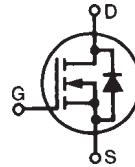


PolarHV™ HiPerFET Power MOSFET

IXFN 82N60P

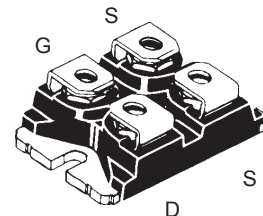
N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



$V_{DSS} = 600 \text{ V}$
 $I_{D25} = 82 \text{ A}$
 $R_{DS(on)} \leq 75 \text{ m}\Omega$
 $t_{rr} \leq 200 \text{ ns}$

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	600	V
V_{DGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GS} = 1 \text{ M}\Omega$	600	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	$T_C = 25^\circ\text{C}$	72	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	200	A
I_{AR}	$T_C = 25^\circ\text{C}$	82	A
E_{AR}	$T_C = 25^\circ\text{C}$	100	mJ
E_{AS}	$T_C = 25^\circ\text{C}$	5	J
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2 \Omega$	20	V/ns
P_D	$T_C = 25^\circ\text{C}$	1040	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS, $T = 1 \text{ min}$ $I_{ISOL} \leq 1 \text{ mA}$, $T = 1 \text{ s}$	2500 3000	V~ V~
M_d	Mounting torque, Terminal connection torque	1.5/13	lb.in.
Weight		30	g

miniBLOC, SOT-227 B (IXFN)
E153432



G = Gate
S = Source
D = Drain

Either Source terminal S can be used as the Source terminal or the Kelvin Source (gate return) terminal.

Features

- International standard package
- Encapsulating epoxy meets UL 94 V-0, flammability classification
- 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
- Synchronous rectification
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls
- Low voltage relays

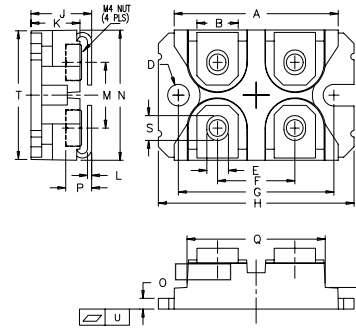
Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 3 \text{ mA}$	600		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 8 \text{ mA}$	3.0		5.0 V
I_{GSS}	$V_{GS} = \pm 30 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 200 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$			25 μA 1000 μA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = I_T$, Note 1			75 $\text{m}\Omega$

Symbol	Test Conditions	Characteristic Values		
		(T _J = 25° C, unless otherwise specified)		
		Min.	Typ.	Max.
g_{fs}	V _{DS} = 20 V; I _D = I _T , Note 1	50	80	S
C_{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		23	nF
C_{oss}			1490	pF
C_{rss}			200	pF
t_{d(on)}	V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = I _T R _G = 1 Ω (External)		28	ns
t_r			23	ns
t_{d(off)}			79	ns
t_f			24	ns
Q_{g(on)}	V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = I _T		240	nC
Q_{gs}			96	nC
Q_{gd}			67	nC
R_{thJC}				0.12 °C/W
R_{thCS}		0.13		°C/W

SOT-227B Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

Symbol	Test Conditions	Characteristic Values		
		(T _J = 25° C, unless otherwise specified)		
		Min.	Typ.	Max.
I_S	V _{GS} = 0 V			82 A
I_{SM}	Repetitive			200 A
V_{SD}	I _F = I _S , V _{GS} = 0 V, Note 1			1.5 V
t_{rr}	I _F = 25A, -di/dt = 100 A/μs V _R = 100V			200 ns
Q_{RM}			0.6	μC
I_{RM}			6.0	A

Notes:

1. Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %

Test Current I_T = 41A

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

IXYS MOSFETs and IGBTs are covered by 4,835,592 4,931,844 5,049,961 5,237,481 6,162,665 6,404,065 B1 6,683,344 6,727,585
 one or more of the following U.S. patents: 4,850,072 5,017,508 5,063,307 5,381,025 6,259,123 B1 6,534,343 6,710,405B2 6,759,692
 4,881,106 5,034,796 5,187,117 5,486,715 6,306,728 B1 6,583,505 6,710,463 6,771,478 B2

Fig. 1. Output Characteristics @ 25°C

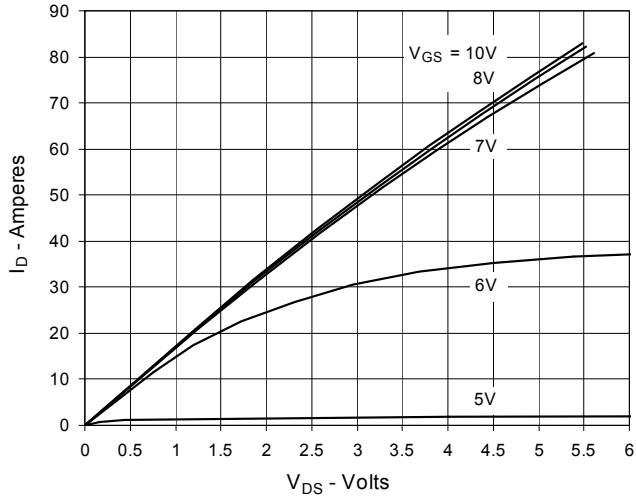


Fig. 2. Extended Output Characteristics @ 25°C

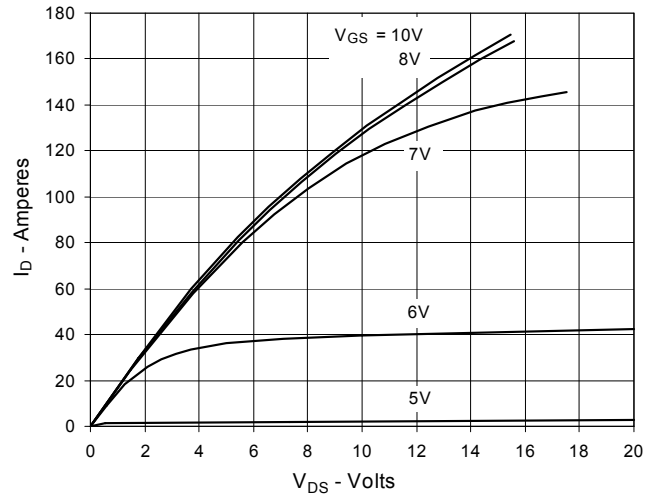


Fig. 3. Output Characteristics @ 125°C

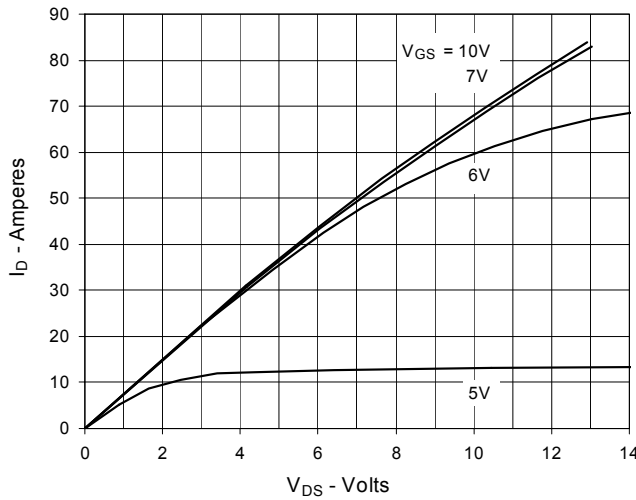


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 41A$ Value vs. Junction Temperature

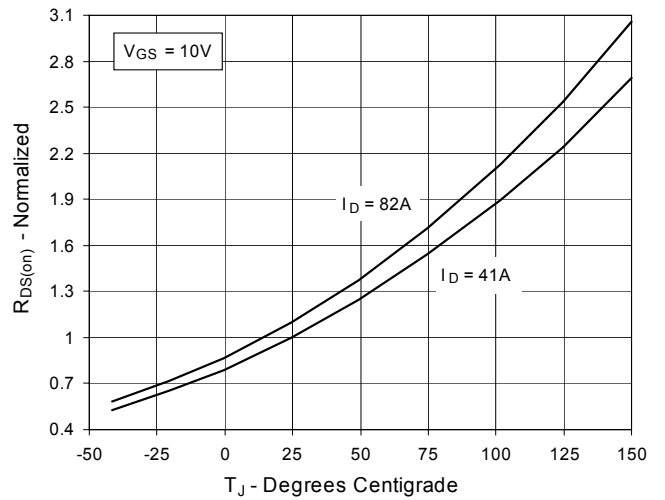


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 41A$ Value vs. Drain Current

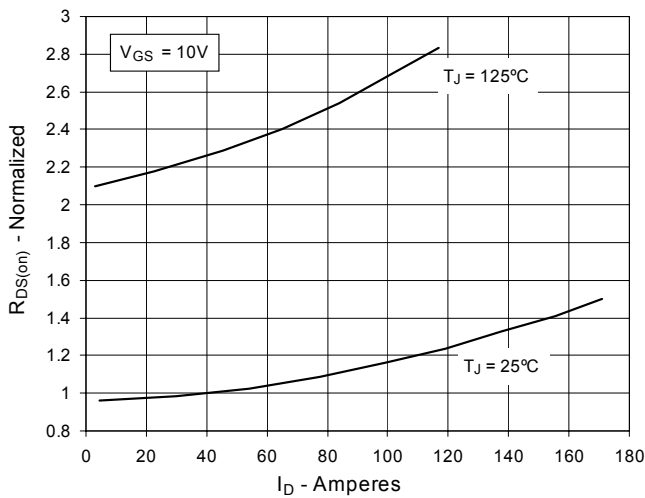


Fig. 6. Maximum Drain Current vs. Case Temperature

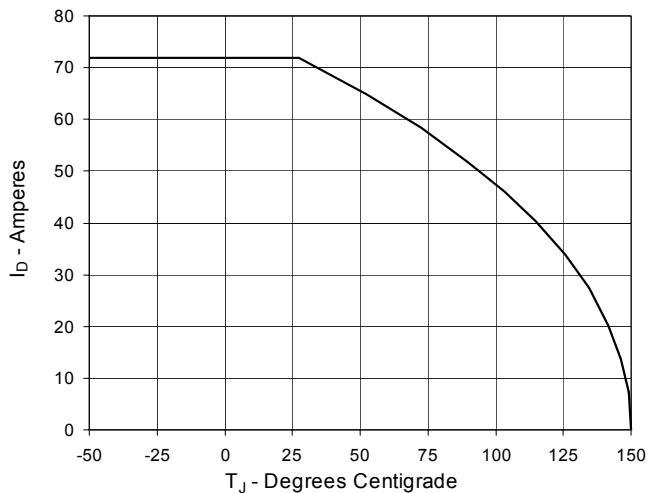


Fig. 7. Input Admittance

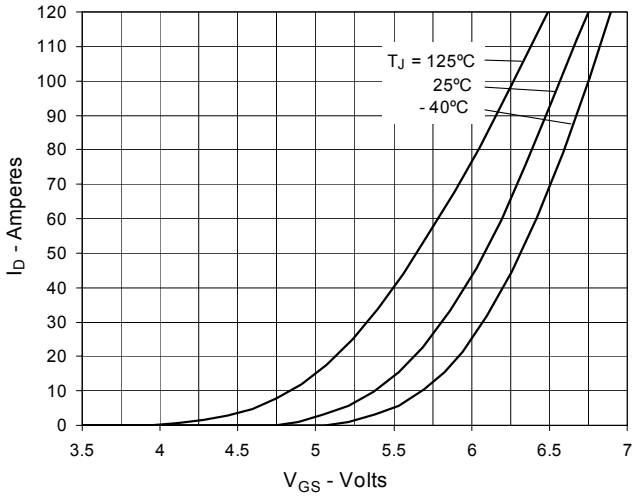


Fig. 8. Transconductance

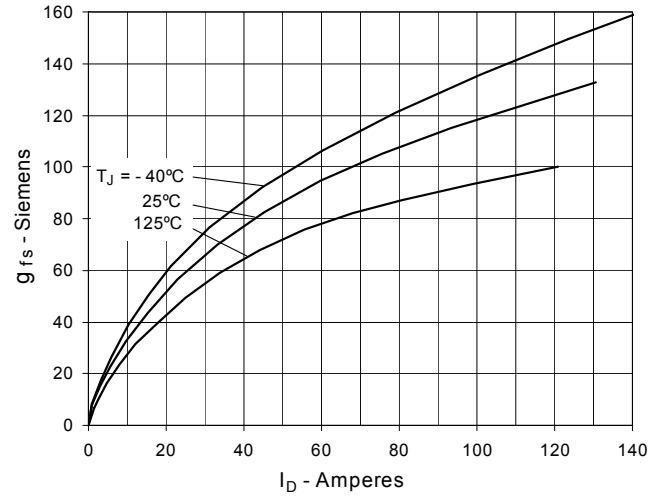


Fig. 9. Forward Voltage Drop of Intrinsic Diode

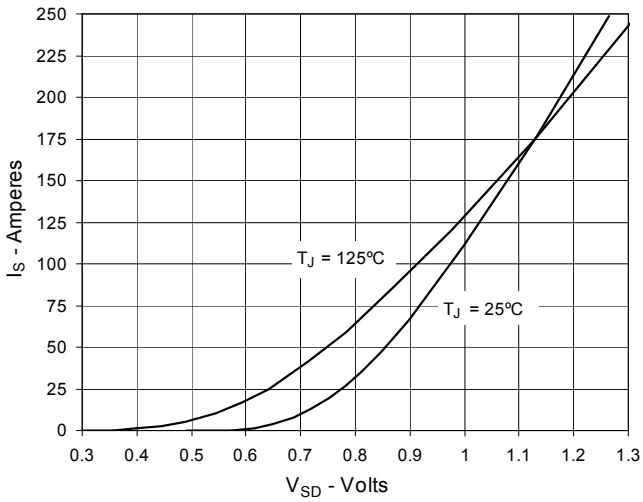


Fig. 10. Gate Charge

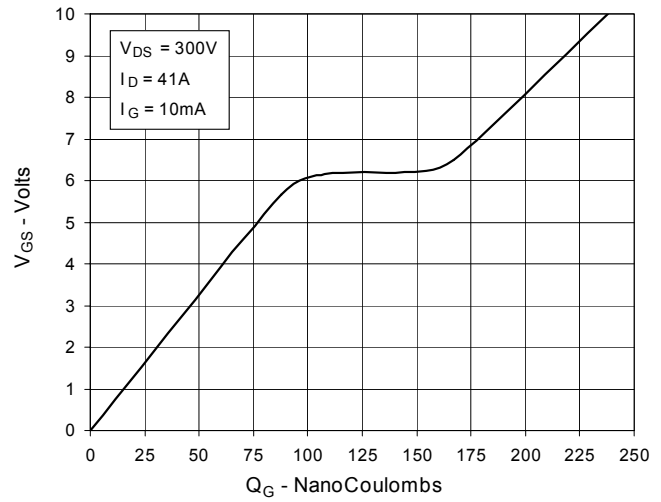


Fig. 11. Capacitance

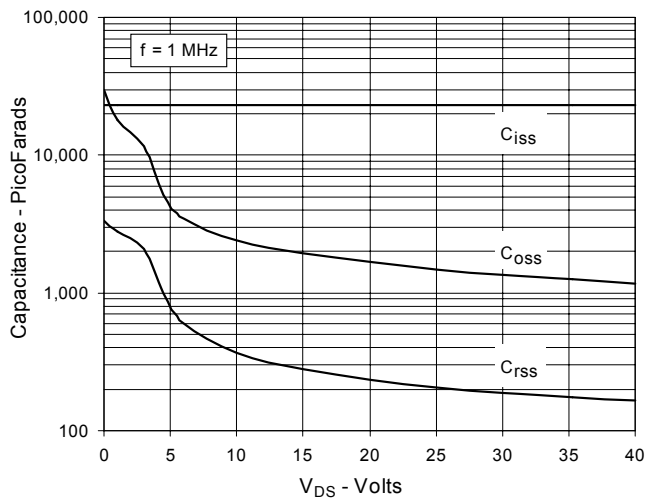
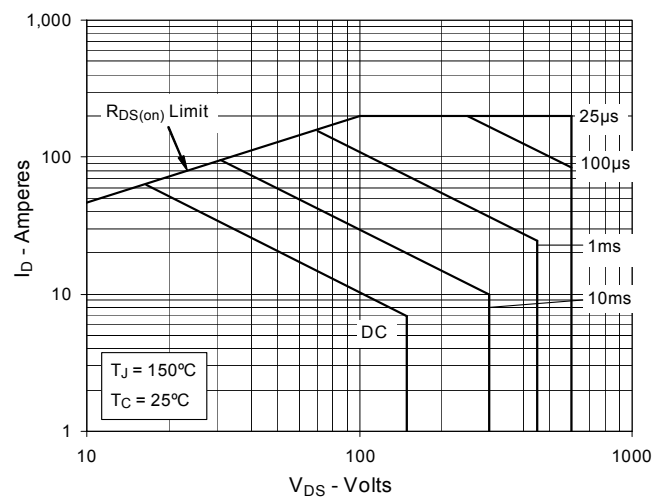


Fig. 12. Forward-Bias Safe Operating Area



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

Fig. 13. Maximum Transient Thermal Resistance

