

DPS200X1200NA

1200 V, 2 x 100 A Soft Recovery FRED



Description

This is a fast and soft recovery diode with two chips in a SOT-227B package.

Features

- Planar passivated chips
- Low leakage current
- Soft reverse recovery for low EMI/RFI
- UL recognized as an Electrically Isolated Semiconductor Device (file number E72873)
- Avalanche voltage rated for reliable operation

Benefits

- Maximises system efficiency
- Reduces switching stress
- Lowers turn-on losses
- Reduced thermal management requirements

Applications

- Rectifiers in Switch Mode Power Supplies (SMPS)
- Uninterruptible Power Supplies (UPS)

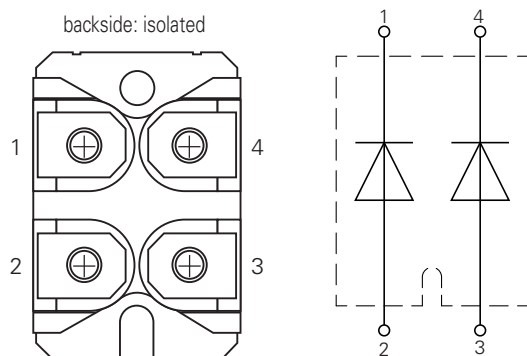
Package SOT-227B (miniBLOC)

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

Product Summary

Characteristic	Value	Unit
V_{RRM}	1200	V
$I_{F(AV)}$	2 x 100	A
V_F	1.82	V

Pinout Diagram SOT-227B (miniBLOC)



1: Cathode; 2: Anode; 3: Anode; 4: Cathode

Maximum Ratings

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
V_{RRM}	Repetitive Peak Reverse Voltage	$T_{vj} = 25^{\circ}\text{C}$	–	–	1200	V
$I_{F(AV)}$	Average Forward Current	$T_c = 50^{\circ}\text{C}$, $T_{vj} = 150^{\circ}\text{C}$, rectangular d = 0.5	–	–	100	A
I_{FSM}	Non-repetitive Surge Forward Current	t = 10 ms, f = 50 Hz, sine wave, $V_R = 0\text{ V}$, $T_{vj} = 45^{\circ}\text{C}$	–	–	1000	A
P_{tot}	Total Power Dissipation	$T_c = 25^{\circ}\text{C}$	–	–	300	W
T_{vj}	Virtual Junction Temperature Range	–	–	–	–55 to +150	$^{\circ}\text{C}$
T_{op}	Operating Temperature Range	–	–	–	–55 to +125	$^{\circ}\text{C}$
T_{stg}	Storage Temperature Range	–	–	–	–55 to +150	$^{\circ}\text{C}$
M_d	Mounting Torque for Screws to Heatsink	–	–	–	1.5	Nm
M_t	Mounting Torque for Terminal Screws	–	1.1	–	1.5	Nm
V_{isol}	Isolation Voltage	t = 1 sec, 50/60 Hz, RMS, $I_{sol} \leq 1\text{ mA}$	3000	–	–	V
		t = 1 minute, 50/60 Hz, RMS, $I_{sol} \leq 1\text{ mA}$	2500	–	–	V

Electrical Characteristics – Static

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
I_R	Reverse Current	$V_R = 1200\text{ V}$, $T_{vj} = 25^{\circ}\text{C}$	–	–	100	μA
		$V_R = 1200\text{ V}$, $T_{vj} = 150^{\circ}\text{C}$	–	–	10	mA
V_F	Forward Voltage	$I_F = 100\text{ A}$; Pulse, $T_{vj} = 25^{\circ}\text{C}$	–	1.6	1.9	V
		$I_F = 200\text{ A}$; Pulse, $T_{vj} = 25^{\circ}\text{C}$	–	1.9	2.13	
		$I_F = 100\text{ A}$; Pulse, $T_{vj} = 150^{\circ}\text{C}$	–	1.4	1.61	
		$I_F = 200\text{ A}$; Pulse, $T_{vj} = 150^{\circ}\text{C}$	–	1.8	1.96	
$V_{(TO)}$	Threshold Voltage	$T_{vj} = 150^{\circ}\text{C}$	–	–	1.25	V
r_T	Slope Resistance	$T_{vj} = 150^{\circ}\text{C}$	–	–	3.55	m Ω
C_j	Junction Capacitance	$V_R = 400\text{ V}$, f = 100 kHz, $T_{vj} = 150^{\circ}\text{C}$	–	67	–	pF

Electrical Characteristics – Dynamic

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
t_{rr}	Reverse Recovery Time	$I_F = 100\text{ A}$, $V_R = 600\text{ V}$, $-di_F/dt = 600\text{ A}/\mu\text{s}$, $T_{vj} = 25^{\circ}\text{C}$	–	314	–	ns
		$I_F = 100\text{ A}$, $V_R = 600\text{ V}$, $-di_F/dt = 600\text{ A}/\mu\text{s}$, $T_{vj} = 100^{\circ}\text{C}$	–	424	–	ns

Thermal Specifications

Symbol	Characteristics	Maximum Value	Units
$R_{th(j-c)}$	Maximum Thermal Resistance, Junction to Case	0.42	K/W

Package SOT-227B (miniBLOC)

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
G	Weight	–	–	30	–	g

Characteristic Curves

Fig. 1. Typical Forward Characteristics

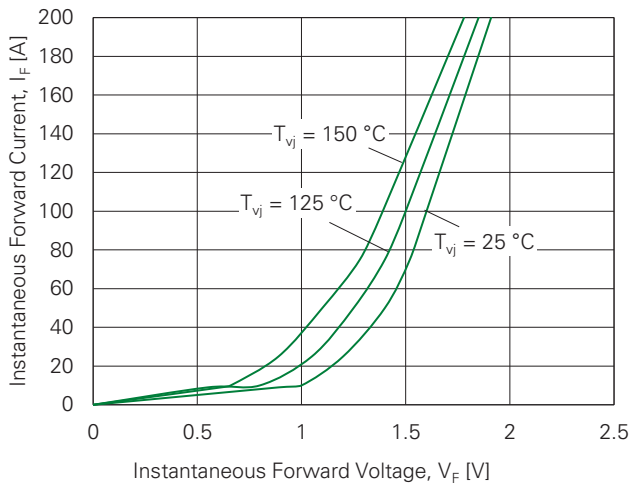
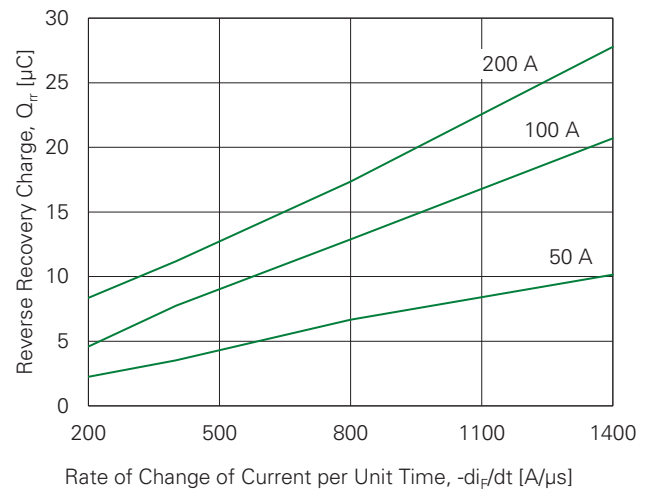
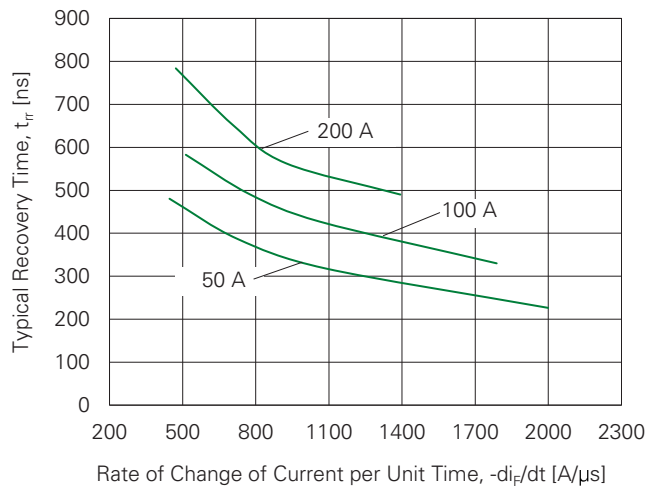
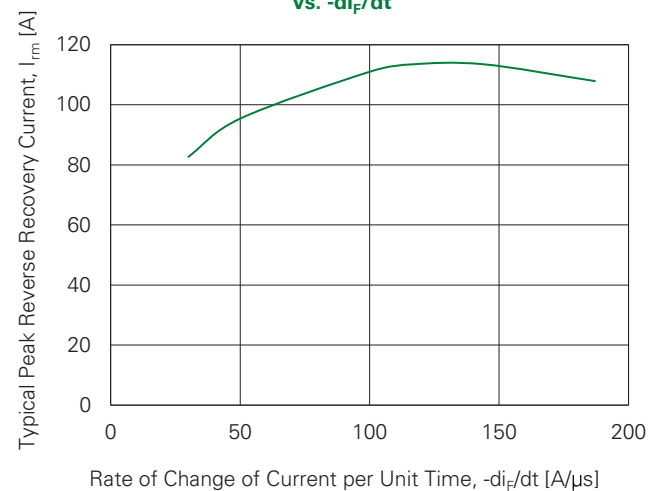
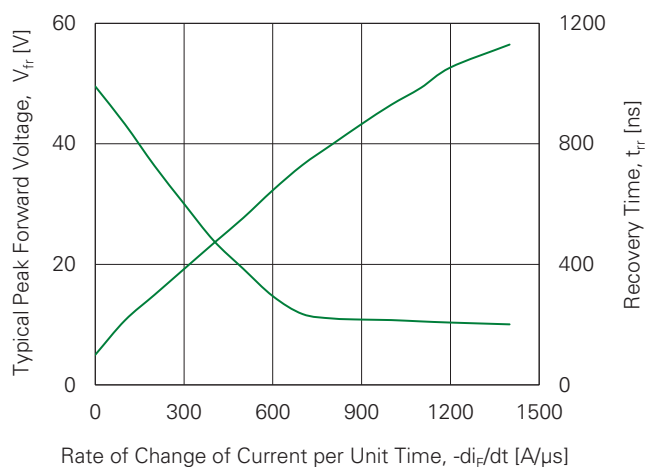
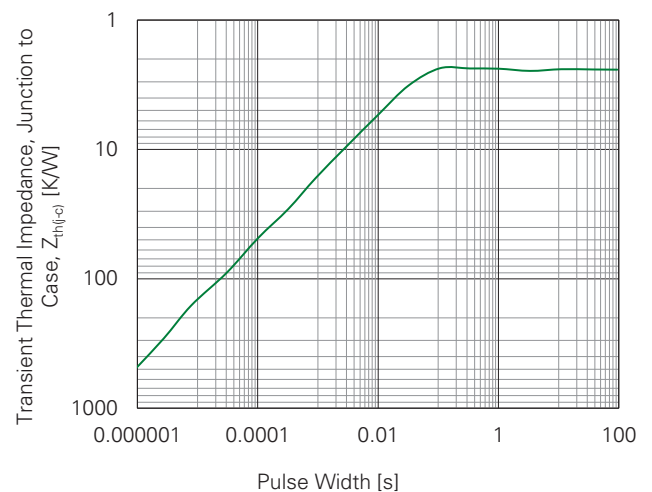
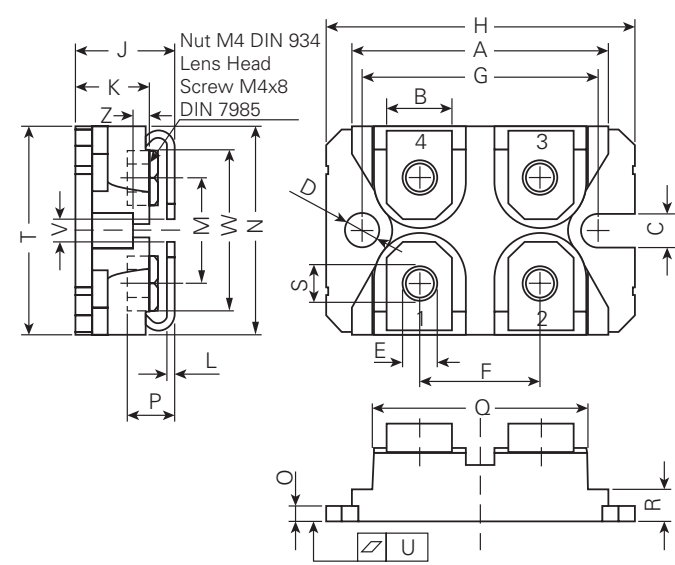
Fig. 2. Typical Reverse Recovery Charge vs. $-di_F/dt$ Fig. 3. Typical Recovery Time vs. $-di_F/dt$ Fig. 4. Typical Peak Reverse Recovery Current vs. $-di_F/dt$ Fig. 5. Typical Peak Forward Voltage and Recovery Time vs. $-di_F/dt$ 

Fig. 6. Transient Thermal Impedance

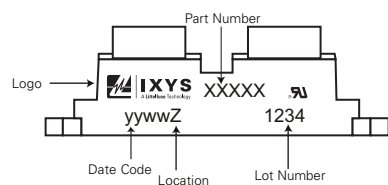


Part Outline Drawing SOT-227B (miniBLOC)



Symbol	Millimeters		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

Part Number and Marking



- D = Diode
- P = FRED
- S = Fast
- 200 = Current (200 A)
- X = Parallel Legs
- 1200 = Voltage (1200 V)
- NA = SOT-227B (miniBLOC)
- yy = Year
- ww = Work Week
- Z = Plant Location Code
- xxxxx = Lot Number

Ordering Information

Part Number	Marking	Packing Mode	Quantity
DPS200X1200NA	DPS200X1200NA	Tube	10 pcs/ tube

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