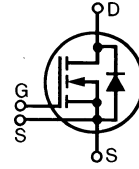


# HiPerFET™ Power MOSFETs

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

**IXFN 200 N06**  
**IXFN 180 N07**  
**IXFN 200 N07**



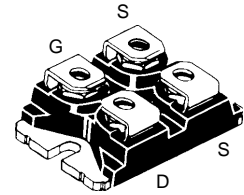
$V_{DSS}$	$I_{D25}$	$R_{DS(on)}$
60 V	200 A	6 mΩ
70 V	180 A	7 mΩ
70 V	200 A	6 mΩ

$t_{rr} \leq 250$  ns

Symbol	Test Conditions	Maximum Ratings		
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	N07	70	V
		N06	60	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1\text{ M}\Omega$	N07	70	V
		N06	60	V
$V_{GS}$	Continuous		$\pm 20$	V
$V_{GSM}$	Transient		$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$ ; Chip capability	200N06/200N07	200	A
		180N07	180	A
$I_{L(RMS)}$	Terminal current limit		100	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$		600	A
$I_{AR}$	$T_C = 25^\circ\text{C}$		100	A
$E_{AR}$	$T_C = 25^\circ\text{C}$		30	mJ
$E_{AS}$	$T_C = 25^\circ\text{C}$		2	J
$dv/dt$	$I_S \leq I_{DM}$ , $di/dt \leq 100\text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ\text{C}$ , $R_G = 2\ \Omega$		5	V/ns
$P_D$	$T_C = 25^\circ\text{C}$		520	W
$T_J$			-55 ... +150	$^\circ\text{C}$
$T_{JM}$			150	$^\circ\text{C}$
$T_{stg}$			-55 ... +150	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz, RMS $I_{ISOL} \leq 1\text{ mA}$	$t = 1\text{ min}$ $t = 1\text{ s}$	2500 3000	V~ V~
$M_d$	Mounting torque Terminal connection torque		1.5/13Nm/lb.in. 1.5/13Nm/lb.in.	
<b>Weight</b>			30	g

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	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0\text{ V}$ , $I_D = 1\text{ mA}$	N06 N07	60 70	V V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 8\text{ mA}$		2	4 V
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}_{DC}$ , $V_{DS} = 0$			$\pm 200$ nA
$I_{DSS}$	$V_{DS} = 0.8 \cdot V_{DSS}$ , $T_J = 125^\circ\text{C}$ $V_{GS} = 0\text{ V}$			400 $\mu\text{A}$ 2 mA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$ , $I_D = 0.5 \cdot I_{D25}$ Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$	200N06/200N07 180N07		6 mΩ 7 mΩ

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$ , pulse test	60	80	S
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		9000	pF
$C_{oss}$			4000	pF
$C_{rss}$			2400	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1\ \Omega$ (External),		30	ns
$t_r$			60	ns
$t_{d(off)}$			100	ns
$t_f$			60	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		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

**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

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

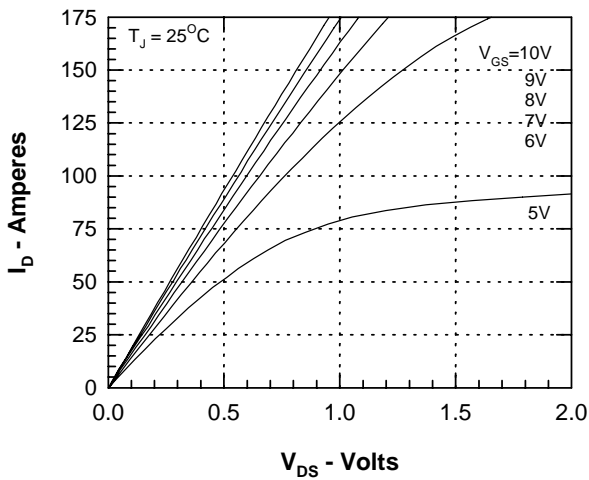


Figure 1. Output Characteristics at 25°C

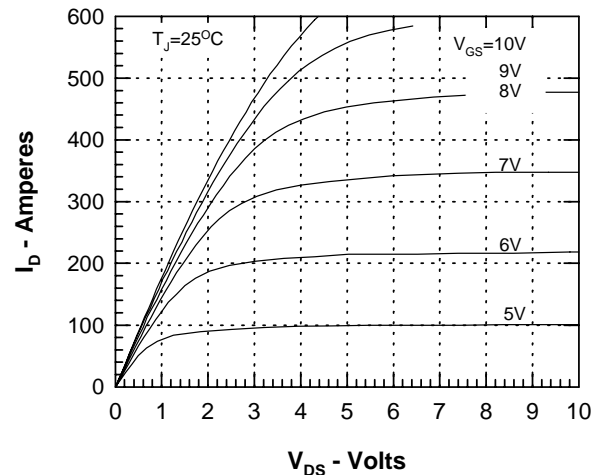


Figure 2. Extended Output Characteristics

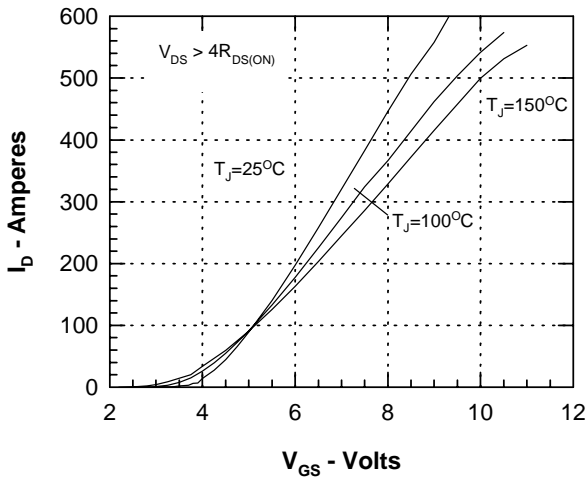


Figure 3. Admittance Curves

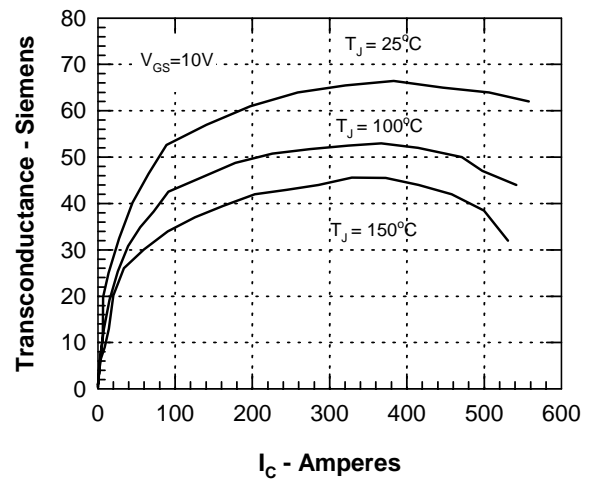
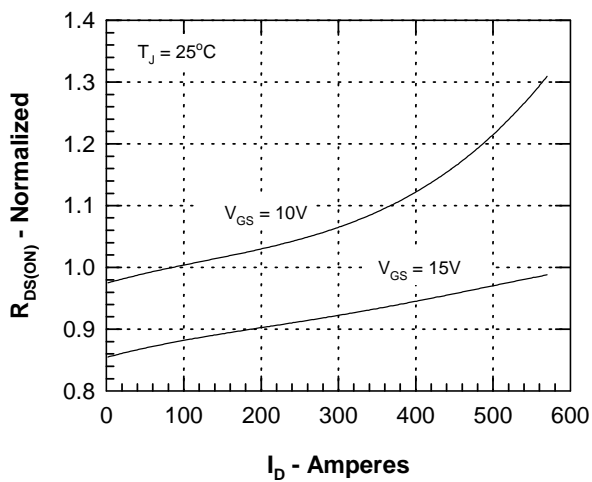
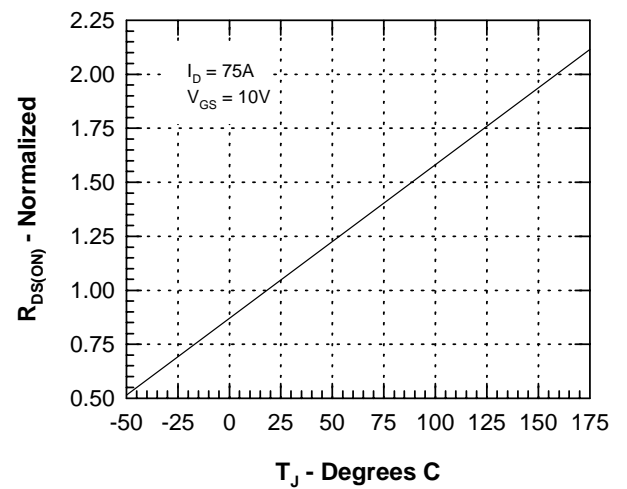


Figure 4. Transconductance vs. Drain Current


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

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

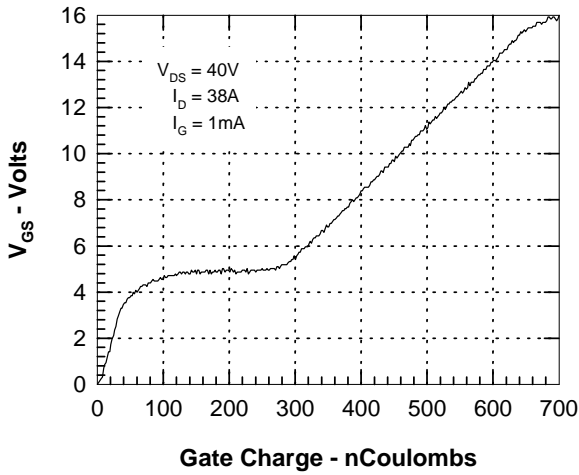


Figure 7. Gate Charge

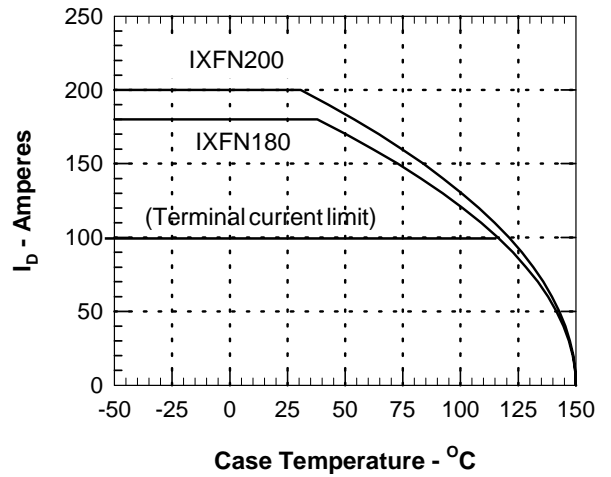


Figure 8. Drain Current vs. Case Temperature

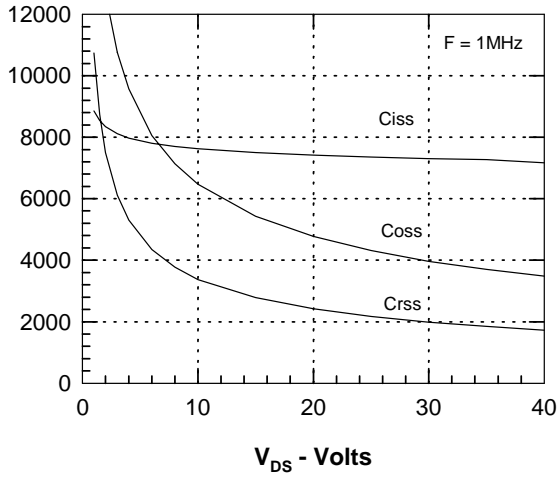


Figure 9. Capacitance Curves

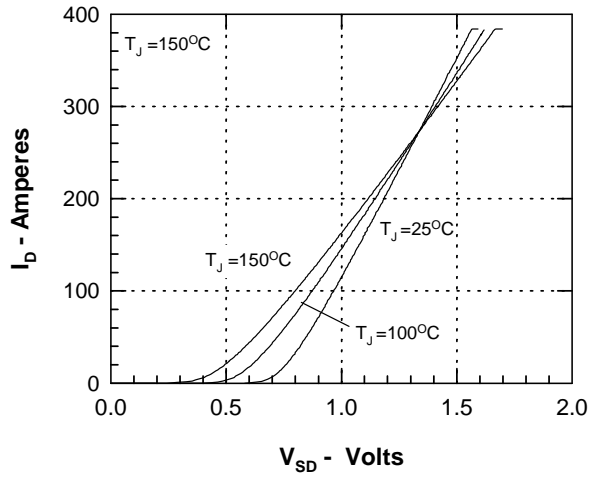


Figure 10. Source-Drain Voltage vs. Source Current

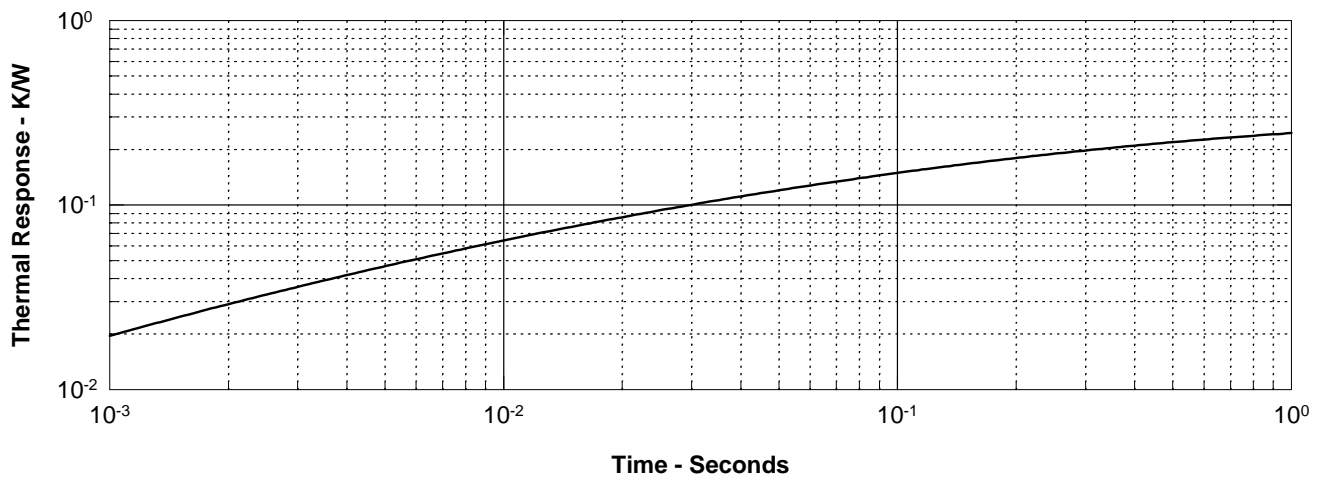


Figure 11. Transient Thermal Resistance