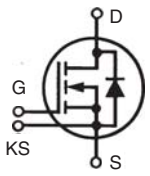
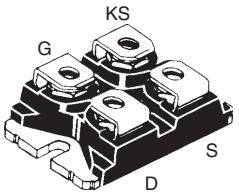
Trench Power MOSFET

Very low $R_{DS(on)}$

V_{DSS} = 100 V
I_{D25} = 280 A
$R_{DS(on)}$ = 3.9 mΩ (typ.)



SOT-227 B, miniBLOC



G = Gate D = Drain
S = Source KS = Kelvin Source

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

Symbol	Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 140 A Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %		3.9	5	mΩ
$V_{GH(th)}$	$V_{DS} = V_{GS}$, I_D = 4 mA	2		4	V
I_{DSS}	$V_{DS} = V_{DSS}$, T_J = 25°C			400	µA
	V_{GS} = 0 V, T_J = 125°C			2	mA
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0			±400	nA

Features

- trench MOSFET
- very low on state resistance R_{DSon}
- 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

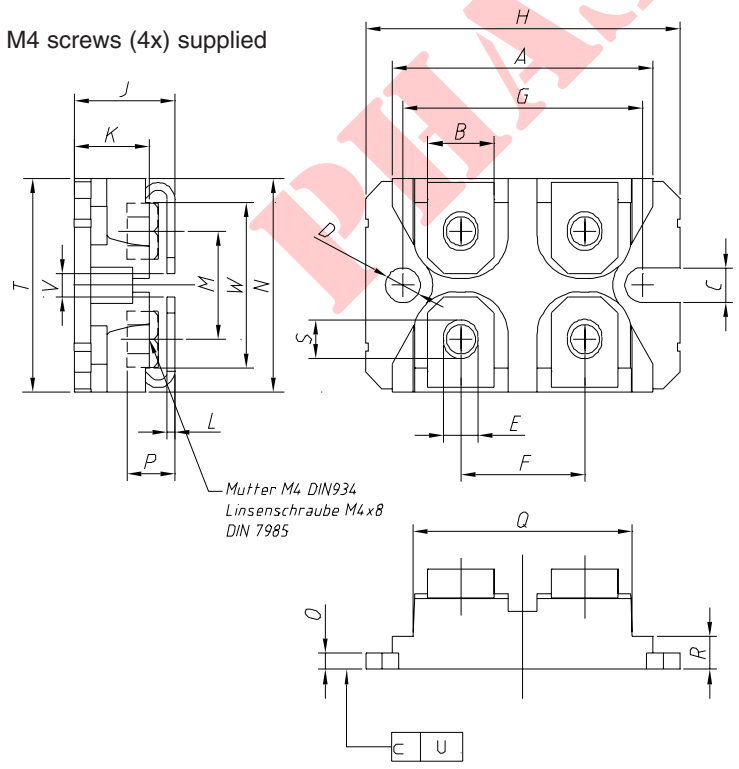
444

Symbol	Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} = 10 V, I_D = 100 A, pulse test		220		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		18		nF
C_{oss}			2.2		nF
C_{rss}			1.2		nF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 30 V, I_D = 100 A R_G = 2.5 Ω (external)		35		ns
t_r			85		ns
$t_{d(off)}$			150		ns
t_f			70		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 80 V, I_D = 100 A		440		nC
Q_{gs}			75		nC
Q_{gd}			180		nC
R_{thJC}				0.19	K/W
R_{thCH}	with heat transfer paste		0.05		K/W

Source-Drain Diode

Symbol	Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V			380	A
I_{SM}	Repetitive, pulse width limited by T_{JM}			570	A
V_{SD}	I_F = 280 A, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %			1.70	V
t_{rr}	I_F = 300 A, V_R = 30 V -di/dt = 400 A/µs		80		ns
I_{RM}			35		A

miniBLOC, SOT-227 B



Dim.	Millimeter Min.	Max.	Inches 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
0	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

IXYS reserves the right to change limits, test conditions, and dimensions.

444