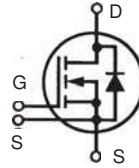


# HiPerFET™ Power MOSFETs Single Die MOSFET

## IXFN 36N100

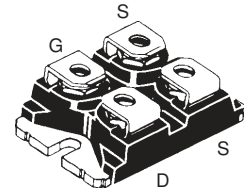
$V_{DSS} = 1000V$   
 $I_{D25} = 36A$   
 $R_{DS(on)} = 0.24\Omega$

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



Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ C$ to $150^\circ C$	1000	V
$V_{DGR}$	$T_J = 25^\circ C$ to $150^\circ C$ ; $R_{GS} = 1 M\Omega$	1000	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ C$ , Chip capability	36	A
$I_{DM}$	$T_C = 25^\circ C$ , pulse width limited by $T_{JM}$	144	A
$I_{AR}$	$T_C = 25^\circ C$	36	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 $\leq 100 A/\mu s$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ C$ , $R_G = 2 \Omega$	5	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~ V~
$M_d$	Mounting torque Terminal connection torque	1.5/13 1.5/13	Nm/lb.in. Nm/lb.in.
Weight		30	g

miniBLOC, SOT-227 B (IXFN)  
E153432



G = Gate                      D = Drain  
S = Source                    TAB = Drain

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

### Features

- International standard packages
- 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

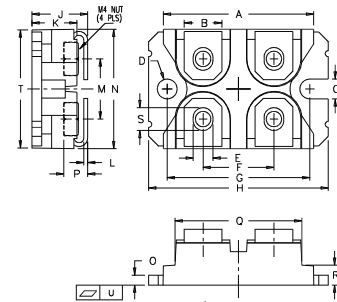
- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls

### Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ C$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0 V$ , $I_D = 3$ mA	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 8$ mA	3.0		5.5 V
$I_{GSS}$	$V_{GS} = \pm 20 V_{DC}$ , $V_{DS} = 0$			$\pm 200$ nA
$I_{DSS}$	$V_{DS} = V_{DSS}$ , $T_J = 25^\circ C$ $V_{GS} = 0 V$ , $T_J = 125^\circ C$			100 $\mu A$ 2 mA
$R_{DS(on)}$	$V_{GS} = 10 V$ , $I_D = 0.5 \cdot I_{D25}$ Pulse test, $t \leq 300 \mu s$ , duty cycle $d \leq 2\%$			0.24 $\Omega$

Symbol	Test 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> = 15 V; I <sub>D</sub> = 0.5 • I <sub>D25</sub> , pulse test	18	40	S
<b>C<sub>iss</sub></b>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		9200	pF
<b>C<sub>oss</sub></b>			1200	pF
<b>C<sub>rss</sub></b>			300	pF
<b>t<sub>d(on)</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 • V <sub>DSS</sub> , I <sub>D</sub> = 0.5 • I <sub>D25</sub> R <sub>G</sub> = 1 Ω (External),		41	ns
<b>t<sub>r</sub></b>			55	ns
<b>t<sub>d(off)</sub></b>			110	ns
<b>t<sub>f</sub></b>			30	ns
<b>Q<sub>g(on)</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 • V <sub>DSS</sub> , I <sub>D</sub> = 0.5 • I <sub>D25</sub>		380	nC
<b>Q<sub>gs</sub></b>			65	nC
<b>Q<sub>gd</sub></b>			185	nC
<b>R<sub>thJC</sub></b>			0.18	K/W
<b>R<sub>thCK</sub></b>			0.05	K/W

**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	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**

Symbol	Test 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			36 A
<b>I<sub>SM</sub></b>	Repetitive; pulse width limited by T <sub>JM</sub>			144 A
<b>V<sub>SD</sub></b>	I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			1.3 V
<b>t<sub>rr</sub></b>	I <sub>F</sub> = I <sub>S</sub> , -di/dt = 100 A/μs, V <sub>R</sub> = 100 V T <sub>J</sub> = 25°C T <sub>J</sub> = 125°C T <sub>J</sub> = 25°C		180	ns
<b>Q<sub>RM</sub></b>			330	ns
<b>I<sub>RM</sub></b>			2	μC
			8	A

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

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715 6,306,728B1 6,259,123B1 6,306,728B1  
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025 6,404,065B1 6,162,665 6,534,343

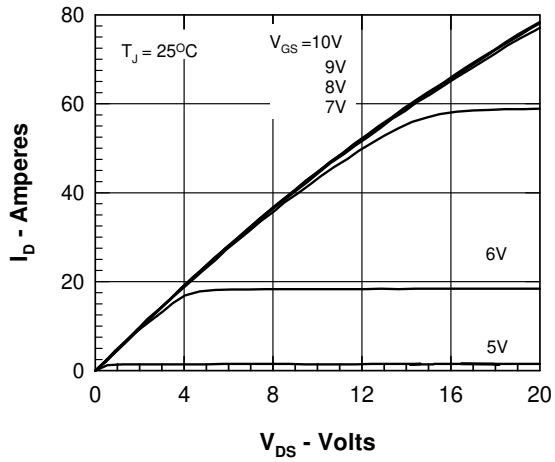


Figure 1. Output Characteristics at 25°C

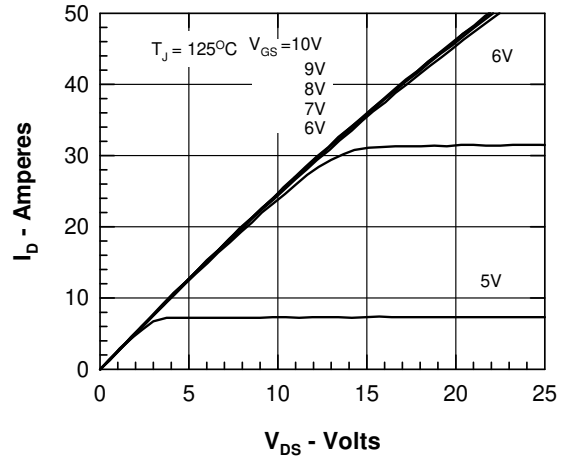


Figure 2. Output Characteristics at 125°C

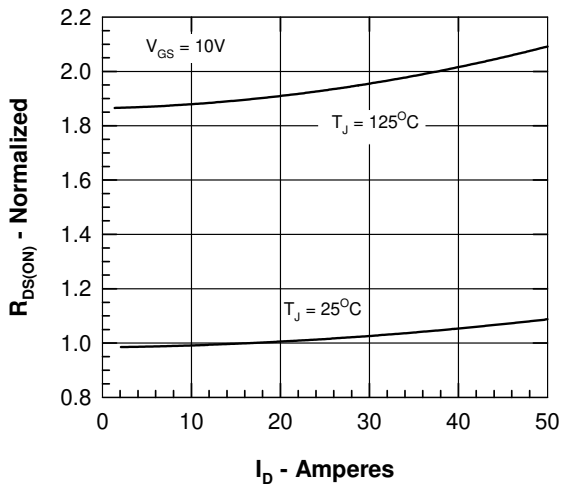


Figure 3.  $R_{DS(on)}$  normalized to  $0.5 I_{D25}$  value vs.  $I_D$

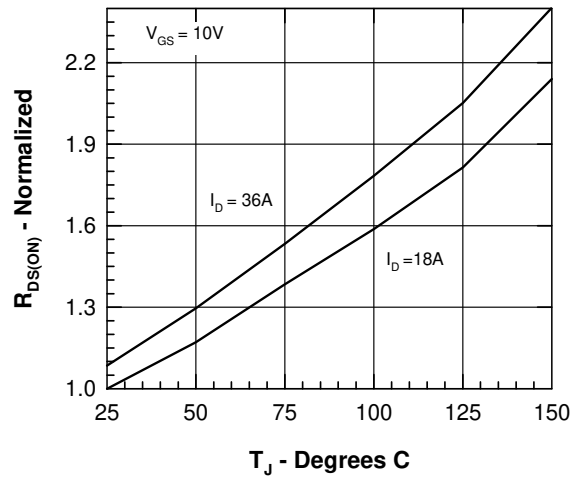


Figure 4.  $R_{DS(on)}$  normalized to  $0.5 I_{D25}$  value vs.  $T_J$

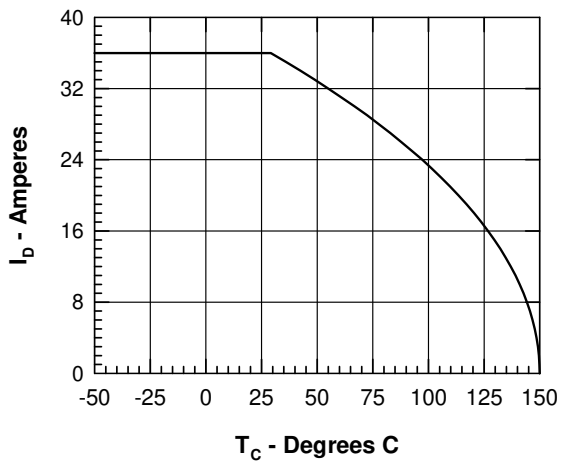


Figure 5. Drain Current vs. Case Temperature

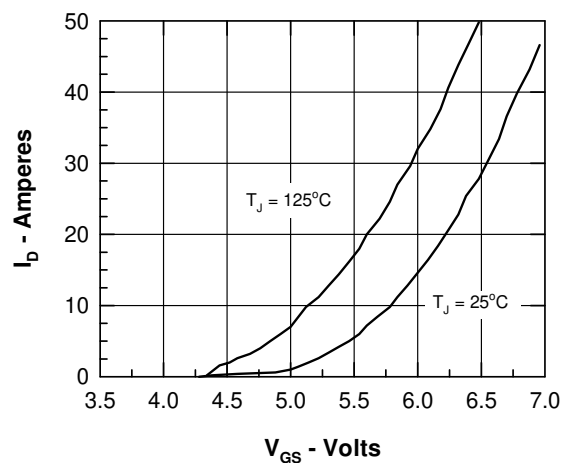


Figure 6. Admittance Curves

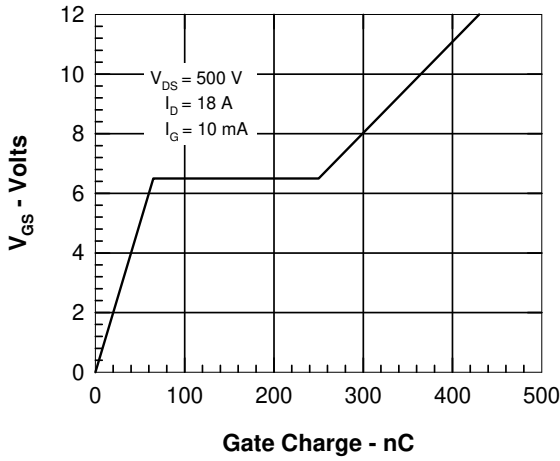


Figure 7. Gate Charge

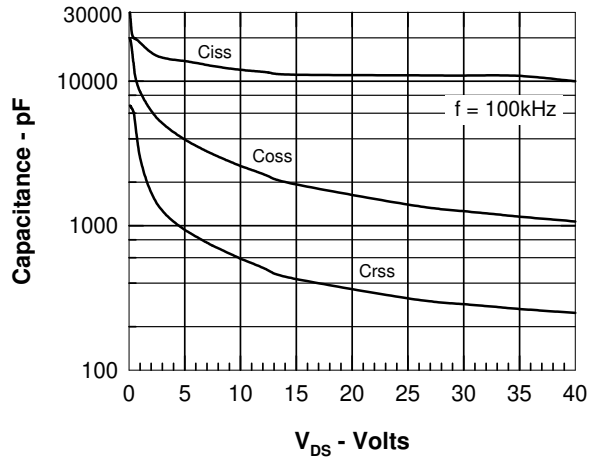


Figure 8. Capacitance Curves

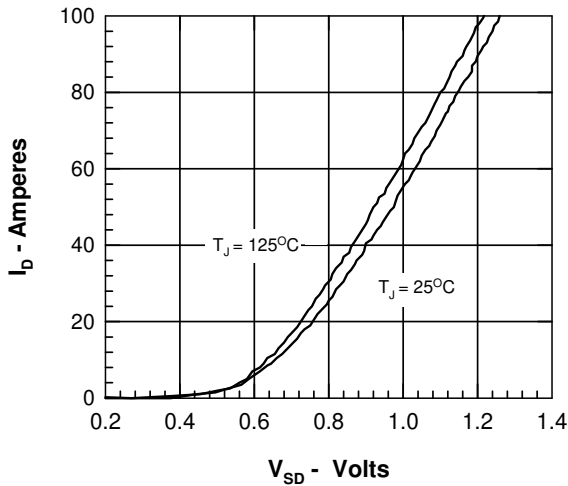


Figure 9. Forward Voltage Drop of the Intrinsic Diode

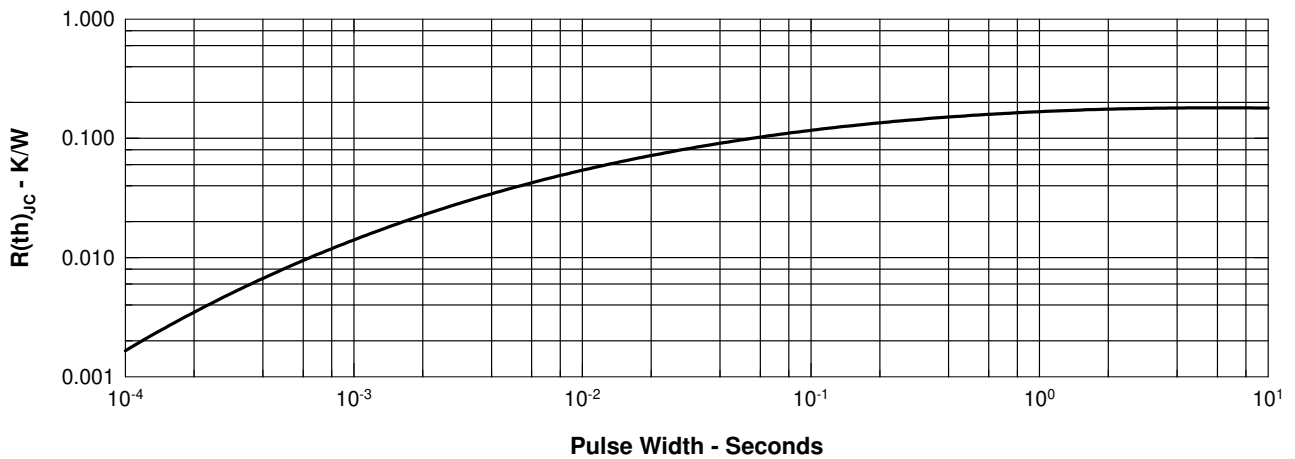


Figure 10. Transient Thermal Resistance

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