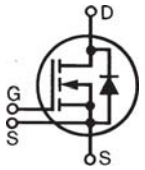
IXYS

HiPerFET™ Power MOSFETs Single Die MOSFET

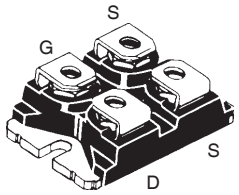
IXFN280N085

V_{DSS} = 85V
I_{D25} = 280A
$R_{DS(on)}$ ≤ 4.4mΩ

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



miniBLOC, SOT-227 B
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°C to 150°C	85	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	85	V
V_{GSS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C, Chip capability	280	A
$I_{L(RMS)}$	External Lead Current Limit	200	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	1120	A
I_A	T_C = 25°C	200	A
E_{AS}	T_C = 25°C	4	J
dV/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$	5	V/ns
P_d	T_C = 25°C	700	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
V_{ISOL}	50/60 Hz, RMS t = 1min $I_{ISOL} \le$ 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

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values 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		4.0	V
I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±200	nA
I_{DSS}	$V_{DS} = V_{DSS}$ V_{GS} = 0V T_J = 125°C			100 2	μA mA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 100A, Note 1			4.4	mΩ

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

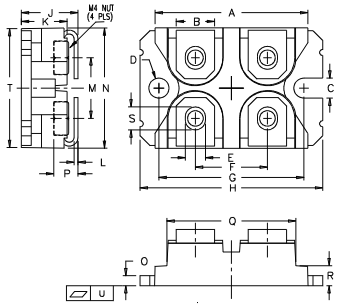
Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10V, I_D = 60A, Note 1	60	100		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		19		nF
C_{oss}			6.4		nF
C_{rss}			3.2		nF
$t_{d(on)}$	**Resistive Switching Times**		40		ns
t_r	V_{GS} =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

Source-Drain Diode

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

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

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

Fig. 1. Extended Output Characteristics @ 25ºC

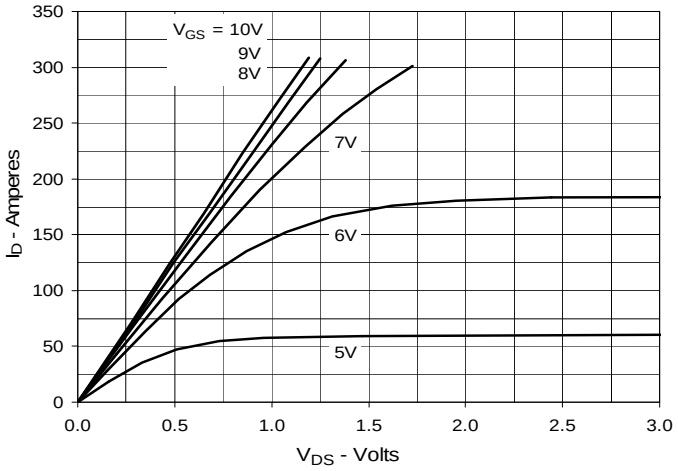


Fig. 2. Output Characteristics @ 125ºC

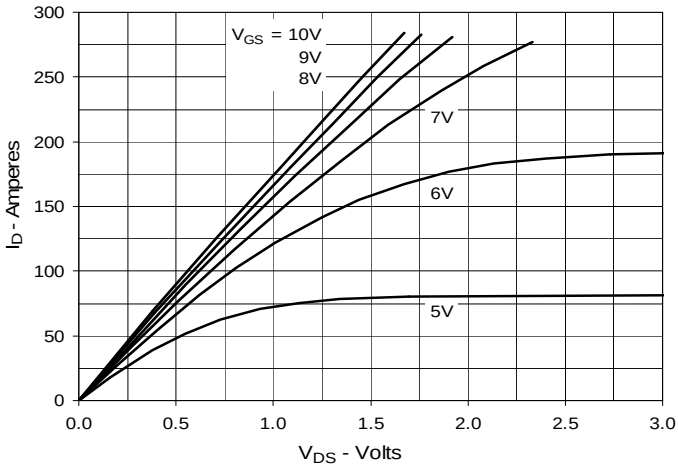


Fig. 3. $R_{DS(on)}$ Normalized to I_D = 140A Value vs. Junction Temperature

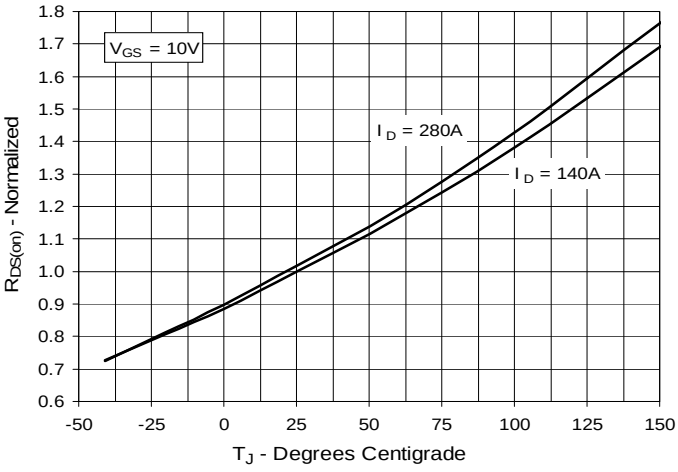


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 140A Value vs. Drain Current

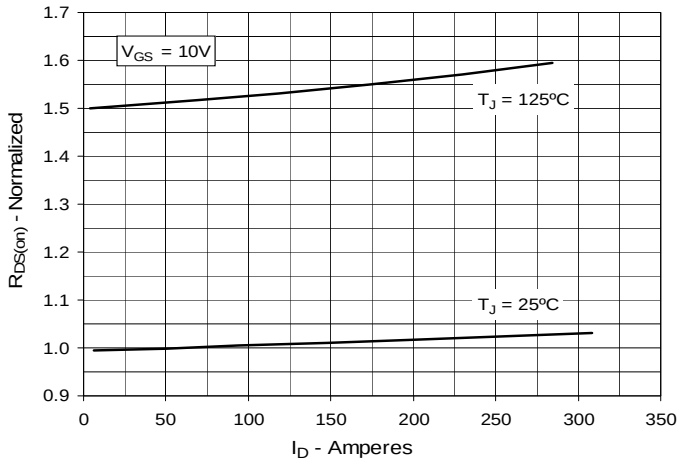


Fig. 5. Maximum Drain Current vs. Case Temperature

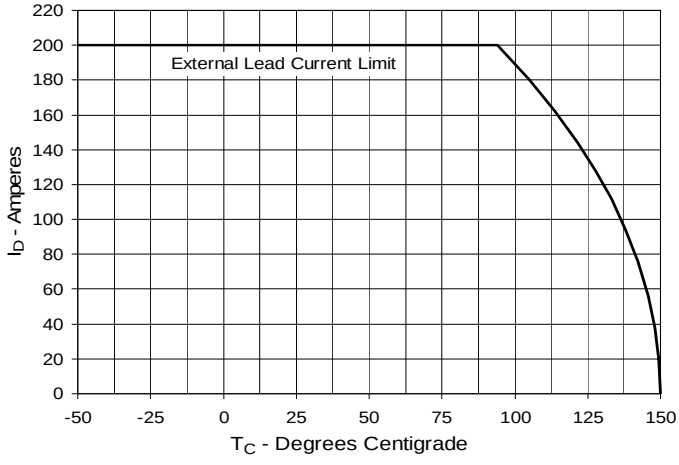


Fig. 6. Forward Voltage Drop of Intrinsic Diode

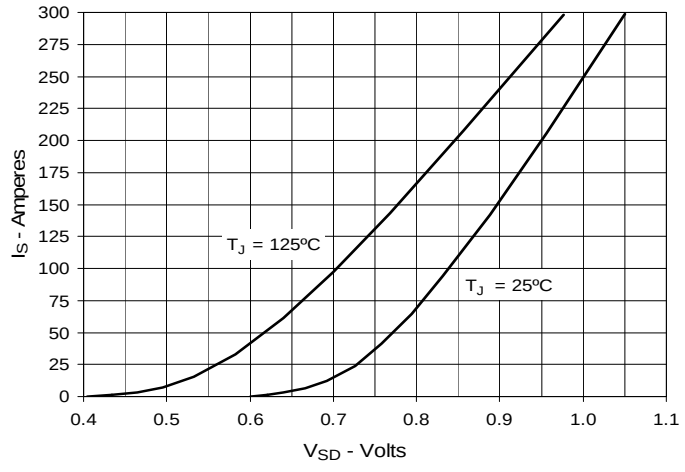


Fig. 7. Input Admittance

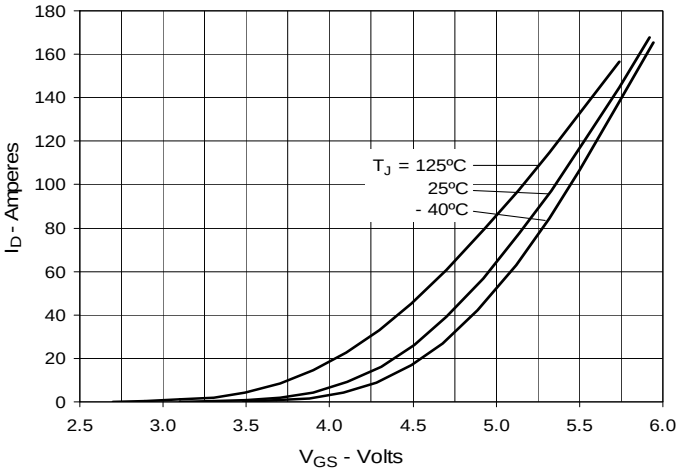


Fig. 8. Transconductance

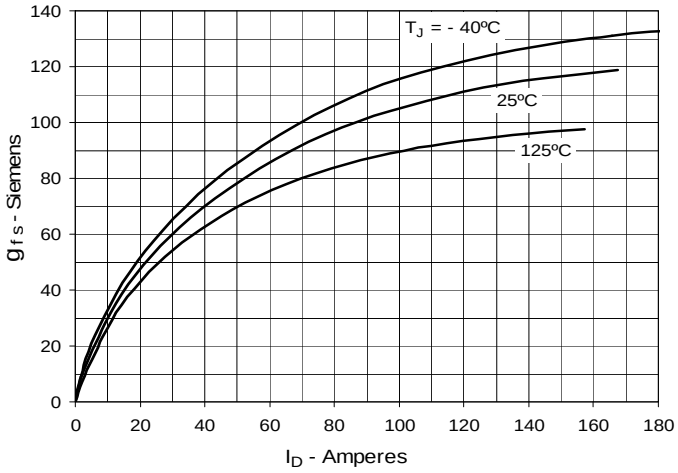


Fig. 9. Capacitance

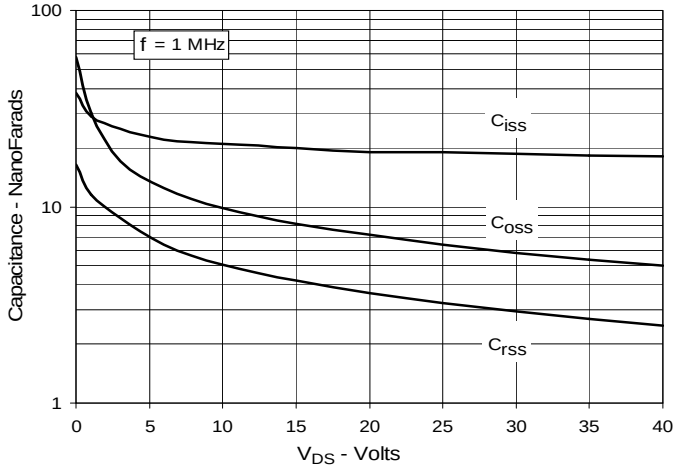


Fig. 10. Gate Charge

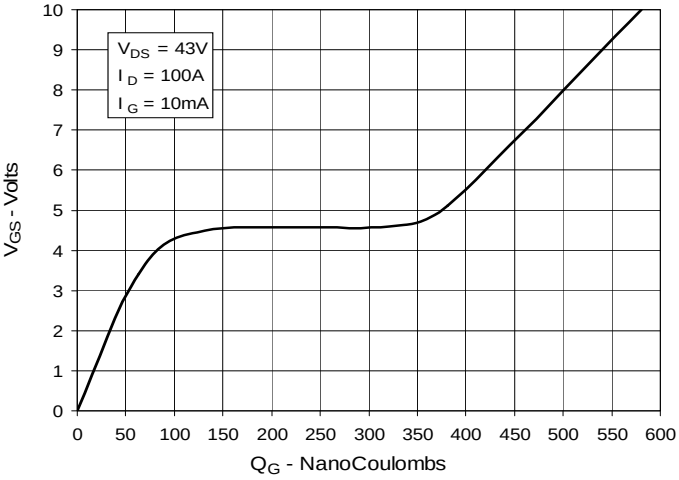


Fig. 11. Maximum Transient Thermal Impedance

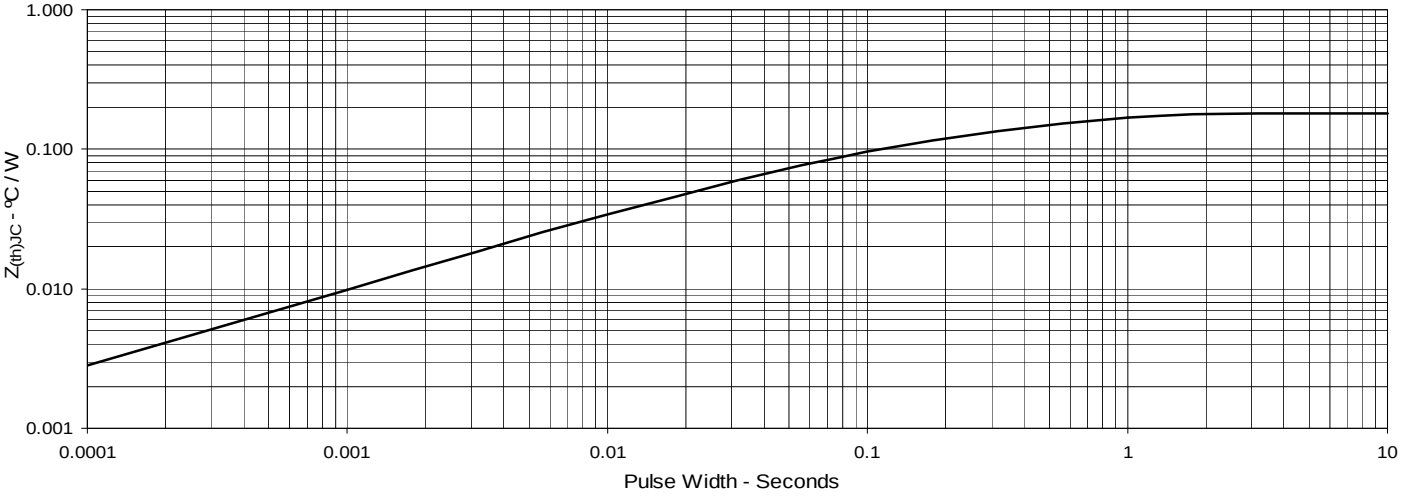


Fig. 12. Forward-Bias Safe Operating Area @ T_C = 25ºC

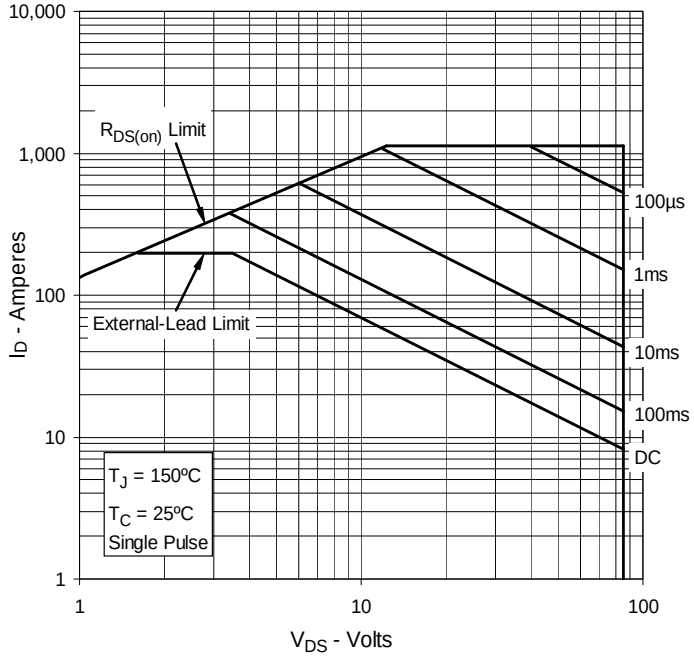


Fig. 13. Forward-Bias Safe Operating Area @ T_C = 75ºC