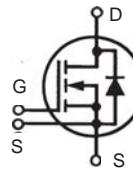


# HiPerFET™ Power MOSFETs Single Die MOSFET

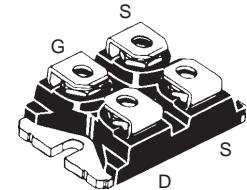
N-Channel Enhancement Mode  
Avalanche Rated, High dv/dt, Low  $t_{rr}$

## IXFN 340N07



$V_{DSS}$	=	70	V
$I_{D25}$	=	340	A
$R_{DS(on)}$	=	4	$m\Omega$
$t_{rr}$	$\leq$	200	ns

miniBLOC, SOT-227 B (IXFN)  
 E153432



G = Gate                      D = Drain  
S = Source

Either Source terminal at miniBLOC can be used as Main or Kelvin Source

Symbol	Test Conditions	Maximum Ratings		
$V_{DSS}$	$T_J = 25^\circ C$ to $150^\circ C$	70		V
$V_{DGR}$	$T_J = 25^\circ C$ to $150^\circ C$ ; $R_{GS} = 1 M\Omega$	70		V
$V_{GS}$	Continuous	$\pm 20$		V
$V_{GSM}$	Transient	$\pm 30$		V
$I_{D25}$	$T_c = 25^\circ C$ , Chip capability	340		A
$I_{L(RMS)}$	Terminal current limit	100		A
$I_{DM}$	$T_c = 25^\circ C$ , pulse width limited by $T_{JM}$	1360		A
$I_{AR}$	$T_c = 25^\circ C$	200		A
$E_{AR}$	$T_c = 25^\circ C$	64		$mJ$
$E_{AS}$	$T_c = 25^\circ C$	4		J
$dv/dt$	$I_s \leq I_{DM}$ , $di/dt \leq 100 A/\mu s$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ C$ , $R_G = 2 \Omega$	10		V/ns
$P_D$	$T_c = 25^\circ C$	700		W
$T_J$		-55 ... +150		$^\circ C$
$T_{JM}$		150		$^\circ C$
$T_{stg}$		-55 ... +150		$^\circ C$
$V_{ISOL}$	50/60 Hz, RMS $t = 1$ min $I_{ISOL} \leq 1$ mA $t = 1$ s	2500 3000	V~	
$M_d$	Mounting torque Terminal connection torque	1.5/13 Nm/lb.in. 1.5/13 Nm/lb.in.		
Weight		30		g

Symbol	Test Conditions	Characteristic Values		
		( $T_J = 25^\circ C$ , unless otherwise specified)	min.	typ.
$T_J = 25^\circ C$				
$V_{DSS}$	$V_{GS} = 0 V$ , $I_D = 3$ mA	70		V
$V_{GH(th)}$	$V_{DS} = V_{GS}$ , $I_D = 8$ mA	2.0		4.0 V
$I_{GSS}$	$V_{GS} = \pm 20 V_{DC}$ , $V_{DS} = 0$			$\pm 200$ nA
$I_{DSS}$	$V_{DS} = V_{DSS}$ $V_{GS} = 0 V$	$T_J = 25^\circ C$ $T_J = 125^\circ C$	100 2	$\mu A$ mA
$R_{DS(on)}$	$V_{GS} = 10 V$ , $I_D = 100$ A Pulse test, $t \leq 300 \mu s$ , duty cycle $d \leq 2 \%$			4 $m\Omega$

### Features

- International standard package
- miniBLOC, with Aluminium nitride isolation
- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
- Fast intrinsic Rectifier

### Applications

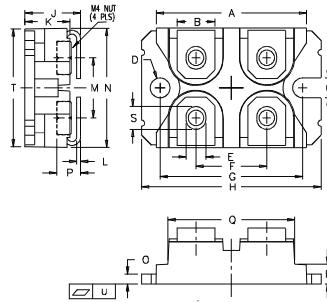
- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls
- Linear current regulators

### Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values			
		( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	min.	typ.	max.
$g_{fs}$	$V_{DS} = 10 \text{ V}; I_D = 60 \text{ A}$ , pulse test	80	98	S	
$C_{iss}$ $C_{oss}$ $C_{rss}$	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	12200	pF		
		7100	pF		
		3340	pF		
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	$V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 100 \text{ A}$ $R_G = 1 \Omega$ (External)	100	ns		
		95	ns		
		200	ns		
		33	ns		
$Q_{g(on)}$ $Q_{gs}$ $Q_{gd}$	$V_{GS} = 10 \text{ V}, V_{DS} = 50 \text{ V}, I_D = 100 \text{ A}$	490	nC		
		72	nC		
		266	nC		
$R_{thJC}$			0.18	K/W	
$R_{thCK}$			0.05	K/W	

## miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches 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	38.00	38.23	1.496	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004

## Source-Drain Diode

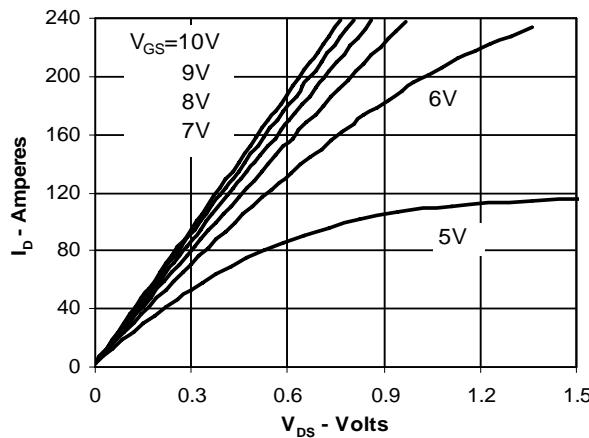
Characteristic Values  
( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

Symbol	Test Conditions	min.	typ.	max.
$I_s$	$V_{GS} = 0 \text{ V}$		340	A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$		1360	A
$V_{SD}$	$I_F = 100 \text{ A}, V_{GS} = 0 \text{ V}$ Pulse test, $t \leq 300 \mu\text{s}$ , duty cycle $d \leq 2 \%$		1.2	V
$t_{rr}$ $Q_{RM}$ $I_{RM}$	$I_F = 50 \text{ A}, -di/dt = 100 \text{ A}/\mu\text{s}, V_R = 50 \text{ V}$ $T_J = 25^\circ\text{C}$	100 1.4 8	200	ns $\mu\text{C}$ A

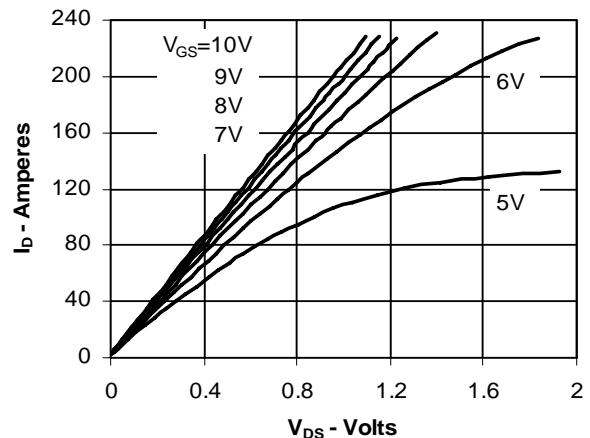
IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by 4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,381,025 6,162,665 6,306,728 B1 6,534,343 6,683,344 one or more of the following U.S. patents: 4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,486,715 6,259,123 B1 6,404,065 B1 6,583,505 6,710,405 B2

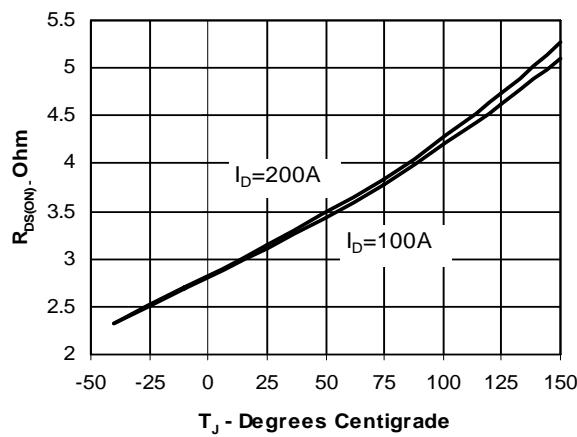
**Fig. 1. Output Characteristics  
@ 25 Deg. C**



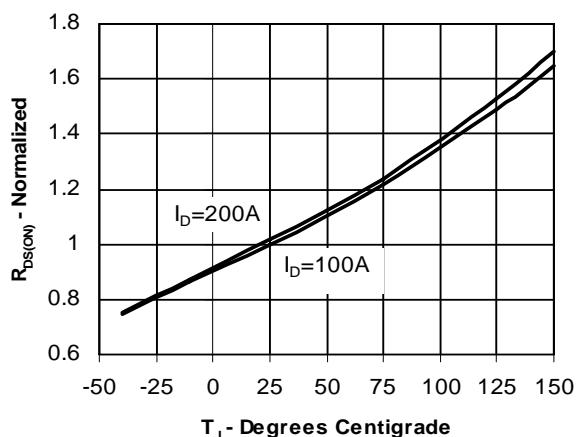
**Fig. 2. Output Characteristics  
@ 125 Deg. C**



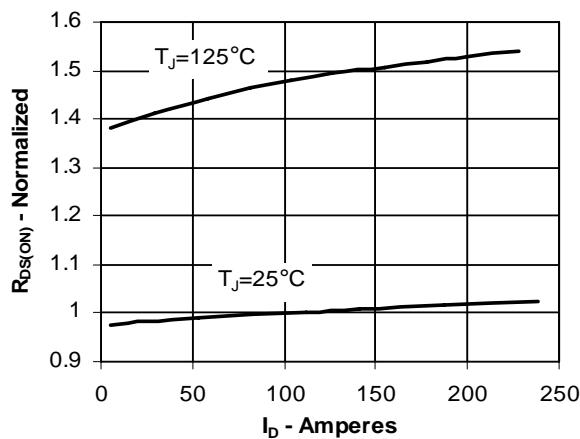
**Fig. 3. Temperature Dependence of  
 $R_{DS(ON)}$**



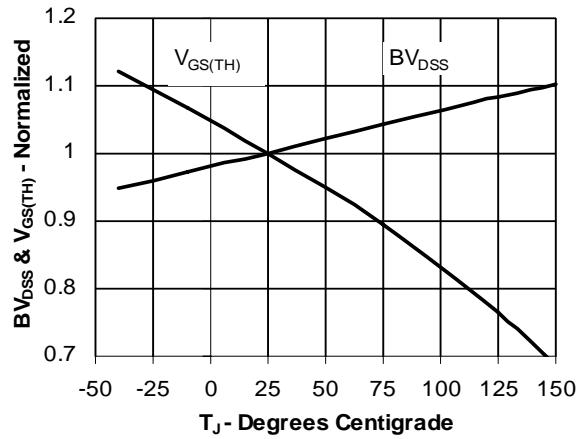
**Fig. 4.  $R_{DS(ON)}$  Normalized to  $I_{L(RMS)}$   
Value vs. Junction Temperature**



**Fig. 5.  $R_{DS(ON)}$  Normalized to  $I_{L(RMS)}$   
Value vs.  $I_D$**



**Fig. 6. Temperature dependence of  
Breakdown & Threshold Voltage**



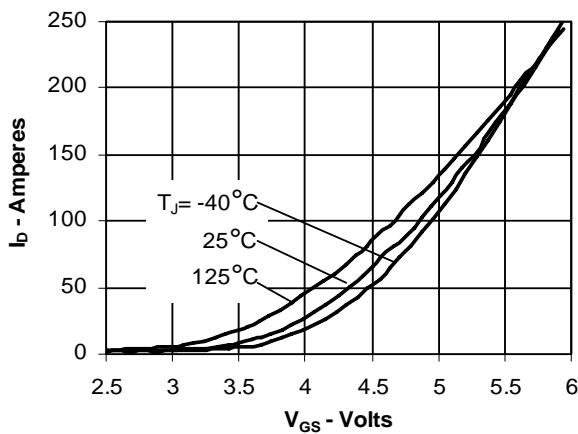
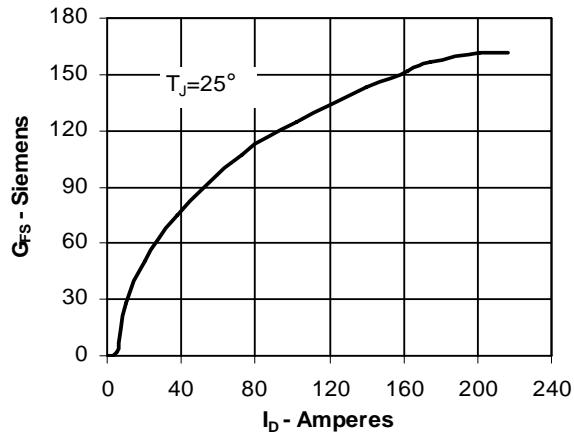
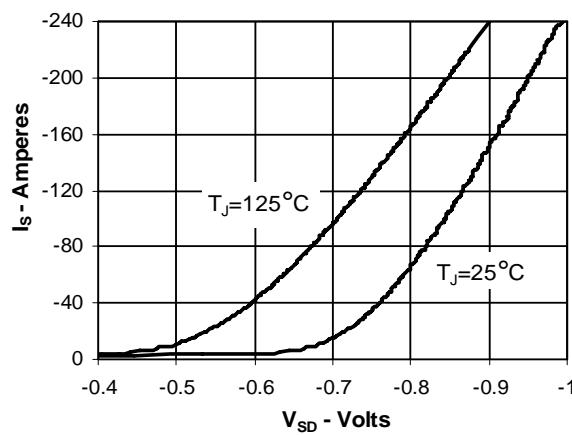
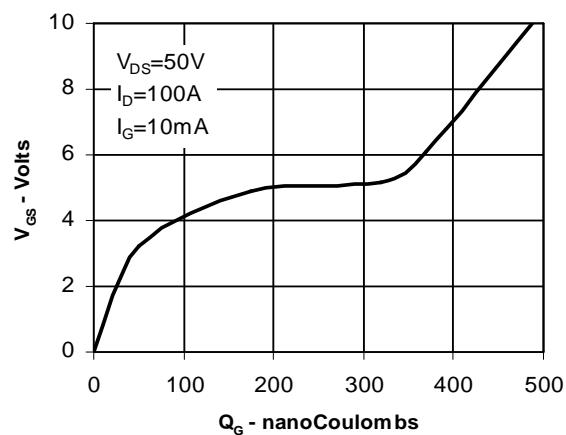
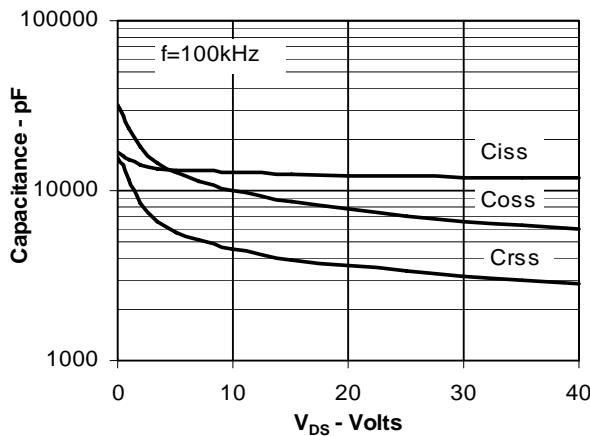
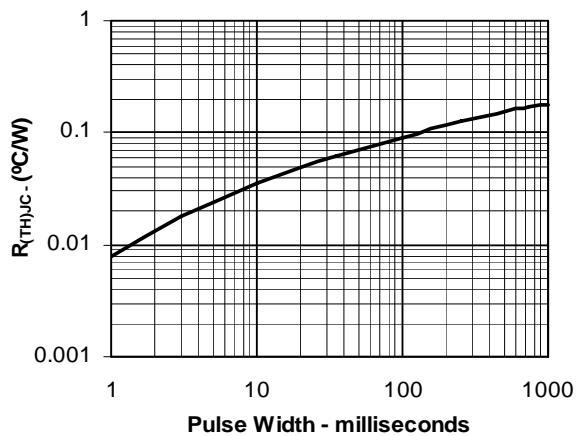
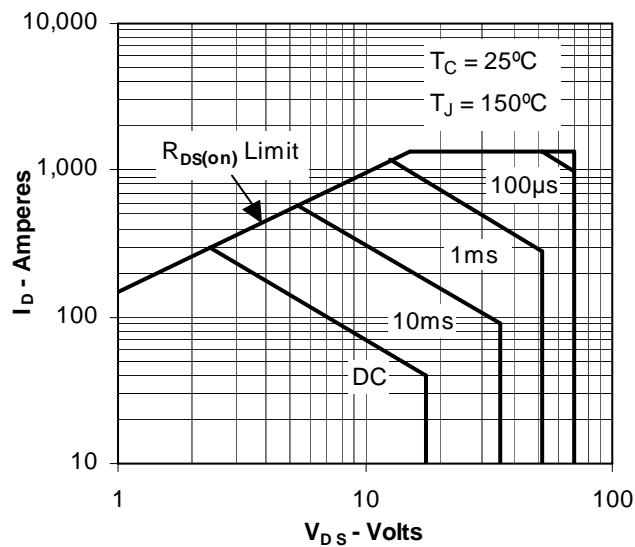
**Fig. 7. Input Admittance****Fig. 8. Transconductance****Fig. 9. Source Current vs. Source-To-Drain Voltage****Fig. 10. Gate Charge****Fig. 11. Capacitance****Fig. 12. Transient Thermal Resistance**

Fig. 13. Forward-Bias Safe  
Operating Area





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