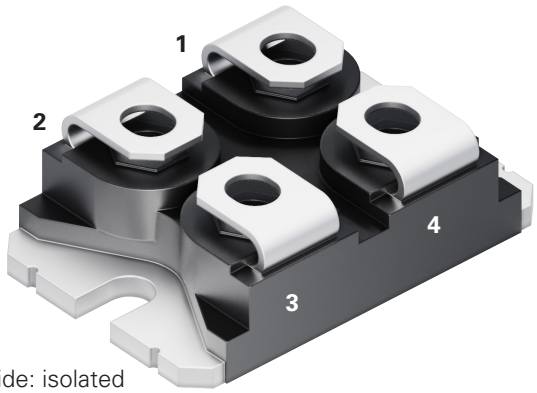
DSEI2x101-06A

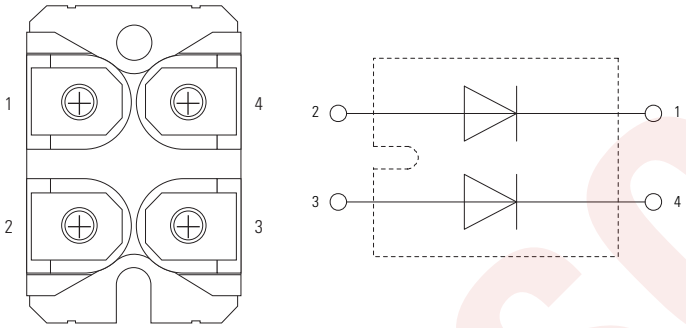
600 V, 2x96 A FRED

RoHS E72873



Backside: isolated

Pinout Diagram SOT-227 (minibloc)



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

Description

The DSEI2x101-06A is a 600 V, dual 96 A fast recovery epitaxial diode designed for high-frequency power conversion systems. The device combines very short recovery time, soft recovery behaviour, and low reverse recovery current to reduce switching losses and EMI. Its isolated SOT-227B package with DCB technology supports effective thermal management and reliable operation in demanding industrial power electronics environments.

Features

- Short reverse recovery time
- Soft recovery behaviour
- Low reverse recovery current
- Avalanche voltage rated
- DCB-isolated SOT-227B package

Benefits

- Minimises switching losses and improves converter efficiency
- Reduces EMI/RFI
- Enhanced robustness against transient operating conditions
- Improved thermal behaviour

Applications

- Antiparallel diode for high frequency switching devices
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Package SOT-227 (minibloc)

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

Product Summary

Characteristic	Value	Unit
V_{RRM}	600	V
$I_{F(AV)}$	2 x 96	A
t_{rr}	35	ns

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Maximum Ratings (T_{vj} = 25 °C, unless otherwise specified)

Symbol	Characteristics	Condition	Value	Units
V_{RRM}	Repetitive Peak Reverse Voltage	T_{vj} = 25 °C	600	V
V_{RSM}	Non-Repetitive Peak Reverse Voltage	T_{vj} = 25 °C	600	V
$I_{F(AV)}$	Average Forward Current	T_c = 70 °C, T_{vj} = 150 °C, rectangular d = 0.5	96	A
I_{FSM}	Non-repetitive Surge Forward Current	t_p = 10 ms, f = 50 Hz, sine wave, V_R = 0 V, T_{vj} = 45 °C	1.20	kA
P_{tot}	Total Power Dissipation	T_c = 25 °C	250	W
T_{stg}	Storage Temperature Range	–	–40 to +150	°C
T_{vj}	Virtual Junction Temperature Range	–	–40 to +150	°C
I_{tRMS}	Terminal RMS Current	–	150	A
V_{isol}	Isolation Withstand Voltage	f = 50/60 Hz, I_{isol} ≤ 1 mA, t = 1 s	3000	V
		f = 50/60 Hz, I_{isol} ≤ 1 mA, t = 1 m	2500	V

Electrical Characteristics – Static (T_{vj} = 25 °C, unless otherwise specified)

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
I_R	Reverse Current	V_R = 600 V, T_{vj} = 25 °C	–	–	3	µA
		V_R = 480 V, T_{vj} = 125 °C	–	–	20	mA
V_F	Forward Voltage	I_F = 100 A; T_{vj} = 25 °C	–	–	1.43	V
		I_F = 200 A; T_{vj} = 25 °C	–	–	1.65	
		I_F = 100 A; T_{vj} = 150 °C	–	–	1.08	
		I_F = 200 A; T_{vj} = 150 °C	–	–	1.33	
$V_{(TO)}$	Threshold Voltage	T_{vj} = 150 °C	–	–	0.70	V
r_T	Slope Resistance	T_{vj} = 150 °C	–	–	4.7	mΩ

Electrical Characteristics – Dynamic (T_{vj} = 25 °C, unless otherwise specified)

Symbol	Characteristics	Conditions		Value			Units
				Min.	Typ.	Max.	
t_{rr}	Reverse Recovery Time	I_F = 100 A, V_R = 300 V, $-di_F/dt$ = 600 A/µs	T_{vj} = 25 °C	–	80	–	ns
			T_{vj} = 100 °C	–	150	–	ns
I_{rrm}	Peak Reverse Recovery Current	I_F = 100 A, V_R = 300 V, $-di_F/dt$ = 600 A/µs	T_{vj} = 25 °C	–	27	–	A
			T_{vj} = 100 °C	–	40	–	A
C_j	Junction Capacitance	V_R = 400 V, f = 1 MHz, T_{vj} = 25 °C		–	107	–	pF

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Thermal Characteristics

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
$R_{th(j-c)}$	Thermal Resistance Junction To Case	–	–	–	0.5	K/W
$R_{th(c-h)}$	Thermal Resistance Case To Heat Sink	–	–	0.10	–	K/W

Package TO-247 2L

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
M_s	Mounting Torque for Screws To Heatsink	–	1.1	–	1.5	Nm
M_t	Mounting Torque for Terminal Screws	–	1.1	–	1.5	Nm
G	Weight	–	–	30	–	g
T_{op}	Operating Temperature	–	-40	–	125	°C
d_s	Creepage Distance Along the Surface	terminal to terminal	3.2	–	–	mm
d_a	Clearance Distance in Air	terminal to backside	6.8	–	–	mm

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Characteristic Curves

Fig. 1. Typical Forward Characteristics

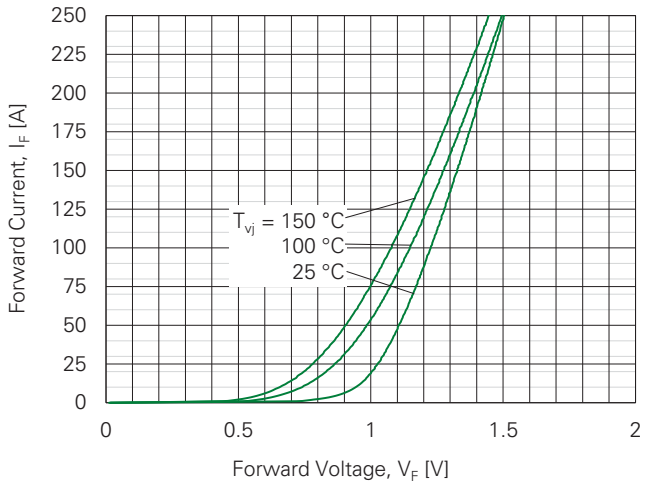


Fig. 2. Typical Reverse Recovery Charge vs. Diode Current Slope

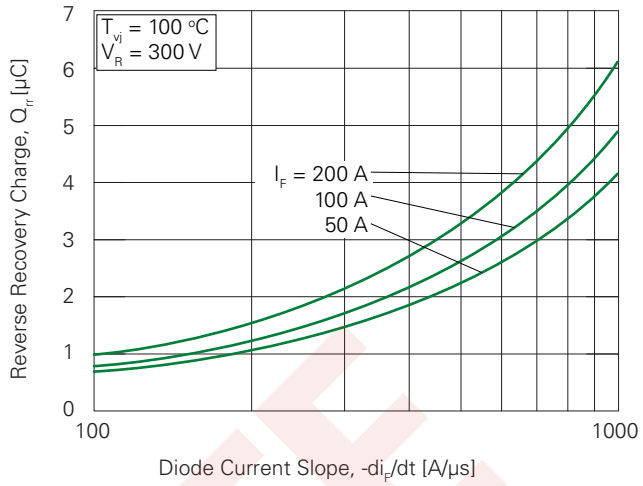


Fig. 3. Typical Peak Reverse Recovery Current vs. Diode Current Slope

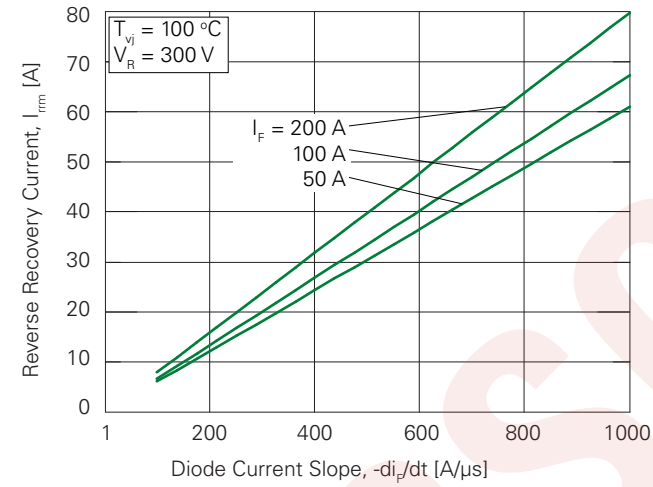


Fig. 4. Typical Dynamic Parameters vs. Virtual Junction Temperature

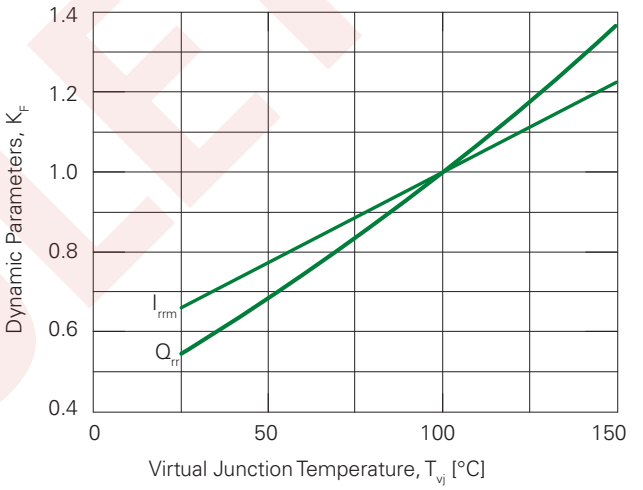


Fig. 5. Typical Reverse Recovery Time vs. Diode Current Slope

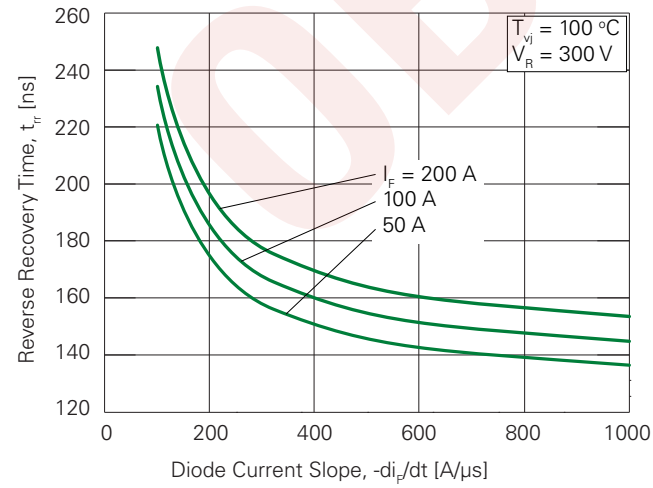
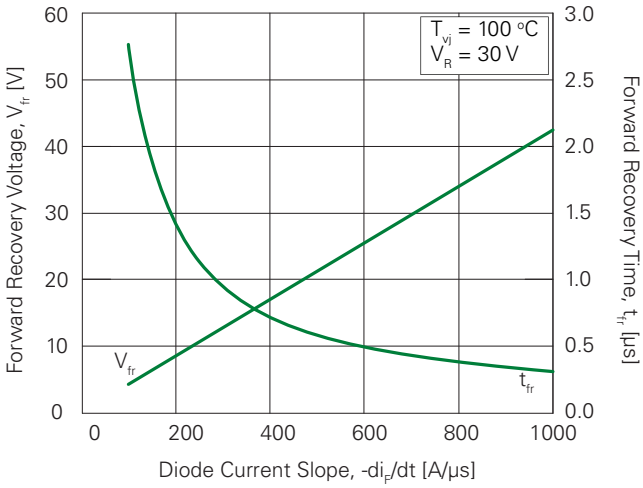


Fig. 6. Typical Peak Forward Recovery Voltage, V_{fr} and Forward Recovery Time, t_{fr} vs. Diode Current Slope

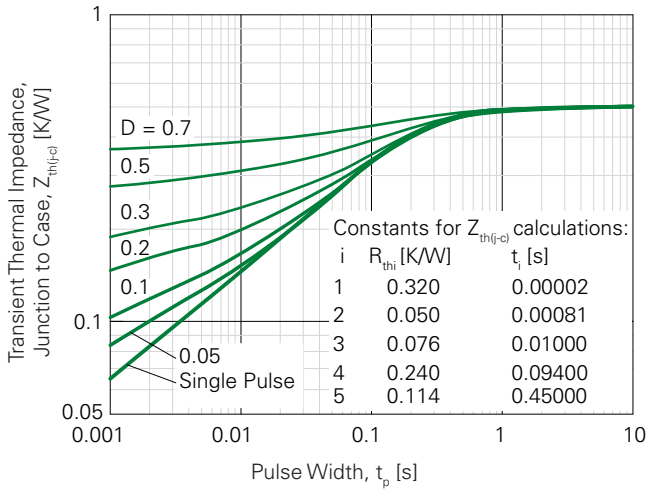


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Characteristic Curves

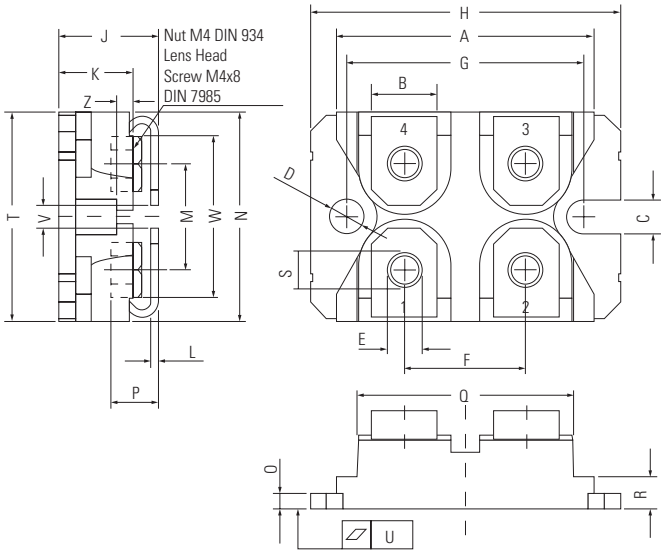
Fig. 7. Typical Transient Thermal Impedance



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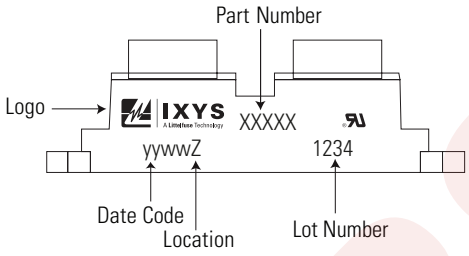
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Part Outline Drawing SOT-227B (miniBLOC)



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

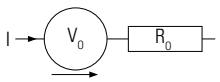
Part Number and Marking



Ordering Information

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity
Standard	DSEI2x101-06A	DSEI2x101-06A	Tube	10

Equivalent Circuits for Simulation (*on die level, T_{vj} = 150 °C)

Symbol	Definition	Fast Diode	Units
			
V_{0max}	Threshold voltage	0.7	V
R_{0max}	Slope resistance*	3.5	mΩ

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