IXYS

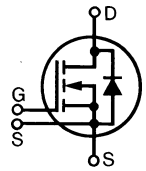
HiPerFET™ Power MOSFETs

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

IXFN 200 N06
IXFN 180 N07
IXFN 200 N07

V_{DSS}	I_{D25}	$R_{DS(on)}$
60 V	200 A	6 mΩ
70 V	180 A	7 mΩ
70 V	200 A	6 mΩ

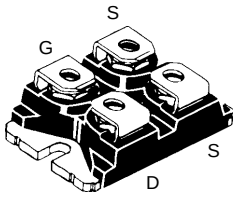
$t_{rr} \leq$ 250 ns



Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	N07	70	V
		N06	60	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	N07	70	V
		N06	60	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25°C; Chip capability	200N06/200N07	200	A
		180N07	180	A
$I_{L(RMS)}$	Terminal current limit		100	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}		600	A
I_{AR}	T_C = 25°C		100	A
E_{AR}	T_C = 25°C		30	mJ
E_{AS}	T_C = 25°C		2	J
dv/dt	$I_S \leq I_{DM}$, di/dt ≤ 100 A/μs, $V_{DD} \leq V_{DSS}$, $T_J \leq$ 150°C, R_G = 2 Ω		5	V/ns
P_D	T_C = 25°C		520	W
T_J			-55 ... +150	°C
T_{JM}			150	°C
T_{stg}			-55 ... +150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	$I_{ISOL} \leq$ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque		1.5/13	Nm/lb.in.
	Terminal connection torque		1.5/13	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 = 1 mA	N06	60			V
		N07	70			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8 mA		2		4	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0				±200	nA
I_{DSS}	V_{DS} = 0.8 • V_{DSS}	T_J = 25°C			400	μA
	V_{GS} = 0 V	T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 • I_{D25}	200N06/200N07			6	mΩ
	Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %	180N07			7	mΩ

miniBLOC, SOT-227 B (IXFN)
E153432



G = Gate D = Drain
S = Source
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
- Synchronous rectification
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls
- Low voltage relays

Advantages

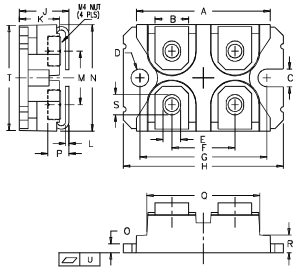
- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 • I_{D25}, pulse test	60	80		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		9000		pF
C_{oss}			4000		pF
C_{rss}			2400		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),		30		ns
t_r			60		ns
$t_{d(off)}$			100		ns
t_f			60		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		480		nC
Q_{gs}			60		nC
Q_{gd}			240		nC
R_{thJC}	miniBLOC, SOT-227 B			0.24	K/W
R_{thCK}	miniBLOC, SOT-227 B		0.05		K/W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)		min.	typ.	max.	
I_S	V_{GS} = 0 V	200N06/200N07			200	A
		180N07			180	A
I_{SM}	Repetitive; pulse width limited by T_{JM}				600	A
V_{SD}	I_F = 100 A, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %				1.7	V
t_{rr}	I_F = 25 A -di/dt = 100 A/µs, V_R = 50 V			150	250	ns
Q_{RM}				0.7		µC
I_{RM}				9		A

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

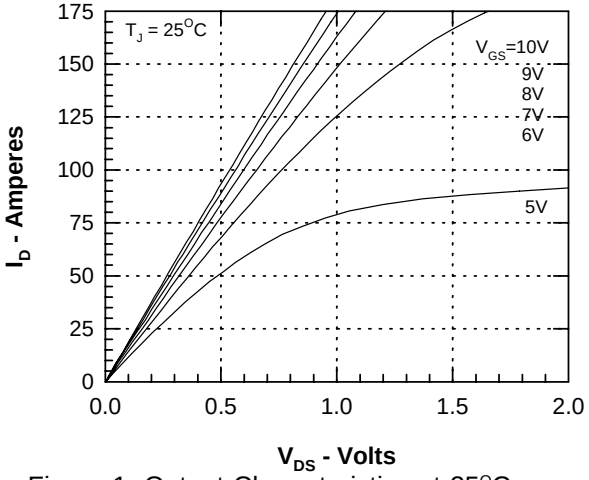


Figure 1. Output Characteristics at 25°C

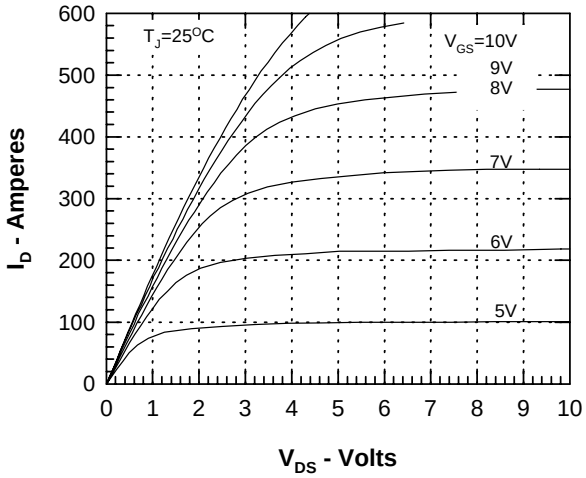


Figure 2. Extended Output Characteristics

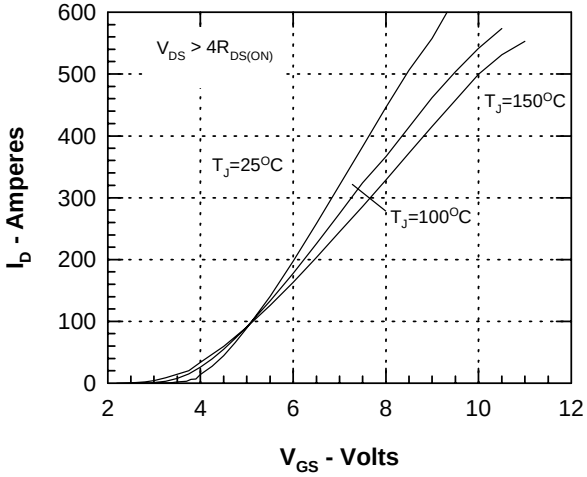


Figure 3. Admittance Curves

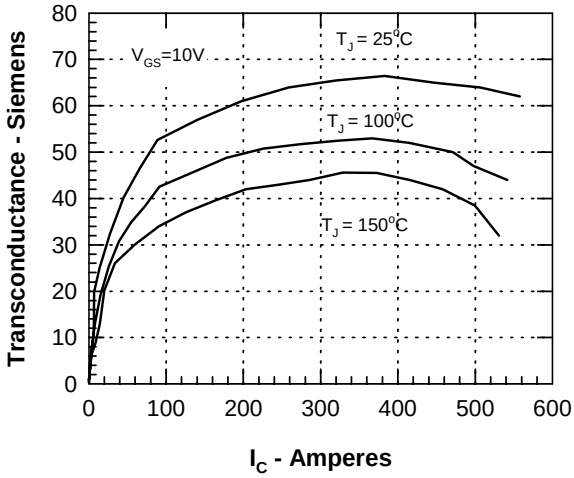


Figure 4. Transconductance vs. Drain Current

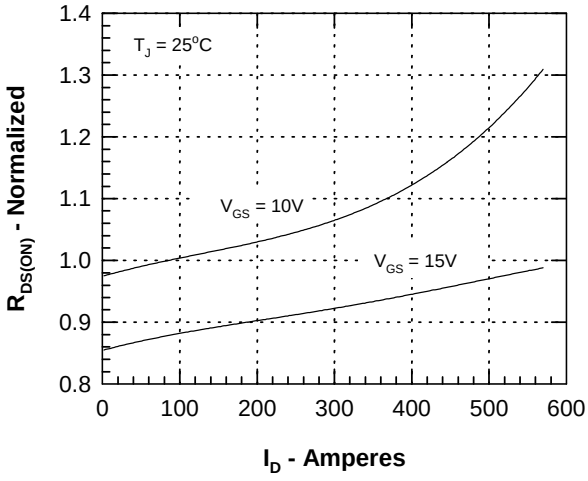


Figure 5. $R_{DS(on)}$ normalized to 0.5 I_{D25} value

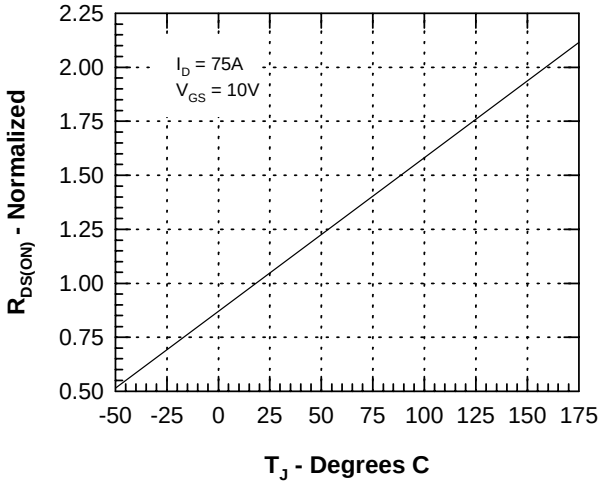


Figure 6. Normalized $R_{DS(on)}$ vs. Junction Temperature

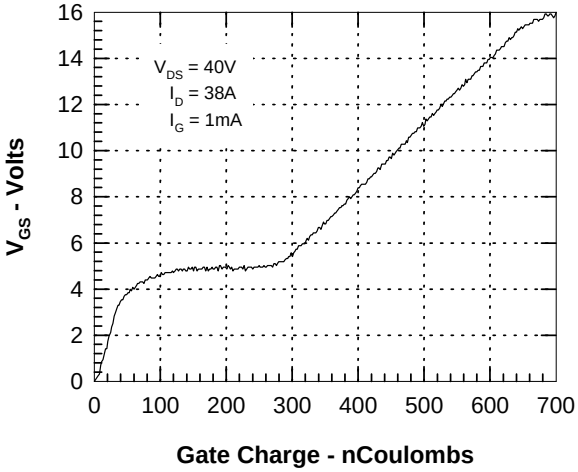


Figure 7. Gate Charge

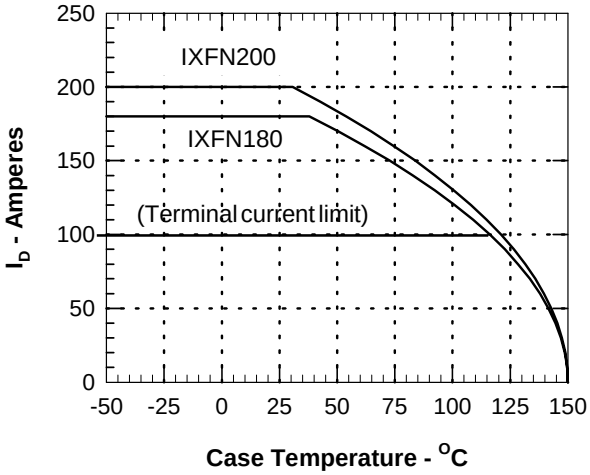


Figure 8. Drain Current vs. Case Temperature

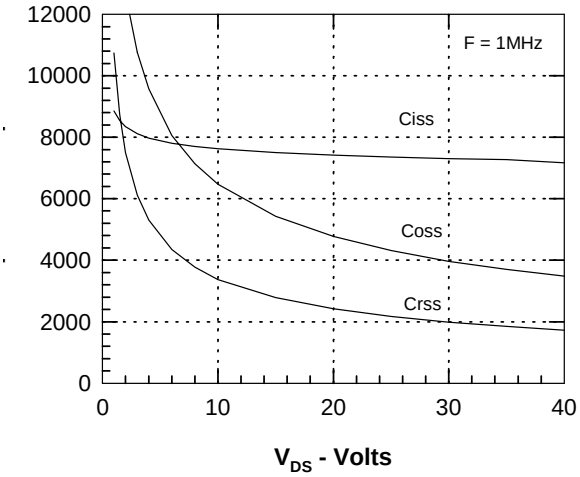


Figure 9. Capacitance Curves

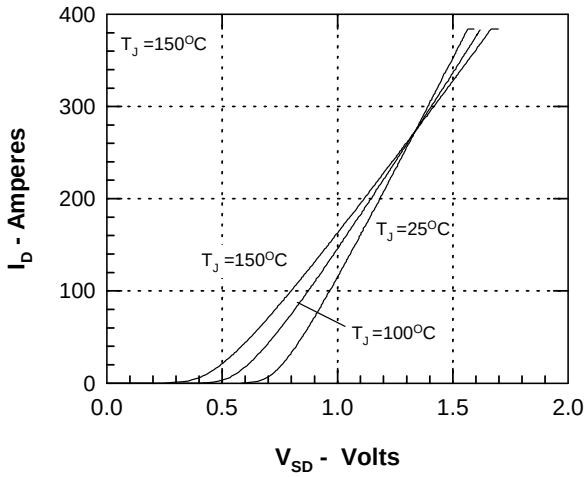


Figure 10. Source-Drain Voltage vs. Source Current

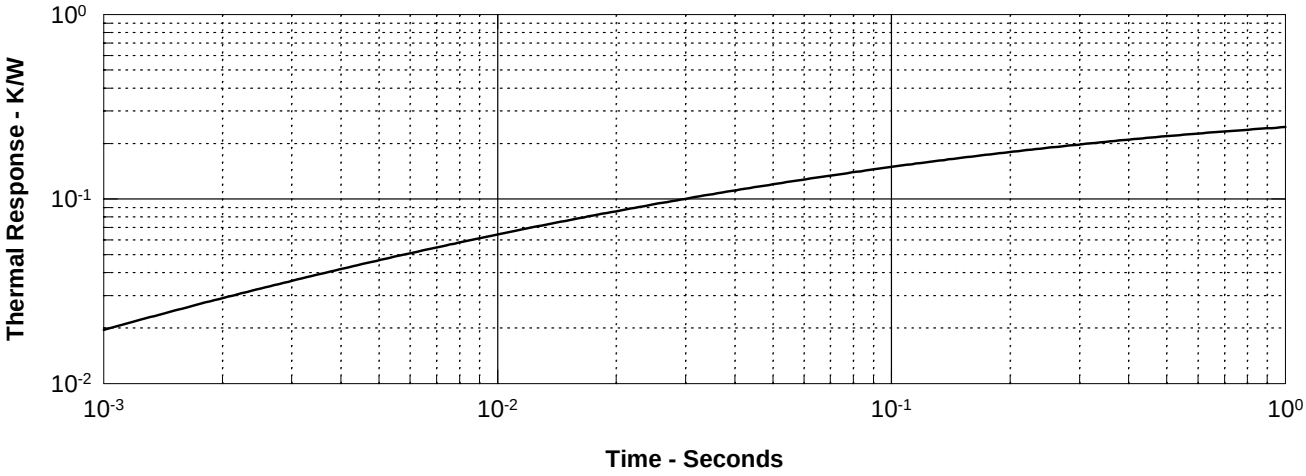


Figure 11. Transient Thermal Resistance