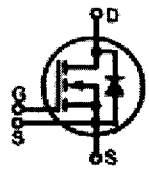
MegaMOS™FET

IXTN 79N20

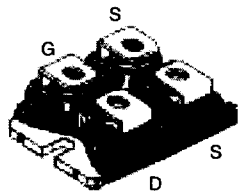
V_{DSS} = 200 V
I_{D25} = 85 A
$R_{DS(on)}$ = 25 mΩ

N-Channel Enhancement Mode



Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25° C to 150° C		200	V
V_{DGR}	T_J = 25° C to 150° C; R_{GS} = 10 kΩ		200	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25° C		85	A
I_{DM}	T_C = 25° C, pulse width limited by T_{JM}		340	A
P_D	T_C = 25° C		400	W
T_J			-40 ... +150	°C
T_{JM}			150	°C
T_{stg}			-40 ... +150	°C
V_{ISOL}	50/60 Hz	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 (M4)		1.5/13	Nm/lb.in.
Weight			30	g

miniBLOC, SOT-227 B
E153432



G = Gate D = Drain
S = Source
Either Source terminal at miniBLOC can be used as Main or Kelvin Source

Features

- International standard package miniBLOC (ISOTOP compatible)
- Isolation voltage 3000 V~
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Low drain-to-case capacitance (< 50 pF)
- Low package inductance (< 10 nH) - easy to drive and to protect

Symbol	Test Conditions		Characteristic Values (T_J = 25° C, unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 1 mA		200			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 20 mA		2		5	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0				±500	nA
I_{DSS}	V_{DS} = 0.8 • V_{DSS}	T_J = 25° C			400	µA
	V_{GS} = 0 V	T_J = 125° C			2	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 • I_{D25} Pulse test, t ≤300 µs, duty cycle d≤ 2 %				0.025	Ω

Applications

- AC motor speed control
- DC servo and robot drives
- Uninterruptible power systems (UPS)
- Switch-mode and resonant-mode power supplies
- DC choppers

Advantages

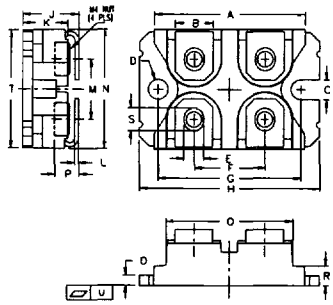
- Easy to mount with 2 screws
- Space savings
- High power density

Symbol	Test Conditions (T$_J$ = 25° C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 • I_{D25}, pulsed	44	58		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		9000		pF
C_{oss}			1600		pF
C_{rss}			600		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 I_{D25} R_G = 1 Ω, (External)			70	ns
t_r				80	ns
$t_{d(off)}$				200	ns
t_f				100	ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 I_{D25}		380	450	nC
Q_{gs}			70	110	nC
Q_{gd}			190	230	nC
R_{thJC}				0.31	K/W
R_{thCK}			0.05		K/W

Source-Drain Diode

Symbol	Test Conditions (T$_J$ = 25° C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
I_S	V_{GS} = 0 V			85	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			340	A
V_{SD}	$I_F = I_S$, V_{GS} = 0 V, Pulse test, t ≤300 µs, duty cycle d≤ 2 %			1.2	V
t_{rr}	$I_F = I_S$, -di/dt = 100 A/µs, V_R = 100 V		400		ns

miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	31.5	31.7	1.241	1.249
B	7.8	8.2	0.307	0.323
C	4.0	-	0.158	-
D	4.1	4.3	0.162	0.169
E	4.1	4.3	0.162	0.169
F	14.9	15.1	0.587	0.595
G	30.1	30.3	1.186	1.193
H	38.0	38.2	1.497	1.505
J	11.8	12.2	0.465	0.481
K	8.9	9.7	0.351	0.382
L	0.75	0.85	0.030	0.033
M	12.6	12.8	0.496	0.504
N	25.2	25.4	0.993	1.001
O	1.95	2.05	0.077	0.081
P	-	5.0	-	0.197

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

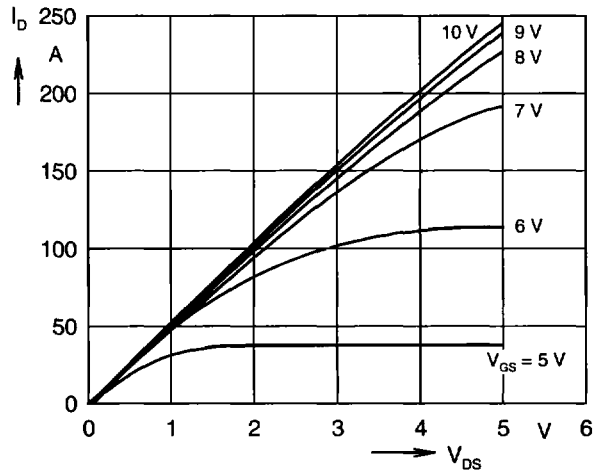


Fig. 1 Typical output characteristics $I_D = f(V_{DS})$

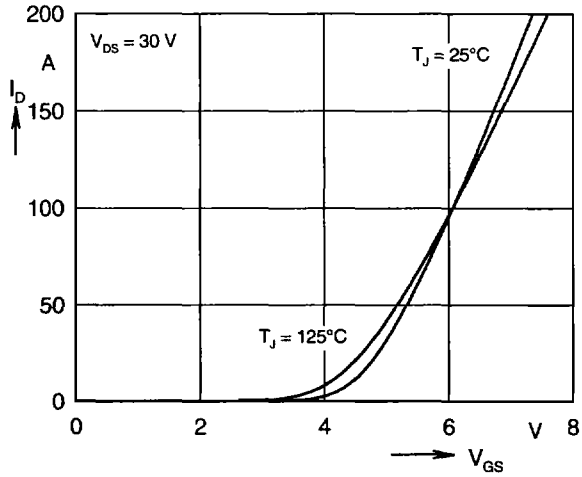


Fig. 2 Typical transfer characteristics $I_D = f(V_{GS})$

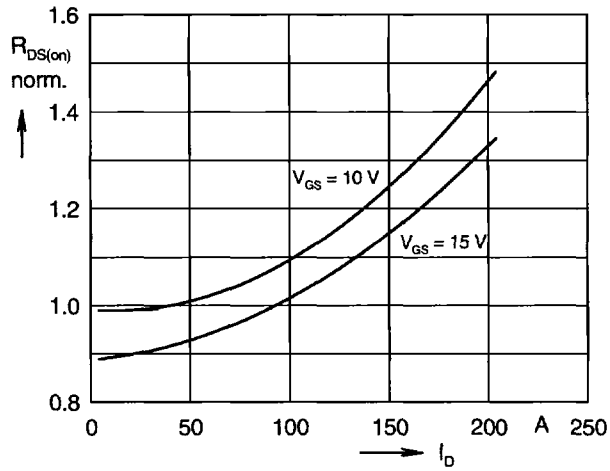


Fig. 3 Typical normalized $R_{DS(on)} = f(I_D)$

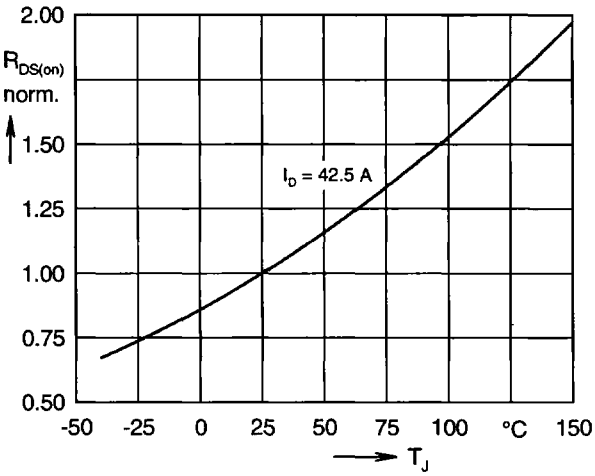


Fig. 4 Typical normalized $R_{DS(on)} = f(T_J)$

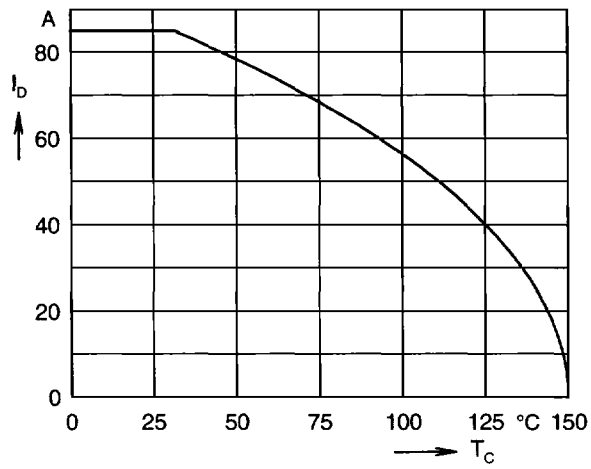


Fig. 5 Continuous drain current $I_D = f(T_C)$

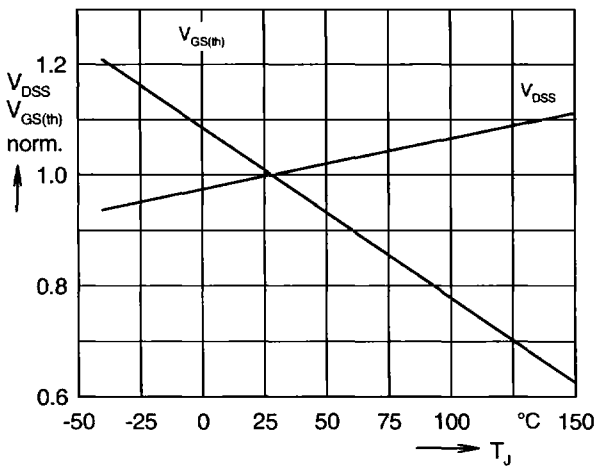


Fig. 6 Typical normalized $V_{DSS} = f(T_J)$, $V_{GS(th)} = f(T_J)$

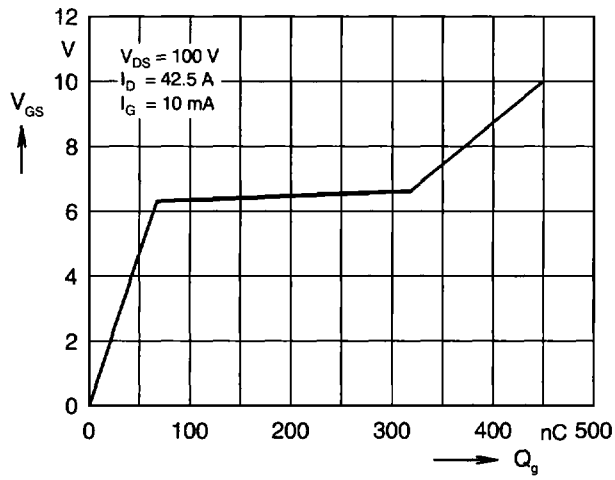


Fig. 7 Typical turn-on gate charge characteristics

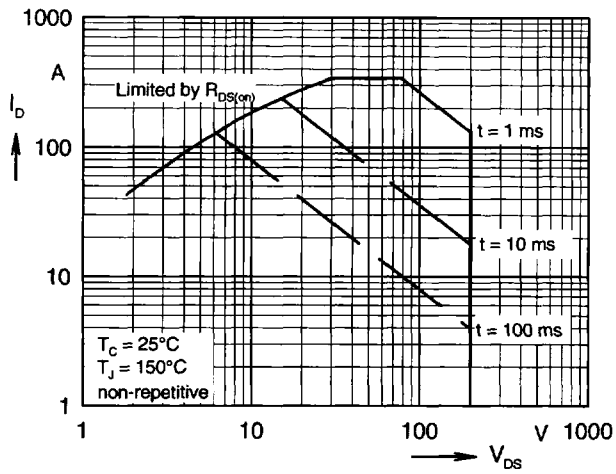


Fig. 8 Forward Safe Operating Area, $I_D = f(V_{DS})$

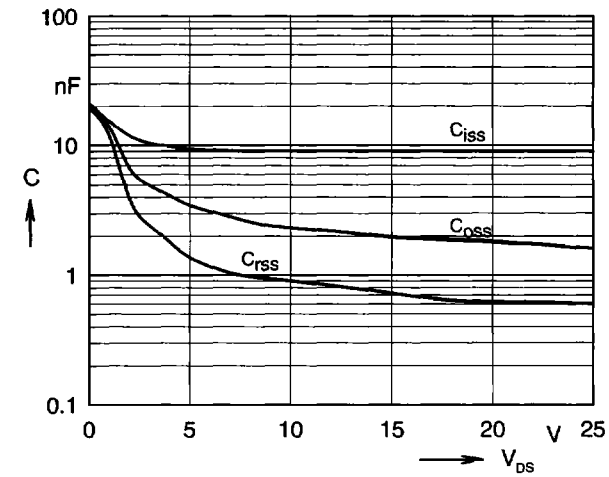


Fig. 9 Typical capacitances $C = f(V_{DS})$, f = 1 MHz

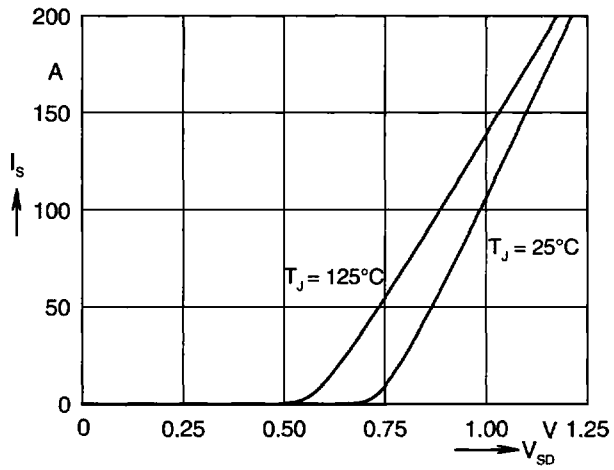


Fig. 10 Typical forward characteristics of reverse diode, $I_S = f(V_{SD})$

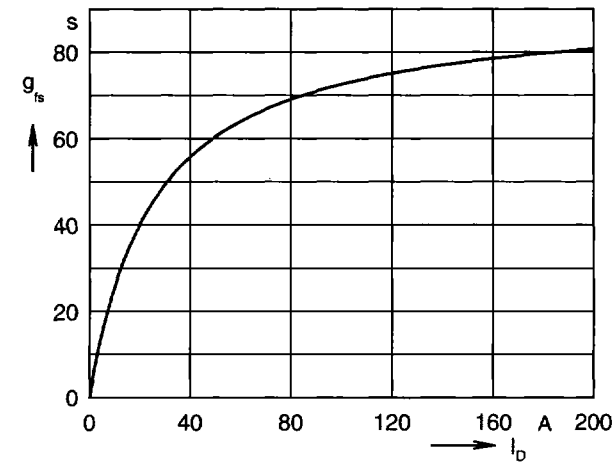


Fig. 11 Typical transconductance $g_{fs} = f(I_D)$

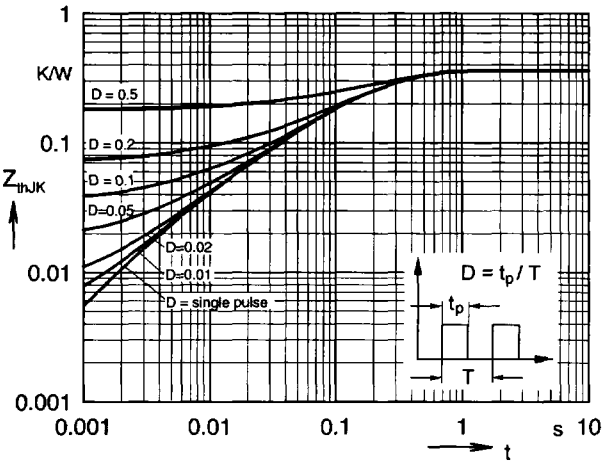


Fig. 12 Transient thermal resistance $Z_{thJK} = f(t_p)$