

High Voltage Power MOSFET

IXTJ3N150

(Electrically Isolated Tab)

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



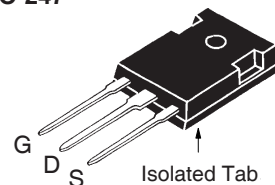
$$V_{DSS} = 1500V$$

$$I_{D25} = 2.3A$$

$$R_{DS(on)} \leq 8.0\Omega$$

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ C$ to $150^\circ C$	1500	V
V_{DGR}	$T_J = 25^\circ C$ to $150^\circ C$, $R_{GS} = 1M\Omega$	1500	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	$T_C = 25^\circ C$	2.3	A
I_{DM}	$T_C = 25^\circ C$, Pulse Width Limited by T_{JM}	9.0	A
I_A	$T_C = 25^\circ C$	3	A
E_{AS}	$T_C = 25^\circ C$	250	mJ
dv/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ C$	5	V/ns
P_D	$T_C = 25^\circ C$	110	W
T_J		- 55 ... +150	$^\circ C$
T_{JM}		150	$^\circ C$
T_{stg}		- 55 ... +150	$^\circ C$
T_L	Maximum Lead Temperature for Soldering	300	$^\circ C$
T_{SOLD}	1.6 mm (0.062in.) from Case for 10s	260	$^\circ C$
F_C	Mounting Torque	1.13 / 10	Nm/lb.in
V_{ISOL}	50/60 Hz, RM, t = 1min	2500	V~
Weight		5	g

ISO TO-247™



G = Gate D = Drain
S = Source

Features

- Silicon Chip on Direct-Copper Bond (DCB) Substrate
- Isolated Mounting Surface
- 2500V~ Electrical Isolation
- Fast Intrinsic Diode
- Avalanche Rated
- Molding Epoxies meet UL 94 V-0 Flammability Classification

Advantages

- Easy to Mount
- Space Savings
- High Power Density

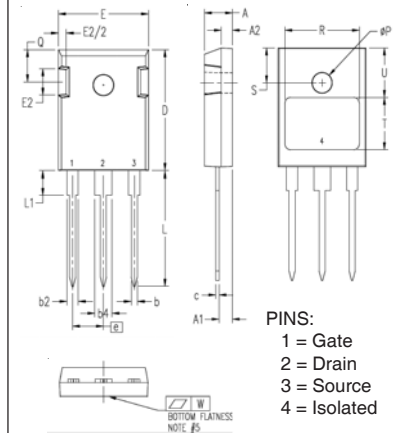
Applications

- High Voltage Power Supplies
- Capacitor Discharge Applications
- Pulse Circuits

Symbol	Test Conditions ($T_J = 25^\circ C$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 250\mu A$	1500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	2.5		5.0 V
I_{GSS}	$V_{GS} = \pm 30V$, $V_{DS} = 0V$			± 100 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0V$ $T_J = 125^\circ C$			10 μA 100 μA
$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 1.5A$, Note 1			8.0 Ω

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 20\text{V}$, $I_D = 1.5\text{A}$, Note 1	2.2	3.6	S
C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		1375	pF
C_{oss}			90	pF
C_{rss}			30	pF
R_{GI}	Gate Input Resistance		3.0	Ω
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 1.5\text{A}$ $R_G = 5\Omega$ (External)		19	ns
t_r			21	ns
$t_{d(off)}$			42	ns
t_f			25	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 1.5\text{A}$		38.6	nC
Q_{gs}			6.5	nC
Q_{gd}			19.0	nC
R_{thJC}				1.13 $^\circ\text{C/W}$
R_{thCS}		0.15		$^\circ\text{C/W}$

ISO TO-247 (IXTJ) OUTLINE



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.087	.100	2.21	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b2	.075	.085	1.91	2.16
b4	.115	.126	2.92	3.20
c	.023	.033	0.58	0.84
D	.820	.840	20.83	21.34
E	.620	.635	15.75	16.13
E2	.175	.195	4.44	4.95
e	.215 BSC		5.45 BSC	
L	.780	.810	19.81	20.57
L1	.160	.177	4.06	4.50
Q	.220	.240	5.59	6.10
R	.520	.540	13.21	13.72
S	.242 BSC		6.15 BSC	
T	.355	.375	9.02	9.53
U	.345	.370	8.76	9.40
ϕP	.140	.144	3.55	3.66
W	.000	.004	0.00	0.10

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max
I_S	$V_{GS} = 0\text{V}$, Note 1			3 A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			12 A
V_{SD}	$I_F = I_S$, $V_{GS} = 0\text{V}$, Note 1			1.3 V
t_{rr}	$I_F = 1.5\text{A}$, $-di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}$		0.9	μs
Q_{RM}			6.7	μC
I_{RM}			15.0	A

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

ADVANCE TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

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
4,860,072	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	

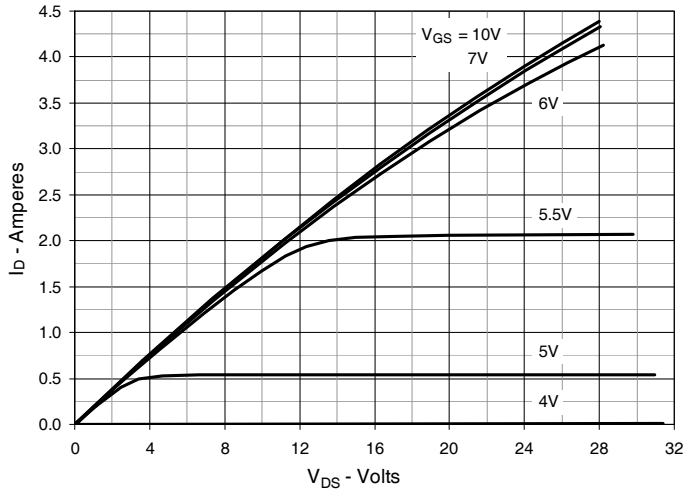
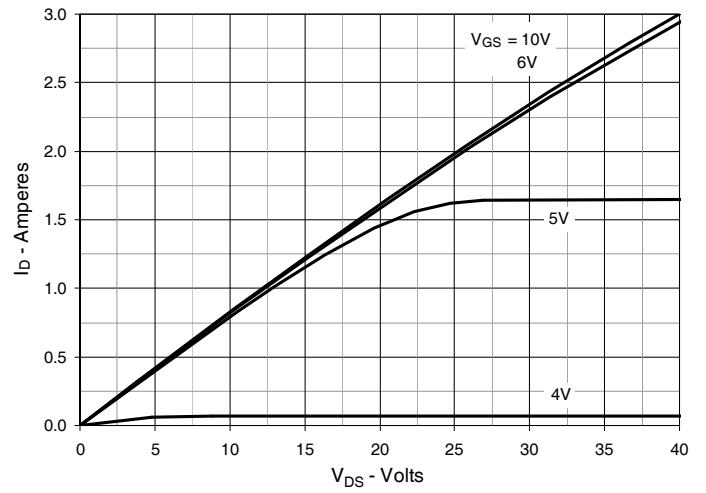
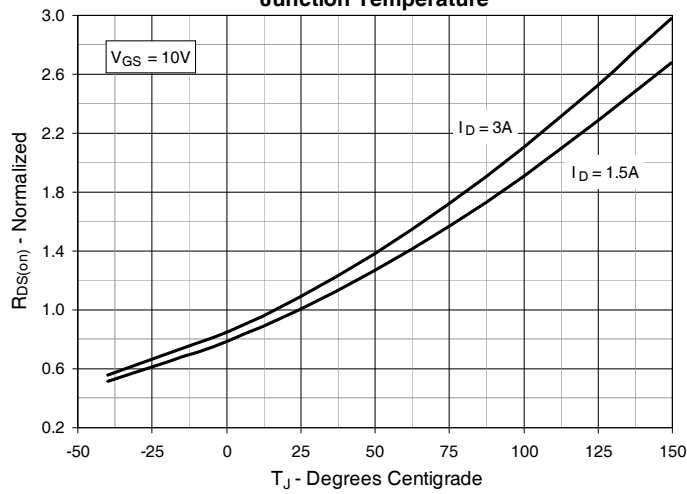
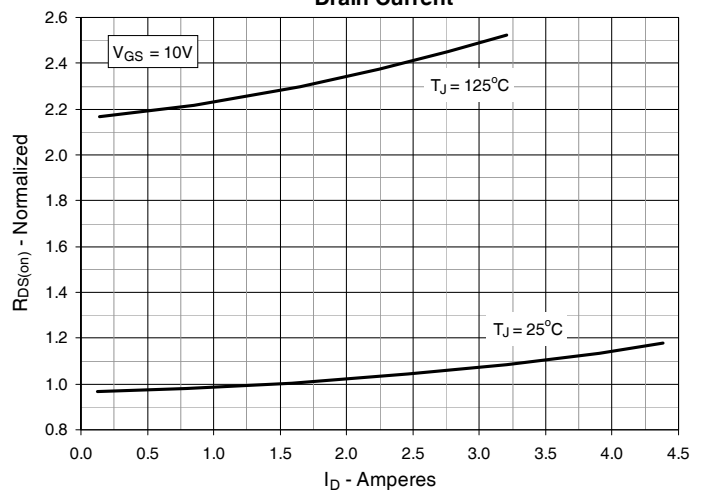
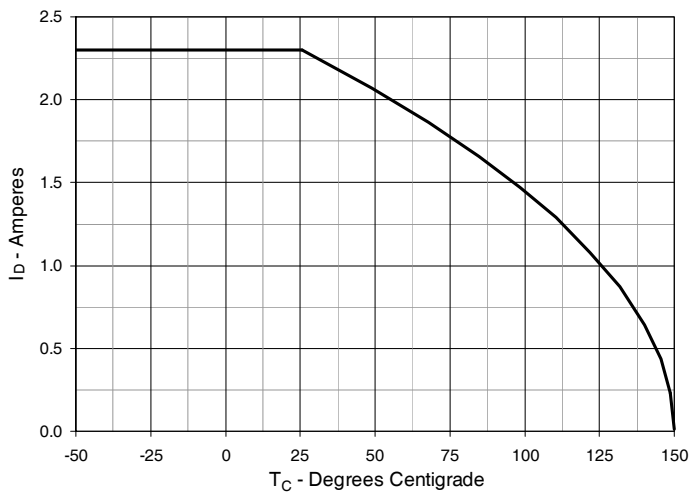
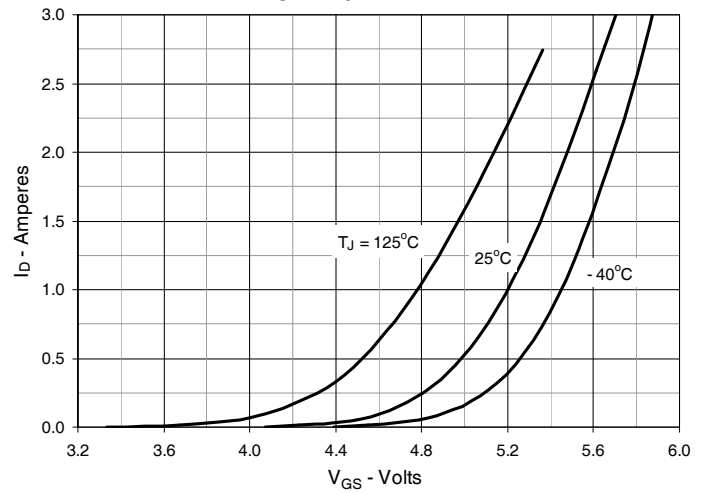
Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

Fig. 2. Output Characteristics @ $T_J = 125^\circ\text{C}$

Fig. 3. $R_{DS(on)}$ Normalized to $I_D = 1.5\text{A}$ Value vs. Junction Temperature

Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 1.5\text{A}$ Value vs. Drain Current

Fig. 5. Maximum Drain Current vs. Case Temperature

Fig. 6. Input Admittance


Fig. 7. Transconductance

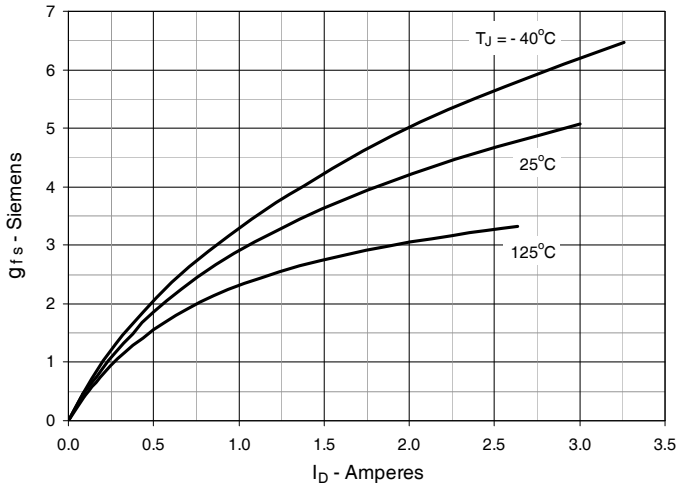


Fig. 8. Forward Voltage Drop of Intrinsic Diode

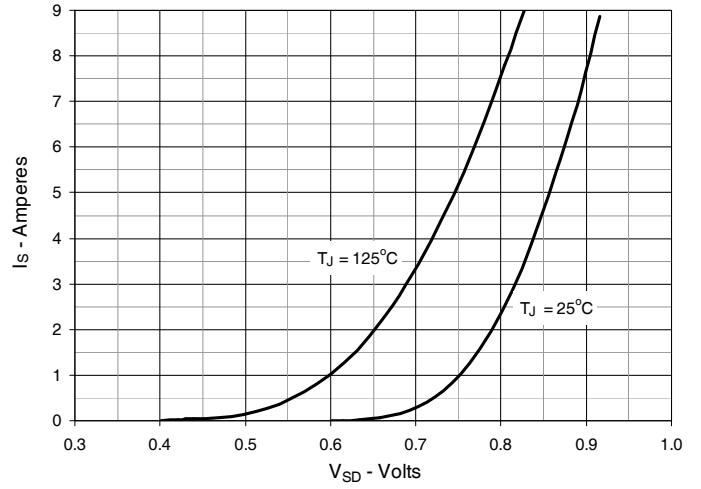


Fig. 9. Gate Charge

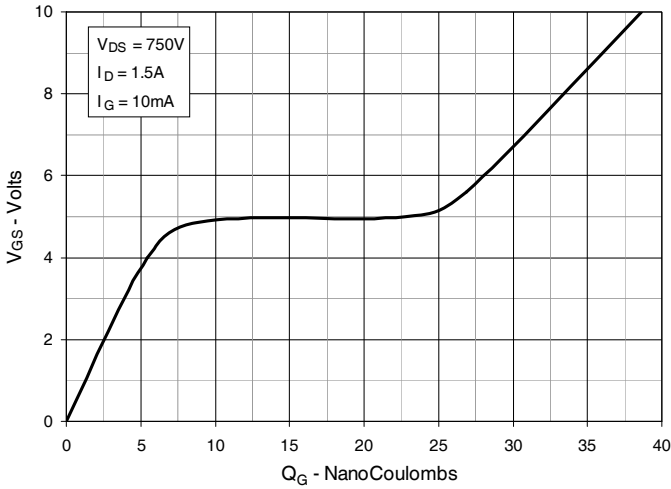


Fig. 10. Capacitance

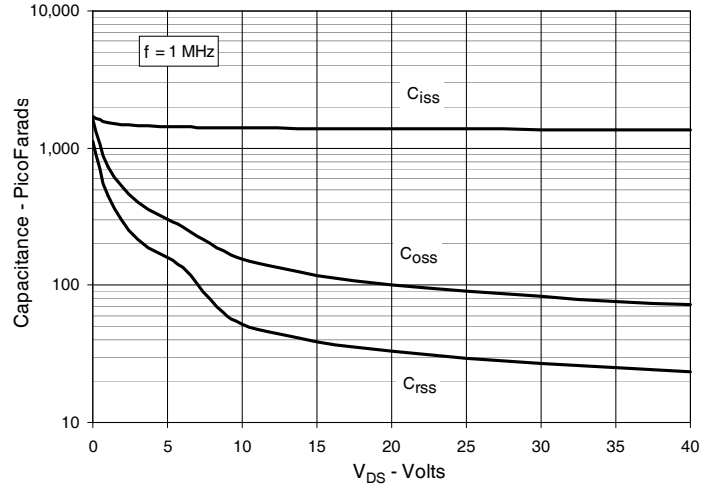


Fig. 11. Forward-Bias Safe Operating Area

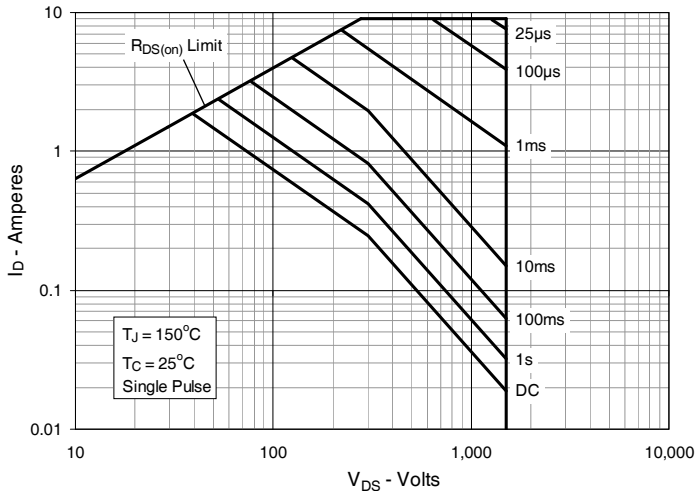
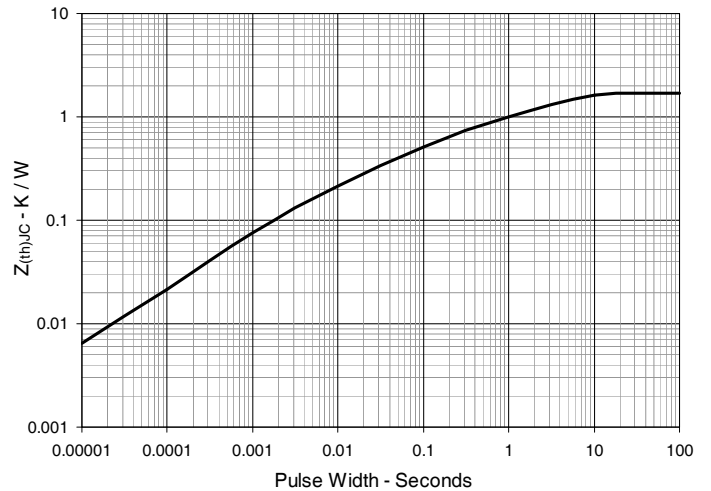


Fig. 12. Maximum Transient Thermal Impedance





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