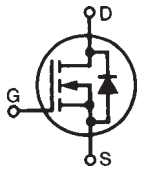
IXYS

PolarHV™ HiPerFET Power MOSFET

IXFH 36N60P
IXFK 36N60P
IXFT 36N60P

V_{DSS} = 600 V
I_{D25} = 36 A
$R_{DS(on)}$ ≤ 190 mΩ
t_{rr} ≤ 200 ns

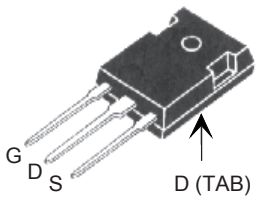
N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



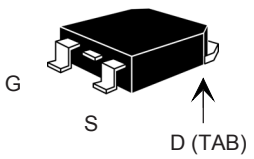
Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	600	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	600	V
V_{GSS}	Continuous	±30	V
V_{GSM}	Transient	±40	V
I_{D25}	T_C = 25°C	36	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	80	A
I_{AR}	T_C = 25°C	36	A
E_{AR}	T_C = 25°C	50	mJ
E_{AS}	T_C = 25°C	1.5	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤100 A/μs, $V_{DD} \le V_{DSS}$, T_J ≤150°C, R_G = 4 Ω	20	V/ns
P_D	T_C = 25°C	650	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
M_d	Mounting torque (TO-247 & TO-264)	1.13/10	Nm/lb.in.
Weight	TO-247	6	g
	TO-268	5	g
	TO-264	10	g
T_L	1.6 mm (0.062 in.) from case for 10 s	300	°C
T_{SOLD}	Plastic body for 10 s	260	°C

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 = 4 mA	3.0		5.0	V
I_{GSS}	V_{GS} = ±30 V_{DC}, V_{DS} = 0			±200	nA
I_{DSS}	$V_{DS} = V_{DSS}$			100	μA
	V_{GS} = 0 V, T_J = 125°C			1000	μA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 I_{D25} Pulse test, t ≤300 μs, duty cycle d ≤ 2 %			190	mΩ

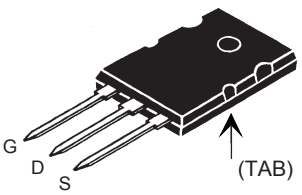
TO-247 (IXFH)



TO-268 (IXFT) Case Style



TO-264 AA (IXFK)



G = Gate D = Drain
S = Source Tab = Drain

Features

- International standard packages
- 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

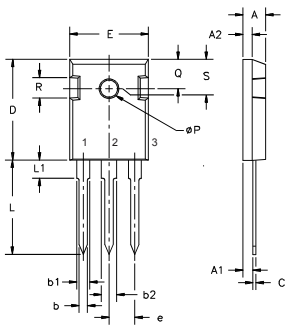
© 2006 IXYS All rights reserved

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) Min.	Typ.	Max.	
g_{fs}	V_{DS} = 20 V; I_D = 0.5 I_{D25}, pulse test	25	39		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		5800		pF
C_{oss}			570		pF
C_{rss}			30		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 I_{D25} R_G =2 Ω (External)		30		ns
t_r			25		ns
$t_{d(off)}$			80		ns
t_f			22		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}		102		nC
Q_{gs}			34		nC
Q_{gd}			36		nC
R_{thJC}				0.19	°C/W
R_{thCS}	TO-247		0.21		°C/W
R_{thCS}	TO-264		0.15		°C/W

Source-Drain Diode

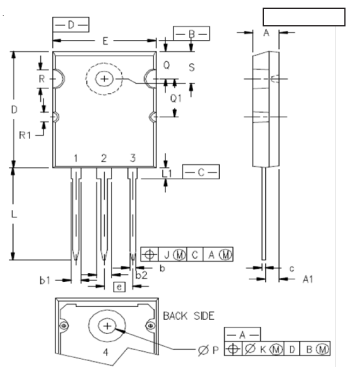
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) Min.	Typ.	Max.	
I_S	V_{GS} = 0 V			36	A
I_{SM}	Repetitive			80	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Pulse test, t ≤300 µs, duty cycle d≤ 2 %			1.5	V
t_{rr}	I_F = 25A, -di/dt = 100 A/µs			200	ns
Q_{RM}	V_R = 100V		0.8		µC
I_{RM}			6.0		A

TO-247 AD (IXFH) Outline



Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	4.7	5.3	.185	.209
A_1	2.2	2.54	.087	.102
A_2	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b_1	1.65	2.13	.065	.084
b_2	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
ØP	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15 BSC		242 BSC	

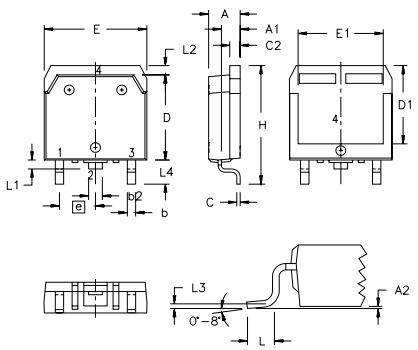
TO-264 (IXFK) Outline



1 – GATE
2, 4 – DRAIN (COLLECTOR)
3 – SOURCE (EMITTER)

SYM	INCHES MIN	MAX	MILLIMETERS MIN	MAX
A	.185	.209	4.70	5.31
A1	.102	.118	2.59	3.00
b	.037	.055	0.94	1.40
b1	.087	.102	2.21	2.59
b2	.110	.126	2.79	3.20
c	.017	.029	0.43	0.74
D	1.007	1.047	25.58	26.59
E	.760	.799	19.30	20.29
e	.215BSC		5.46 BSC	
J	.000	.010	0.00	0.25
K	.000	.010	0.00	0.25
L	.779	.842	19.79	21.39
L1	.087	.102	2.21	2.59
ØP	.122	.138	3.10	3.51
Q	.240	.256	6.10	6.50
Q1	.330	.346	8.38	8.79
ØR	.155	.187	3.94	4.75
ØR1	.085	.093	2.16	2.36
S	.243	.253	6.17	6.43

TO-268 (IXFT)Outline



SYM	INCHES MIN	MAX	MILLIMETERS MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e	.215 BSC		5.45 BSC	
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010 BSC		0.25 BSC	
L4	.150	.161	3.80	4.10

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

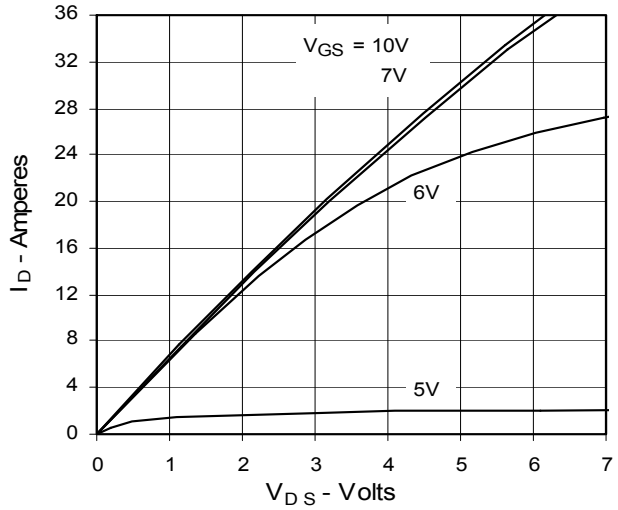


Fig. 2. Extended Output Characteristics @ 25°C

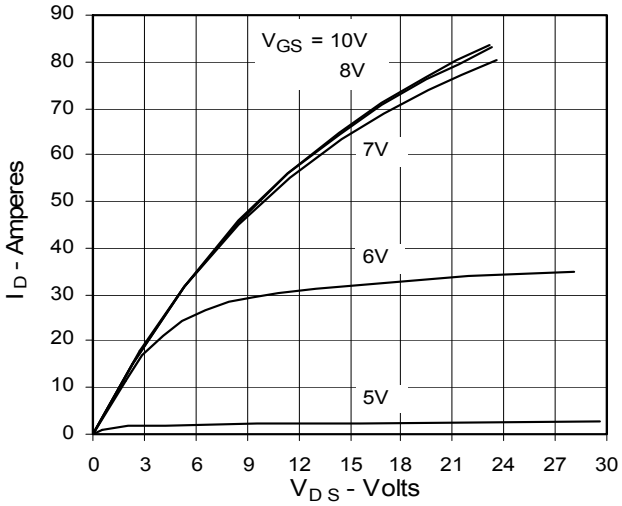


Fig. 3. Output Characteristics @ 125°C

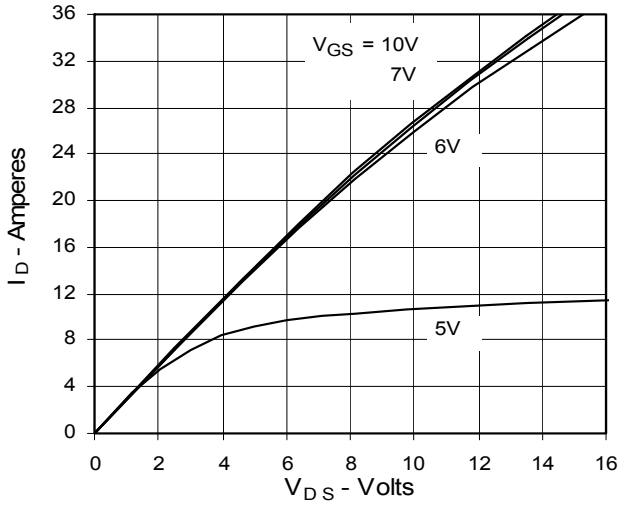


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

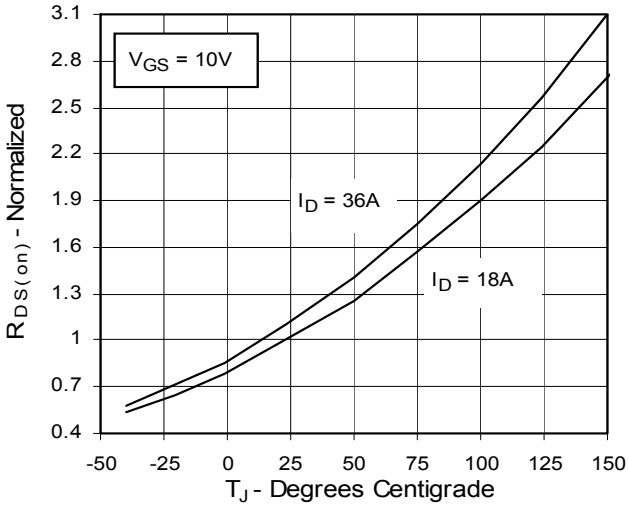


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

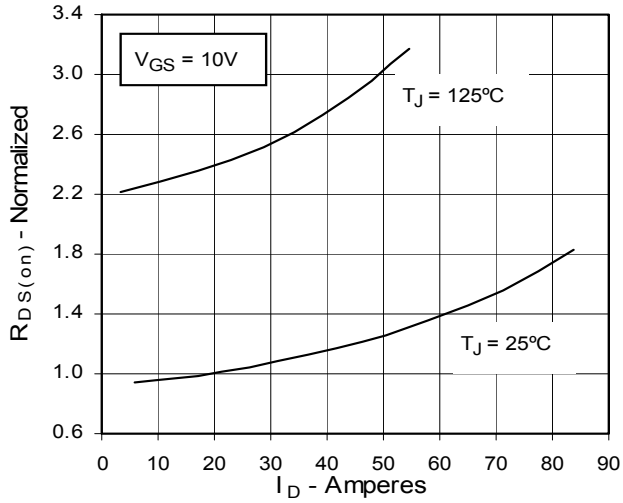
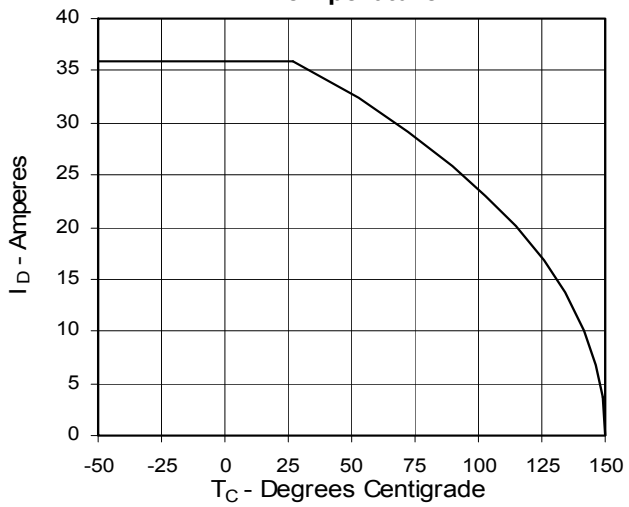


Fig. 6. Drain Current vs. Case Temperature



© 2006 IXYS All rights reserved

Fig. 7. Input Admittance

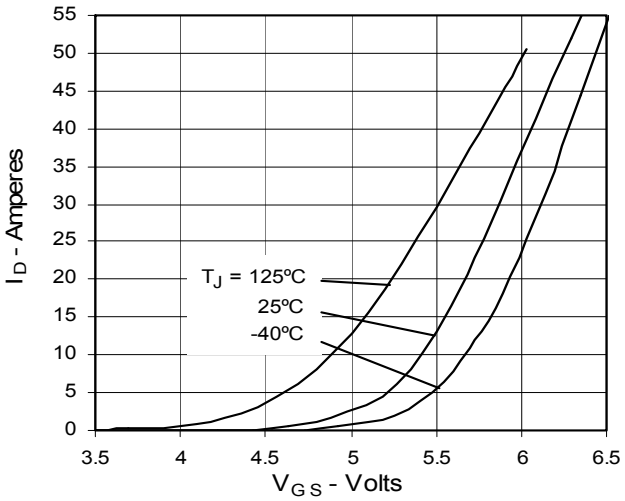


Fig. 8. Transconductance

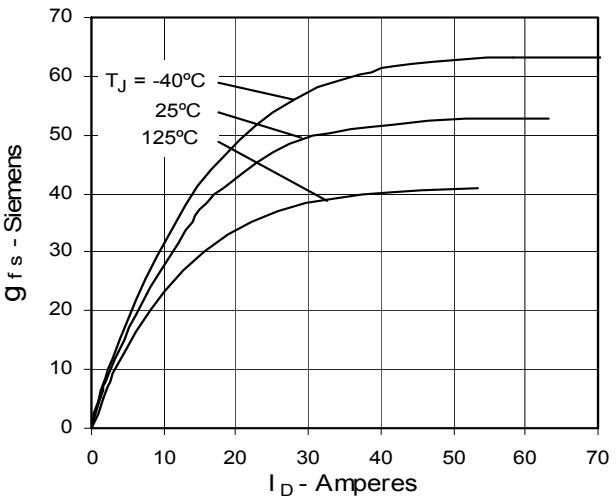


Fig. 9. Source Current vs. Source-To-Drain Voltage

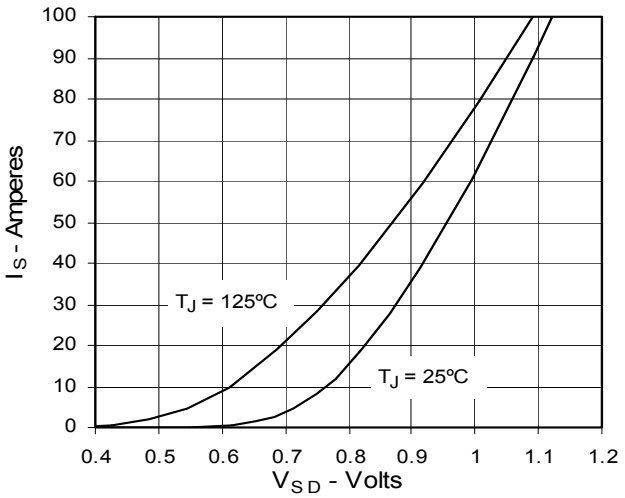


Fig. 10. Gate Charge

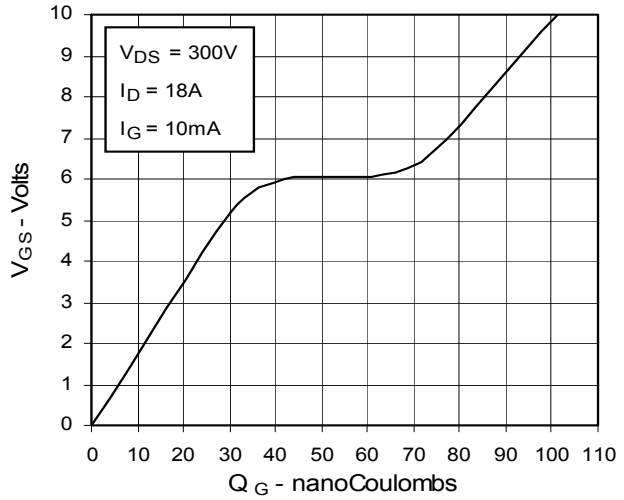


Fig. 11. Capacitance

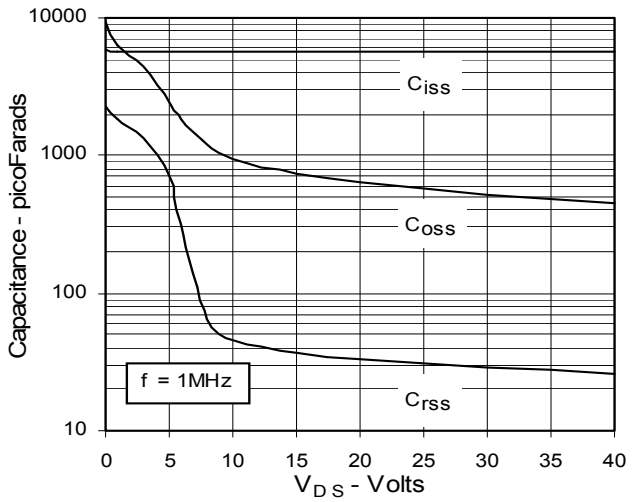
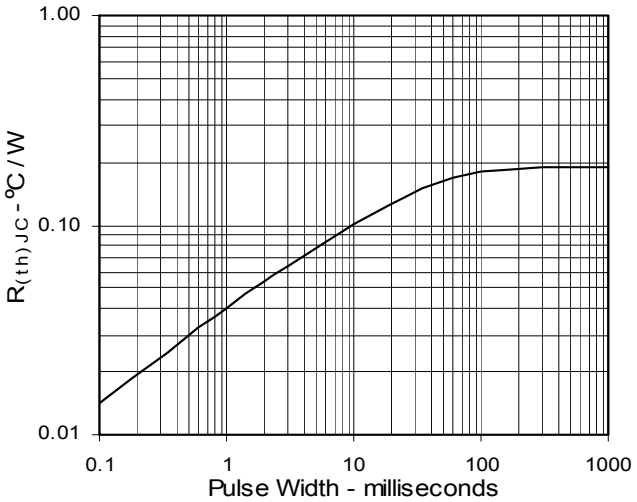


Fig. 12. Maximum Transient Thermal Resistance



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.