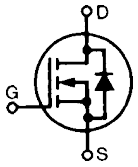
IXYS

High Voltage Power MOSFET

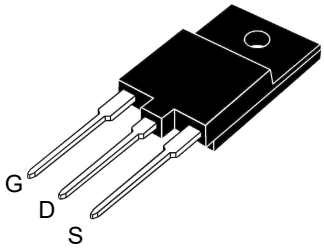
IXTQ3N150M

V_{DSS} = 1500V
I_{D25} = 3A
$R_{DS(on)}$ ≤ 7.3Ω



N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode

OVERMOLDED (IXTQ...M)



G = Gate D = Drain
S = Source

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	1500	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1 MΩ	1500	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	T_C = 25°C, Limited by T_{JM}	3	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	9	A
I_A	T_C = 25°C	3	A
E_{AS}	T_C = 25°C	250	mJ
dv/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, T_J = 150°C	5	V/ns
P_D	T_C = 25°C	73	W
T_J		- 55 ... +150	°C
T_{JM}		150	°C
T_{stg}		- 55 ... +150	°C
T_L	Maximum Lead Temperature for Soldering 1.6 mm (0.062 in.) from Case for 10s	300	°C
M_d	Mounting Torque	1.13/10	Nm/lb.in.
Weight		6	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	1500			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250μA	2.5		5.0	V
I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±100	nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS} = 0V			10	μA
	T_J = 125°C			100	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 1.5A, Note 1			7.3	Ω

Features

- Plastic Overmolded Tab for Electrical Isolation
- Avalanche Rated
- Fast Intrinsic Diode
- Low Package Inductance

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

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

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Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 20V, I_D = 1.5A, Note 1	2.2	3.6		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		1375		pF
C_{oss}			90		pF
C_{rss}			30		pF
R_{Gi}	Gate Input Resistance		3.0		Ω
$t_{d(on)}$	**Resistive Switching Times**		19		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 1.5A		21		ns
$t_{d(off)}$	R_G = 5Ω (External)		42		ns
t_f			25		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 1.5A		38.6		nC
Q_{gs}			6.5		nC
Q_{gd}			19.0		nC
R_{thJC}				1.7	°C/W
R_{thCS}			0.21		°C/W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max	
I_S	V_{GS} = 0V, Note1			3	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			12	A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.3	V
t_{rr}	I_F = 1.5A, -di/dt = 100A/μs		0.9		μs
Q_{RM}	V_R = 100V		6.7		μC
I_{RM}			15		A

Note 1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2 %.

Littelfuse 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 4,860,072 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 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

Fig. 1. Output Characteristics @ T_J = 25ºC

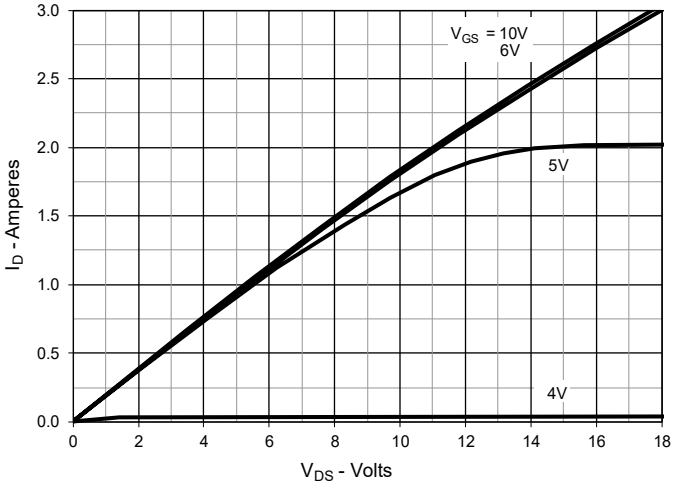


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

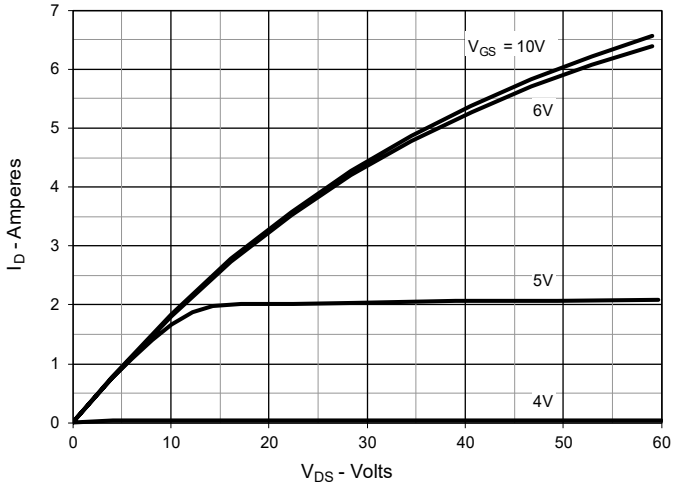


Fig. 3. Output Characteristics @ T_J = 125ºC

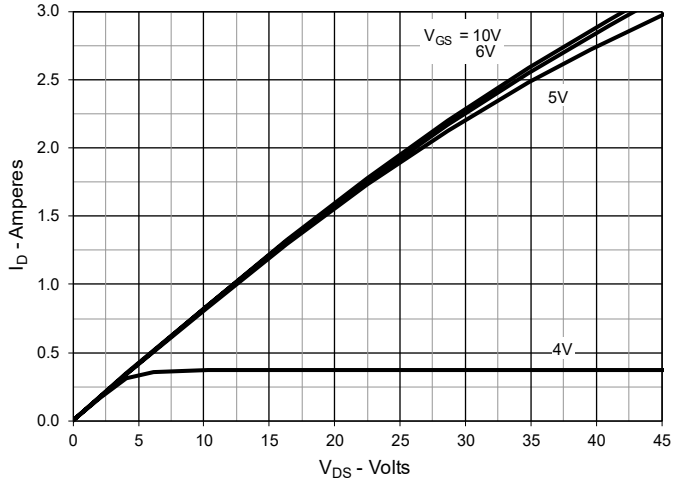


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 1.5A Value vs. Junction Temperature

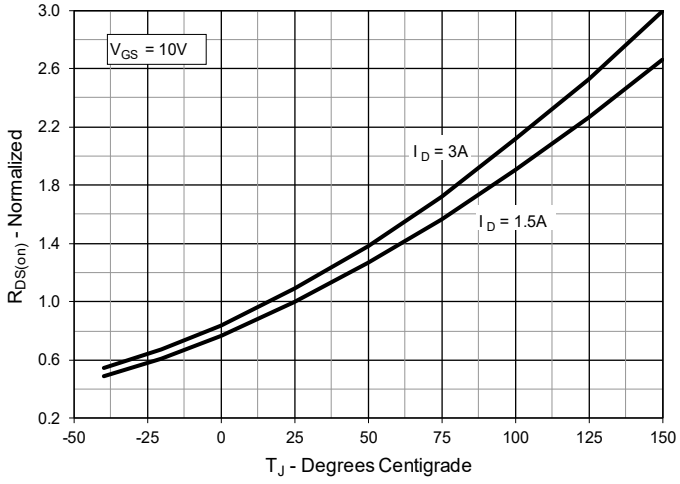


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 1.5A Value vs. Drain Current

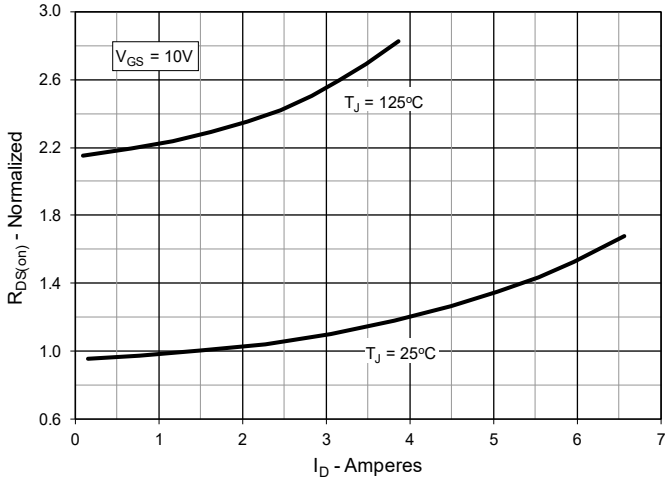
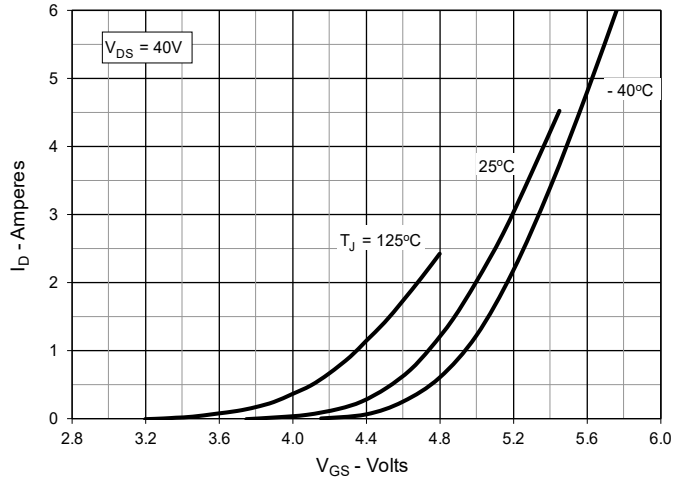


Fig. 6. Input Admittance



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Fig. 7. Transconductance

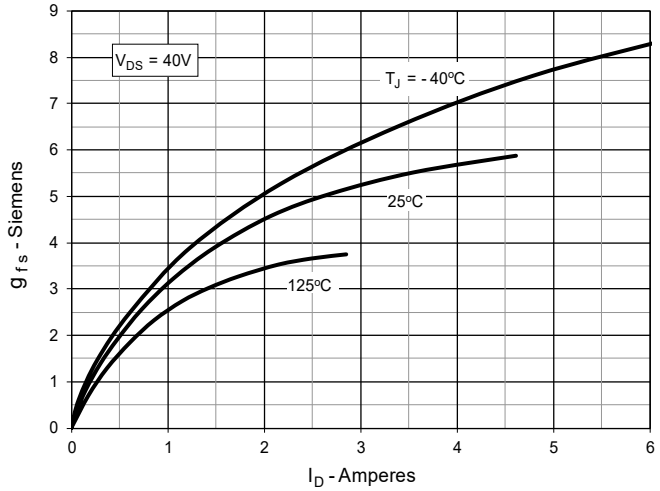


Fig. 8. Forward Voltage Drop of Intrinsic Diode

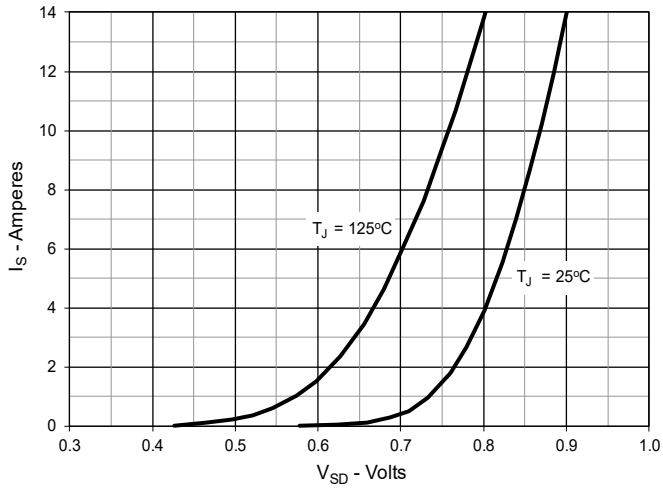


Fig. 9. Gate Charge

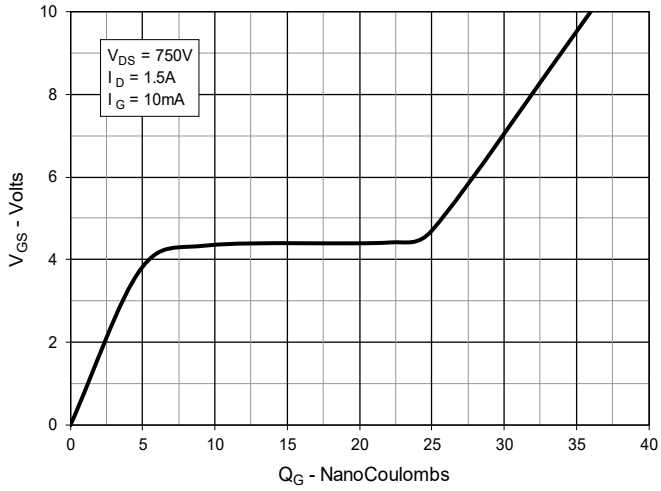


Fig. 10. Capacitance

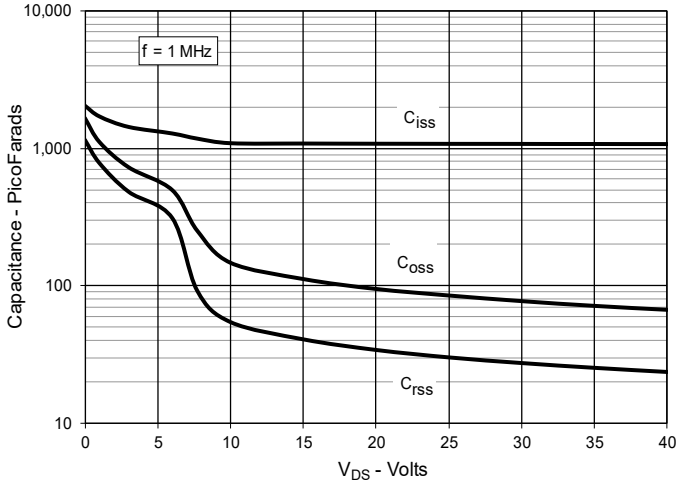


Fig. 12. Maximum Transient Thermal Impedance



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Fig. 12. Forward-Bias Safe Operating Area @ T_C = 25ºC

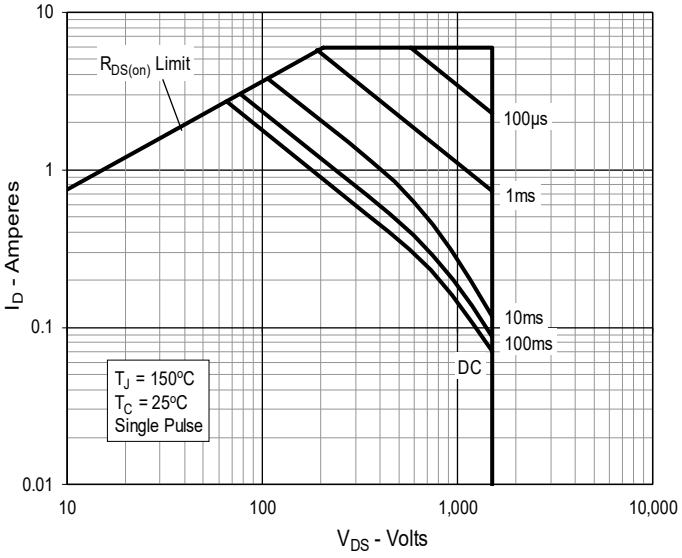
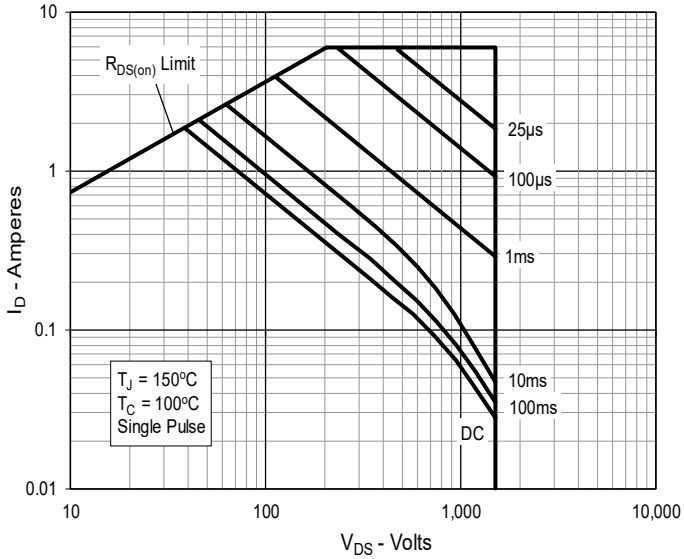
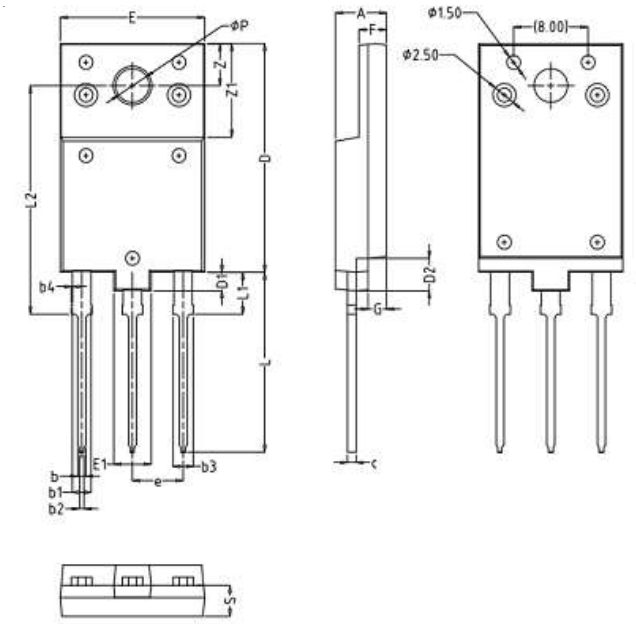


Fig. 13. Forward-Bias Safe Operating Area @ T_C = 100ºC



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TO-3PFP Outline



SYMBOL	MIN	MAX
A	5.30	5.70
b	0.65	0.95
b1	1.81	2.19
b2	0.30	0.70
b3	1.81	2.40
b4	-	0.20
c	0.80	1.00
D	24.20	24.80
D1	1.80	2.20
D2	3.30	3.70
E	15.30	15.70
E1	3.80	4.20
F	2.80	3.20
e	5.45 BSC	
L	19.00	19.60
L1	4.20	4.80
L2	24.20	24.80
P	3.40	3.80
Z	4.30	4.70
Z1	9.70	10.30
G	1.80	2.20
S	3.10	3.50

IXYS
A Littelfuse Technology

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