

Schottky Diode

$$V_{RRM} = 45 \text{ V}$$

$$I_{FAV} = 2 \times 120 \text{ A}$$

$$V_F = 0.59 \text{ V}$$

High Performance Schottky Diode
 Low Loss and Soft Recovery
 Parallel legs

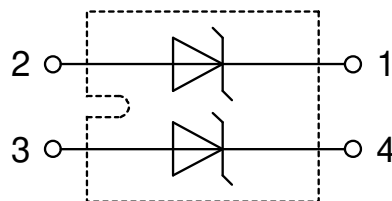
Part number

DSS2x121-0045B



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

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Schottky				Ratings				
Symbol	Definition	Conditions		min.	typ.	max.	Unit	
V_{RSM}	max. non-repetitive reverse blocking voltage					45	V	
V_{RRM}	max. repetitive reverse blocking voltage					45	V	
I_R	reverse current, drain current	$V_R = 45\text{ V}$	$T_{VJ} = 25^\circ\text{C}$			120	mA	
		$V_R = 45\text{ V}$	$T_{VJ} = 100^\circ\text{C}$			500	mA	
V_F	forward voltage drop	$I_F = 120\text{ A}$	$T_{VJ} = 25^\circ\text{C}$			0.62	V	
		$I_F = 240\text{ A}$				0.89	V	
		$I_F = 120\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			0.59	V	
		$I_F = 240\text{ A}$				0.90	V	
I_{FAV}	average forward current	$T_C = 100^\circ\text{C}$ rectangular $d = 0.5$	$T_{VJ} = 150^\circ\text{C}$			120	A	
V_{F0}	threshold voltage	} for power loss calculation only				0.27	V	
r_F	slope resistance					2.6	mΩ	
R_{thJC}	thermal resistance junction to case					0.4	K/W	
R_{thCH}	thermal resistance case to heatsink			0.1			K/W	
P_{tot}	total power dissipation			$T_C = 25^\circ\text{C}$			310	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$		$T_{VJ} = 45^\circ\text{C}$			1.60	kA
C_J	junction capacitance	$V_R = 5\text{ V}$ $f = 1\text{ MHz}$		$T_{VJ} = 25^\circ\text{C}$	5.86		nF	



Package SOT-227B (minibloc)				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
I_{RMS}	RMS current	per terminal			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			3000	V	
		t = 1 minute	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA		2500	V	

Product Marking



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSS2x121-0045B	DSS2x121-0045B	Tube	10	478334

Equivalent Circuits for Simulation

* on die level

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



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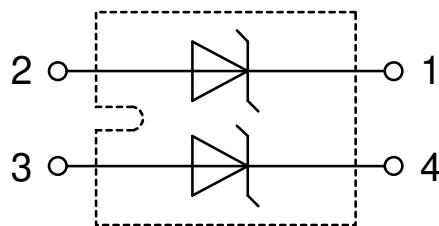
$V_{0\ max}$	threshold voltage	0.27	V
$R_{0\ max}$	slope resistance *	0.8	mΩ



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



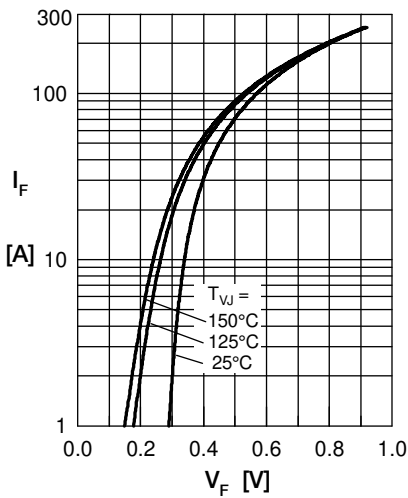
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Fig. 1 Max. forward voltage drop characteristics

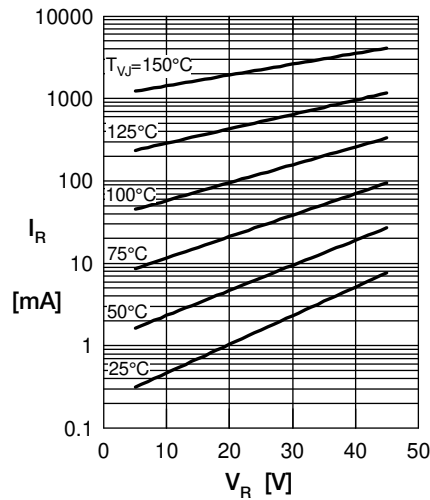
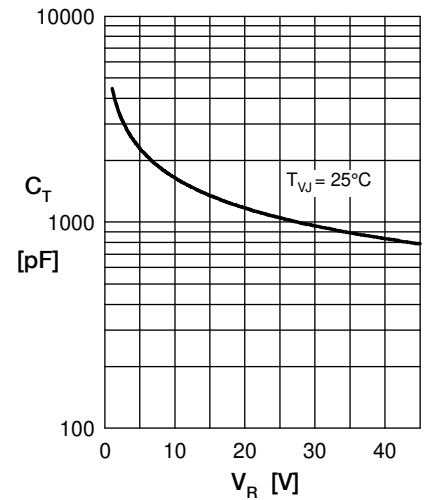
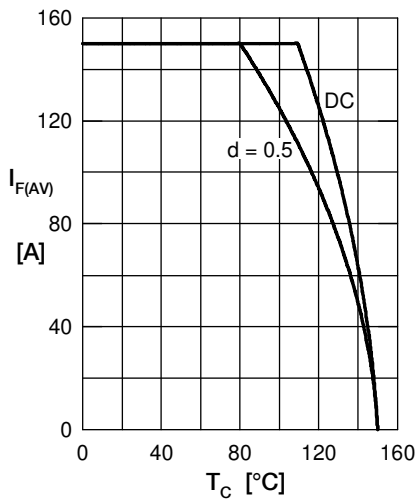
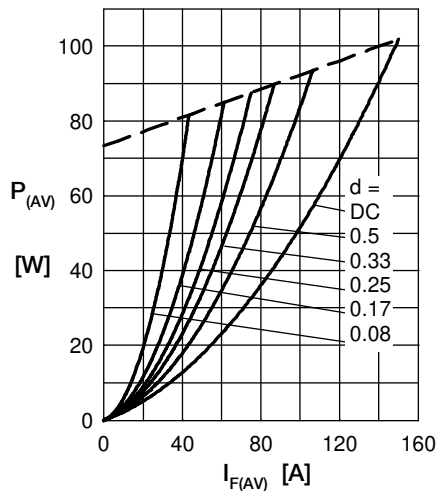

 Fig. 2 Typ. reverse current I_R vs. reverse voltage V_R

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

 Fig. 4 Average forward current $I_{F(AV)}$ vs. case temp. T_C


Fig. 5 Forward power loss characteristics

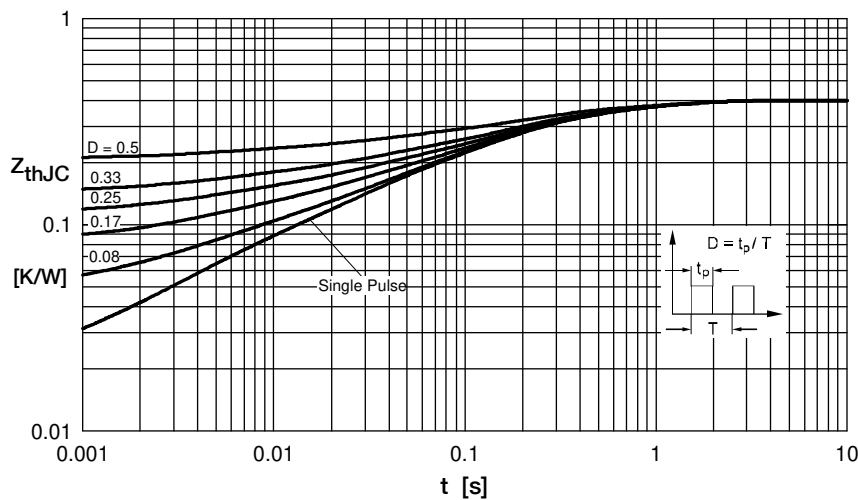


Fig. 6 Transient thermal impedance junction to case at various duty cycles

Note: All curves are per diode