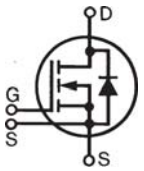
IXYS

HiPerFET™ Power MOSFET

Single MOSFET Die

	V_{DSS}	I_{D25}	$R_{DS(on)}$
IXFN 24N100	1000 V	24 A	0.39 Ω
IXFN 23N100	1000 V	23 A	0.43 Ω

$t_{rr} \leq 250$ ns

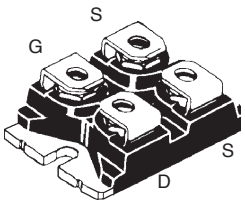


Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C		1000	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ		1000	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25°C	24N100	24	A
		23N100	23	A
I_{DM}	T_C = 25°C; Note 1	24N100	96	A
		23N100	92	A
I_{AR}	T_C = 25°C		24	A
E_{AR}	T_C = 25°C		60	mJ
E_{AS}	T_C = 25°C		3	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		600	W
T_J			-55 ... +150	°C
T_{JM}			150	°C
T_{stg}			-55 ... +150	°C
T_L	1.6 mm (0.063 in) from case for 10 s		300	°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 (T_J = 25°C, unless otherwise specified)		Characteristic Values Min.	Typ.	Max.	
V_{DSS}	V_{GS} = 0 V, I_D = 3mA		1000			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8mA		3.0		5.0	V
I_{GSS}	V_{GS} = ±20V, V_{GS} = 0V				±100	nA
I_{DSS}	$V_{DS} = V_{DSS}$	T_J = 25°C			100	µA
	V_{GS} = 0 V	T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 0.5 ï I_{D25}	23N100			0.43	Ω
	Note 2	24N100			0.39	Ω

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 package
- Encapsulating epoxy meets UL 94 V-0, flammability classification
- 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

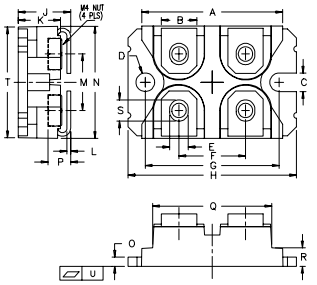
Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 ï I_{D25}, Note 2	15	22		S
C_{iss}			7000		pF
C_{oss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		750		pF
C_{rss}			260		pF
$t_{d(on)}$			35		ns
t_r	V_{GS} = 10 V, V_{DS} = 0.5 ï V_{DSS}, I_D = 0.5 ï I_{D25}		35		ns
$t_{d(off)}$	R_G = 1 Ω (External),		75		ns
t_f			21		ns
$Q_{g(on)}$			250		nC
Q_{gs}	V_{GS} = 10 V, V_{DS} = 0.5 ï V_{DSS}, I_D = 0.5 ï I_{D25}		55		nC
Q_{gd}			135		nC
R_{thJC}				0.21	K/W
R_{thCK}			0.05		K/W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)		Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0	24N100			24	A
		23N100			23	A
I_{SM}	Repetitive;	24N100			96	A
	pulse width limited by T_{JM}	23N100			92	A
V_{SD}	$I_F = I_S$, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %				1.5	V
t_{rr}					250	ns
Q_{RM}	$I_F = I_S$, -di/dt = 100 A/µs, V_R = 100 V			1.0		µC
I_{RM}				8		A

Notes: 1. Pulse width limited by T_{JM}.
2. Pulse test, t ≤ 300 ms, duty cycle d ≤ 2 %.

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

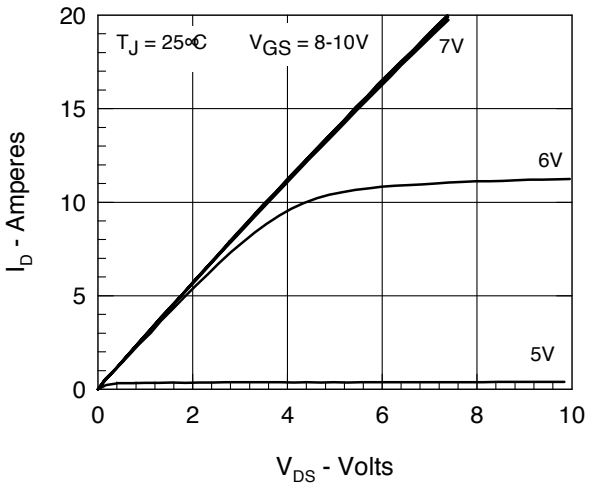


Figure 1. Output Characteristics at 25°C

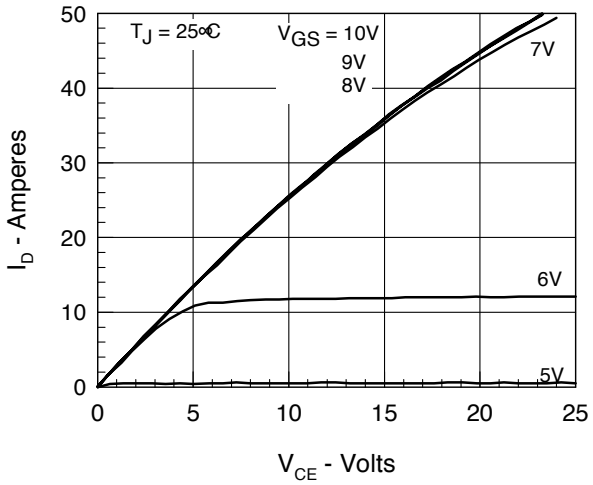


Figure 2. Extended Output Characteristics at 125°C

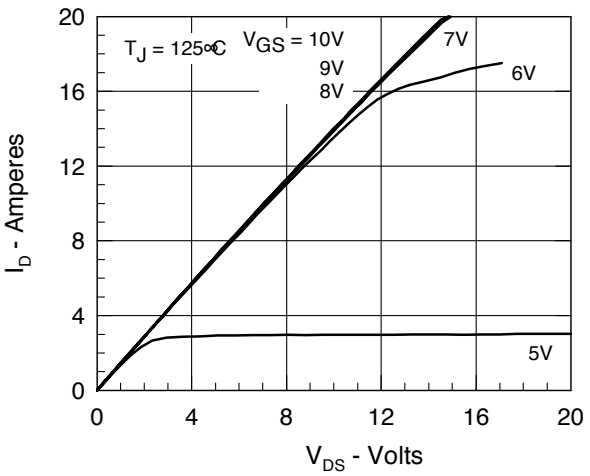


Figure 3. $R_{DS(on)}$ normalized to 0.5 I_{D25} value vs. I_D

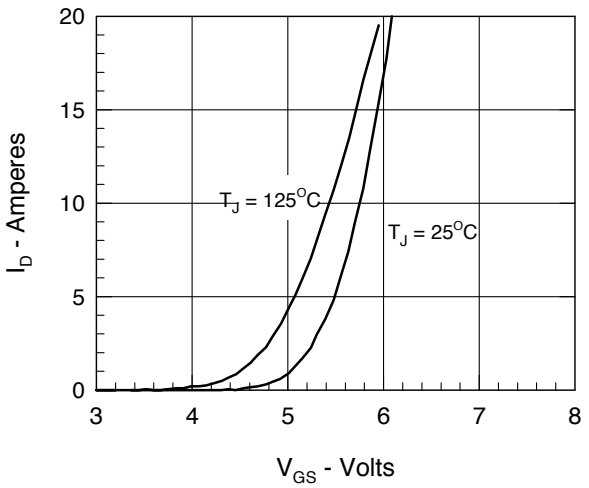


Figure 4. Admittance Curves

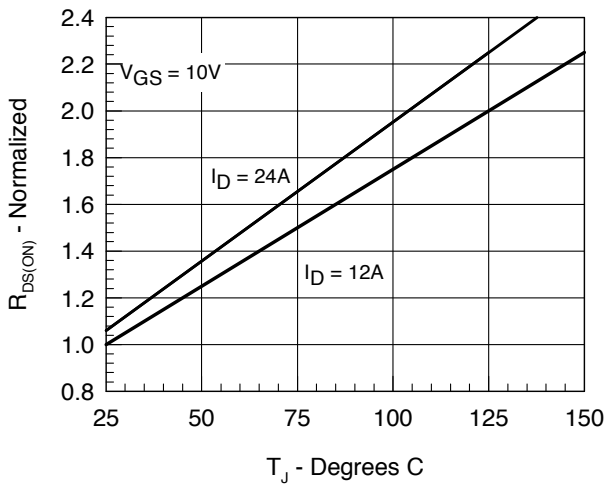


Figure 5. $R_{DS(on)}$ normalized to 0.5 I_{D25} value vs. T_J

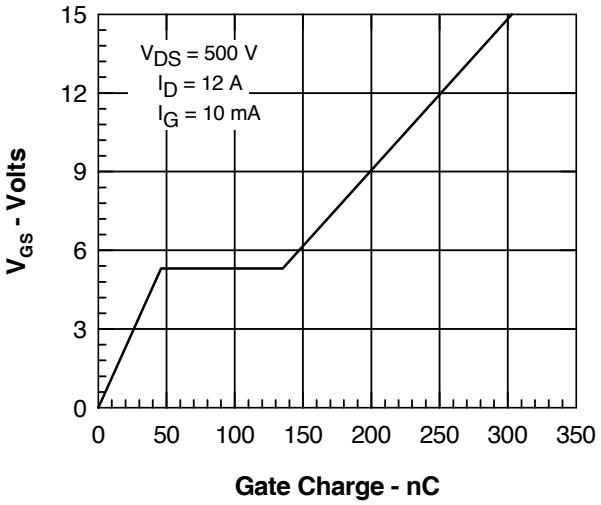


Figure 6. Gate Charge

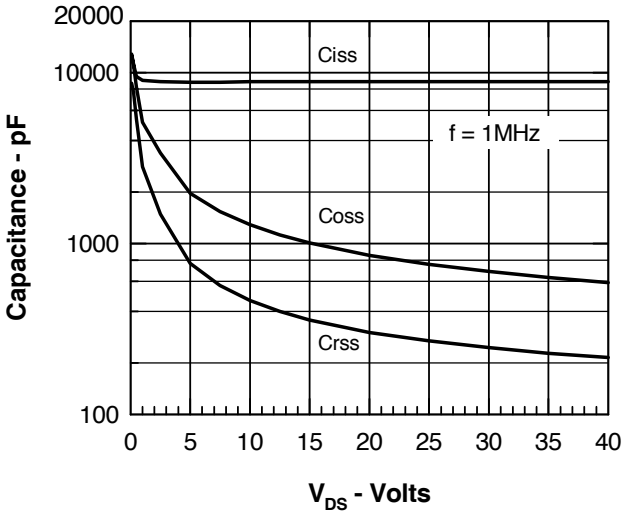


Figure 7. Capacitance Curves

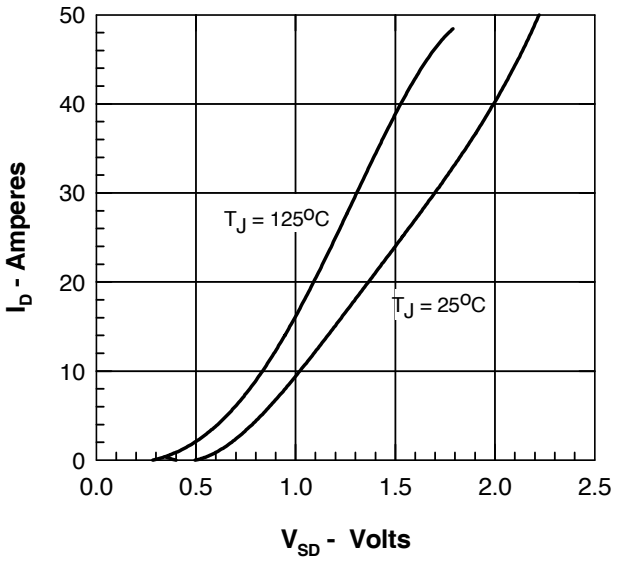


Figure 8. Forward Voltage Drop of the Intrinsic Diode

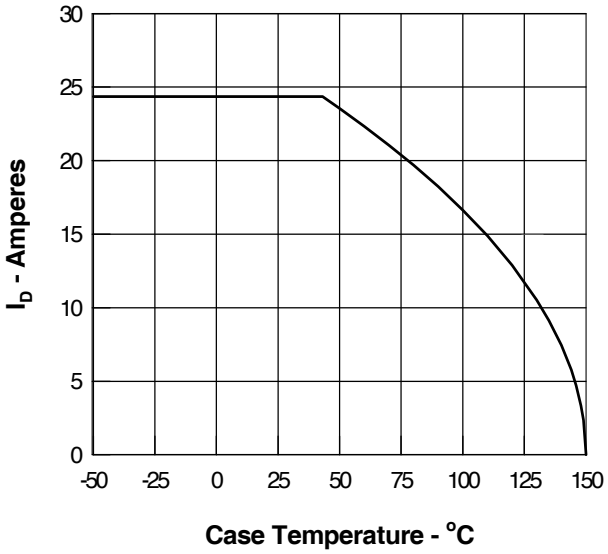


Figure9. Drain Current vs. Case Temperature

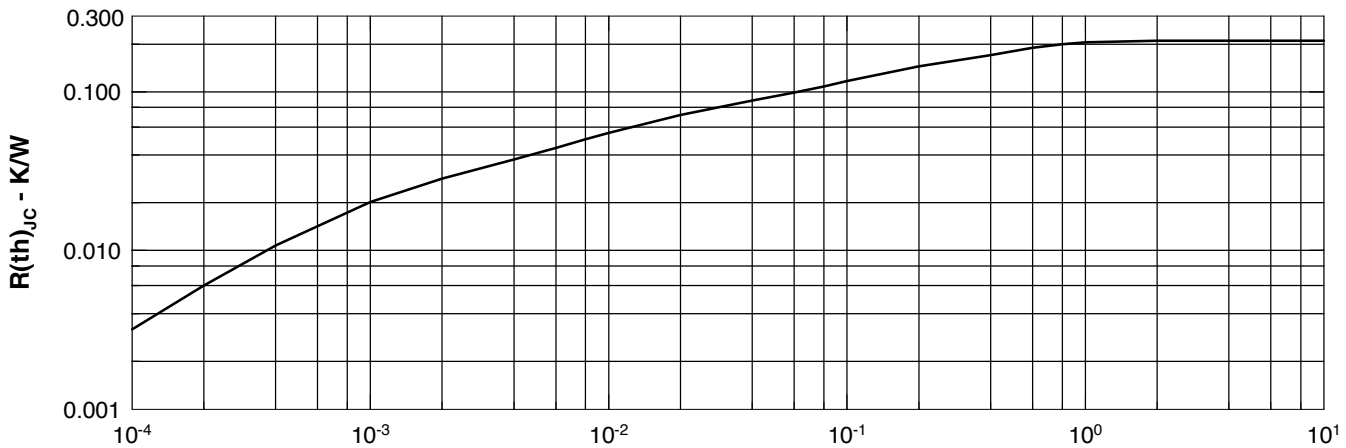


Figure 10. Transient Thermal Resistance