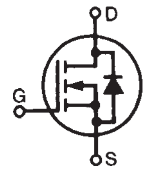
Polar™ HiperFET™ Power MOSFET

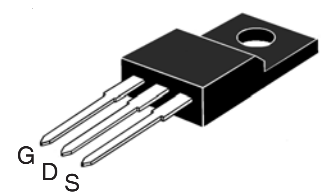
IXFP4N100PM

V_{DSS} = 1000V
I_{D25} = 2.5A
$R_{DS(on)}$ ≤ 3.3Ω

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



OVERMOLDED



G = Gate D = Drain
S = Source

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	1000	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1 MΩ	1000	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	T_C = 25°C	2.5	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	8.0	A
I_A	T_C = 25°C	4.0	A
E_{AS}	T_C = 25°C	200	mJ
dv/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, T_J =150°C	10	V/ns
P_D	T_C = 25°C	57	W
T_J		- 55 ... +150	°C
T_{JM}		150	°C
T_{stg}		- 55 ... +150	°C
T_L	1.6 mm (0.062 in.) from Case for 10 s	300	°C
T_{SOLD}	Plastic Body for 10 s	260	°C
M_d	Mounting Torque	1.13/10	Nm/lb.in.
Weight		2.5	g

Symbol	Test Conditions	Characteristic Values			
(T_J = 25°C, Unless Otherwise Specified)		Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	1000			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	3.0		6.0	V
I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
I_{DSS}	V_{DS} = V_{DSS}, V_{GS} = 0V			10	μA
	T_J = 125°C			750	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 2A, Note 1			3.3	Ω

Features

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

Advantages

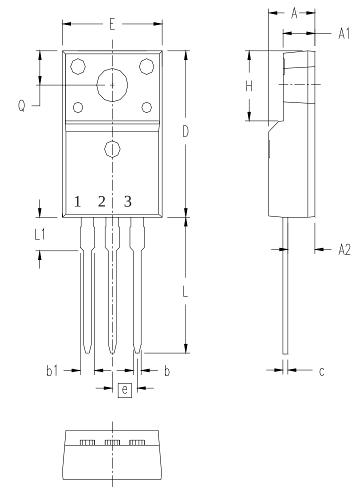
- High Power Density
- Easy to Mount
- Space Savings

Applications

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

Symbol	Test Conditions	Characteristic Values			
(T_J = 25°C Unless Otherwise Specified)		Min.	Typ.	Max.	
g_{fs}	V_{DS} = 20V, I_D = 2A, Note 1	1.8	3.0		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		1456		pF
C_{oss}			90		pF
C_{rss}			16		pF
R_{Gi}	Gate Input Resistance		1.6		Ω
$t_{d(on)}$	**Resistive Switching Times** V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 2A, R_G = 5Ω (External)		24		ns
t_r			36		ns
$t_{d(off)}$			37		ns
t_f			50		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 2A		26		nC
Q_{gs}			9		nC
Q_{gd}			12		nC
R_{thJC}				2.2	°C/W

ISOLATED TO-220 (IXFP...M)



Terminals: 1 - Gate
2 - Drain
3 - Source

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.177	.193	4.50	4.90
A1	.092	.108	2.34	2.74
A2	.101	.117	2.56	2.96
b	.028	.035	0.70	0.90
b1	.050	.058	1.27	1.47
c	.018	.024	0.45	0.60
D	.617	.633	15.67	16.07
E	.392	.408	9.96	10.36
e	.100 BSC		2.54 BSC	
H	.255	.271	6.48	6.88
L	.499	.523	12.68	13.28
L1	.119	.135	3.03	3.43
ØP	.121	.129	3.08	3.28
Q	.126	.134	3.20	3.40

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values			
(T_J = 25°C, Unless Otherwise Specified)		Min.	Typ.	Max.	
I_S	V_{GS} = 0V			4	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			16	A
V_{SD}	I_F = I_S , V_{GS} = 0V, Note 1			1.3	V
t_{rr}	I_F = 2A, -di/dt = 100A/µs, V_R = 100V, V_{GS} = 0V			300	ns
Q_{RM}			0.34		µC
I_{RM}			5.30		A

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

Fig. 1. Output Characteristics @ T_J = 25ºC

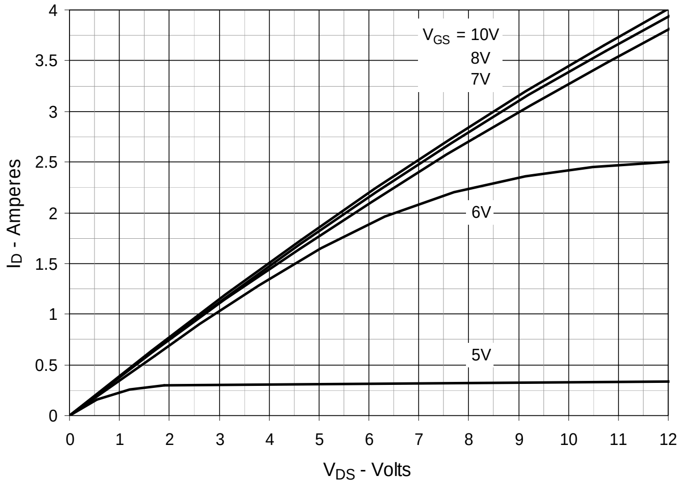


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

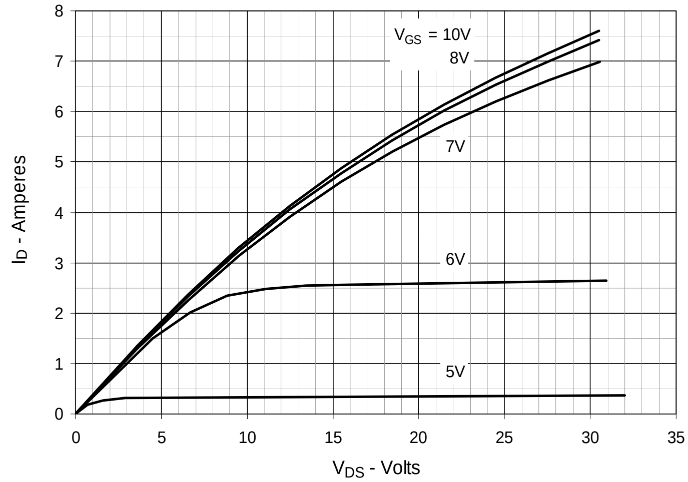


Fig. 3. Output Characteristics @ T_J = 125ºC

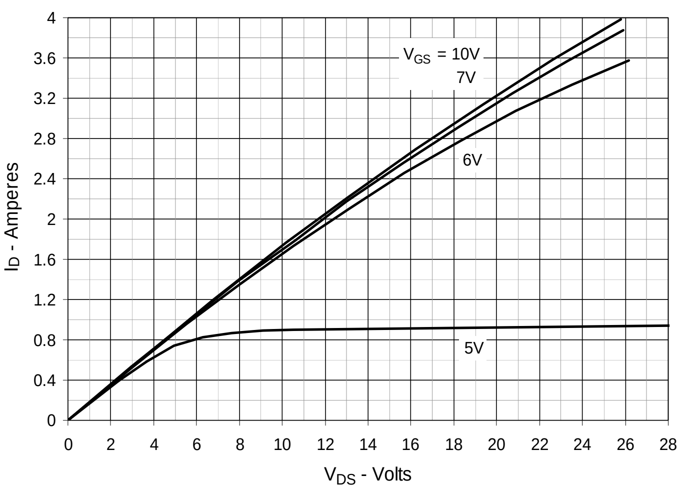


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 2A Value vs. Junction Temperature

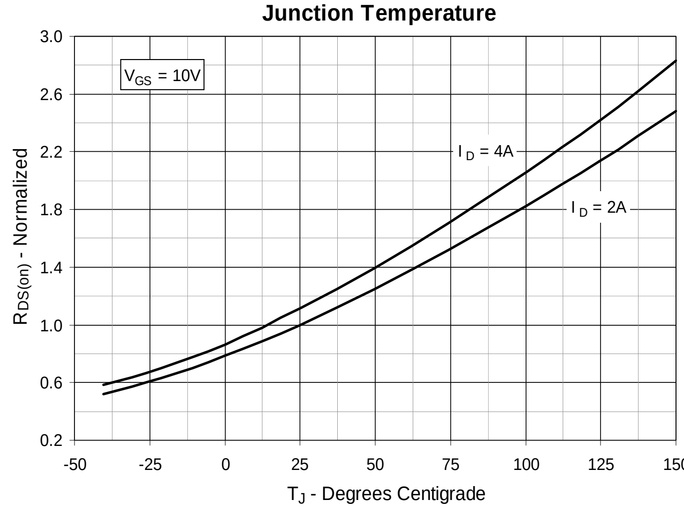


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 2A Value vs. Drain Current

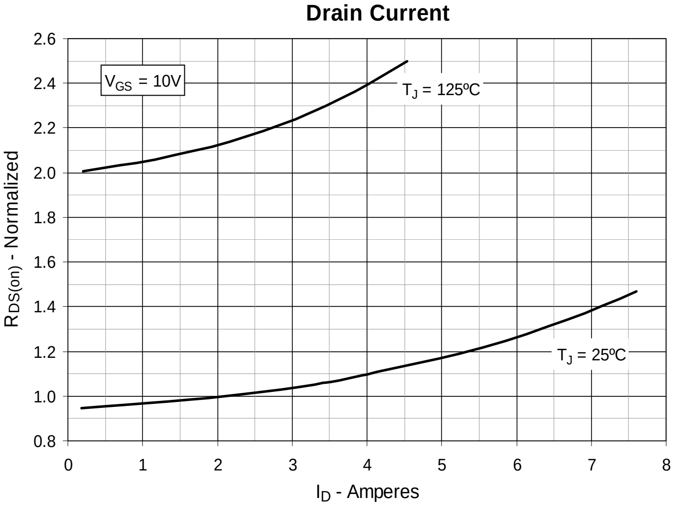
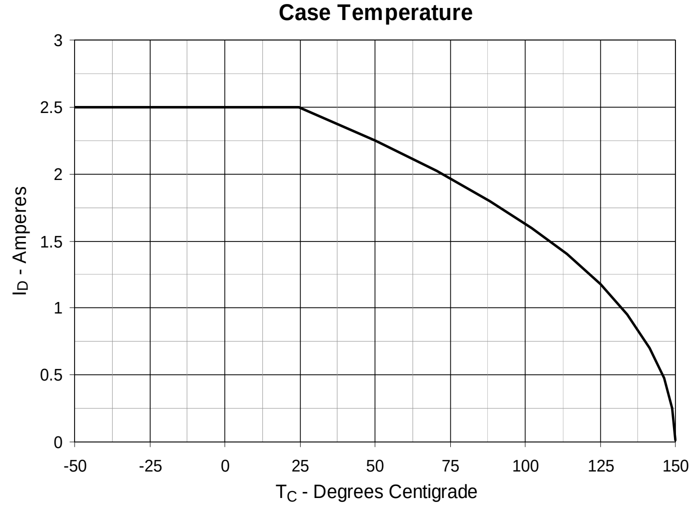
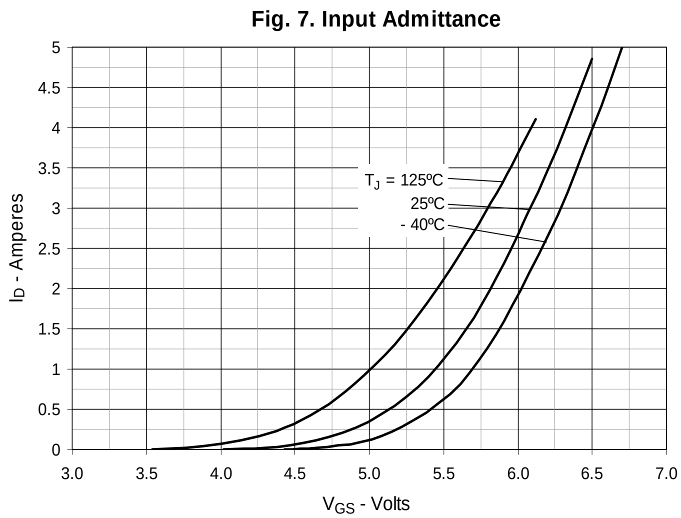
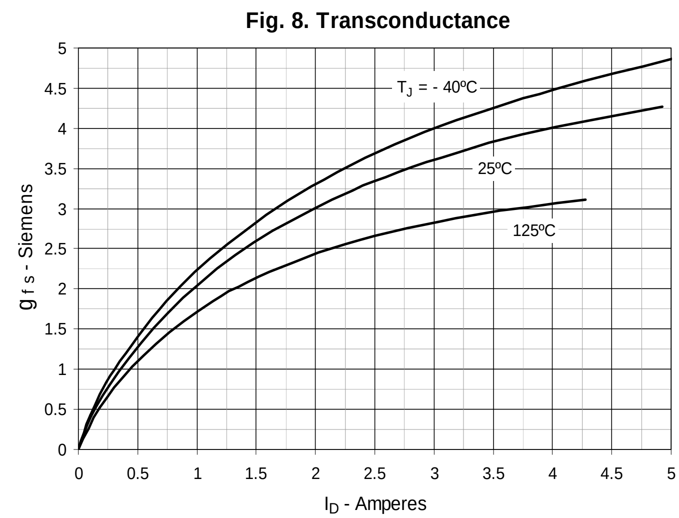
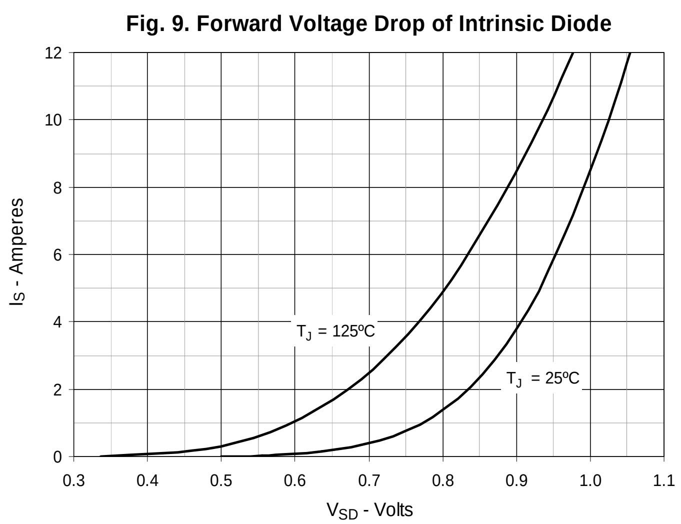


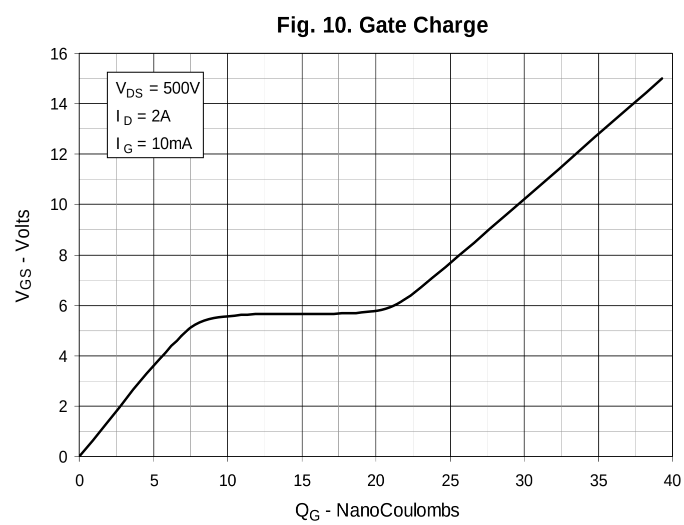
Fig. 6. Maximum Drain Current vs. Case Temperature

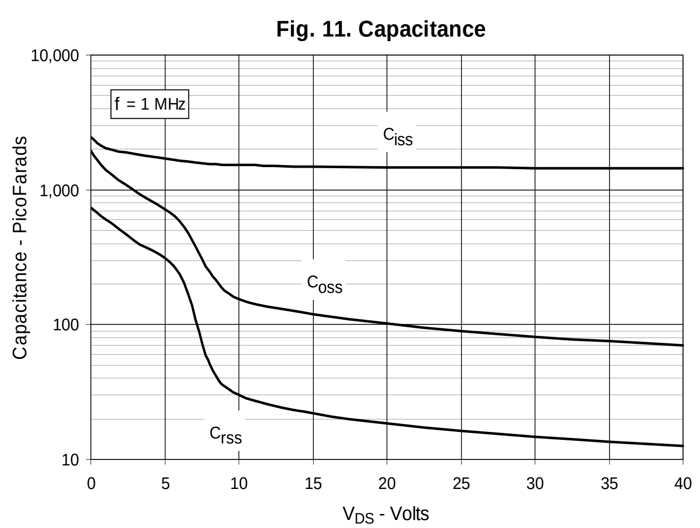


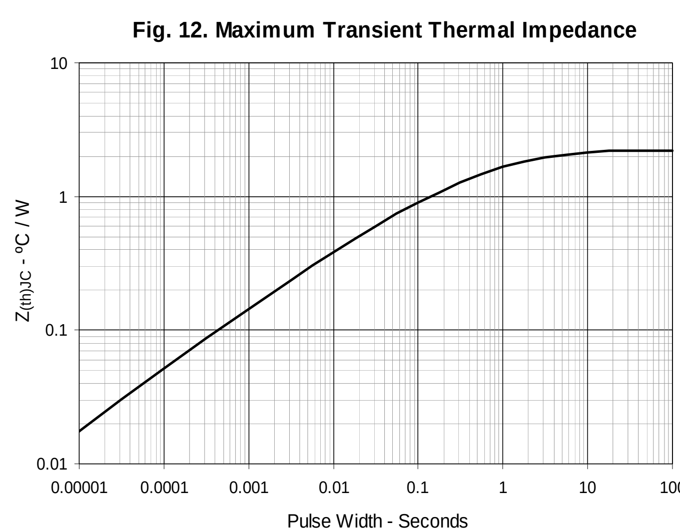












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