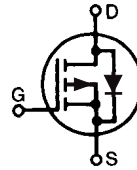


Standard Power MOSFET

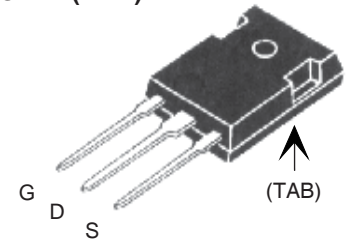
IXTH50P10
IXTT50P10

$V_{DSS} = -100V$
 $I_{D25} = -50A$
 $R_{DS(on)} \leq 55m\Omega$

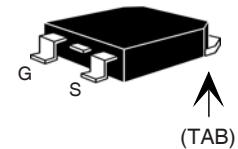
P-Channel Enhancement Mode
Avalanche Rated



TO-247 (IXTH)



TO-268 (IXTT)



G = Gate D = Drain
S = Source TAB = Drain

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ C$ to $150^\circ C$	-100	V
V_{DGR}	$T_J = 25^\circ C$ to $150^\circ C$, $R_{GS} = 1M\Omega$	-100	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ C$	- 50	A
I_{DM}	$T_C = 25^\circ C$, pulse width limited by T_{JM}	- 200	A
I_A	$T_C = 25^\circ C$	- 50	A
E_{AS}	$T_C = 25^\circ C$	30	mJ
P_D	$T_C = 25^\circ C$	300	W
T_J		- 55 ... +150	$^\circ C$
T_{JM}		150	$^\circ C$
T_{stg}		- 55 ... +150	$^\circ C$
T_L	1.6mm (0.062 in.) from case for 10s	300	$^\circ C$
T_{SOLD}	Plastic body for 10s	260	$^\circ C$
M_d	Mounting torque (TO-247)	1.13 / 10	Nm/lb.in.
Weight	TO-247	6	g
	TO-268	5	g

Features

- International standard packages
JEDEC TO-247 AD
- Low $R_{DS(ON)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance (< 5nH)
- easy to drive and to protect

Applications

- High side switching
- Push-pull amplifiers
- DC Choppers
- Automatic test equipment

Advantages

- Easy to mount with 1 screw
(isolated mounting screw hole)
- Space savings
- High power density

Symbol	Test Conditions ($T_J = 25^\circ C$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = -250 \mu A$	-100		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250 \mu A$	- 3.0		- 5.0 V
I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$			± 100 nA
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0V$ $T_J = 125^\circ C$			- 25 μA -1 mA
$R_{DS(on)}$	$V_{GS} = -10V$, $I_D = 0.5 \cdot I_{D25}$, Note 1			55 m Ω

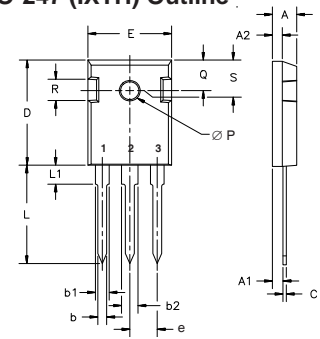
Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = -10\text{V}$, $I_D = 0.5 \cdot I_{D25}$, Note 1	13	22	S
C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = -25\text{V}$, $f = 1\text{MHz}$		4350	pF
C_{oss}			1505	pF
C_{rss}			733	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = -10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$ $R_G = 4.7\Omega$ (External)		46	ns
t_r			39	ns
$t_{d(off)}$			86	ns
t_f			38	ns
$Q_{g(on)}$	$V_{GS} = -10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$		140	nC
Q_{gs}			25	nC
Q_{gd}			85	nC
R_{thJC}			0.42	$^\circ\text{C/W}$
R_{thCS}		0.25		$^\circ\text{C/W}$

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
I_s	$V_{GS} = 0\text{V}$			- 50 A
I_{SM}	Repetitive, pulse width limited by T_{JM}			- 200 A
V_{SD}	$I_F = -25\text{A}$, $V_{GS} = 0\text{V}$, Note 1			- 3.0 V
t_{rr}	$I_F = -25\text{A}$, $di/dt = -100\text{A}/\mu\text{s}$, $V_R = -50\text{V}$, $V_{GS} = 0\text{V}$	180		ns

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

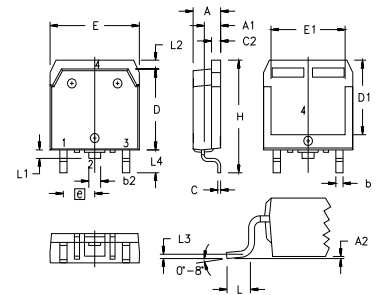
TO-247 (IXTH) Outline



Terminals: 1 - Gate 2 - Drain

Dim.	Millimeter		Inches	
	Min.	Max.	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
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216

TO-268 (IXTT) Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	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 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
by one or more of the following U.S. patents: 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

Fig. 1. Output Characteristics @ 25°C

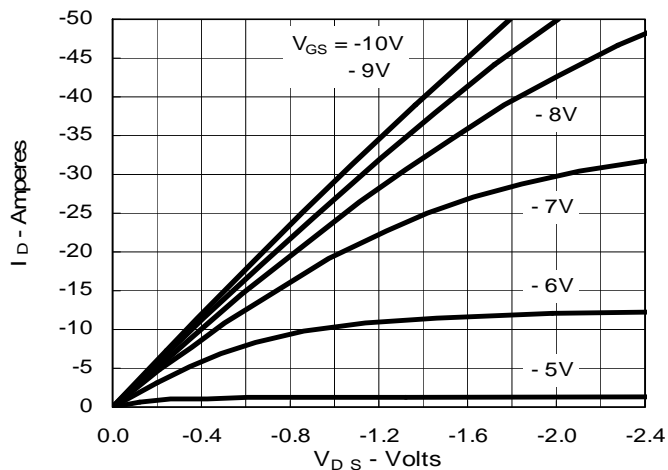


Fig. 2. Extended Output Characteristics @ 25°C

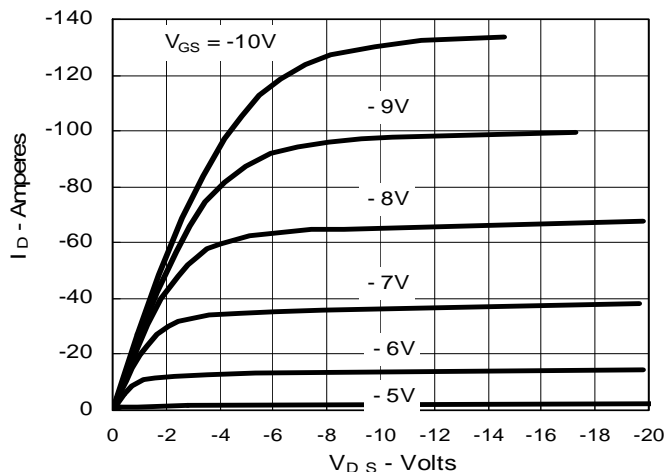


Fig. 3. Output Characteristics @ 125°C

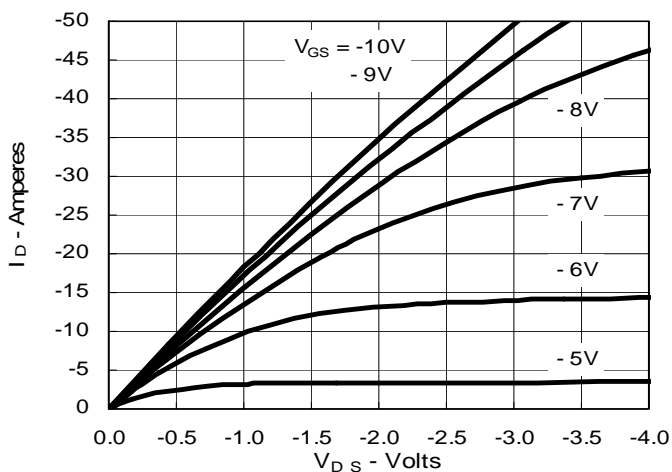


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

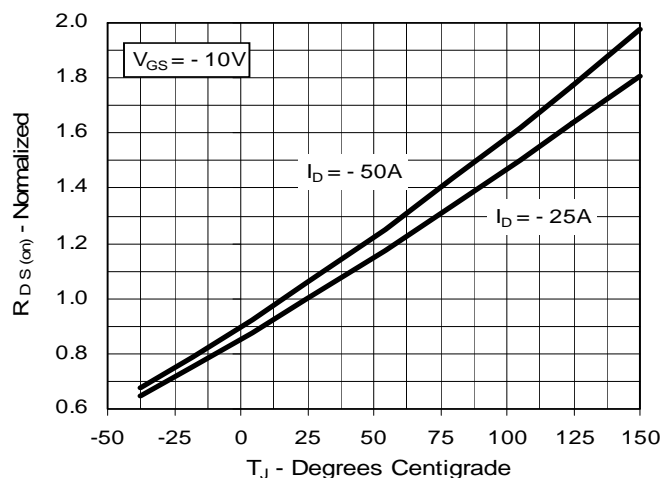


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

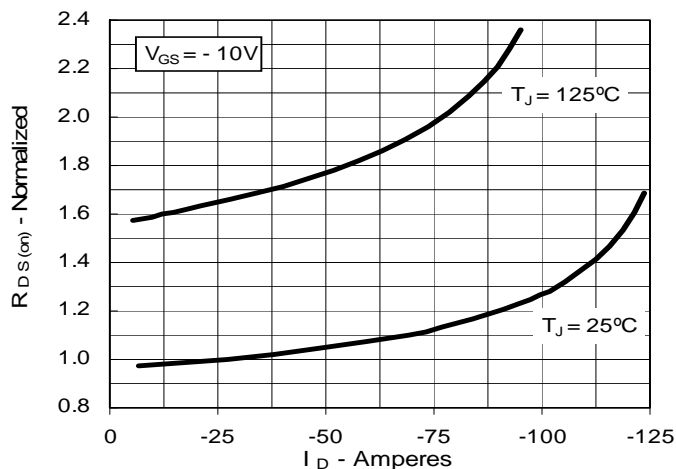


Fig. 6. Drain Current vs. Case Temperature

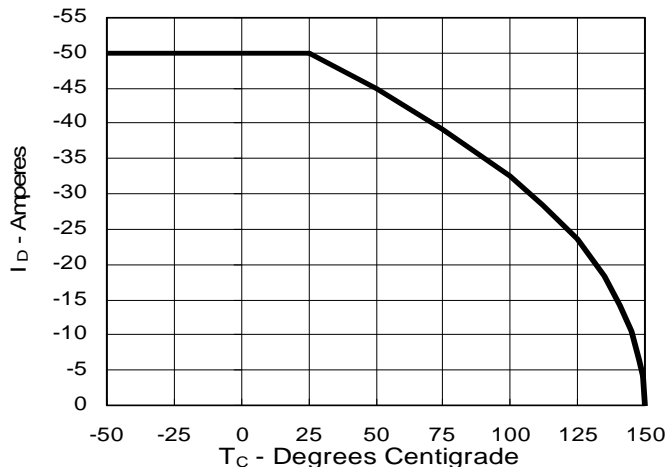


Fig. 7. Input Admittance

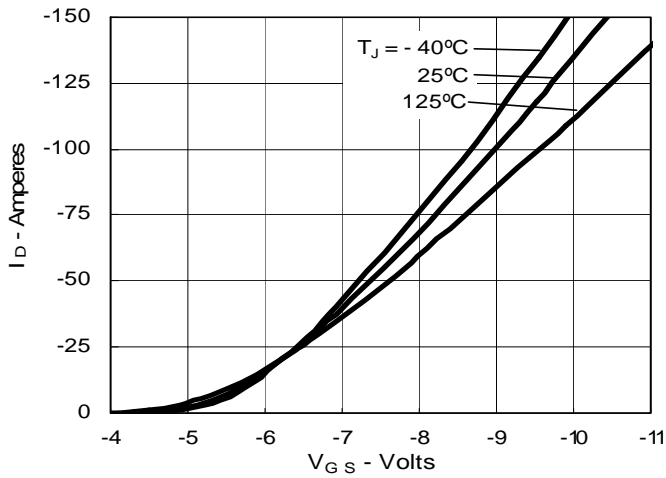


Fig. 8. Transconductance

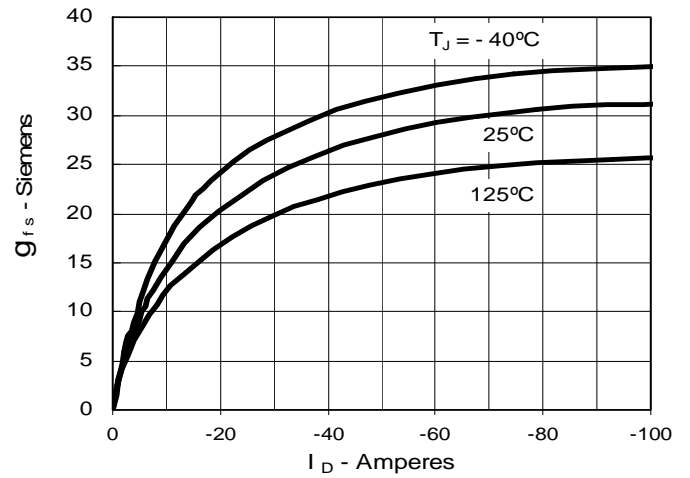


Fig. 9. Source Current vs. Source-To-Drain Voltage

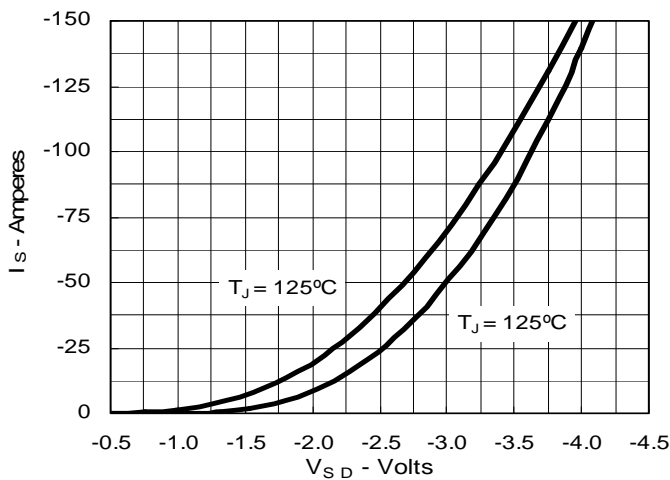


Fig. 10. Gate Charge

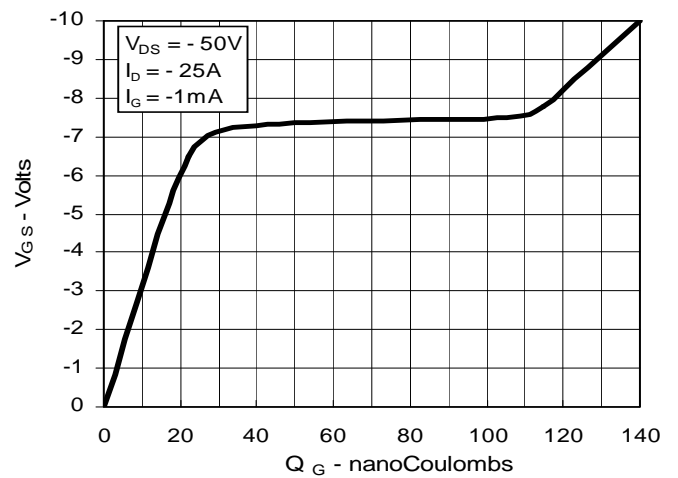


Fig. 11. Capacitance

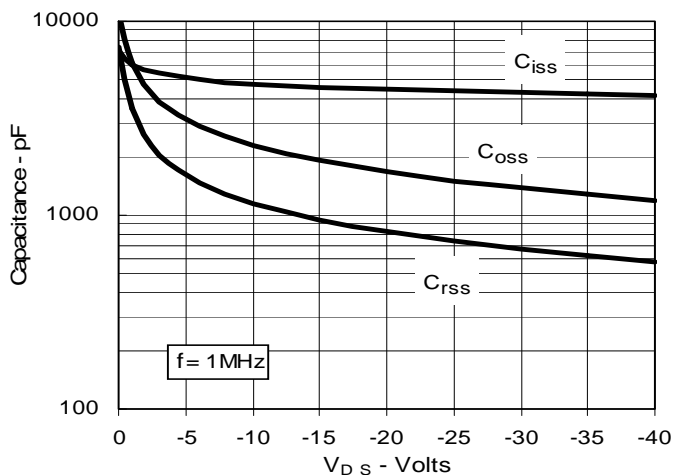
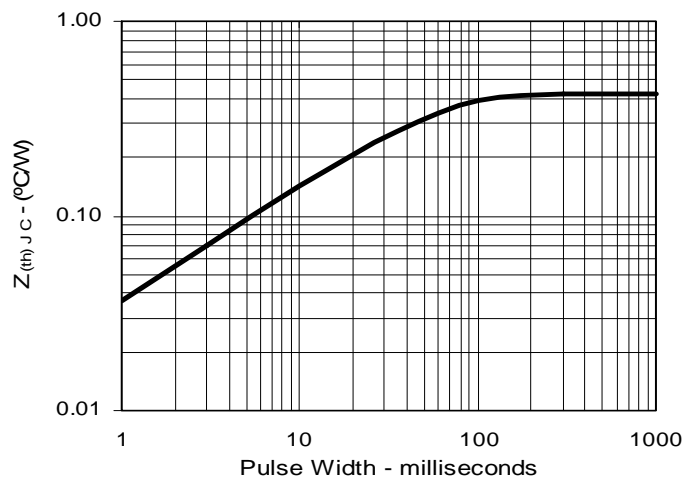


Fig. 12. Maximum Transient Thermal Impedance





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