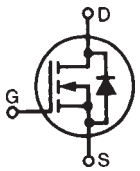
IXYS

MegaMOS™FET

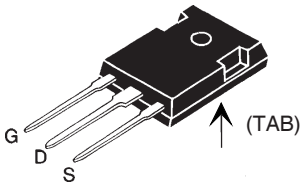
V_{DSS}	I_{D25}	$R_{DS(on)}$
100 V	67 A	25 mΩ
100 V	75 A	20 mΩ

IXTH / IXTM 67N10
IXTH / IXTM 75N10
IXTT 75N10

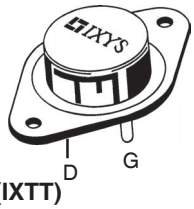
N-Channel Enhancement Mode



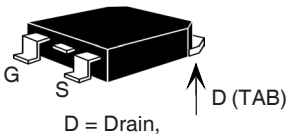
TO-247 AD (IXTH)



TO-204 AE (IXTM)



TO-268 (IXTT)



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

Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C		100	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ		100	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25°C	67N10	67	A
		75N10	75	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	67N10	268	A
		75N10	300	A
P_D	T_C = 25°C		300	W
T_J			-55 ... +150	°C
T_{JM}			150	°C
T_{stg}			-55 ... +150	°C
M_d	Mounting torque		1.13/10	Nm/lb.in.
Weight		TO-204	18	g
		TO-247	6	g
		TO-268	5	g
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s			10	°C

Features

- International standard packages
- Low $R_{DS\ (on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
  - easy to drive and to protect
- Fast intrinsic Rectifier

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 250 μA		100			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 4 mA		2.0		4	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0				±100	nA
I_{DSS}	V_{DS} = 0.8 • V_{DSS}	T_J = 25°C			250	μA
	V_{GS} = 0 V	T_J = 125°C			1	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 I_{D25}	67N10			0.025	Ω
		75N10			0.020	Ω
	Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %					

Applications

- DC-DC converters
- Synchronous rectification
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control
- Temperature and lighting controls
- Low voltage relays

Advantages

- Easy to mount with 1 screw (TO-247) (isolated mounting screw hole)
- Space savings
- High power density

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

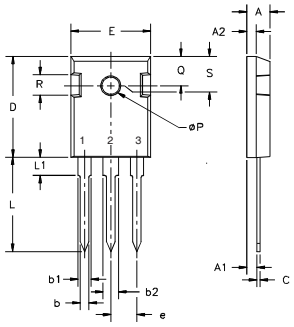
DS91533F(9/03)

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; I_D = I_{D25}, pulse test	25	30		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		4500		pF
C_{oss}			1300		pF
C_{rss}			550		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 I_{D25} R_G = 2 Ω, (External)		40	60	ns
t_r			60	110	ns
$t_{d(off)}$			100	140	ns
t_f			30	60	ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 I_{D25}		180	260	nC
Q_{gs}			30	70	nC
Q_{gd}			90	160	nC
R_{thJC}				0.42	K/W
R_{thCK}	(TO-204, TO-247)		0.25		K/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	67N10			67	A
		75N10			75	A
I_{SM}	Repetitive; pulse width limited by T_{JM}	67N10			268	A
		75N10			300	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %				1.75	V
t_{rr}	I_F = I_S, -di/dt = 100 A/µs, V_R = 100 V			200		ns

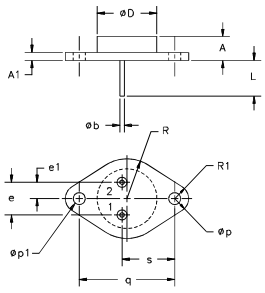
TO-247 AD (IXTH) Outline



Terminals: 1 - Gate 2 - Drain
3 - Source Tab - Drain

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
∅P	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	

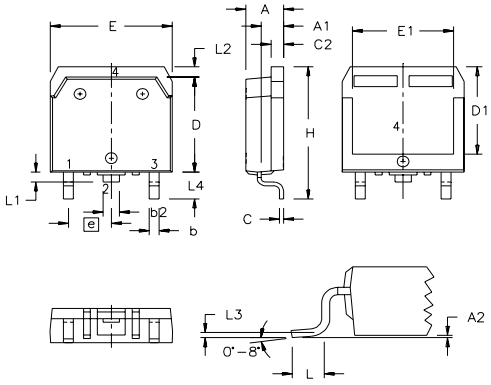
TO-204AE (IXTM) Outline



Pins 1 - Gate 2 - Source
Case - Drain

Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	6.4	11.4	.250	.450
A1		3.42		.135
∅b	.97	1.09	.038	.043
∅D		22.22		.875
e	10.67	11.17	.420	.440
e1	5.21	5.71	.205	.225
L	7.93		.312	
∅p	3.84	4.19	.151	.165
∅p1	3.84	4.19	.151	.165
q	30.15 BSC		1.187 BSC	
R		13.33		.525
R1		4.77		.188
s	16.64	17.14	.655	.675

TO-268 (IXTT) 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

Fig. 1 Output Characteristics

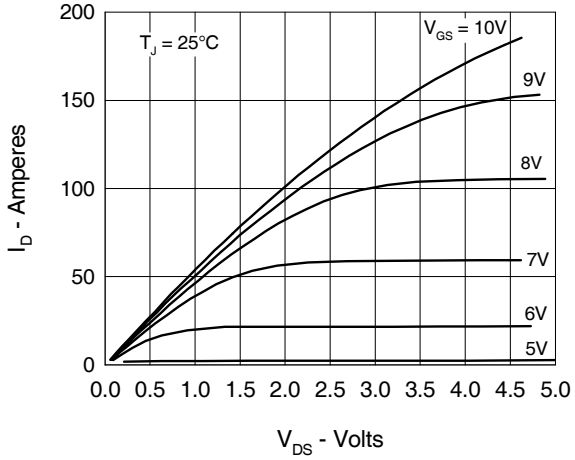


Fig. 2 Input Admittance

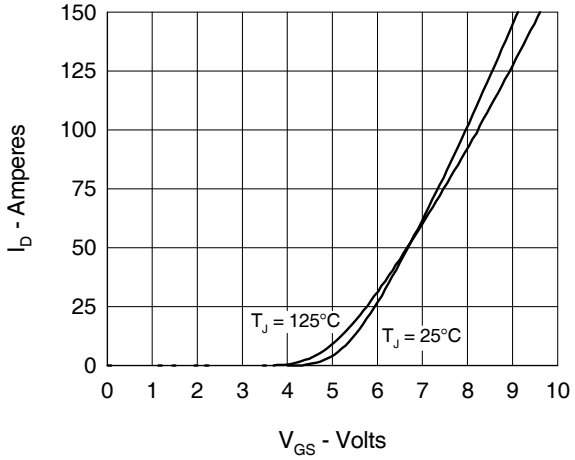
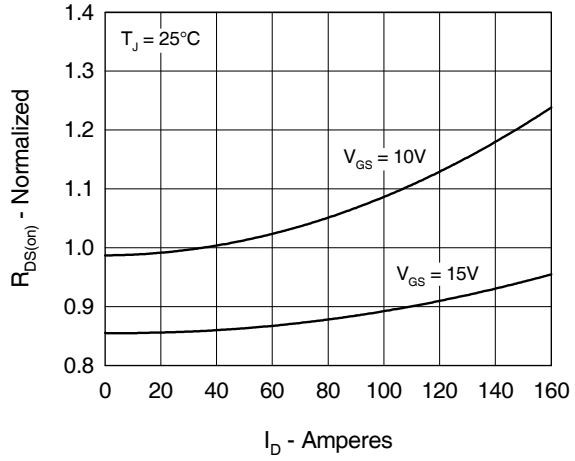


Fig. 3 $R_{DS(on)}$ vs. Drain Current

Fig. 4 Temperature Dependence of Drain to Source Resistance



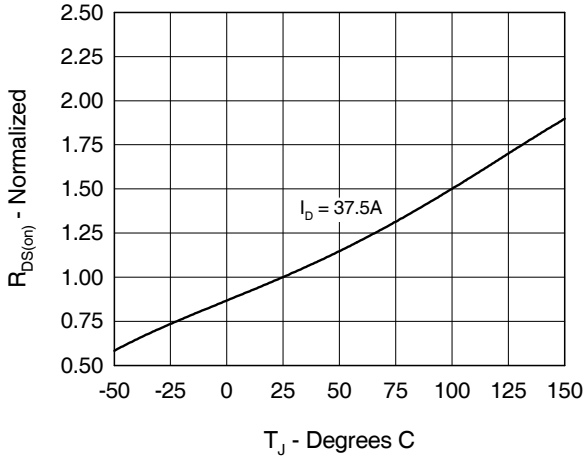
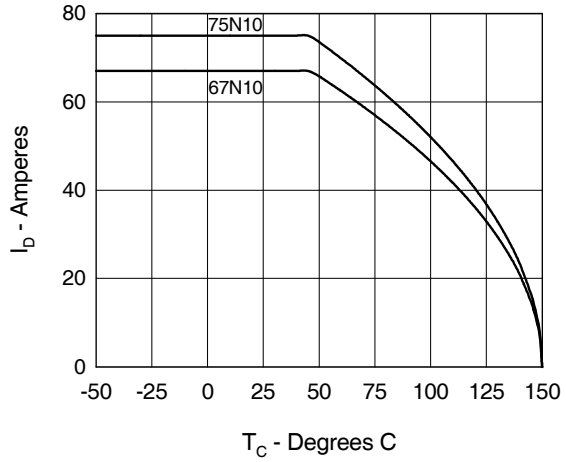


Fig. 5 Drain Current vs. Case Temperature

Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage



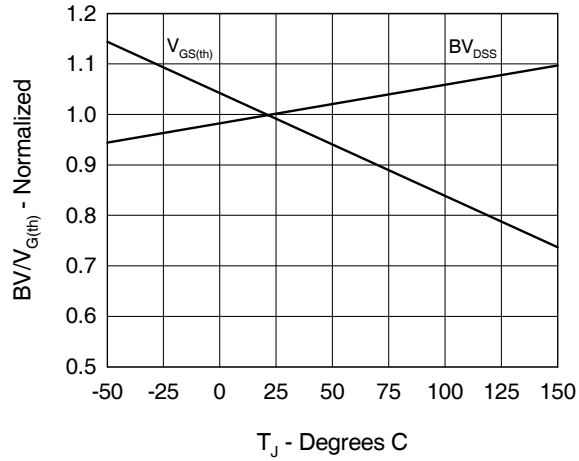


Fig.7 Gate Charge Characteristic Curve

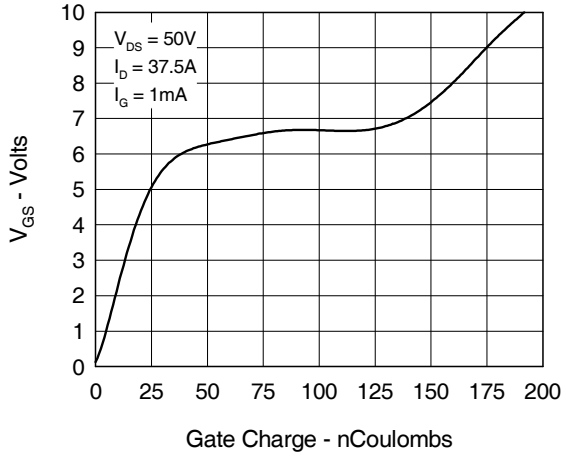


Fig.8 Forward Bias Safe Operating Area

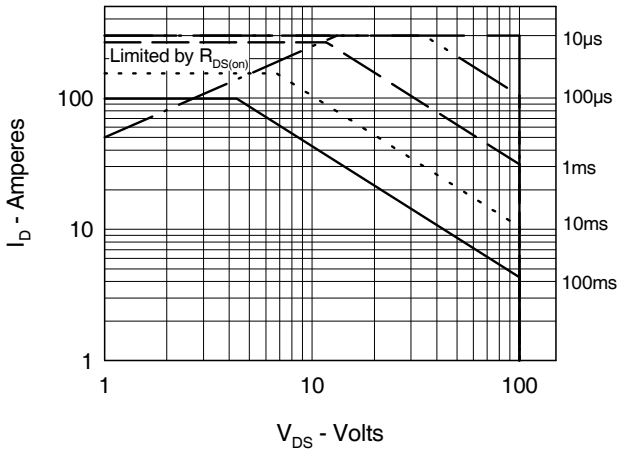


Fig.9 Capacitance Curves

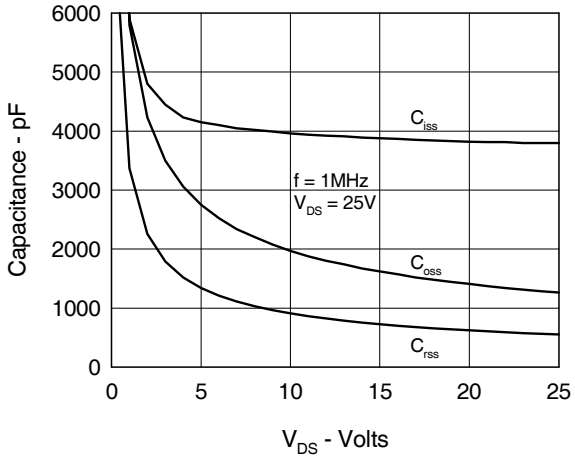


Fig.10 Source Current vs. Source to Drain Voltage

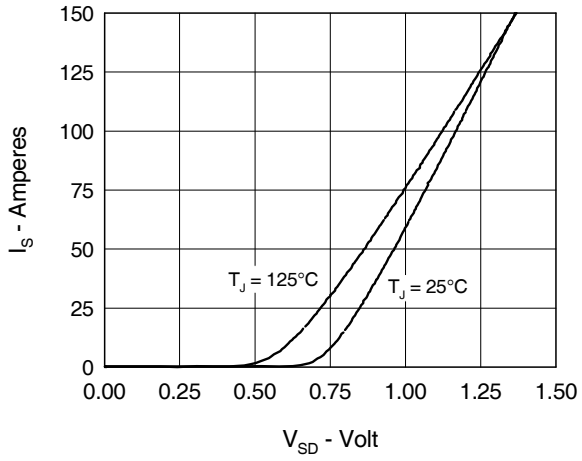


Fig.11 Transient Thermal Impedance