IXYS

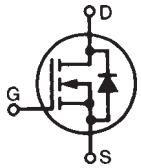
PolarHV™ Power MOSFET

IXTP14N60PM

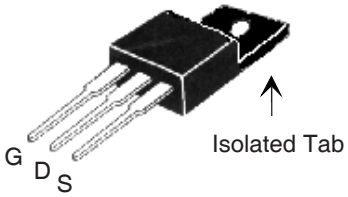
V_{DSS} = 600V
I_{D25} = 7A
$R_{DS(on)}$ ≤ 550mΩ

(Electrically Isolated Tab)

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



OVERMOLDED (IXTP...M) OUTLINE



G = Gate D = Drain
S = Source

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	600	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1 MΩ	600	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	T_C = 25°C	7	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	42	A
I_A	T_C = 25°C	14	A
E_{AS}	T_C = 25°C	900	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	75	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 (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	600		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250μA	3.0		5.5 V
I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±100 nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS} = 0V			5 μA
	V_{GS} = 0V, T_J = 125°C			100 μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 7A, Note 1			550 mΩ

Features

- Plastic overmolded tab for electrical isolation
- International standard package
- Avalanche rated
- Fast Intrinsic Diode
- Low package inductance

Advantages

- Easy to mount
- Space savings

Applications:

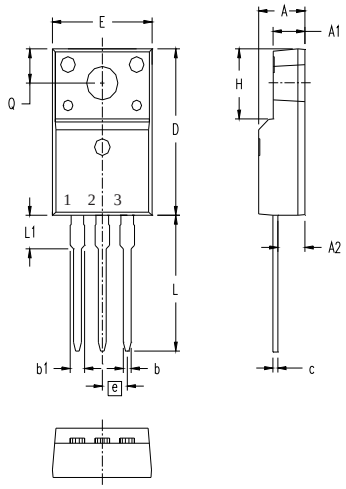
- Switched-mode and resonant-mode power supplies
- DC-DC Converters
- Laser Drivers
- AC and DC motor drives
- Robotics and servo controls

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) Min.	Typ.	Max.	
g_{fs}	V_{DS}= 20V, I_D = 7A, Note 1	7	13		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		2500		pF
C_{oss}			215		pF
C_{rss}			13		pF
$t_{d(on)}$	**Resistive Switching Times**		23		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 7A		27		ns
$t_{d(off)}$	R_G = 10Ω (External)		70		ns
t_f			26		ns
$Q_{g(on)}$	V_{GS}= 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 7A		36		nC
Q_{gs}			16		nC
Q_{gd}			12		nC
R_{thJC}				1.66	°C/W

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) Min.	Typ.	Max.	
I_S	V_{GS} = 0V			14	A
I_{SM}	Repetitive, pulse width limited by T_{JM}			42	A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.5	V
t_{rr}	I_F = 14A, -di/dt = 100A/μs, V_R = 100V, V_{GS} = 0V		500		ns

ISOLATED TO-220 (IXTP...M)



Terminals: 1 - Gate
2 - Drain (Collector)
3 - Source (Emitter)

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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

Notes:1. Pulse test, t ≤ 300 μs; duty cycle, d ≤ 2 %.

Fig. 1. Output Characteristics @ 25ºC

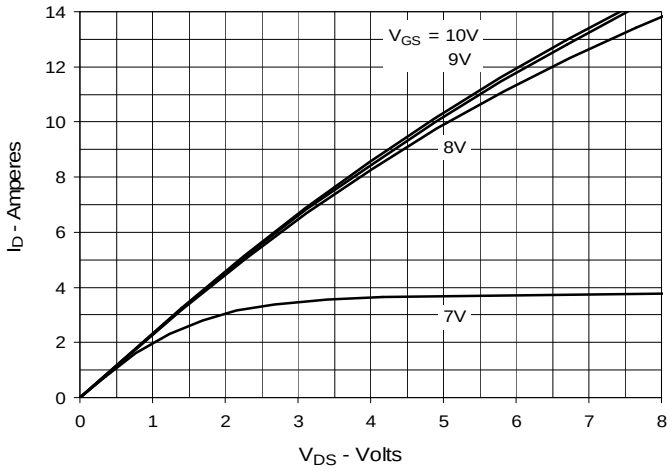


Fig. 2. Extended Output Characteristics @ 25ºC

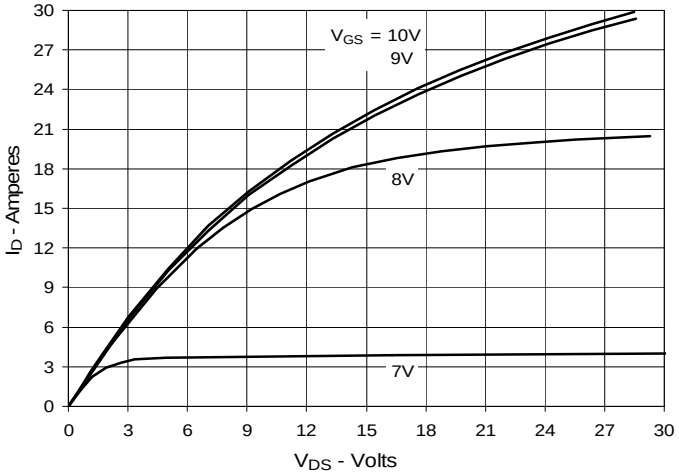


Fig. 3. Output Characteristics @ 125ºC

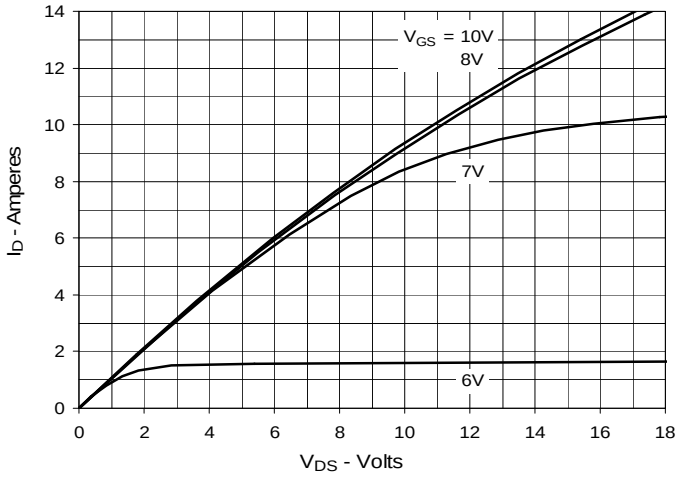


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 7A Value vs. Junction Temperature

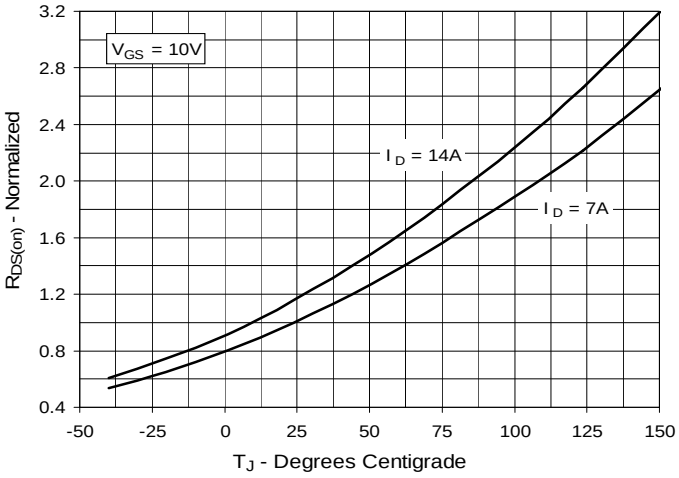


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 7A Value vs. Drain Current

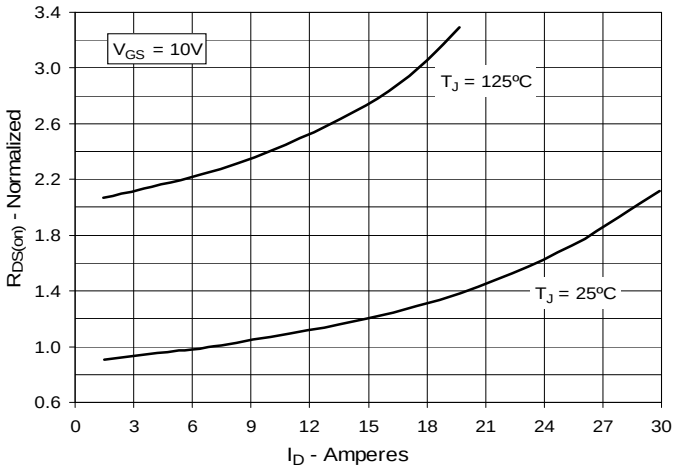


Fig. 6. Maximum Drain Current vs. Case Temperature

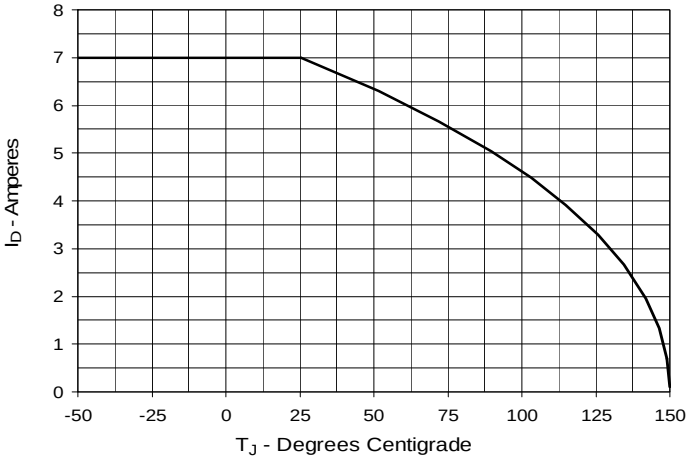


Fig. 7. Input Admittance

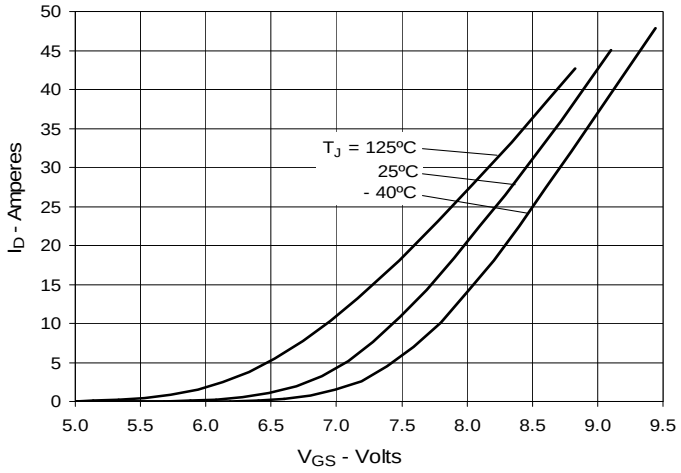


Fig. 8. Transconductance

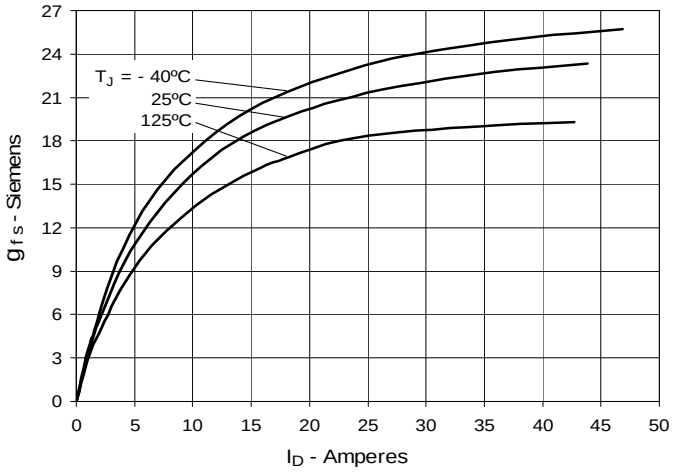


Fig. 9. Forward Voltage Drop of Intrinsic Diode

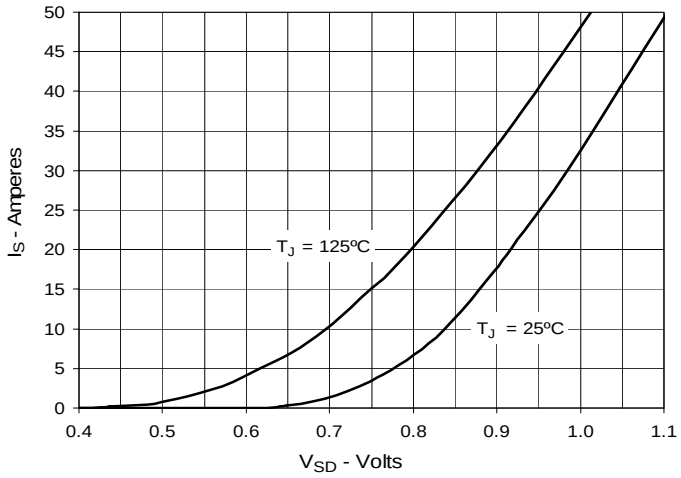


Fig. 10. Gate Charge

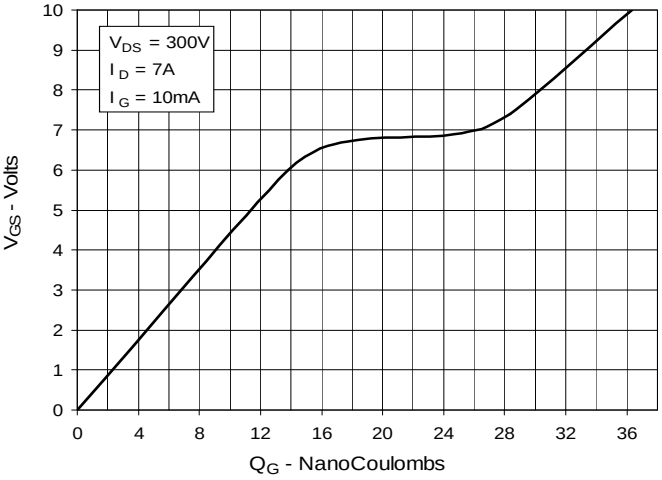


Fig. 11. Capacitance

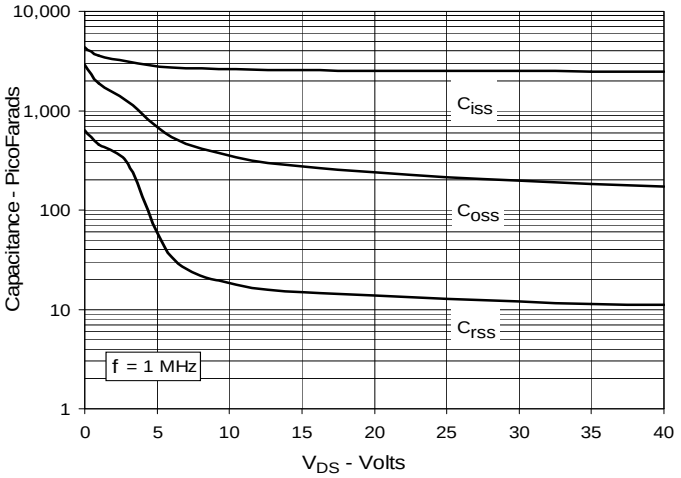


Fig. 12. Forward-Bias Safe Operating Area

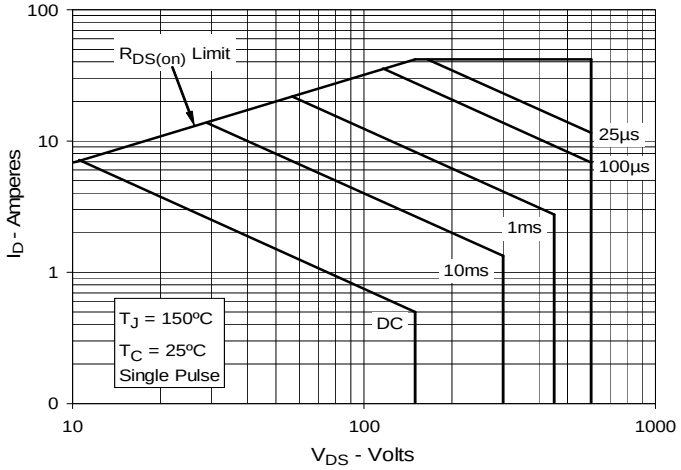
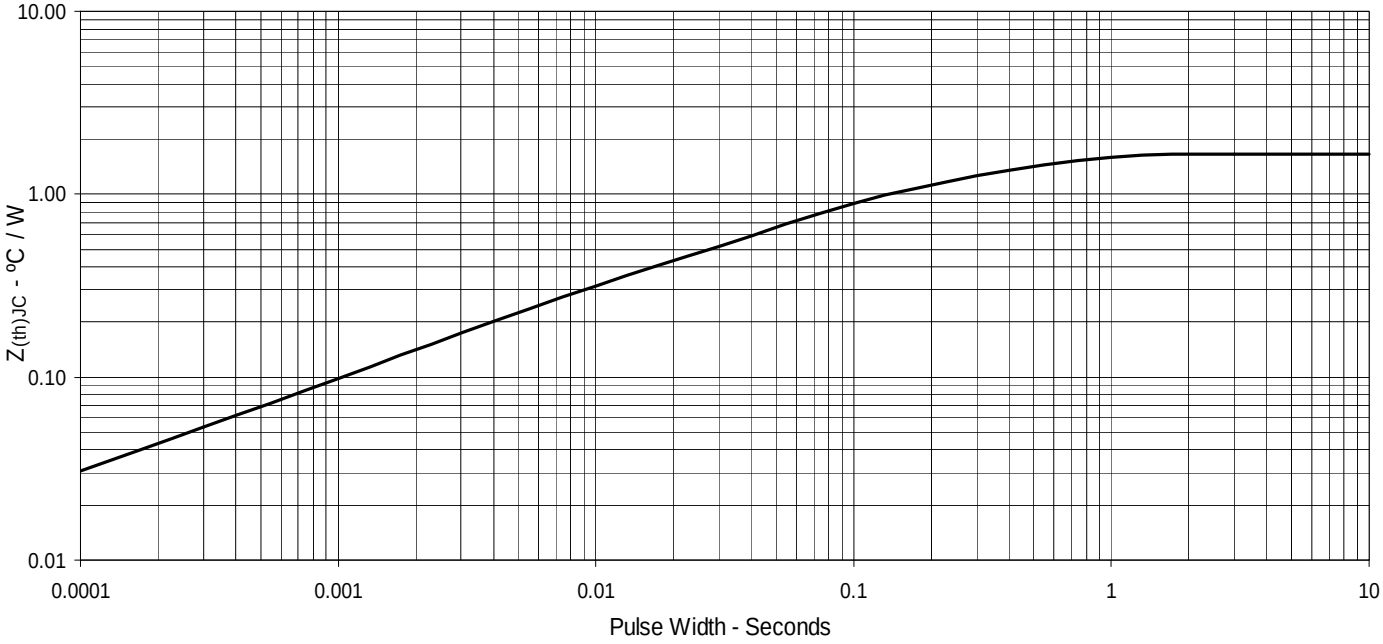


Fig. 13. Maximum Transient Thermal Impedance



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