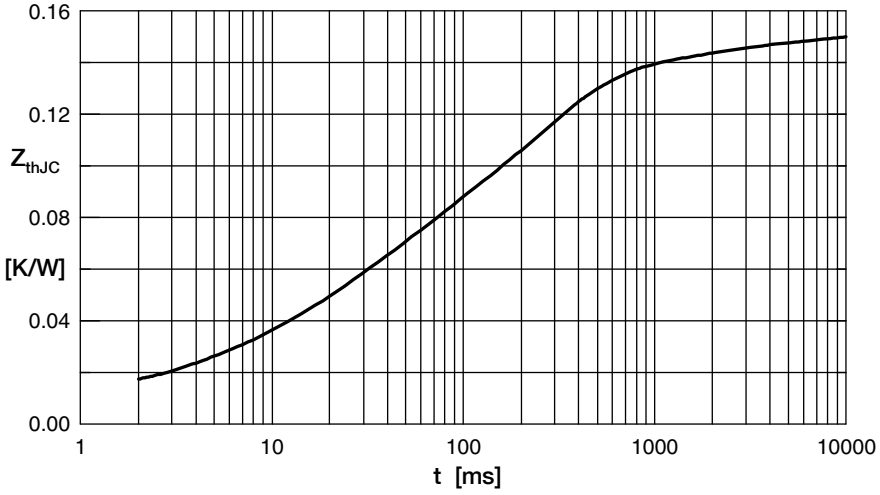


Fig. 5 Average forward current $I_{F(AV)}$ vs. case temp. T_C



R_{thi} [K/W]	t_i [s]
0.02	0.01
0.01	0.00001
0.016	0.015
0.027	0.095
0.077	0.14

Fig. 6 Transient thermal impedance junction to case