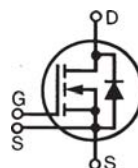


HiPerFET™ Power MOSFETs Single Die MOSFET

IXFN280N085

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

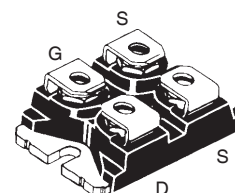


$$V_{DSS} = 85V$$

$$I_{D25} = 280A$$

$$R_{DS(on)} \leq 4.4m\Omega$$

miniBLOC, SOT-227 B
E153432



G = Gate
S = Source
D = Drain

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 $150^\circ C$	85	V
V_{DGR}	$T_J = 25^\circ C$ to $150^\circ C$, $R_{GS} = 1M\Omega$	85	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ C$, Chip capability	280	A
$I_{L(RMS)}$	External Lead Current Limit	200	A
I_{DM}	$T_C = 25^\circ C$, pulse width limited by T_{JM}	1120	A
I_A	$T_C = 25^\circ C$	200	A
E_{AS}	$T_C = 25^\circ C$	4	J
dV/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ C$	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 $t = 1min$ $I_{ISOL} \leq 1mA$ $t = 1s$	2500 3000	V~ V~
M_d	Mounting torque Terminal connection torque	1.5/13 1.3/11.5	Nm/lb.in. Nm/lb.in.
Weight		30	g

Features

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

Advantages

- Easy to mount
- Space savings
- High power density

Applications

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

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ C$, unless otherwise specified)		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 3mA$	85		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 8mA$	2.0		V
I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$			± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0V$ $T_J = 125^\circ C$			100 μA 2 mA
$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 100A$, Note 1			4.4 m Ω

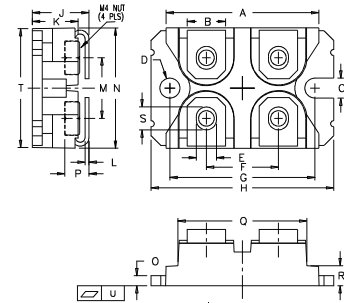
Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{V}$, $I_D = 60\text{A}$, Note 1	60	100	S
C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		19	nF
C_{oss}			6.4	nF
C_{rss}			3.2	nF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 60\text{A}$ $R_G = 1\Omega$ (External)		40	ns
t_r			150	ns
$t_{d(off)}$			112	ns
t_f			60	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 100\text{A}$		580	nC
Q_{gs}			77	nC
Q_{gd}			280	nC
R_{thJC}				0.18 $^\circ\text{C/W}$
R_{thCS}			0.05	$^\circ\text{C/W}$

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
I_S	$V_{GS} = 0\text{V}$			280 A
I_{SM}	Repetitive, pulse width limited by T_{JM}			1120 A
V_{SD}	$I_F = 100\text{A}$, $V_{GS} = 0\text{V}$, Note 1			1.2 V
t_{rr}	$I_F = 50\text{A}$, $-di/dt = 100\text{A}/\mu\text{s}$, $V_R = 50\text{V}$			200 ns
Q_{RM}			0.76	μC
I_{RM}			8.00	A

Note 1: Pulse test, $t \leq 300\mu\text{s}$; duty cycle, $d \leq 2\%$.

miniBLOC, SOT-227 B



M4 screws (4x) supplied

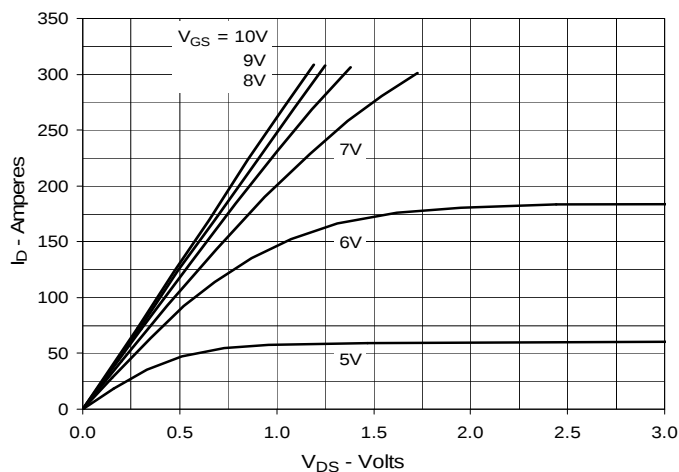
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	38.00	38.23	1.496	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	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

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

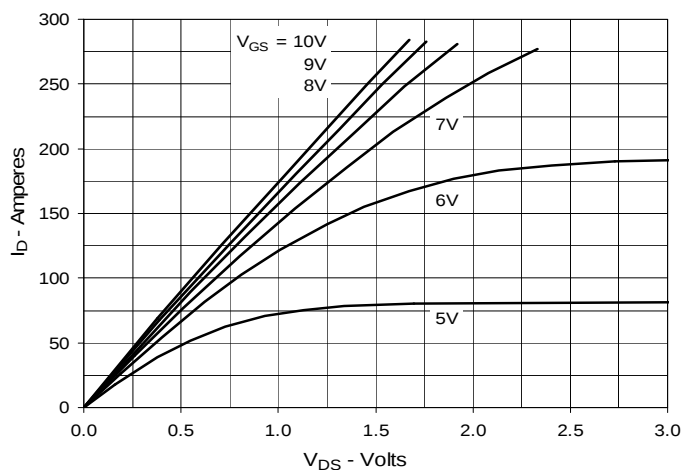
IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
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	7,071,537	

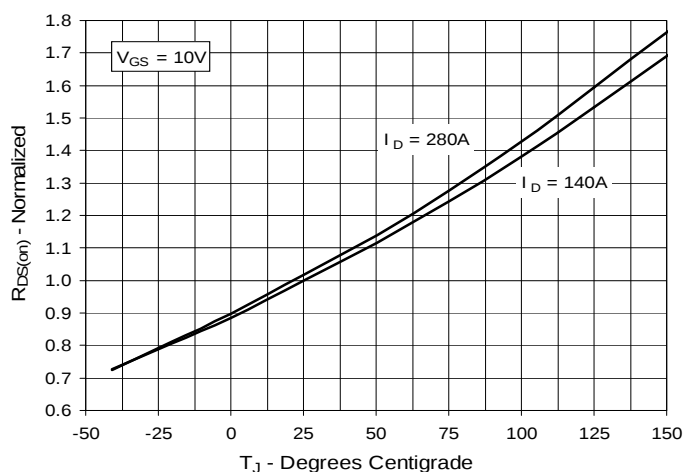
**Fig. 1. Extended Output Characteristics
@ 25°C**



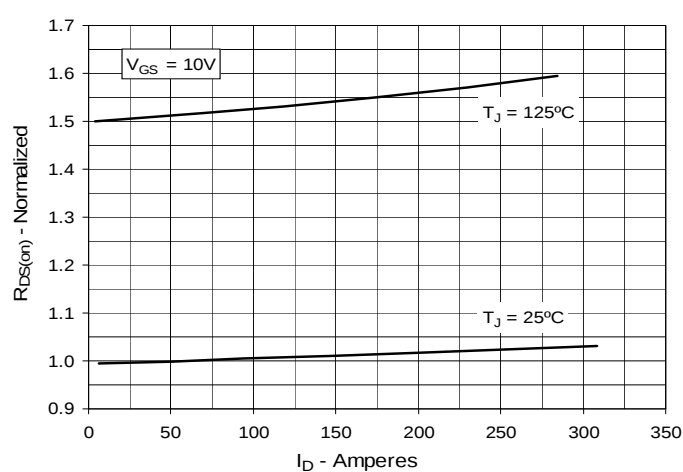
**Fig. 2. Output Characteristics
@ 125°C**



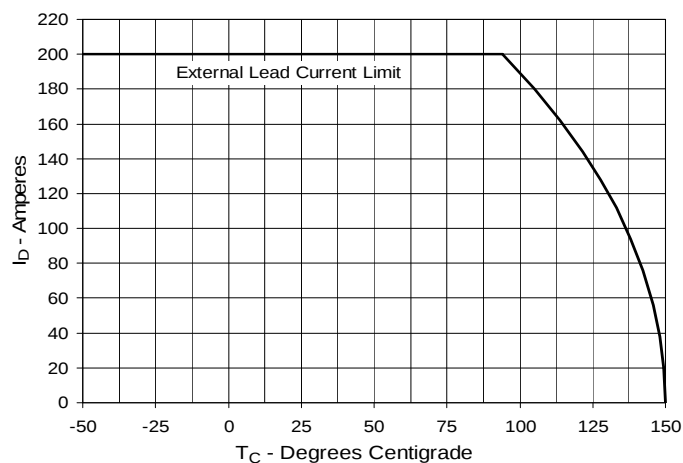
**Fig. 3. $R_{DS(on)}$ Normalized to $I_D = 140\text{A}$ Value
vs. Junction Temperature**



**Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 140\text{A}$ Value
vs. Drain Current**



**Fig. 5. Maximum Drain Current vs.
Case Temperature**



**Fig. 6. Forward Voltage Drop of
Intrinsic Diode**

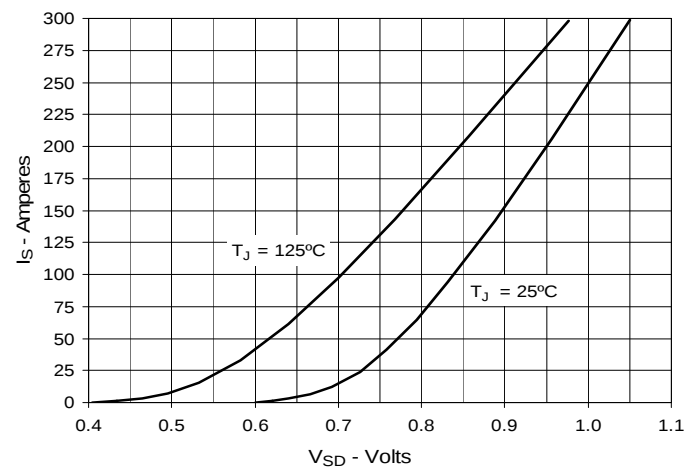


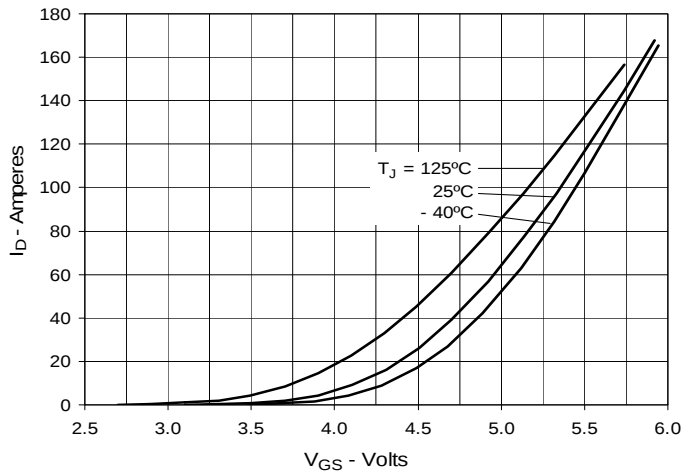
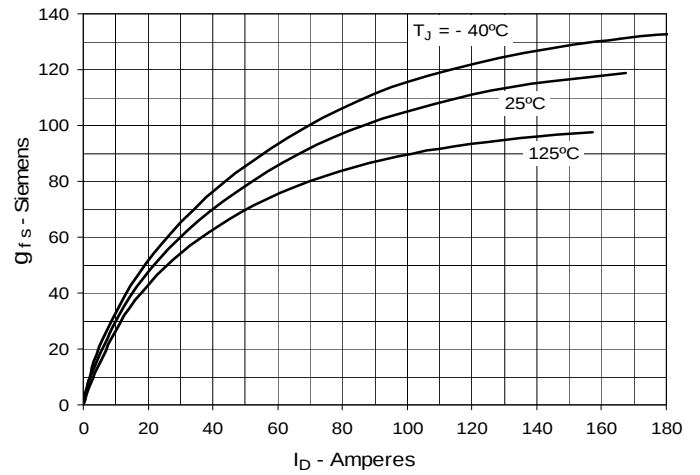
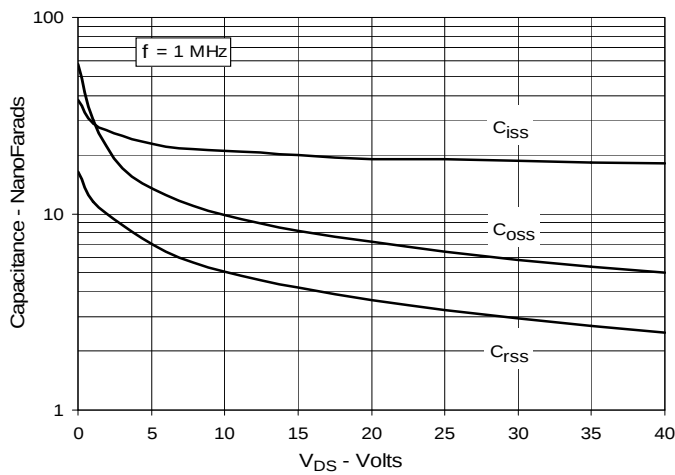
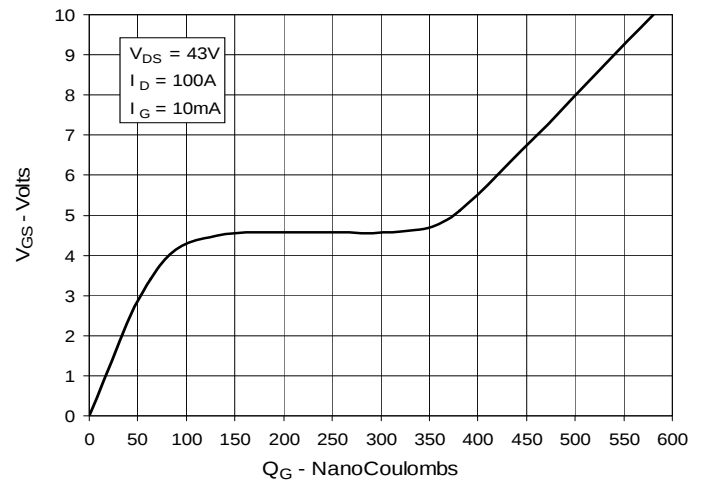
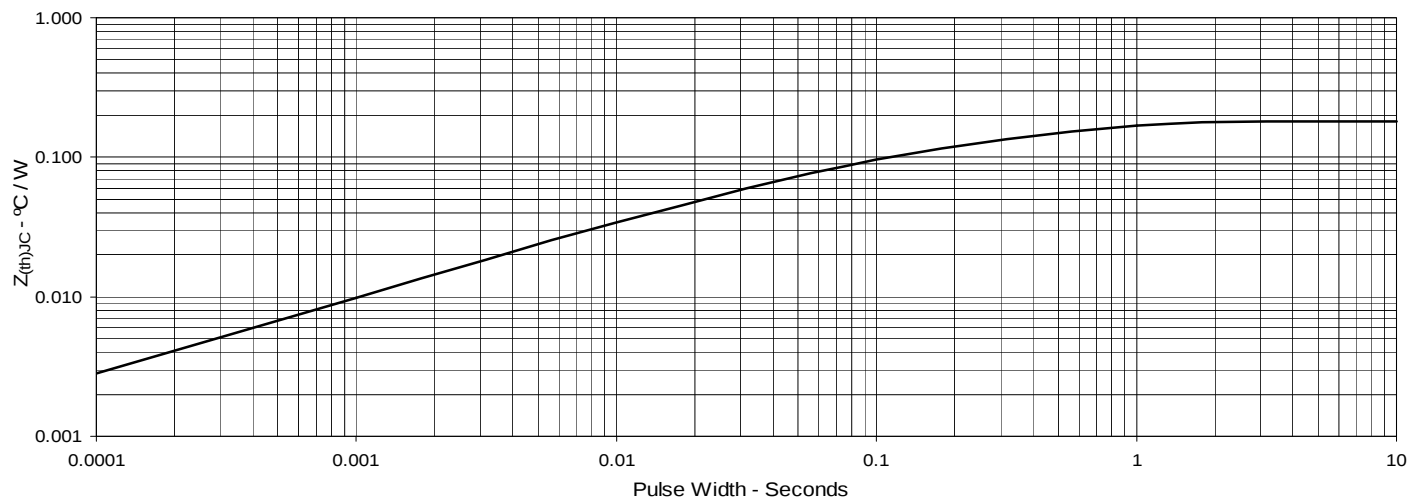
Fig. 7. Input Admittance

Fig. 8. Transconductance

Fig. 9. Capacitance

Fig. 10. Gate Charge

Fig. 11. Maximum Transient Thermal Impedance


Fig. 12. Forward-Bias Safe Operating Area
@ $T_C = 25^\circ\text{C}$

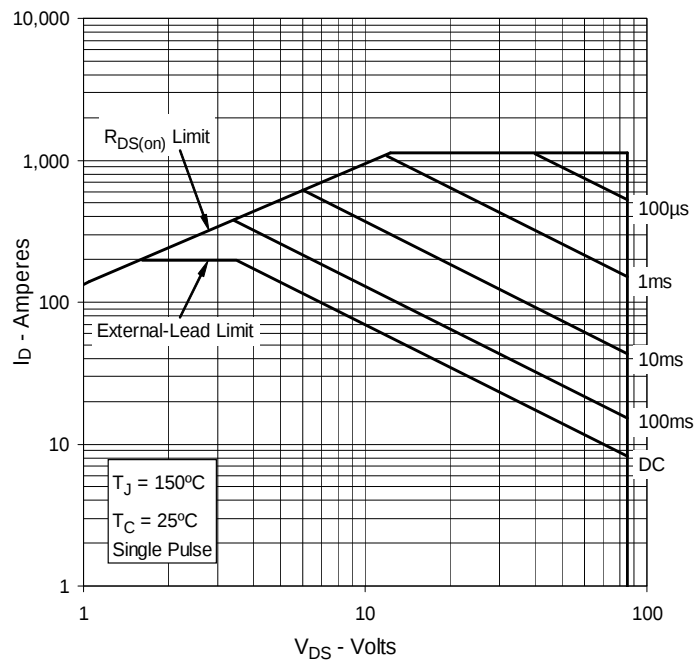


Fig. 13. Forward-Bias Safe Operating Area
@ $T_C = 75^\circ\text{C}$

