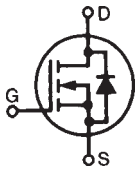
IXYS

PolarHV™ HiPerFET Power MOSFET

IXFN 48N60P

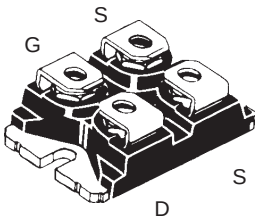
V_{DSS} = 600 V
I_{D25} = 40 A
$R_{DS(on)}$ ≤ 140 mΩ
t_{rr} ≤ 200 ns

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C		600	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ		600	V
V_{GSS}	Continuous		±30	V
V_{GSM}	Transient		±40	V
I_{D25}	T_C = 25°C		40	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}		110	A
I_{AR}	T_C = 25°C		48	A
E_{AR}	T_C = 25°C		70	mJ
E_{AS}	T_C = 25°C		2.0	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$, R_G = 2 Ω		10	V/ns
P_D	T_C = 25°C		625	W
T_J			-55 ... +150	°C
T_{JM}			150	°C
T_{stg}			-55 ... +150	°C
T_L	1.6 mm (0.062 in.) from case for 10 s		300	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	$I_{ISOL} \le$ 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

miniBLOC, SOT-227 B (IXFN)
E153432



G = Gate D = Drain
S = Source

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

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0 V, I_D = 250 µA	600			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8 mA	3.0		5.5	V
I_{GSS}	V_{GS} = ±30 V_{DC}, V_{DS} = 0			±200	nA
I_{DSS}	$V_{DS} = V_{DSS}$			25	µA
	V_{GS} = 0 V, T_J = 125°C			1000	µA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 4 A, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %			140	mΩ

Features

- International standard package
- Encapsulating epoxy meets UL 94 V-0, flammability classification
- miniBLOC with Aluminium nitride isolation
- Fast recovery diode
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
  - easy to drive and to protect

Advantages

- Easy to mount
- Space savings
- High power density

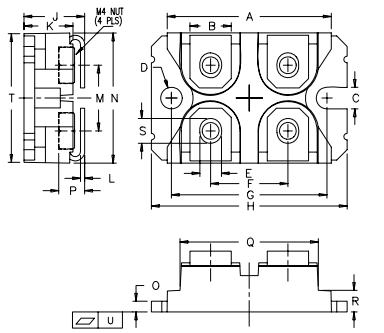
© 2006 IXYS All rights reserved

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 20 V; I_D = 24 A, pulse test	35	53		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		8860		pF
C_{oss}			850		pF
C_{rss}			60		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 24 A R_G = 2 Ω (External)		30		ns
t_r			25		ns
$t_{d(off)}$			85		ns
t_f			22		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 24 A		150		nC
Q_{gs}			50		nC
Q_{gd}			50		nC
R_{thJC}				0.2	°C/W
R_{thCS}	SOT-227B		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} = 0 V			48	A
I_{SM}	Repetitive			110	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}	I_F = 25A, -di/dt = 100 A/µs			200	ns
Q_{RM}	V_R = 100V		0.8		µC
I_{RM}			6.0		A

SOT-227B (IXFN) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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

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

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

Fig. 1. Output Characteristics @ 25°C

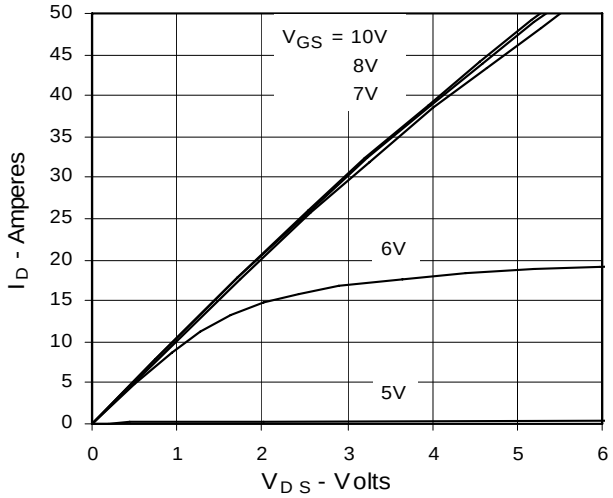


Fig. 2. Extended Output Characteristics @ 25°C

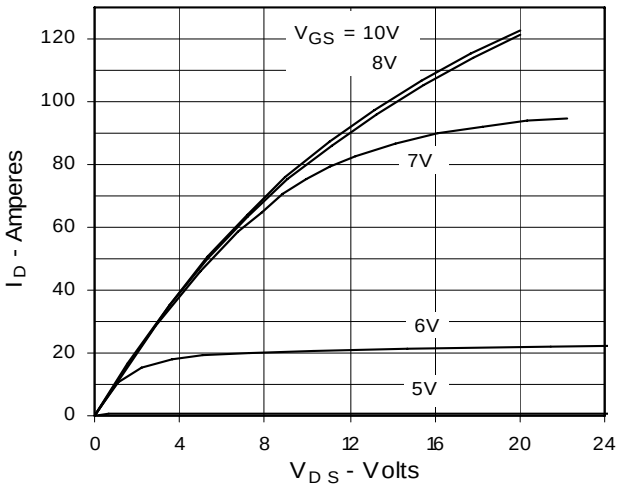


Fig. 3. Output Characteristics @ 125°C

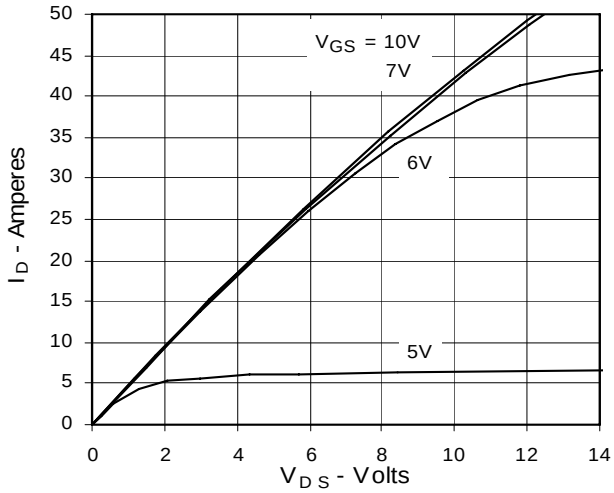


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 24A Value vs. Junction Temperature

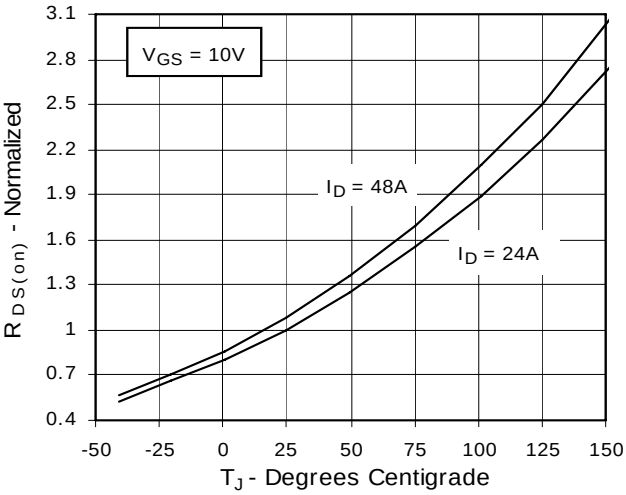


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 24A Value vs. Drain Current

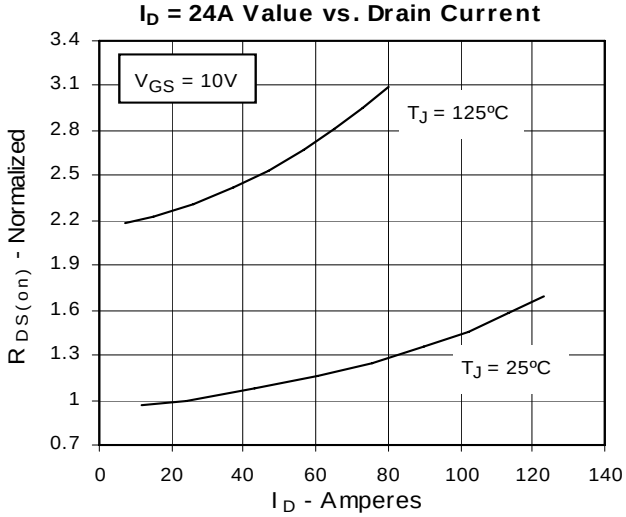
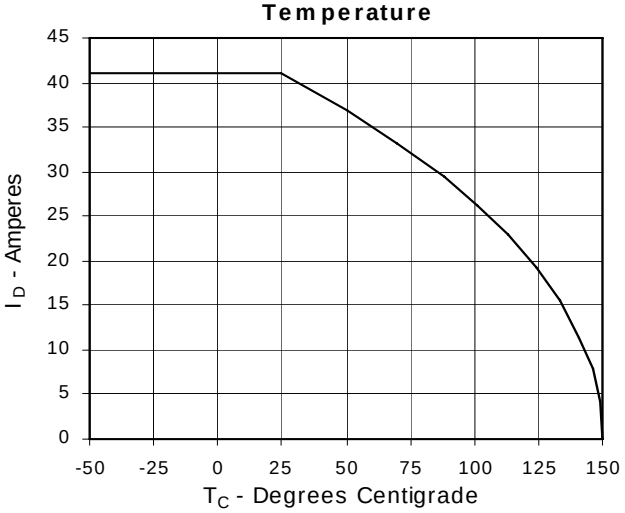


Fig. 6. Drain Current vs. Case Temperature



© 2006 IXYS All rights reserved

Fig. 7. Input Admittance

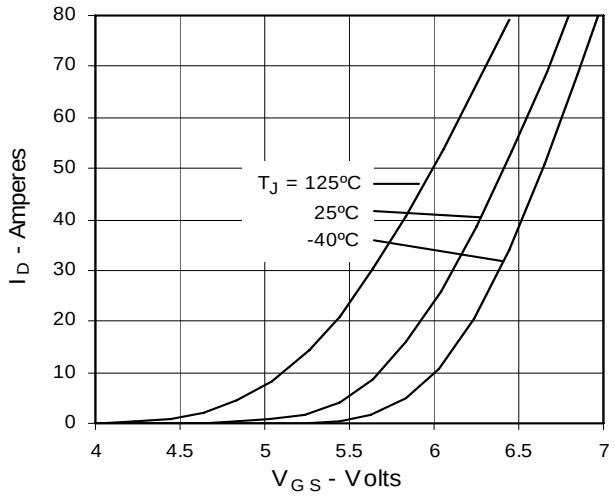


Fig. 8. Transconductance

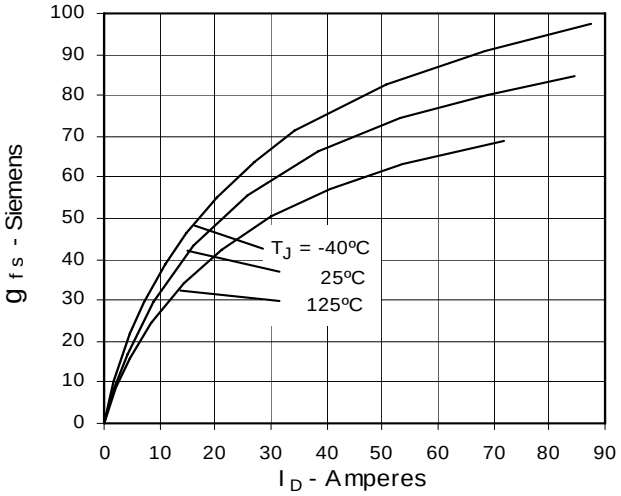


Fig. 9. Source Current vs. Source-To-Drain Voltage

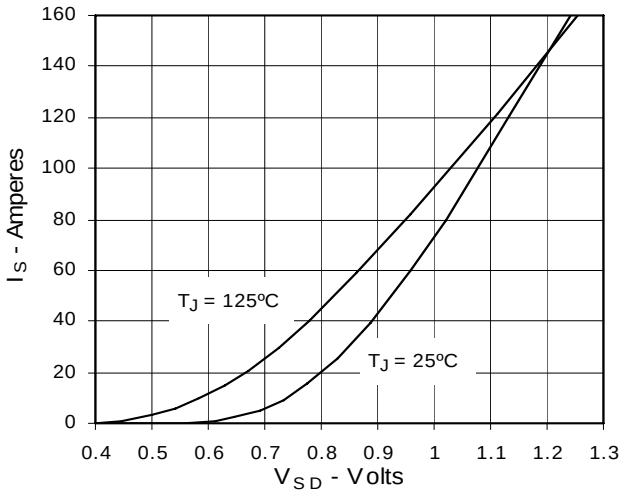


Fig. 10. Gate Charge

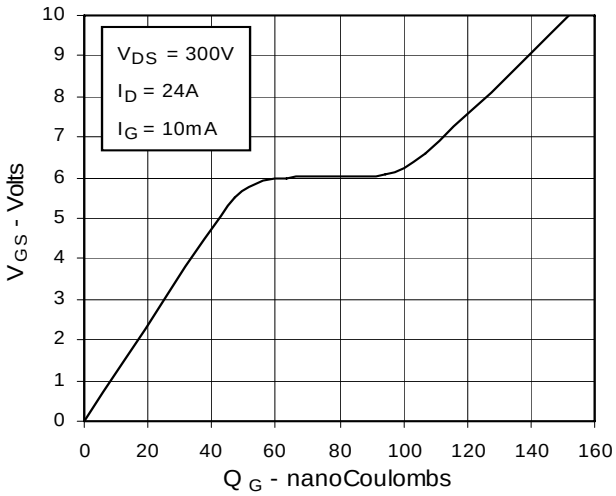


Fig. 11. Capacitance

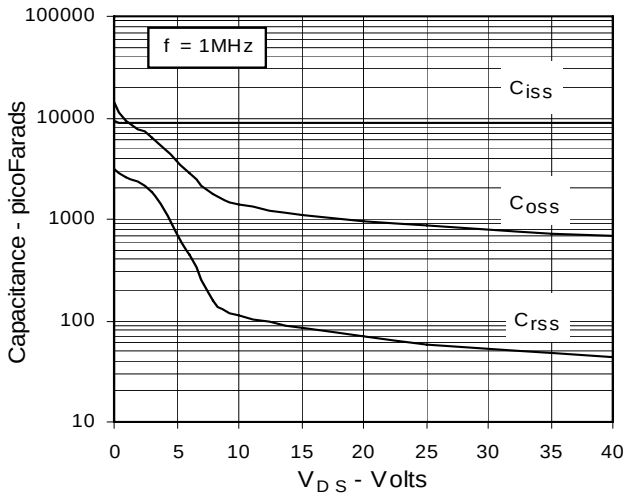
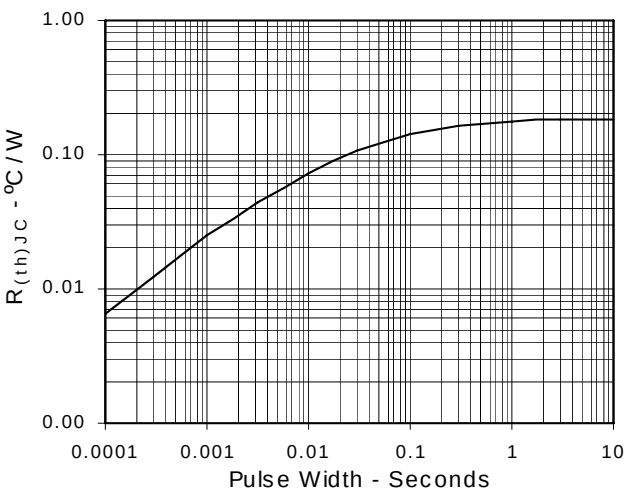


Fig. 13. Maximum Transient Thermal Resistance



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



Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications.Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.