

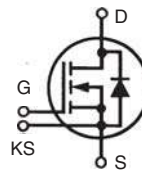
# Trench Power MOSFET

Very low  $R_{DS(on)}$

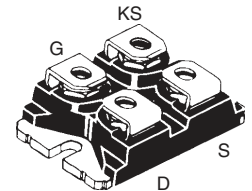
$$V_{DSS} = 100 \text{ V}$$

$$I_{D25} = 280 \text{ A}$$

$$R_{DS(on)} = 3.9 \text{ m}\Omega \text{ (typ.)}$$



**SOT-227 B,  
miniBLOC**



G = Gate  
S = Source

D = Drain  
KS = Kelvin Source

Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	100	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	280	A
$I_{D90}$	$T_C = 90^\circ\text{C}$	210	A
$I_{D(RMS)}$	Package lead current limit	150	A
$P_D$	$T_C = 25^\circ\text{C}$	770	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		175	$^\circ\text{C}$
$T_{stg}$		-55 ... +175	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz, RMS, $t = 1 \text{ min}$ $I_{ISOL} \leq 1 \text{ mA}$ , $t = 1 \text{ s}$	2500 3000	V~ V~
$M_d$	Mounting torque Terminal connection torque	1.5/13 Nm/lb.in. 1.5/13 Nm/lb.in.	
<b>Weight</b>		30	g

## Features

- trench MOSFET
- very low on state resistance  $R_{DS(on)}$
- fast switching
- fast body diode
- industry standard outline
- isolated package
- high reliability

## Applications

- automotive
- converters for fuel cells
- AC drives
- choppers to replace series dropping resistors used for motors, heaters etc.
- DC-DC converters
- electronic switches
- replacing relays and fuses
- power supplies
- solar inverters
- battery supplied systems
- choppers or inverters for motor control in hand tools
- battery chargers

## Advantages

- Easy to mount
- Space savings
- High power density

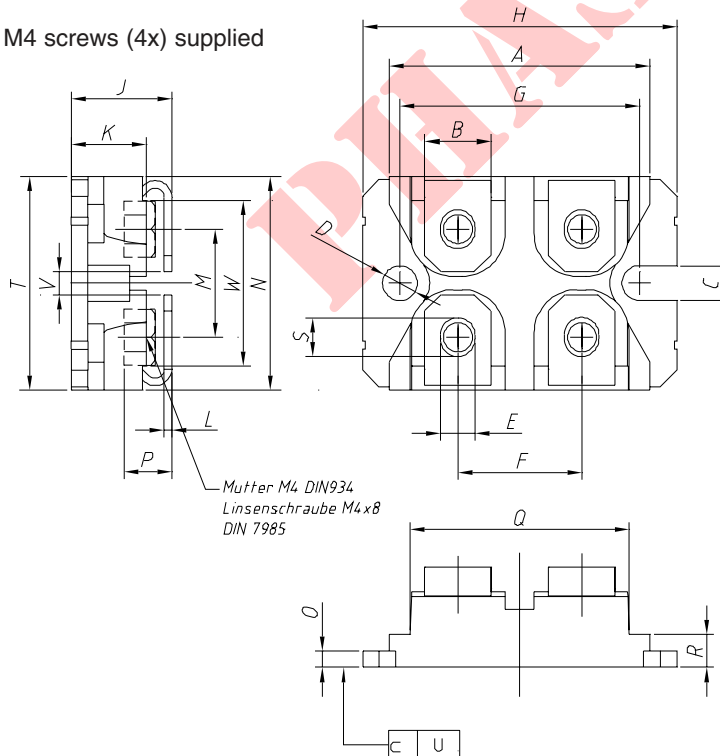
Symbol	Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$ , $I_D = 140 \text{ A}$ Pulse test, $t \leq 300 \mu\text{s}$ , duty cycle $d \leq 2 \%$		3.9	5 m $\Omega$
$V_{GH(th)}$	$V_{DS} = V_{GS}$ , $I_D = 4 \text{ mA}$	2		4 V
$I_{DSS}$	$V_{DS} = V_{DSS}$ , $T_J = 25^\circ\text{C}$ $V_{GS} = 0 \text{ V}$ , $T_J = 125^\circ\text{C}$			400 $\mu\text{A}$ 2 mA
$I_{GSS}$	$V_{GS} = \pm 20 V_{DC}$ , $V_{DS} = 0$			$\pm 400 \text{ nA}$

Symbol	Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>g<sub>fs</sub></b>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 100 A, pulse test		220	S
<b>C<sub>ISS</sub></b>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		18	nF
<b>C<sub>OSS</sub></b>			2.2	nF
<b>C<sub>rSS</sub></b>			1.2	nF
<b>t<sub>d(on)</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 30 V, I <sub>D</sub> = 100 A R <sub>G</sub> = 2.5 Ω (external)		35	ns
<b>t<sub>r</sub></b>			85	ns
<b>t<sub>d(off)</sub></b>			150	ns
<b>t<sub>f</sub></b>			70	ns
<b>Q<sub>g(on)</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 80 V, I <sub>D</sub> = 100 A		440	nC
<b>Q<sub>gs</sub></b>			75	nC
<b>Q<sub>gd</sub></b>			180	nC
<b>R<sub>thJC</sub></b>				0.19 K/W
<b>R<sub>thCH</sub></b>	with heat transfer paste		0.05	K/W

Symbol	Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>I<sub>S</sub></b>	V <sub>GS</sub> = 0 V			380 A
<b>I<sub>SM</sub></b>	Repetitive, pulse width limited by T <sub>JM</sub>			570 A
<b>V<sub>SD</sub></b>	I <sub>F</sub> = 280 A, V <sub>GS</sub> = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			1.70 V
<b>t<sub>rr</sub></b>	I <sub>F</sub> = 300 A, V <sub>R</sub> = 30 V -di/dt = 400 A/μs		80	ns
<b>I<sub>RM</sub></b>			35	A

**miniBLOC, SOT-227 B**

M4 screws (4x) supplied



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	.307	.323
C	4.09	4.29	.161	.169
D	4.09	4.29	.161	.169
E	4.09	4.29	.161	.169
F	14.91	15.11	.587	.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.489	1.505
J	11.68	12.22	.460	.481
K	8.92	9.60	.351	.378
L	0.76	0.84	.030	.033
M	12.60	12.85	.496	.506
N	25.15	25.42	.990	1.001
O	1.98	2.13	0.78	.084
P	4.95	5.97	.195	.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	.155	.174
S	4.72	4.85	.186	.191
T	24.59	25.07	.968	.987
U	-0.05	0.10	-.002	.004
V	3.30	4.57	.130	.180
W	19.81	21.08	.780	.830

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