

PolarHV™ HiPerFET IXFP 5N50PM

Power MOSFET

(Electrically Isolated Tab)

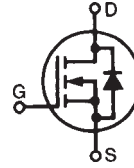
$$V_{DSS} = 500 \text{ V}$$

$$I_{D25} = 3.2 \text{ A}$$

$$R_{DS(on)} \leq 1.4 \text{ } \Omega$$

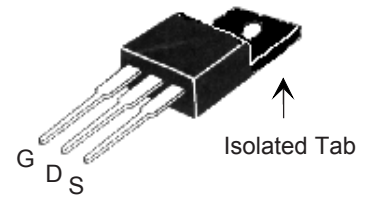
$$t_{rr} \leq 200 \text{ ns}$$

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	500	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	500	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	$T_C = 25^\circ\text{C}$	3.2	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	10	A
I_{AR}	$T_C = 25^\circ\text{C}$	5	A
E_{AR}	$T_C = 25^\circ\text{C}$	15	mJ
E_{AS}	$T_C = 25^\circ\text{C}$	150	mJ
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 30 \text{ } \Omega$	10	V/ns
P_D	$T_C = 25^\circ\text{C}$	38	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
T_{SOLD}	Plastic body for 10 s	260	$^\circ\text{C}$
M_d	Mounting torque	1.13/10	Nm/lb.in.
Weight		4	g

OVERMOLDED TO-220 (IXTP...M) OUTLINE



G = Gate D = Drain
S = Source

Features

- † Plastic overmolded tab for electrical isolation
- † Fast intrinsic diode
- † International standard package
- † Unclamped Inductive Switching (UIS) rated
- † Low package inductance
 - easy to drive and to protect

Advantages

- † Easy to mount
- † Space savings
- † High power density

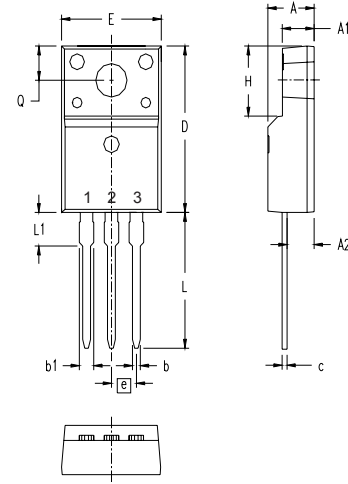
Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \text{ } \mu\text{A}$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 500 \text{ } \mu\text{A}$	3.0		5.5 V
I_{GSS}	$V_{GS} = \pm 30 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 100 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$			5 μA 50 μA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 2.5 \text{ A}$ Note 1			1.4 Ω

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 2.5\text{ A}$, Note 1	3.0	4.7	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		620	pF
C_{oss}			72	pF
C_{rss}			6.3	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 5\text{ A}$ $R_G = 30\ \Omega$ (External)		28	ns
t_r			28	ns
$t_{d(off)}$			65	ns
t_f			26	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 2.5\text{ A}$		12.6	nC
Q_{gs}			4.3	nC
Q_{gd}			5.0	nC
R_{thJC}				3.3 $^\circ\text{C/W}$

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
I_S	$V_{GS} = 0\text{ V}$			5 A
I_{SM}	Repetitive			15 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V}$, Note 1			1.5 V
t_{rr}	$I_F = 5\text{ A}, -di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 100\text{ V}, V_{GS} = 0\text{ V}$			200 ns
Q_{RM}			0.15	μC
I_{RM}			1	A

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

ISOLATED TO-220 (IXTP...M)


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

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
$\varnothing P$.121	.129	3.08	3.28
Q	.126	.134	3.20	3.40

PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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