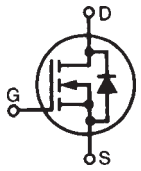
IXYS

Polar™ HiPerFET™ Power MOSFET

IXFL30N120P

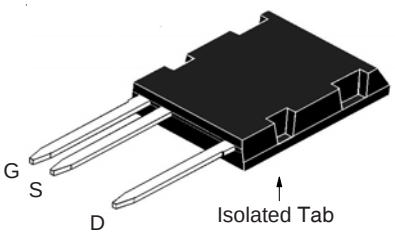
V_{DSS} = 1200V
I_{D25} = 18A
$R_{DS(on)}$ ≤ 380mΩ
t_{rr} ≤ 300ns

(Electrically Isolated Tab)



N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode

ISOPLUS i5-Pak™



G = Gate D = Drain
S = Source

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	1200	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	1200	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	T_C = 25°C	18	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	80	A
I_A	T_C = 25°C	15	A
E_{AS}	T_C = 25°C	1.5	J
dv/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$	15	V/ns
P_D	T_C = 25°C	357	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
V_{ISOL}	50/60 Hz, RMS, 1 minute	2500	V~
	$I_{ISOL} \le$ 1mA t = 1s	3000	V~
F_C	Mounting Force	40..120/4.5..27	N/lb.
Weight		8	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 3mA	1200			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 1mA	3.5		6.5	V
I_{GSS}	V_{GS} = ± 30V, V_{DS} = 0V			± 200	nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS} = 0V			50	μA
	Note 2, T_J = 125°C			5	mA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 15A, Note 1			380	mΩ

Features

- Silicon Chip on Direct-Copper-Bond Substrate
  - High Power Dissipation
  - Isolated Mounting Surface
  - 2500V~ Electrical Isolation
- Avalanche Rated
- Fast Intrinsic Diode

Advantages

- Easy Assembly
- Space Savings
- High Power Density

Applications

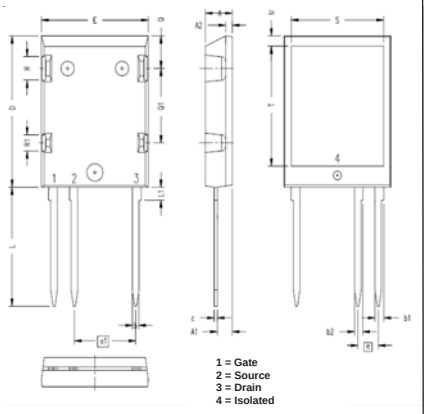
- Switch-Mode and Resonant-Mode Power Supplies
- DC-DC Converters
- Laser Drivers
- AC and DC Motor Drives
- Robotics and Servo Controls

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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 = 15A, Note 1	13	22	S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		19	nF
C_{oss}			960	pF
C_{rss}			25	pF
R_{Gi}	Gate input resistance		1.70	Ω
$t_{d(on)}$	**Resistive Switching Times**		57	ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 15A		60	ns
$t_{d(off)}$	R_G = 1Ω (External)		95	ns
t_f			56	ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 15A		310	nC
Q_{gs}			104	nC
Q_{gd}			137	nC
R_{thJC}				0.35 °C/W
R_{thCS}			0.15	°C/W

Source-Drain Diode (T_J = 25°C Unless Otherwise Specified)		Characteristic Values Min.	Typ.	Max.
I_S	V_{GS} = 0V			30 A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			120 A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.5 V
t_{rr}	I_F = 15A, -di/dt = 100A/μs			300 ns
Q_{RM}	V_R = 100V, V_{GS} = 0V		1.6	μC
I_{RM}			14	A

ISOPLUS i5-Pak™ (IXFL) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETER MIN	MILLIMETER MAX
A	0.190	0.205	4.83	5.21
A1	0.102	0.118	2.59	3.00
A2	0.046	0.055	1.17	1.40
b	0.045	0.055	1.14	1.40
b1	0.063	0.072	1.60	1.83
b2	0.058	0.068	1.47	1.73
c	0.020	0.029	0.51	0.74
D	1.020	1.040	25.91	26.42
E	0.770	0.799	19.56	20.29
e	0.150 BSC		3.81 BSC	
e1	0.450 BSC		11.43 BSC	
L	0.780	0.820	19.81	20.83
L1	0.080	0.102	2.03	2.59
Q	0.210	0.235	5.33	5.97
Q1	0.490	0.513	12.45	13.03
R	0.150	0.180	3.81	4.57
R1	0.100	0.130	2.54	3.30
S	0.668	0.690	16.97	17.53
T	0.801	0.821	20.34	20.85
U	0.065	0.080	1.65	2.03

Notes:

1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.
2. Part must be heatsunk for high-temp Ices measurement.

IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,850,072 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

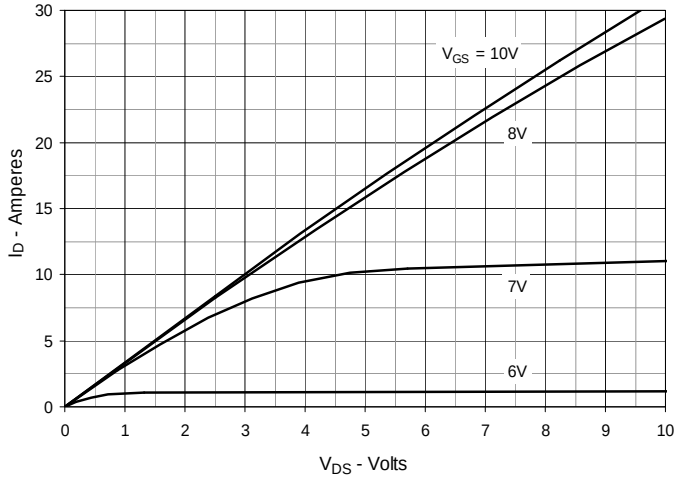


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

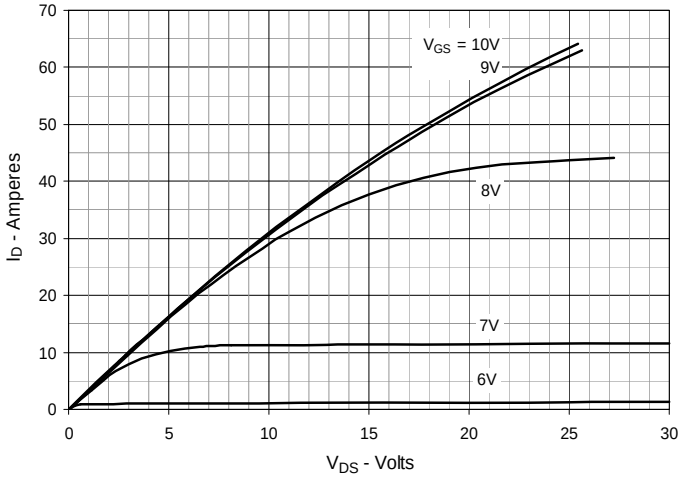


Fig. 3. Output Characteristics @ T_J = 125ºC

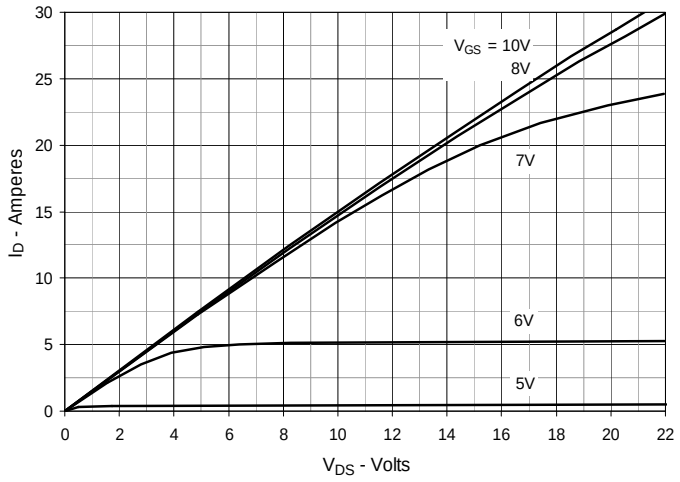


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 15A Value vs. Junction Temperature

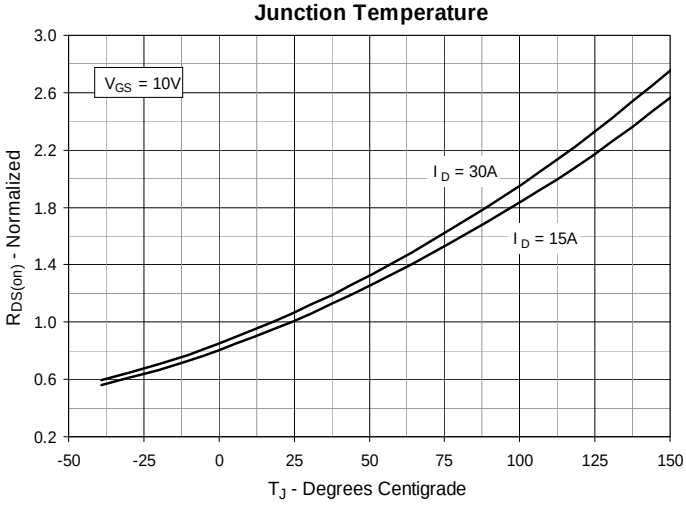


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 15A Value vs. Drain Current

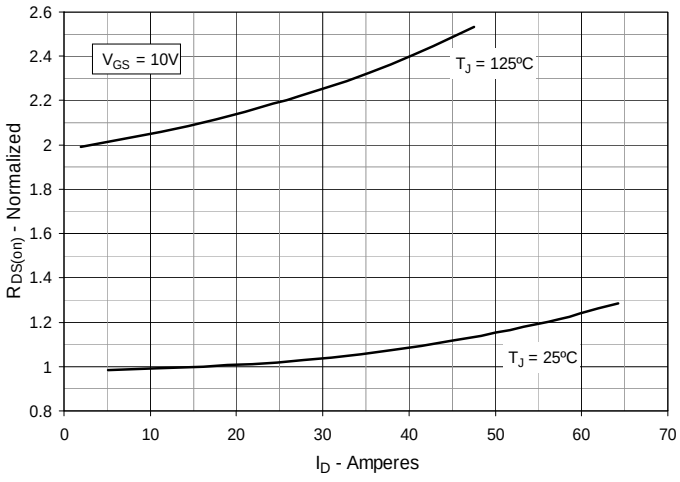
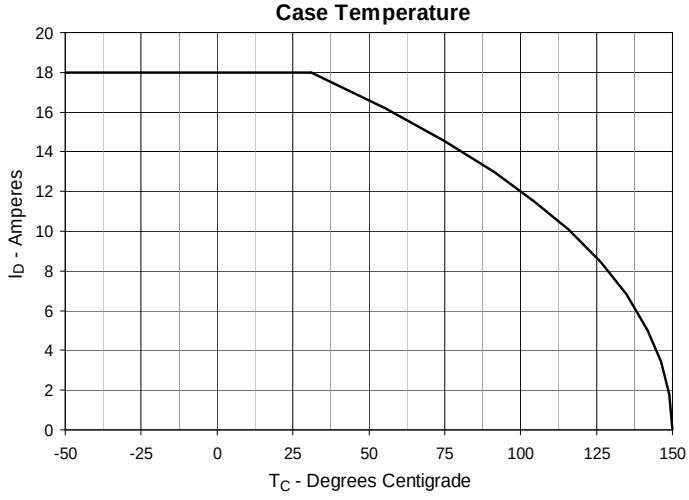


Fig. 6. Maximum Drain Current vs. Case Temperature



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Fig. 7. Input Admittance

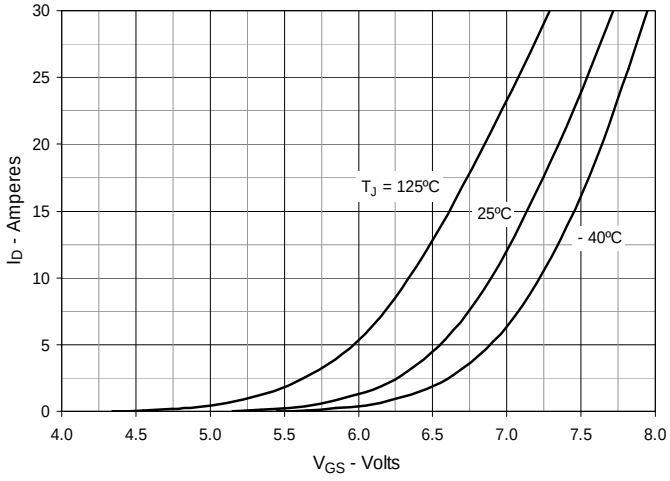


Fig. 8. Transconductance

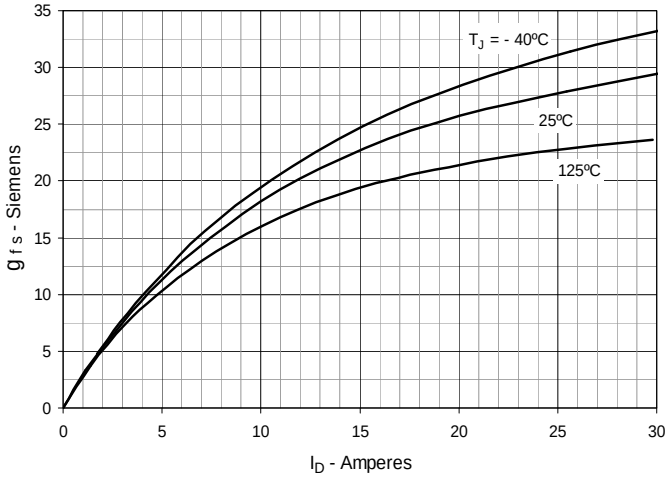


Fig. 9. Forward Voltage Drop of Intrinsic Diode

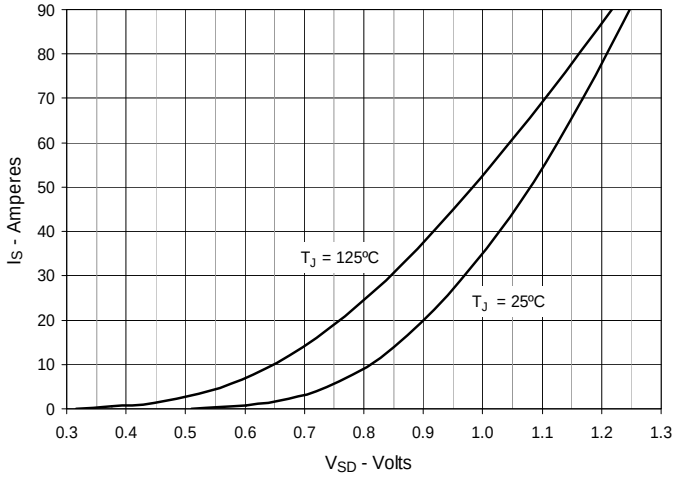


Fig. 10. Gate Charge

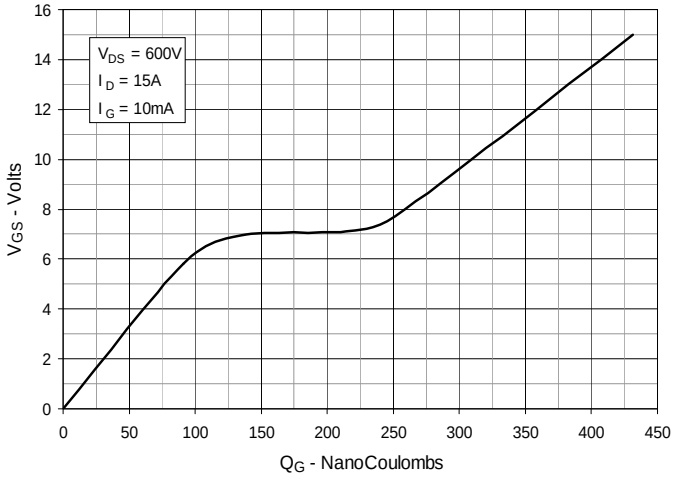


Fig. 11. Capacitance

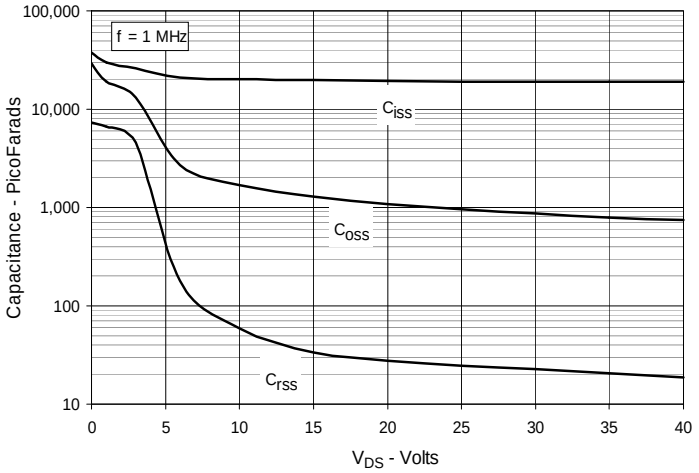
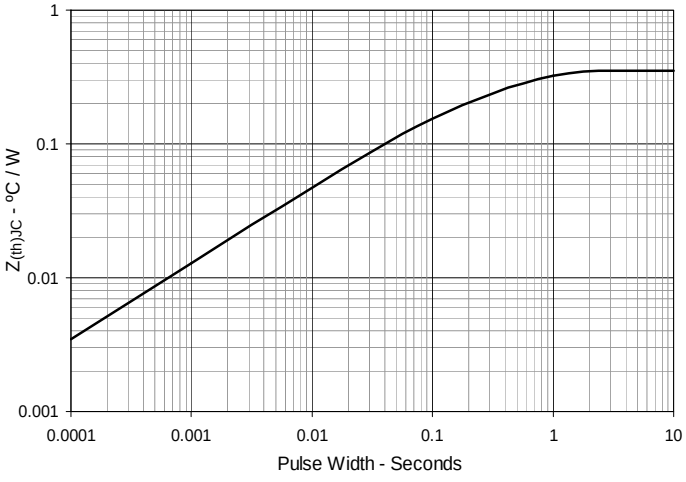


Fig. 12. Maximum Transient Thermal Impedance



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