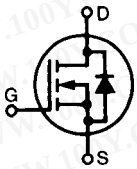
IXYS

MegaMOS™FET

	V_{DSS}	I_{D25}	$R_{DS(on)}$
IXTH / IXTM 21N50	500 V	21 A	0.25 Ω
IXTH / IXTM 24N50	500 V	24 A	0.23 Ω

N-Channel Enhancement Mode



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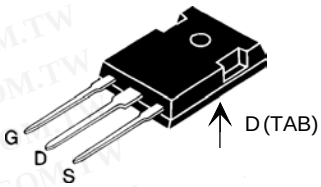
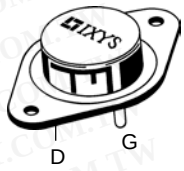
胜特力电子(上海) 86-21-34970699
胜特力电子(深圳) 86-755-83298787
Http://www.100y.com.tw

Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C		500	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ		500	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25°C	21N50	21	A
		24N50	24	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	21N50	84	A
		24N50	96	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	
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s			300	°C

TO-247 AD (IXTH)



TO-204 AE (IXTM)



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

Features

- International standard packages
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Low package inductance (< 5 nH)
  - easy to drive and to protect
- Fast switching times

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		500			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA		2		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			200	µA
	V_{GS} = 0 V	T_J = 125°C			1	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 I_{D25}	21N50			0.25	Ω
		24N50			0.23	Ω
	Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %					

Applications

- Switch-mode and resonant-mode power supplies
- Motor controls
- Uninterruptible Power Supplies (UPS)
- DC choppers

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.

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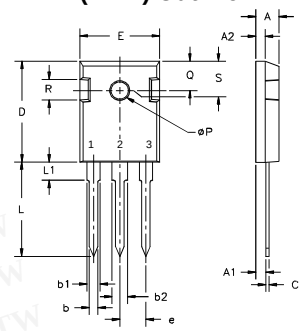
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 • I_{D25}, pulse test	11	21		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		4200		pF
C_{oss}			450		pF
C_{rss}			135		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 I_{D25}, R_G = 2 Ω, (External)		24	30	ns
t_r			33	45	ns
$t_{d(off)}$			65	80	ns
t_f			30	40	ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 I_{D25}		160	190	nC
Q_{gs}			28	40	nC
Q_{gd}			75	85	nC
R_{thJC}				0.42	K/W
R_{thCK}			0.25		K/W

Source-Drain Diode — Characteristic Values (T_J = 25°C, unless otherwise specified)

Symbol	Test Conditions		min.	typ.	max.	
I_S	V_{GS} = 0	21N50			21	A
		24N50			24	A
I_{SM}	Repetitive; pulse width limited by T_{JM}	21N50			84	A
		24N50			96	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}	$I_F = I_S$, -di/dt = 100 A/µs, V_R = 100 V			600		ns

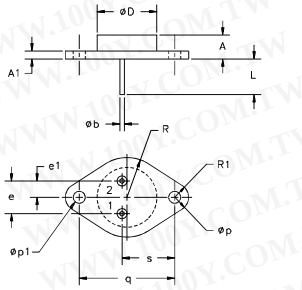
TO-247 AD (IXTH) Outline



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-204 AE(IXTM) Outline



Pins 1 - Gate 2 - Source
Case - Drain

Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	6.4	11.4	.250	.450
A1	1.53	3.42	.060	.135
∅b	1.45	1.60	.057	.063
∅D		22.22		.875
e	10.67	11.17	.420	.440
e1	5.21	5.71	.205	.225
L	11.18	12.19	.440	.480
∅p	3.84	4.19	.151	.165
∅p1	3.84	4.19	.151	.165
q	30.15 BSC		1.187 BSC	
R	12.58	13.33	.495	.525
R1	3.33	4.77	.131	.188
s	16.64	17.14	.655	.675

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IXYS MOSFETS and IGBTs are covered by one or more of the following U.S. patents:
4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025

Fig. 1 Output Characteristics

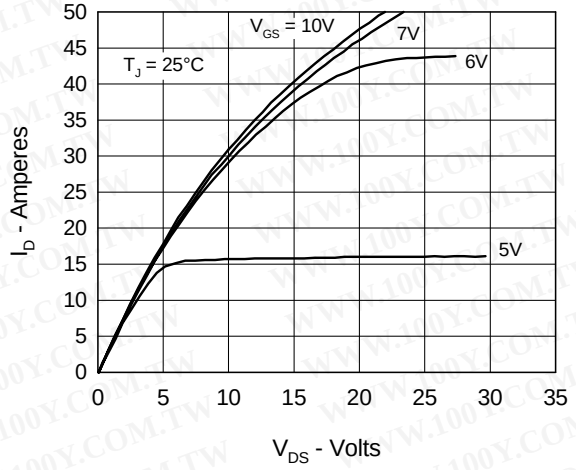

Fig. 2 Input Admittance

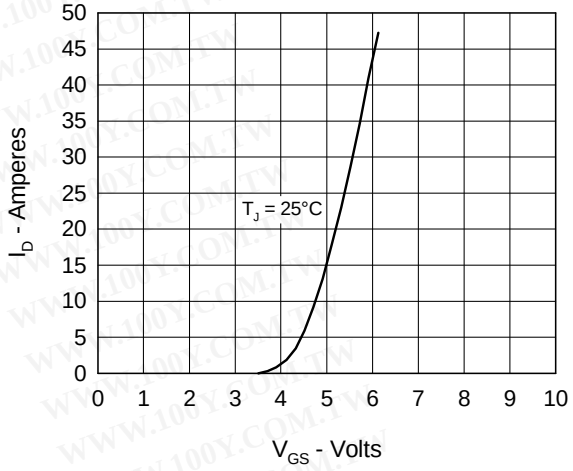

Fig. 3 $R_{DS(on)}$ vs. Drain Current

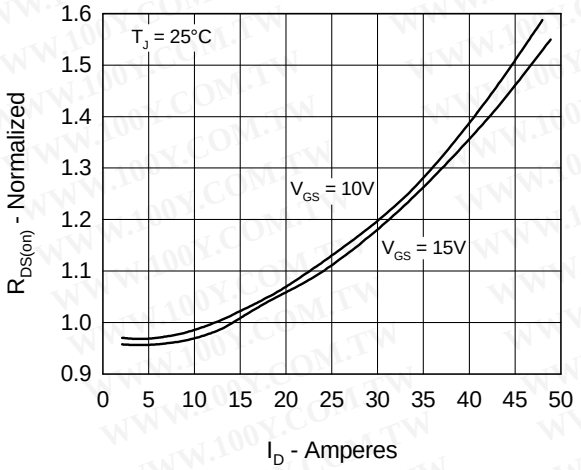

Fig. 4 Temperature Dependence of Drain to Source Resistance

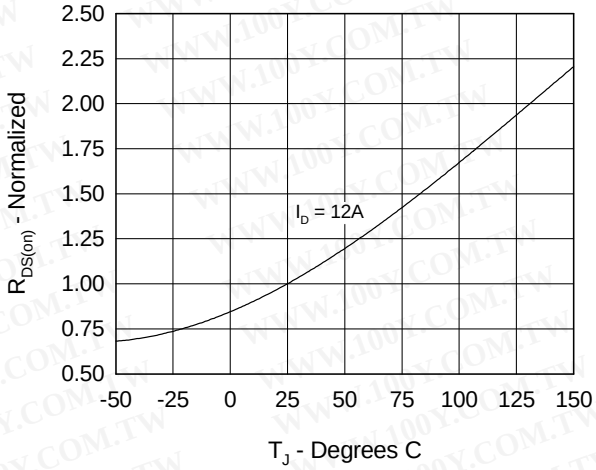

Fig. 5 Drain Current vs. Case Temperature

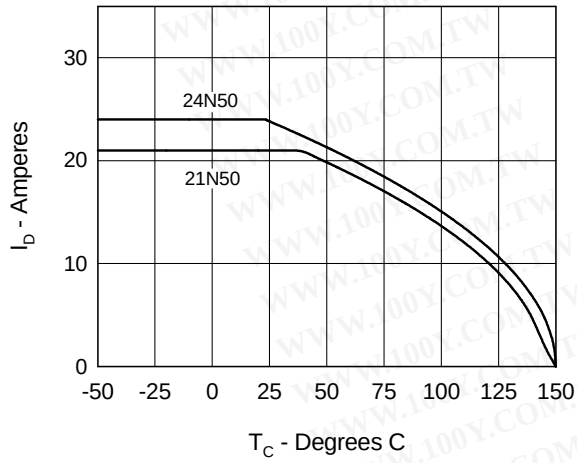

Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage

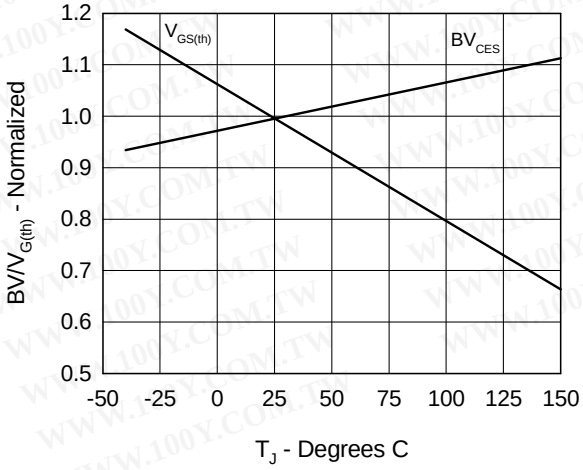

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Fig.7 Gate Charge Characteristic Curve

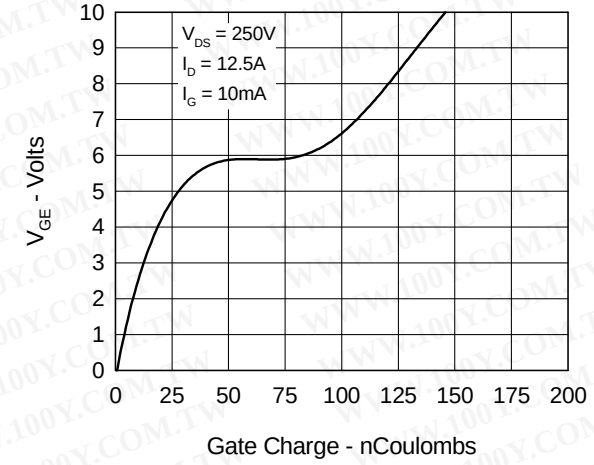


Fig.8 Forward Bias Safe Operating Area

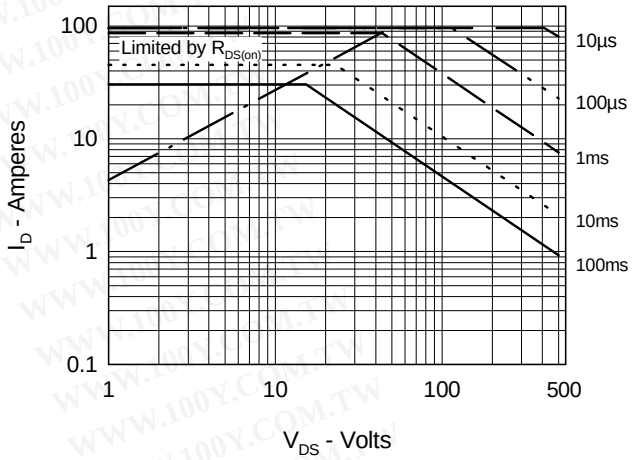


Fig.9 Capacitance Curves

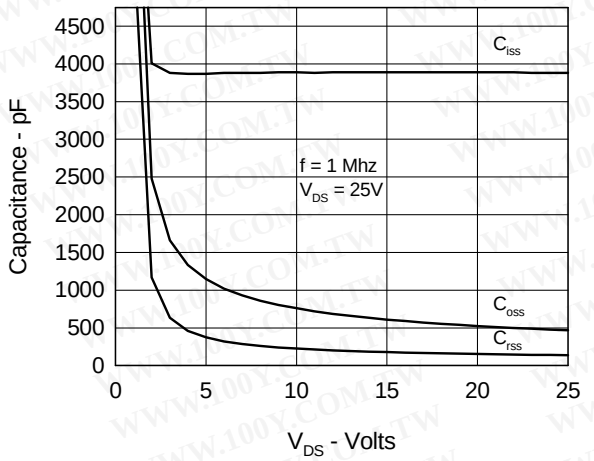


Fig.10 Source Current vs. Source to Drain Voltage

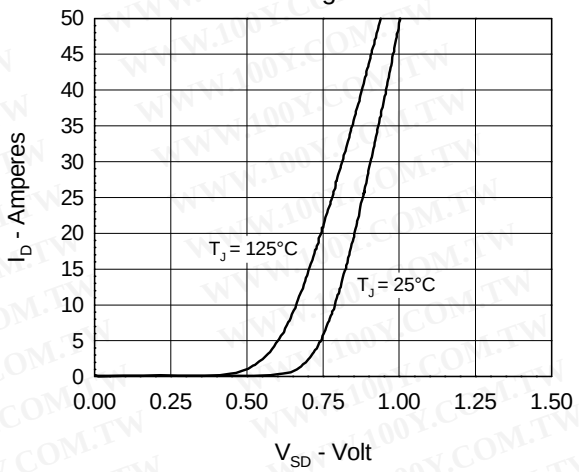
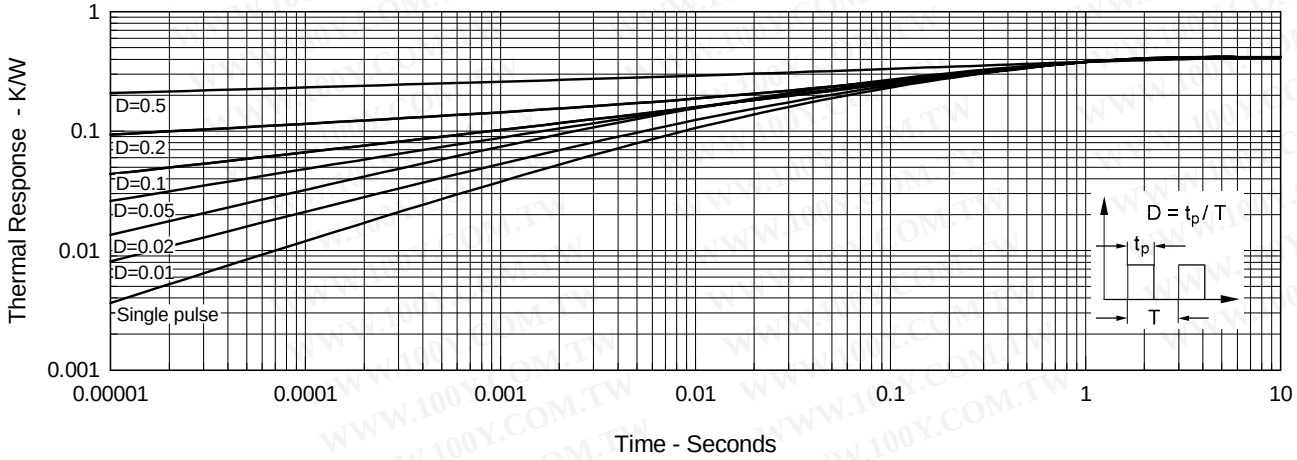


Fig.11 Transient Thermal Impedance



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