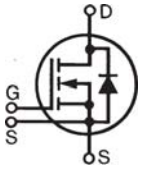
IXYS

HiPerFET™ Power MOSFET Single MOSFET Die

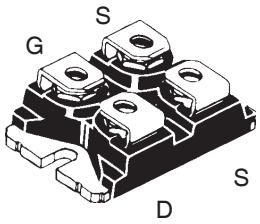
IXFN39N90

V_{DSS} = 900V
I_{D25} = 39A
$R_{DS(on)}$ ≤ 220mΩ
t_{rr} ≤ 250ns

N-Channel Enhancement Mode
Avalanche Rated



miniBLOC, SOT-227
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		900	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ		900	V
V_{GSS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25°C		39	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}		154	A
I_A	T_C = 25°C		39	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		694	W
T_J			-55 ... +150	°C
T_{JM}			150	°C
T_{stg}			-55 ... +150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 minute	2500	V~
	$I_{ISOL} \le$ 1mA	t = 1 second	3000	V~
M_d	Mounting Torque		1.5/13	Nm/lb.in.
	Terminal Connection Torque		1.3/11.5	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} = 0V, I_D = 3mA	900			V
BV_{DSS}	**Temperature Dependence**		3.68		V/K
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8mA	3.0		5.5	V
$V_{GS(th)}$	**Temperature Dependence**		-0.009		V/K
I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±200	nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS} = 0V			100	μA
	T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS} = 10V, $I_D = 0.5 \bullet I_{D25}$, Note 1			220	mΩ

Features

- International Standard Package
- miniBLOC, with Aluminium Nitride Isolation
- High Current Handling Capability
- Fast Intrinsic Diode
- Avalanche Rated
- Low Package Inductance

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- DC-DC Converters
- Battery Chargers
- Switch-Mode and Resonant-Mode Power Supplies
- DC Choppers
- Temperture and Lighting Controls

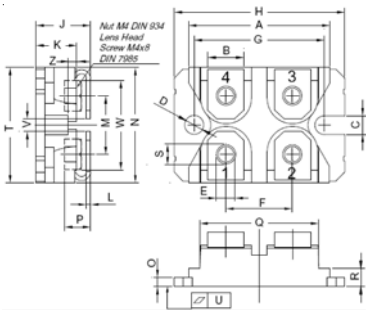
Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 15V, I_D = 0.5 • I_{D25}, Note 1	30	45		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		9200		pF
C_{oss}			1360		pF
C_{rss}			380		pF
$t_{d(on)}$	**Resistive Switching Times**		45		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0 .5 • I_{D25}		68		ns
$t_{d(off)}$	R_G = 1Ω (External)		125		ns
t_f			30		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		390		nC
Q_{gs}			65		nC
Q_{gd}			190		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			39	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			154	A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.3	V
t_{rr}	I_F = 39A, -di/dt = -100A/μs			250	ns
Q_{RM}	V_R = 100V, V_{GS} = 0V		2.0		μC
I_{RM}			9.0		A

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

SOT-227B miniBLOC (IXFN)



(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	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.55	4.85	0.179	0.191
T	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Z	2.50	2.70	0.098	0.106

Figure 1. Output Characteristics at 25°C

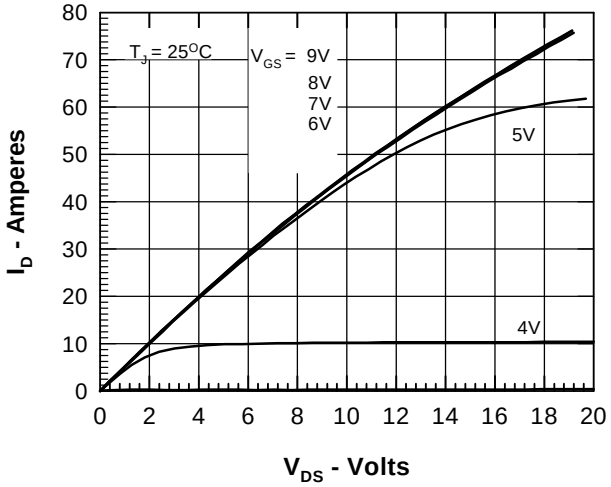


Figure 2. Output Characteristics at 125°C

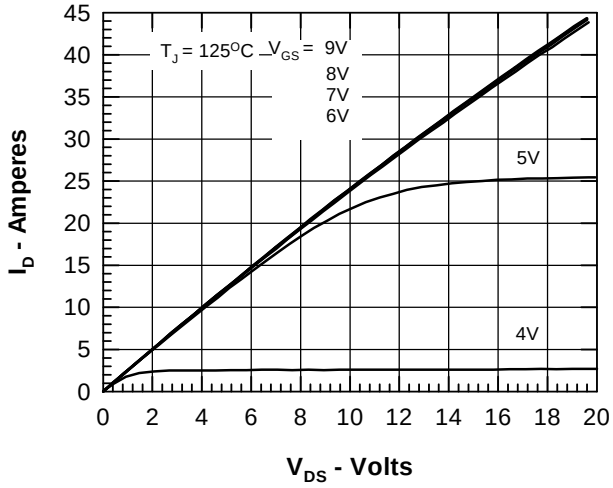
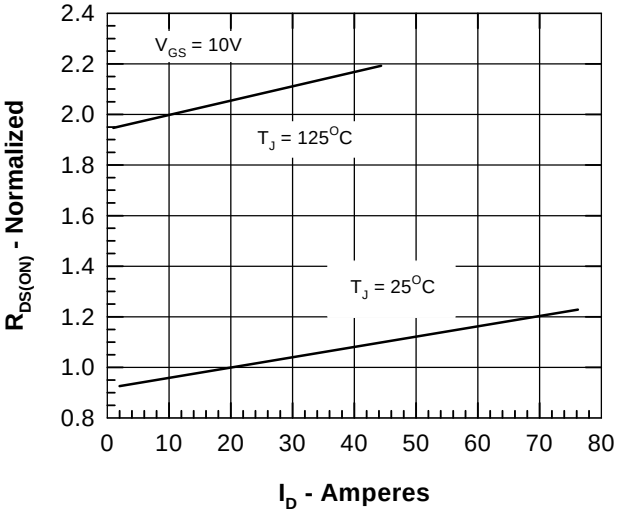


Figure 3. $R_{DS(on)}$ normalized to 0.5 I_{D25} value vs. I_D



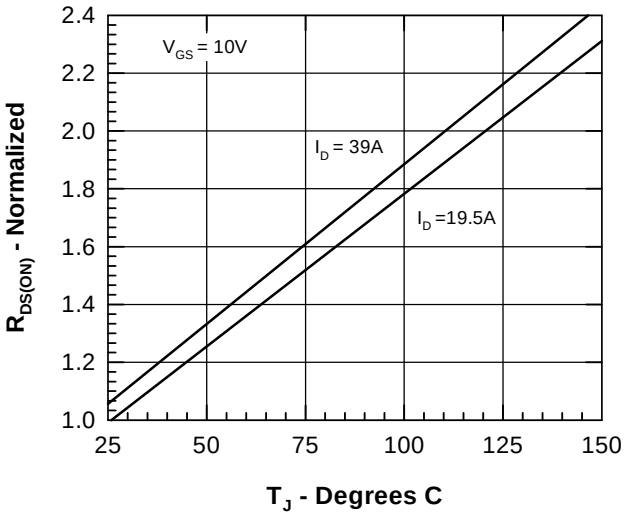


Figure 5. Drain Current vs. Case Temperature

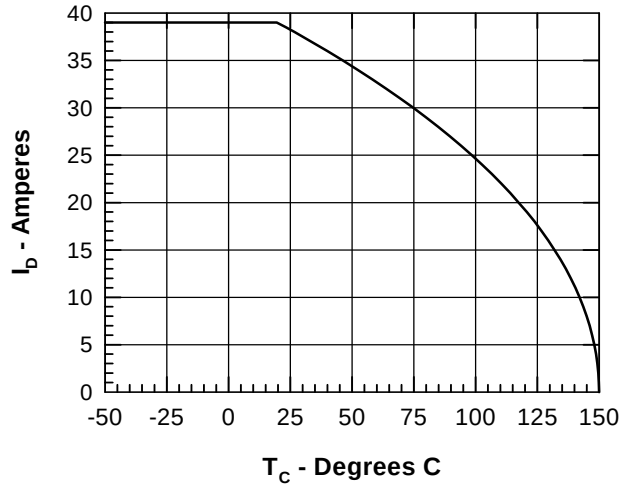


Figure 6. Admittance Curves

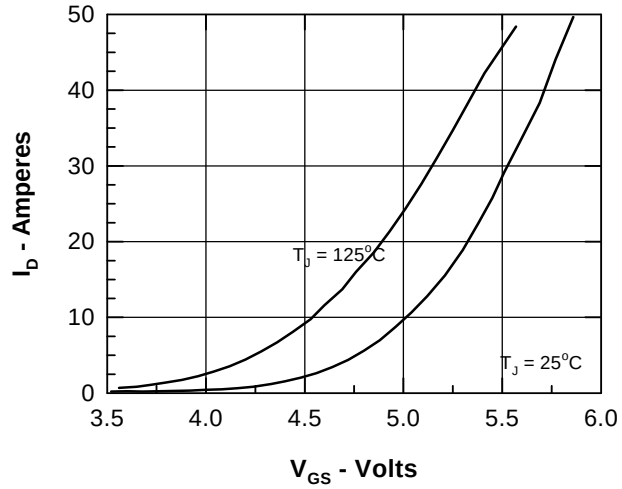


Figure 7. Gate Charge

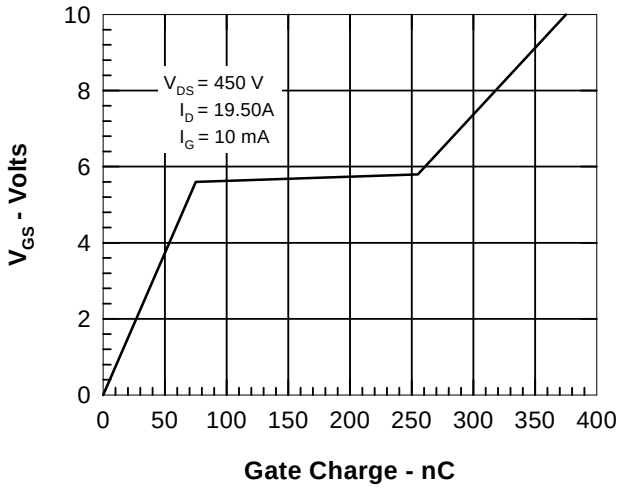


Figure 8. Capacitance Curves

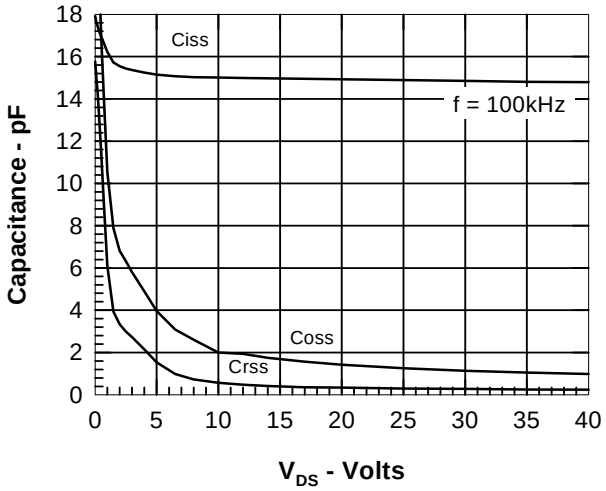


Figure 9. Forward Voltage Drop of the Intrinsic Diode

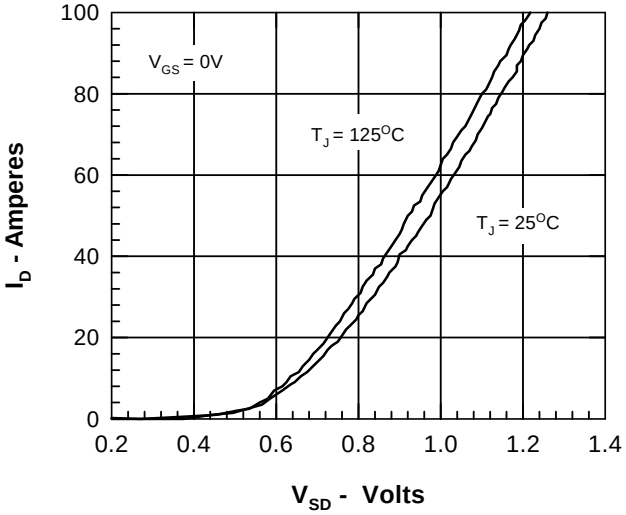
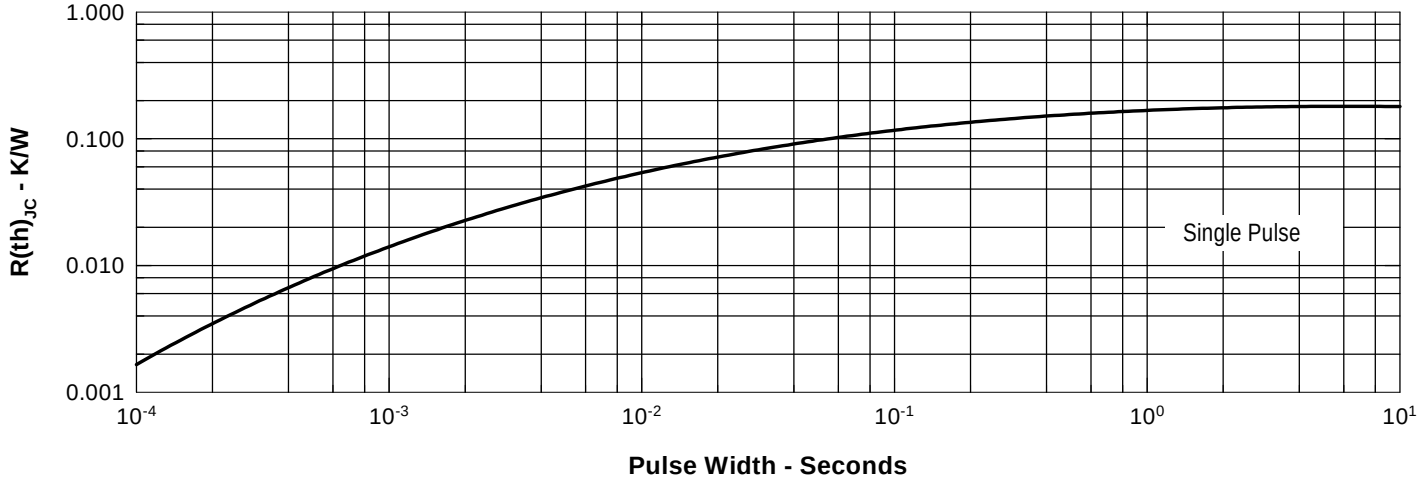


Figure 10. Transient Thermal Resistance



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

IXYS:
IXFN39N90