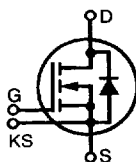


# MegaMOS™ FET

## IXTN79N20

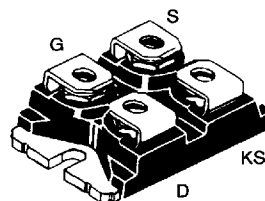
$V_{DSS} = 200 \text{ V}$   
 $I_{D25} = 85 \text{ A}$   
 $R_{DS(on)} = 25 \text{ m}\Omega$

N-Channel Enhancement Mode



Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	200	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 10 \text{ k}\Omega$	200	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	85	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	340	A
$P_D$	$T_C = 25^\circ\text{C}$	400	W
$T_J$		-40 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-40 ... +150	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz	t = 1 min	2500 V~
	$I_{ISOL} \leq 1 \text{ mA}$	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



G = Gate, D = Drain,  
 S = Source, KS = 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 ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0 \text{ V}$ , $I_D = 1 \text{ mA}$	200		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 20 \text{ mA}$	2		V
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}_{DC}$ , $V_{DS} = 0$			$\pm 500 \text{ nA}$
$I_{DSS}$	$V_{DS} = 0.8 \cdot V_{DSS}$			400 $\mu\text{A}$
	$V_{GS} = 0 \text{ V}$			2 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$ , $I_D = 0.5 \cdot I_{D25}$ Pulse test, $t \leq 300 \mu\text{s}$ , duty cycle $d \leq 2\%$			0.025 $\Omega$

### Applications

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

### Advantages

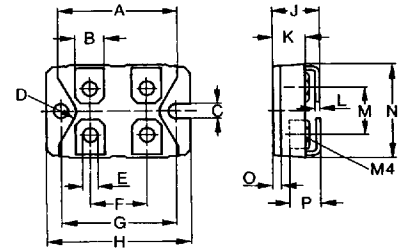
- Easy to mount with 2 screws
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$ , pulsed	47	58	S
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		9	nF
$C_{oss}$			1.6	nF
$C_{rss}$			0.6	nF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 I_{D25}$ $R_G = 1\ \Omega$ , (External)			70 ns
$t_r$				80 ns
$t_{d(off)}$				200 ns
$t_f$				100 ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 I_{D25}$		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

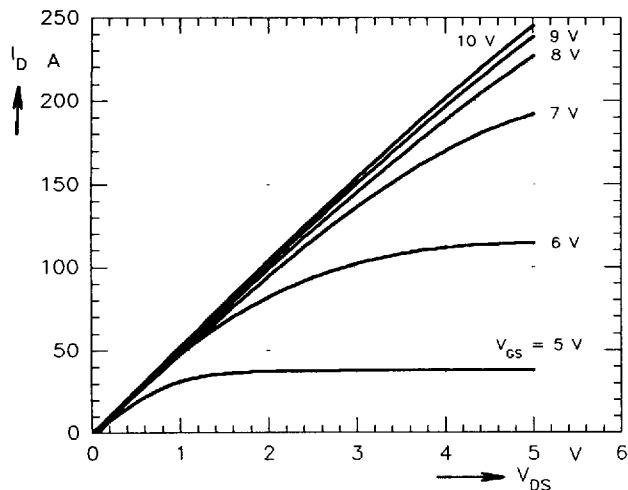
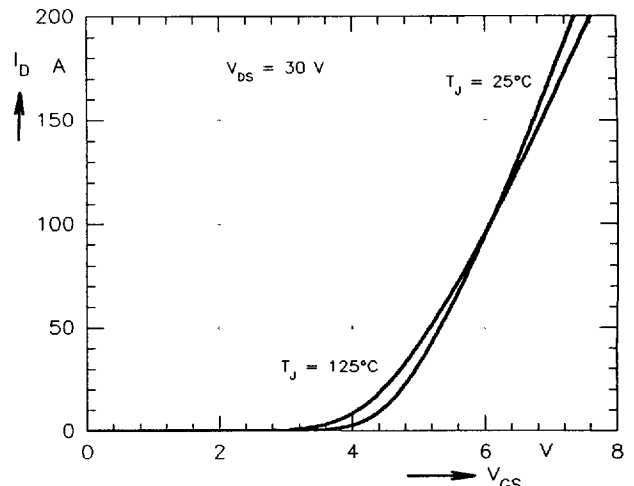
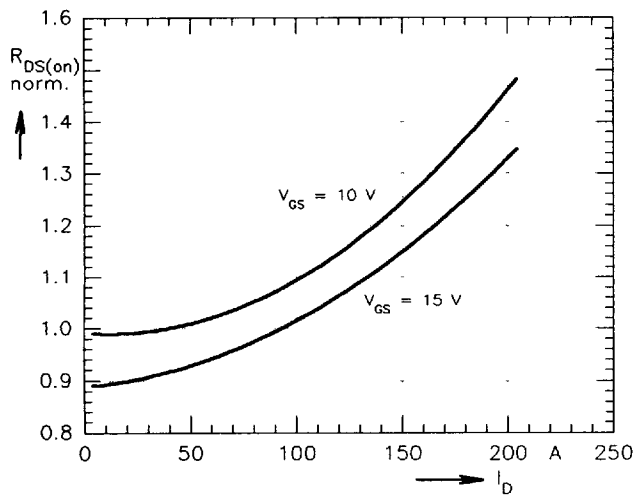
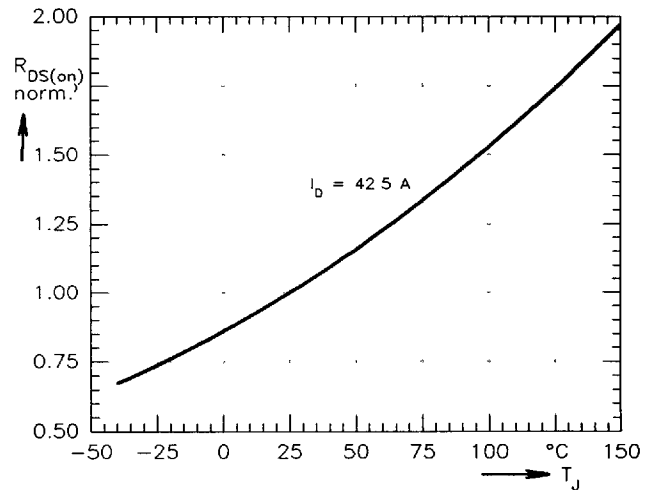
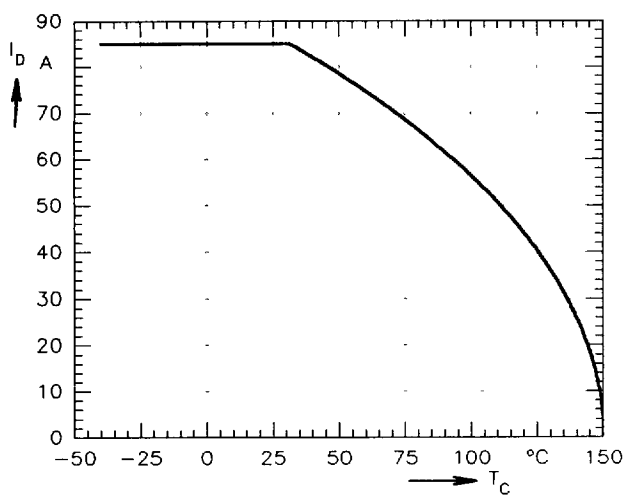
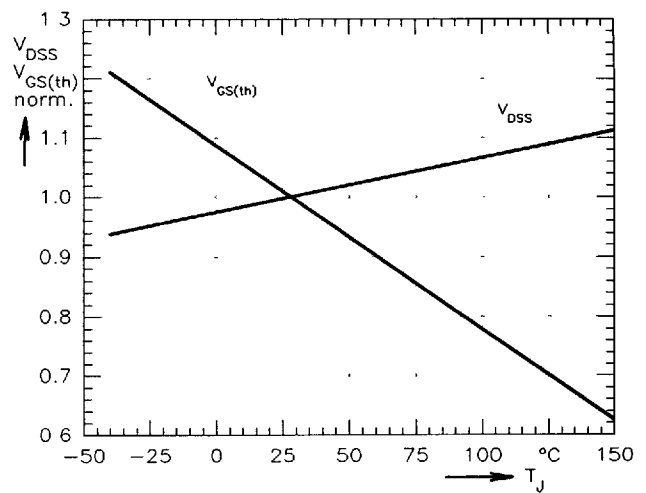
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$I_S$	$V_{GS} = 0$			85 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$			340 A
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$			1.5 V
$t_{rr}$	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$	400		ns

## miniBLOC, SOT 227-B



M4 screws (4x) supplied

Dim	Millimeter		Inches	
	Min	Max	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	9.1	0.351	0.359
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

Fig. 1 Typ. output characteristics,  $I_D = f(V_{DS})$ Fig. 2 Typ. transfer characteristics,  $I_D = f(V_{GS})$ Fig. 3 Typ. normalized  $R_{DS(on)} = f(I_D)$ Fig. 4 Typ. normalized  $R_{DS(on)} = f(T_J)$ Fig. 5 Continuous drain current  $I_D = f(T_C)$ Fig. 6 Typ normalized  $V_{DS} = f(T_J)$ ,  $V_{GS(th)} = f(T_J)$

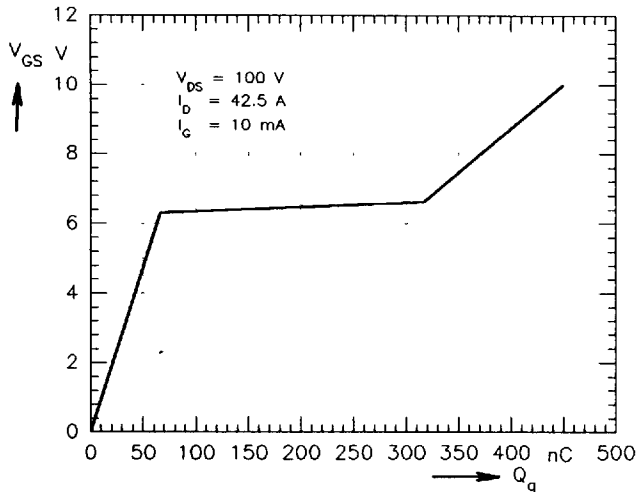


Fig. 7 Typ. turn-on gate charge characteristics,  $V_{GS} = f(Q_g)$

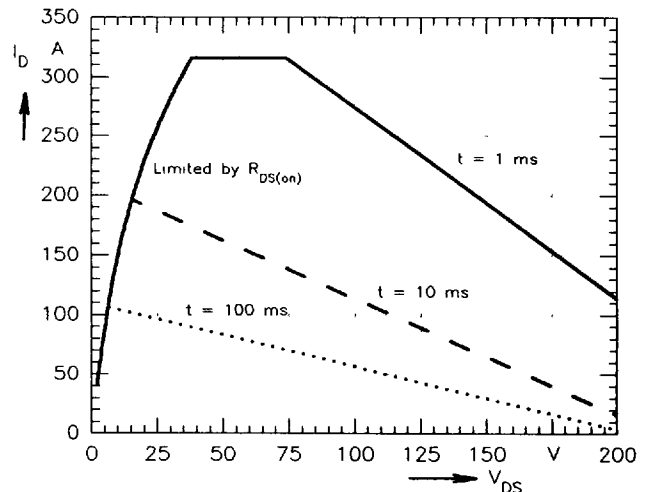


Fig. 8 Forward Bias Safe Operating Area,  $I_D = f(V_{DS})$

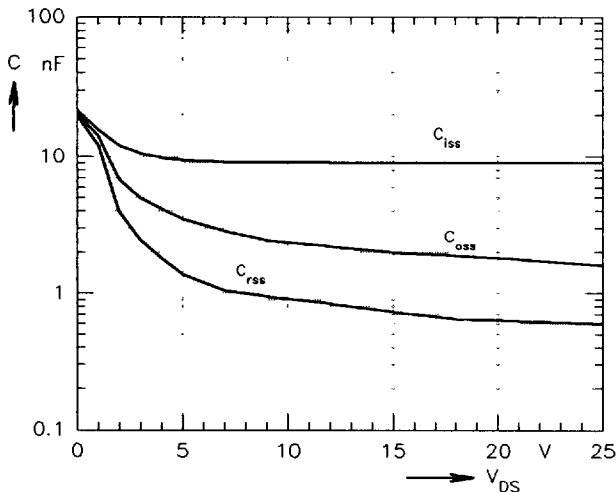


Fig. 9 Typ. capacitances  $C = f(V_{DS})$ ,  $f = 1 \text{ MHz}$

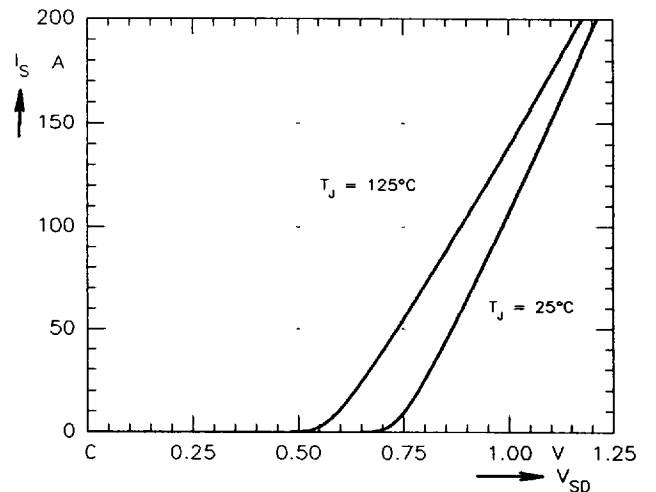


Fig. 10 Typ. forward characteristics of reverse diode  $I_S = f(V_{SD})$

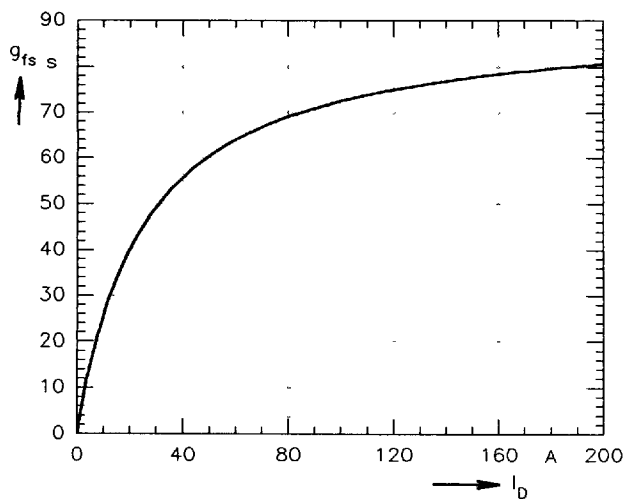


Fig. 11 Typ. transconductance,  $g_{fs} = f(I_D)$

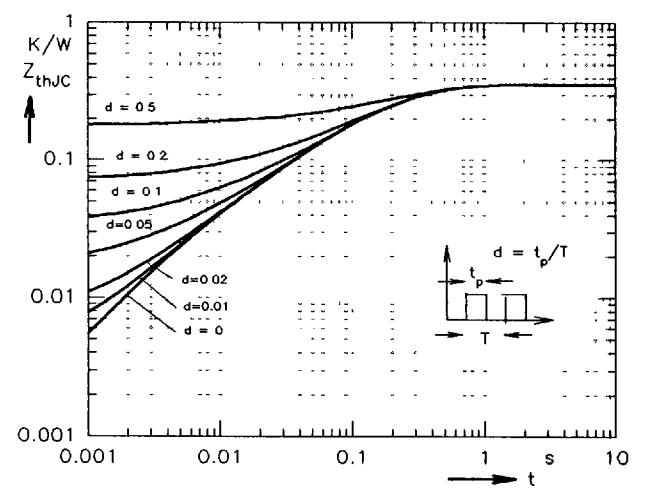


Fig. 12 Transient thermal resistance,  $Z_{thJC} = f(t)$