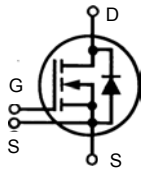
IXYS

HiPerFET™ Power MOSFETs Single MOSFET Die

IXFN 44N80

V_{DSS} = 800 V
I_{D25} = 44 A
$R_{DS(on)}$ = 0.165 Ω

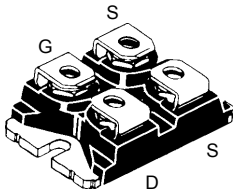
N-Channel Enhancement Mode
Avalanche Rated, High dv/dt, Low t_{rr}



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	800	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	800	V
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C, Chip capability	44	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	176	A
I_{AR}	T_C = 25°C	44	A
E_{AR}	T_C = 25°C	64	mJ
E_{AS}	T_C = 25°C	4	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$, R_G = 2 Ω	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 = 1 min $I_{ISOL} \le$ 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

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 3 mA	800			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8 mA	2.0		4.0	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0			±200	nA
I_{DSS}	$V_{DS} = V_{DSS}$ T_J = 25°C V_{GS} = 0 V T_J = 125°C			100 2	µA mA
$R_{DS(on)}$	V_{GS} = 10 V, $I_D = 0.5 \cdot I_{D25}$ Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %			0.165	Ω

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

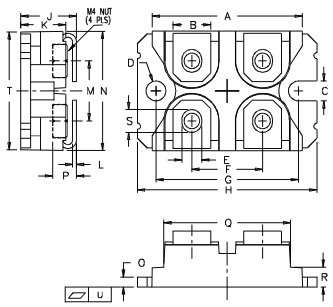
- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls

Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
g_{fs}	V_{DS} = 15 V; I_D = 0.5 • I_{D25}, pulse test	32	50		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		10000		pF
C_{oss}			1300		pF
C_{rss}			330		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25} R_G = 1 Ω (External),		35		ns
t_r			48		ns
$t_{d(off)}$			100		ns
t_f			24		ns
$Q_{G(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		380		nC
Q_{GS}			70		nC
Q_{GD}			170		nC
R_{thJC}				0.18	K/W
R_{thCK}			0.05		K/W

miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter Min.	Max.	Inches 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 (T_J = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
I_S	V_{GS} = 0 V			44	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			176	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %			1.3	V
t_{rr}	I_F = 25A, -di/dt = 100 A/µs, V_R = 100 V			250	ns
Q_{RM}			1.2		µC
I_{RM}			8		A

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

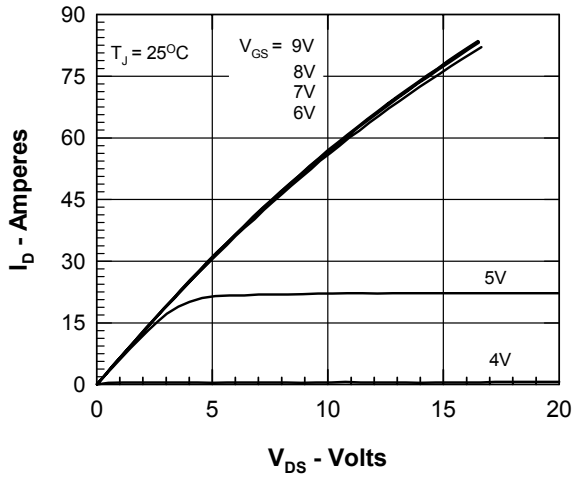


Figure 1. Output Characteristics at 25°C

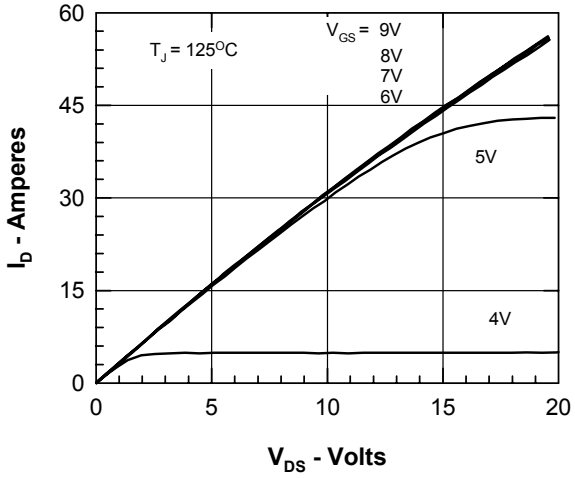


Figure 2. Output Characteristics at 125°C

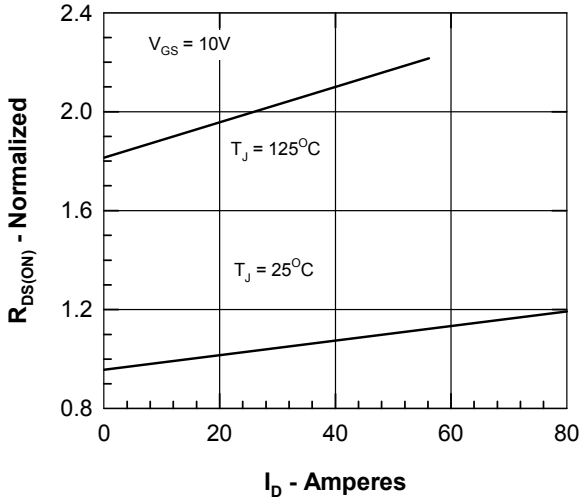


Figure 3. $R_{DS(on)}$ normalized to 0.5 I_{D25} value vs. I_D

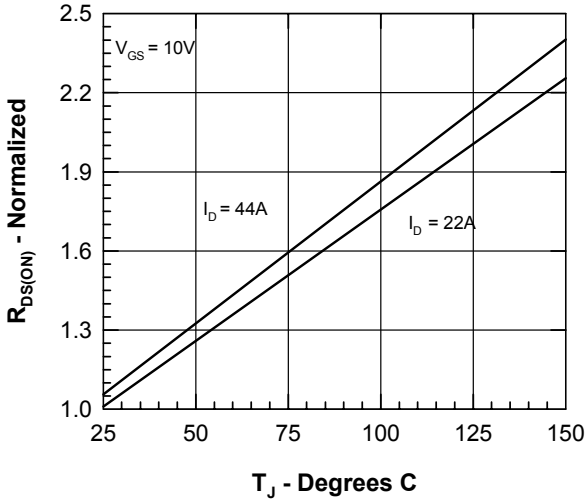


Figure 4.$R_{DS(on)}$ normalized to 0.5 I_{D25} value vs. T_J

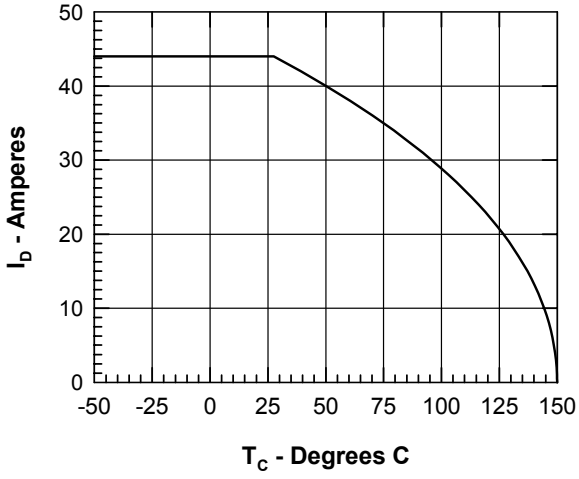


Figure 5. Drain Current vs. Case Temperature

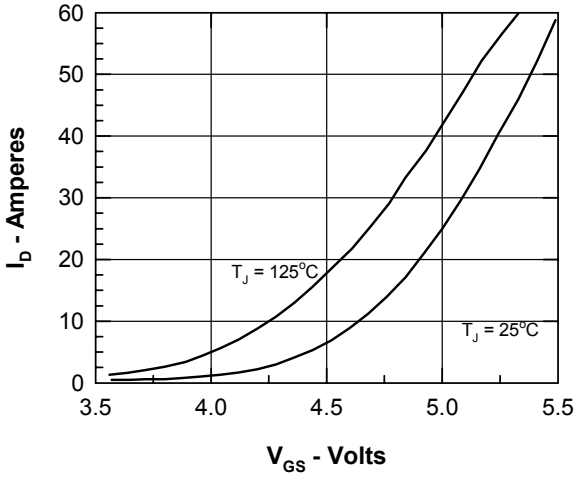


Figure 6. Admittance Curves

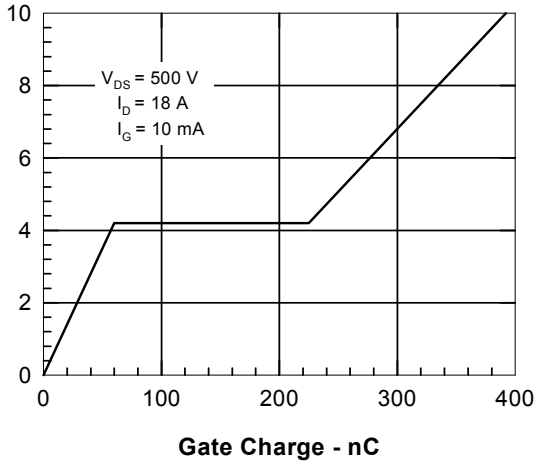


Figure 7. Gate Charge

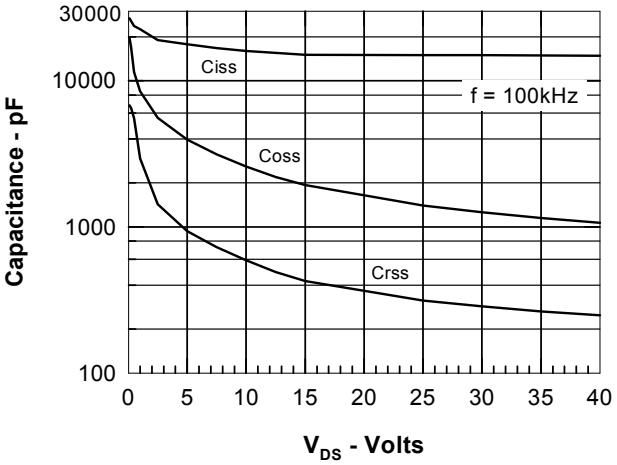


Figure 8. Capacitance Curves

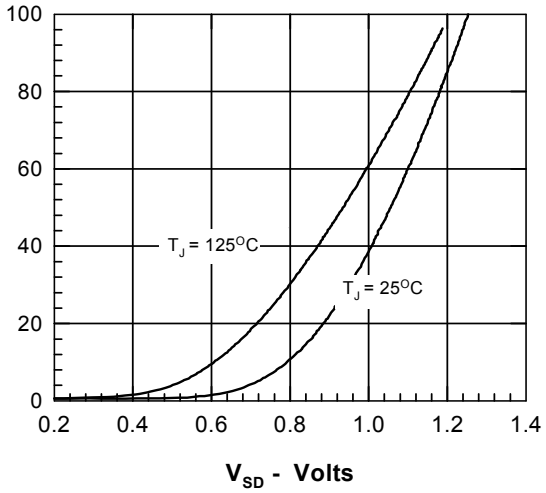


Figure 9. Forward Voltage Drop of the Intrinsic Diode

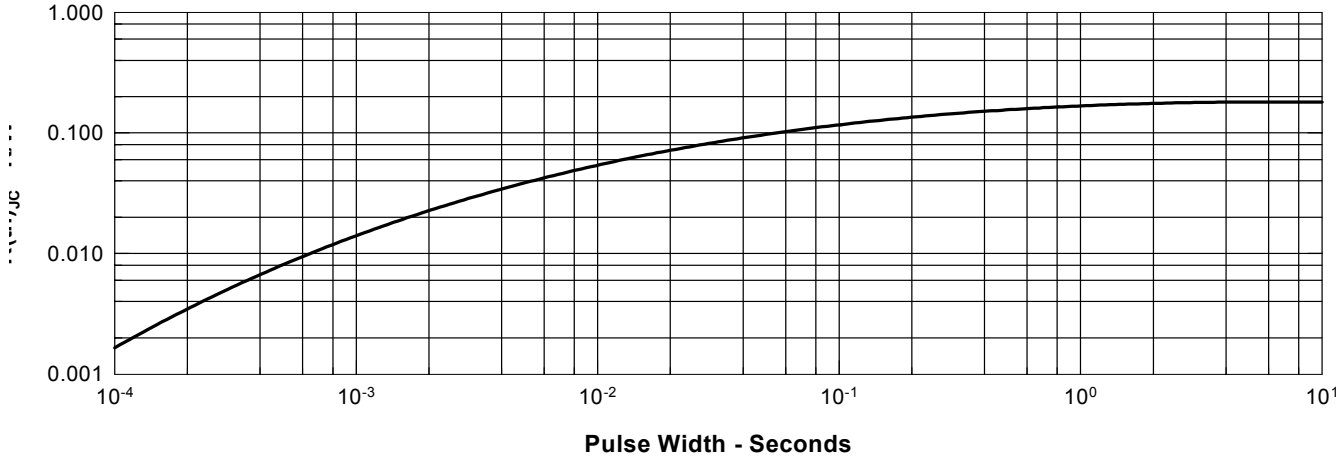


Figure 10. Transient Thermal Resistance