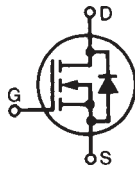


# HiPerFET™ Power MOSFETs

## Single Die MOSFET

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

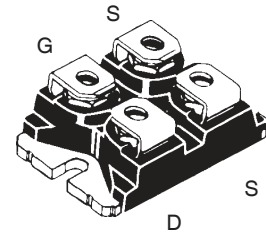


**IXFN25N90**  
**IXFN26N90**

$V_{DSS}$	$I_{D25}$	$R_{DS(on)}$
<b>900V</b>	<b>25A</b>	<b>330mΩ</b>
<b>900V</b>	<b>26A</b>	<b>300mΩ</b>

Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	900	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ , $R_{GS} = 1\text{M}\Omega$	900	V
$V_{GSS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	25N90 25	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	25N90 100	A
$I_{D25}$	$T_C = 25^\circ\text{C}$	26N90 26	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	26N90 104	A
$I_{AR}$	$T_C = 25^\circ\text{C}$	25N90 25	A
$I_{AR}$	$T_C = 25^\circ\text{C}$	26N90 26	A
$E_{AR}$	$T_C = 25^\circ\text{C}$	64	mJ
$E_{AS}$	$T_C = 25^\circ\text{C}$	3	J
$dV/dt$	$I_S \leq I_{DM}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ\text{C}$	5	V/ns
$P_D$	$T_C = 25^\circ\text{C}$	600	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$T_L$	1.6mm (0.062 in.) from case for 10s	300	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz, RMS	t = 1min 2500	V~
	$I_{ISOL} \leq 1\text{mA}$	t = 1s 3000	V~
$M_d$	Mounting torque	1.5/13	Nm/lb.in.
	Terminal connection torque	1.3/11.5	Nm/lb.in.
<b>Weight</b>		30	g

miniBLOC, SOT-227  
E153432



G = Gate  
S = Source  
D = Drain

Either Source terminal S can be used as the Source terminal or the Kelvin Source (gate return) terminal.

### Features

- International standard package
- miniBLOC, with Aluminium nitride isolation
- Low  $R_{DS(ON)}$  HDMOS™ process
- Avalanche Rated
- Low package inductance
- Fast intrinsic diode

### Advantages

- Low gate drive requirement
- High power density

### Applications:

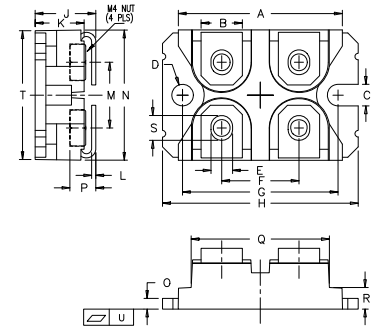
- Switched-mode and resonant-mode power supplies
- DC-DC Converters
- Battery chargers
- DC choppers
- Temperature & lighting controls

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
$BV_{DSS}$	$V_{GS} = 0\text{V}$ , $I_D = 3\text{mA}$	900		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 8\text{mA}$	3.0		5.0 V
$I_{GSS}$	$V_{GS} = \pm 20\text{V}$ , $V_{DS} = 0\text{V}$			$\pm 200$ nA
$I_{DSS}$	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0\text{V}$ $T_J = 125^\circ\text{C}$			100 $\mu\text{A}$ 2 mA
$R_{DS(on)}$	$V_{GS} = 10\text{V}$ , $I_D = 0.5 \cdot I_{D25}$ , Note 1	25N90 330 26N90 300		mΩ

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$V_{DS} = 10\text{V}, I_D = 0.5 \cdot I_{DSS}$ , Note 1	18	28	S
$C_{iss}$	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		8.7	10.8 nF
$C_{oss}$			800	1000 pF
$C_{rss}$			300	375 pF
$t_{d(on)}$	<b>Resistive Switching Times</b> $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{DSS}$ $R_G = 1\Omega$ (External)		60	ns
$t_r$			35	ns
$t_{d(off)}$			130	ns
$t_f$			24	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{DSS}$		240	nC
$Q_{gs}$			56	nC
$Q_{gd}$			107	nC
$R_{thJC}$				0.21 $^\circ\text{C/W}$
$R_{thCS}$		0.05		$^\circ\text{C/W}$

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$I_S$	$V_{GS} = 0\text{V}$	25N90 26N90		25 A 26 A
$I_{SM}$	Repetitive, pulse width limited by $T_{JM}$	25N90 26N90		100 A 104 A
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{V}$ , Note 1			1.5 V
$t_{rr}$	$I_F = I_S, -di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}$			250 ns
$Q_{RM}$			1.4	$\mu\text{C}$
$I_{RM}$			10	A

### SOT-227B Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

Note 1: Pulse test,  $t \leq 300\mu\text{s}$ ; duty cycle,  $d \leq 2\%$ .

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

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:	4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
	4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
	4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2	7,071,537	

Figure 1. Output Characteristics at 25°C

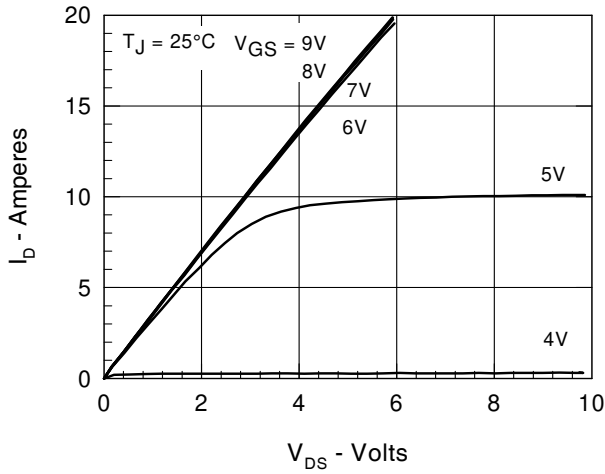


Figure 2. Extended Output Characteristics at 125°C

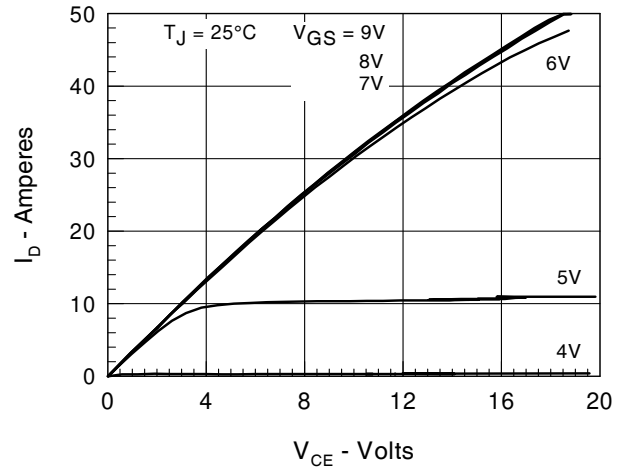


Figure 3.  $R_{DS(on)}$  normalized to 0.5  $I_{D25}$  value vs.  $I_D$

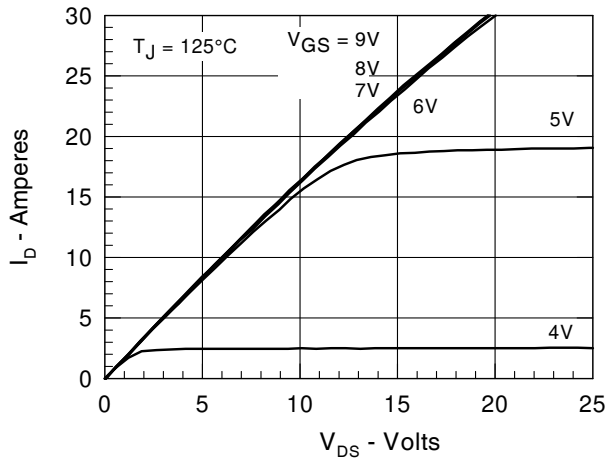


Figure 4. Admittance Curves

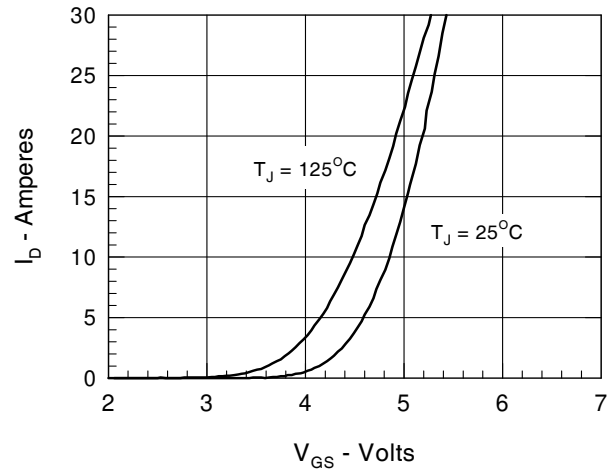


Figure 5.  $R_{DS(on)}$  normalized to 0.5  $I_{D25}$  value vs.  $I_D$

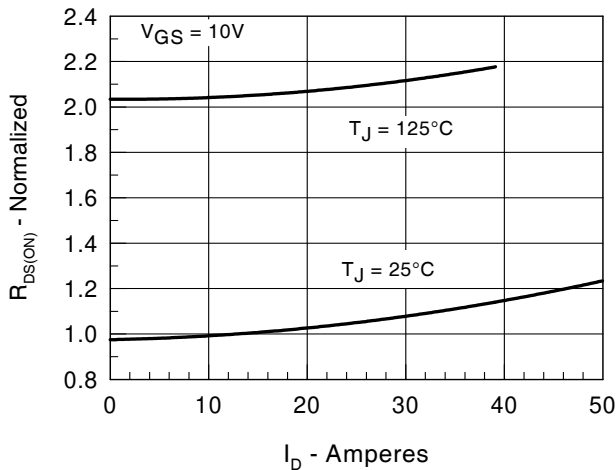


Fig. 6.  $R_{DS(on)}$  Normalized to 0.5  $I_{D25}$  Value vs. Junction Temperature

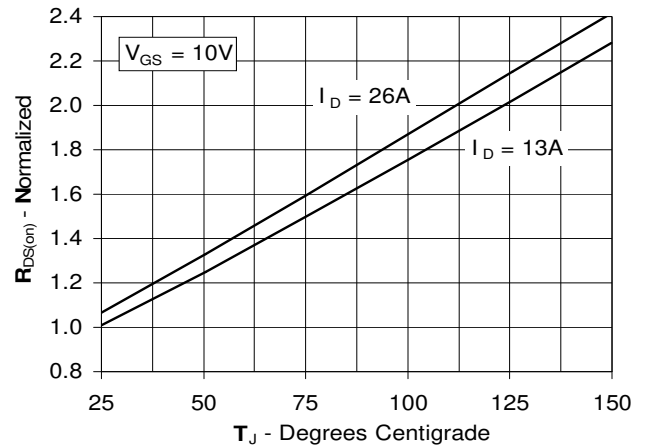


Figure 7. Gate Charge

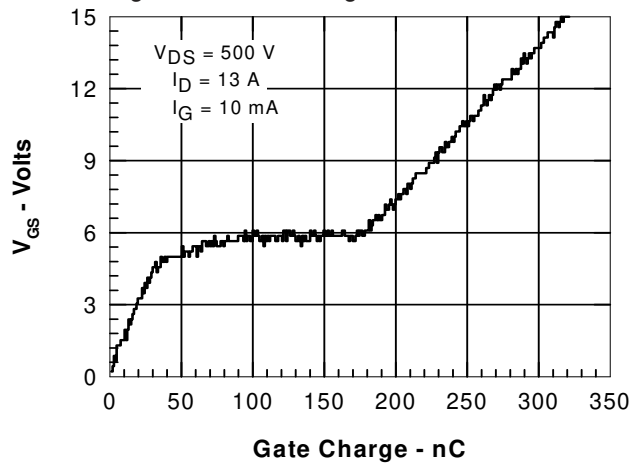


Figure 8. Capacitance Curves

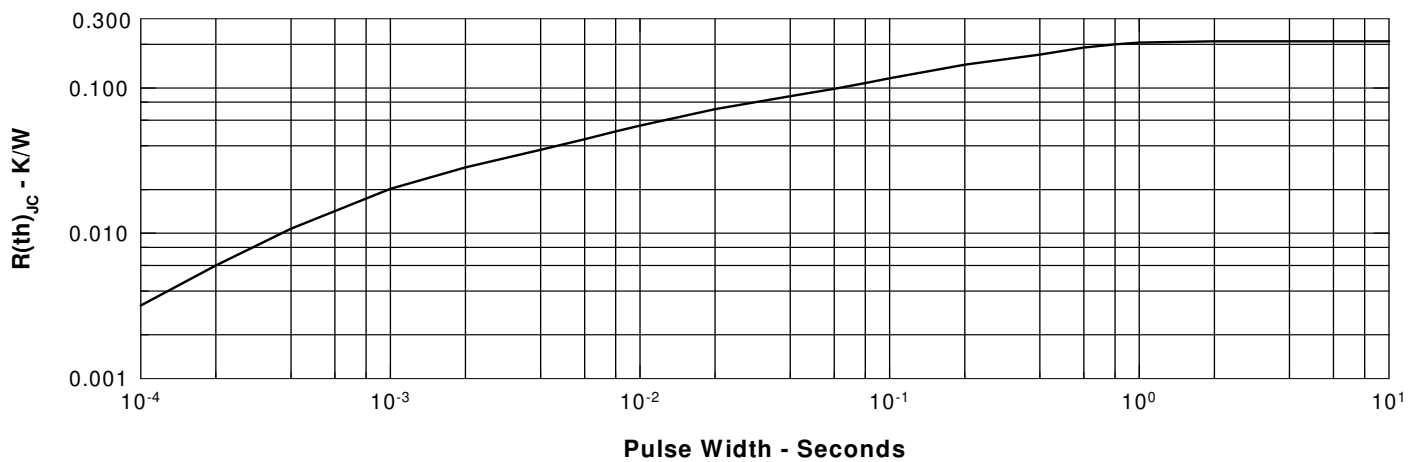
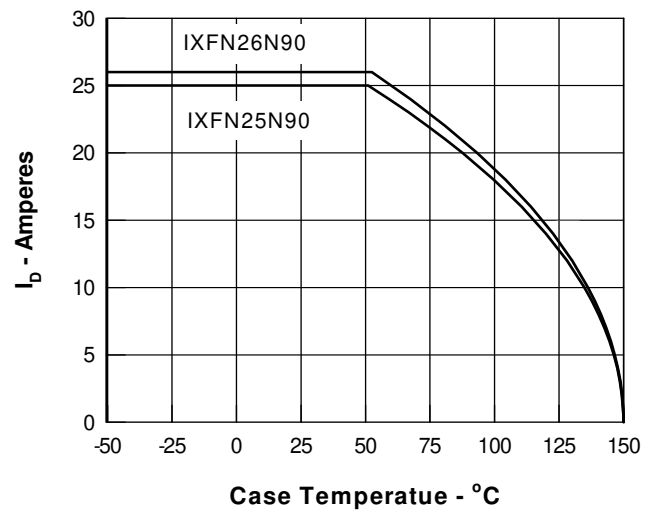
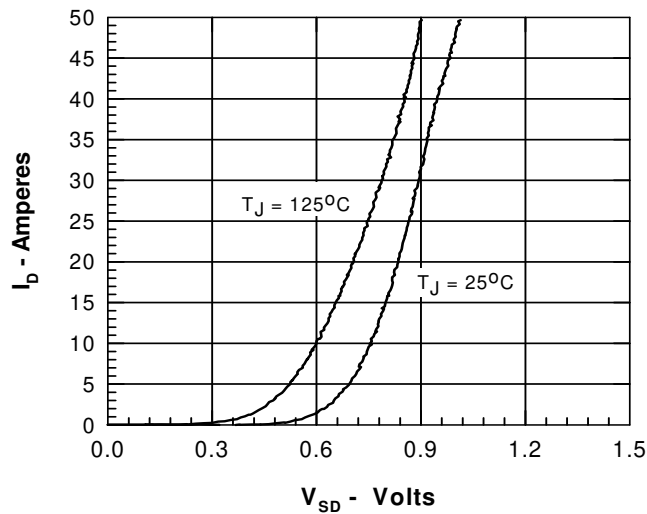
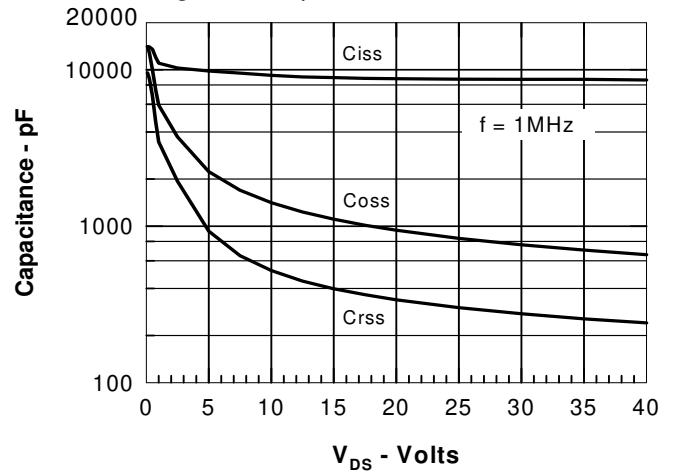


Figure 11. Transient Thermal Resistance



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