

PolarP™ Power MOSFET

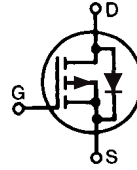
IXTN170P10P

$$V_{DSS} = -100V$$

$$I_{D25} = -170A$$

$$R_{DS(on)} \leq 12m\Omega$$

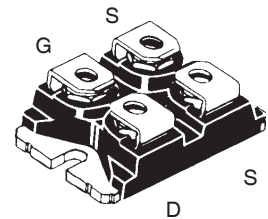
P-Channel Enhancement Mode
Avalanche Rated



miniBLOC, SOT-227 (IXTN)
E153432



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ C$ to $150^\circ C$	-100	V
V_{DGR}	$T_J = 25^\circ C$ to $150^\circ C$, $R_{GS} = 1M\Omega$	-100	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ C$	-170	A
I_{LRMS}	Terminal Current Limit	-100	A
I_{DM}	$T_C = 25^\circ C$, pulse width limited by T_{JM}	- 510	A
I_{AR}	$T_C = 25^\circ C$	-170	A
E_{AS}	$T_C = 25^\circ C$	3.5	J
dV/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ C$	10	V/ns
P_D	$T_C = 25^\circ C$	890	W
T_J		-55 ... +150	$^\circ C$
T_{JM}		150	$^\circ C$
T_{stg}		-55 ... +150	$^\circ C$
T_L	1.6mm (0.062 in.) from case for 10s	300	$^\circ C$
T_{SOLD}	Plastic body for 10s	260	$^\circ C$
V_{ISOL}	50/60 Hz, RMS $t = 1$ minute	2500	V~
	$I_{ISOL} \leq 1mA$ $t = 1$ second	3000	V~
M_d	Mounting torque	1.5/13	Nm/lb.in.
	Terminal Connection torque	1.3/11.5	Nm/lb.in.
Weight		30	g



G = Gate D = Drain
S = Source

Either source terminal at miniBLOC can be used as Main or Kelvin Source.

Features

- International standard package
- Rugged PolarP™ process
- Avalanche Rated
- Low package inductance

Applications

- High side switching
- Push-pull amplifiers
- DC Choppers
- Automatic test equipment

Symbol	Test Conditions ($T_J = 25^\circ C$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = -250\mu A$	-100		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250\mu A$	- 2.5		- 4.5 V
I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$			± 100 nA
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0V$ $T_J = 125^\circ C$			- 50 μA - 250 μA
$R_{DS(on)}$	$V_{GS} = -10V$, $I_D = 0.5 \cdot I_{D25}$, Note 1			12 m Ω

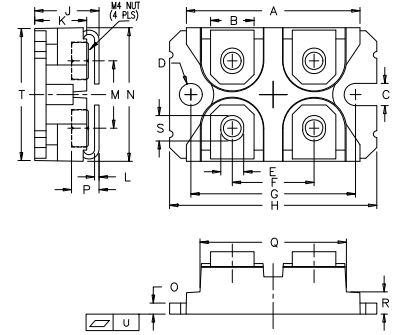
Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = -10\text{V}$, $I_D = 0.5 \cdot I_{D25}$, Note 1	35	58	S
C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = -25\text{V}$, $f = 1\text{MHz}$		12.6	nF
C_{oss}			4190	pF
C_{rss}			930	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = -10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$ $R_G = 1\Omega$ (External)		32	ns
t_r			75	ns
$t_{d(off)}$			82	ns
t_f			45	ns
$Q_{g(on)}$	$V_{GS} = -10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$		240	nC
Q_{gs}			45	nC
Q_{gd}			120	nC
R_{thJC}				0.14 $^\circ\text{C/W}$
R_{thCS}		0.05		$^\circ\text{C/W}$

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
I_S	$V_{GS} = 0\text{V}$			-170 A
I_{SM}	Repetitive, pulse width limited by T_{JM}			-680 A
V_{SD}	$I_F = -85\text{A}$, $V_{GS} = 0\text{V}$, Note 1			-3.3 V
t_{rr}	$I_F = -85\text{A}$, $-di/dt = -100\text{A}/\mu\text{s}$ $V_R = -50\text{V}$, $V_{GS} = 0\text{V}$		176	ns
Q_{RM}			1.25	μC
I_{RM}			-14.2	A

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

SOT-227B (IXTN) Outline



(M4 screws (4x) supplied)

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

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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IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2	7,071,537	

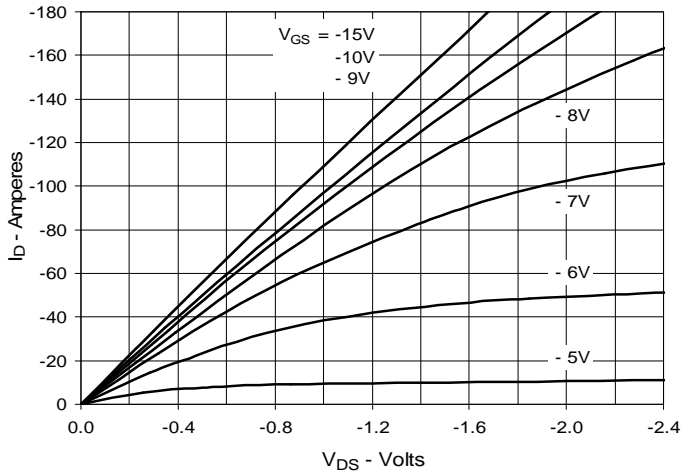
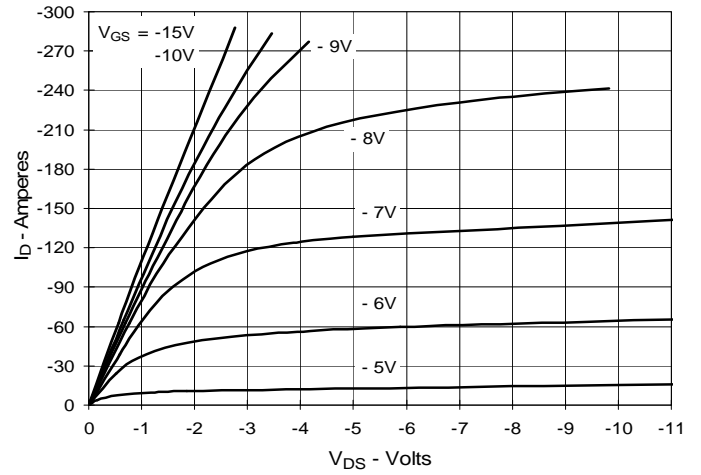
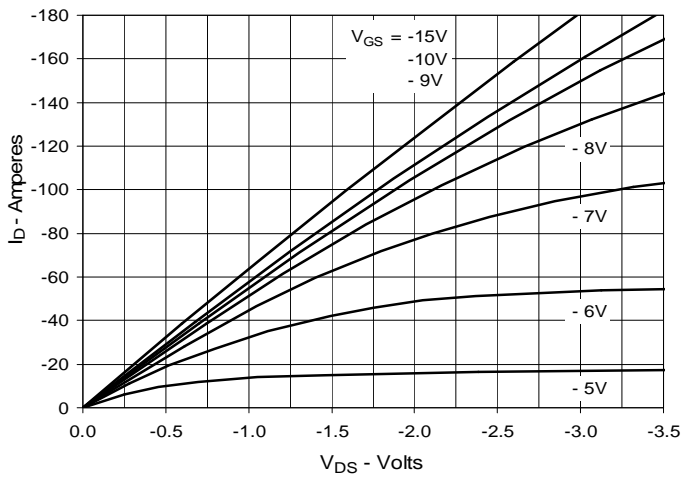
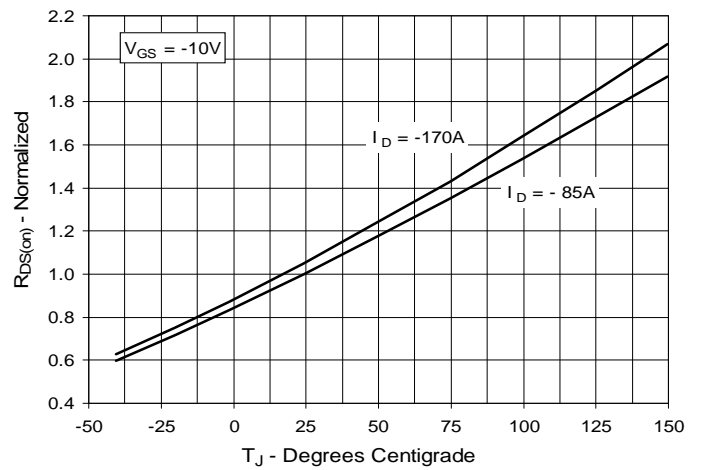
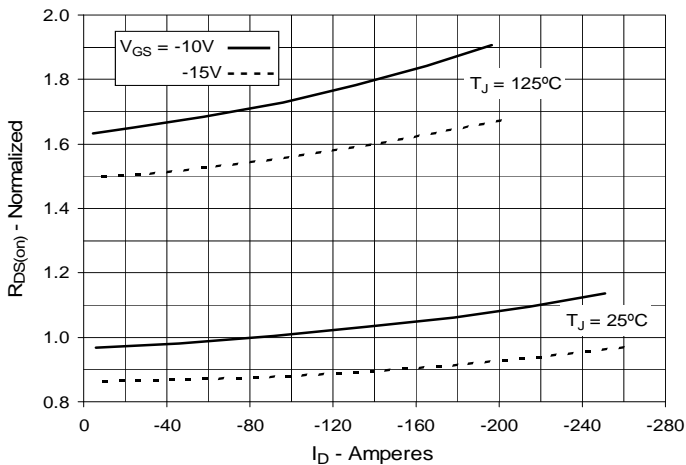
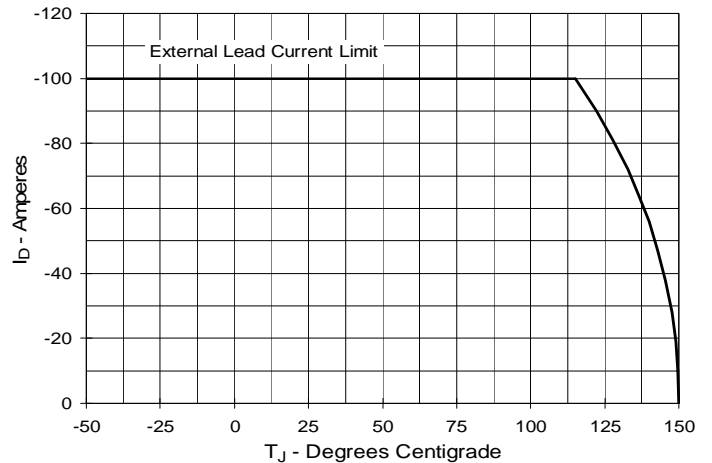
Fig. 1. Output Characteristics @ 25°C

Fig. 2. Extended Output Characteristics @ 25°C

Fig. 3. Output Characteristics @ 125°C

Fig. 4. $R_{DS(on)}$ Normalized to $I_D = -85A$ vs. Junction Temperature

Fig. 5. $R_{DS(on)}$ Normalized to $I_D = -85A$ vs. Drain Current

Fig. 6. Maximum Drain Current vs. Case Temperature


Fig. 7. Input Admittance

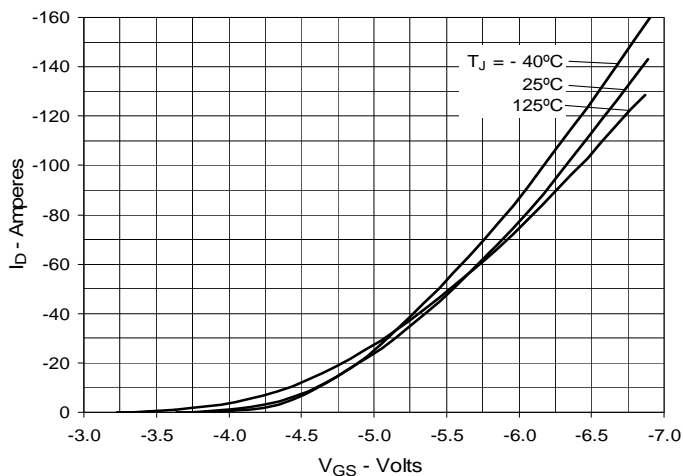


Fig. 8. Transconductance

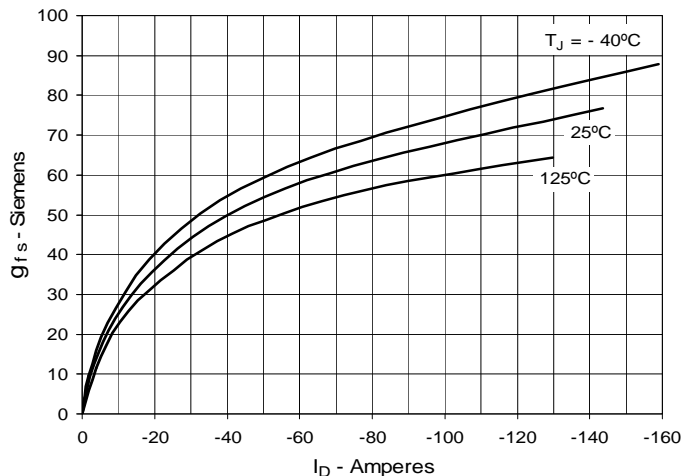


Fig. 9. Forward Voltage Drop of Intrinsic Diode

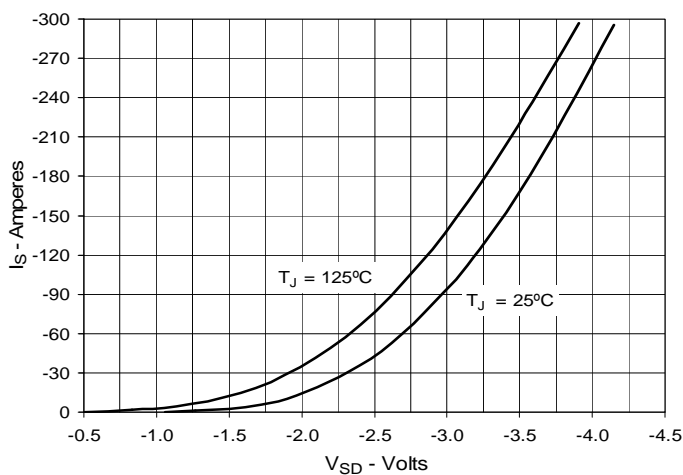


Fig. 10. Gate Charge

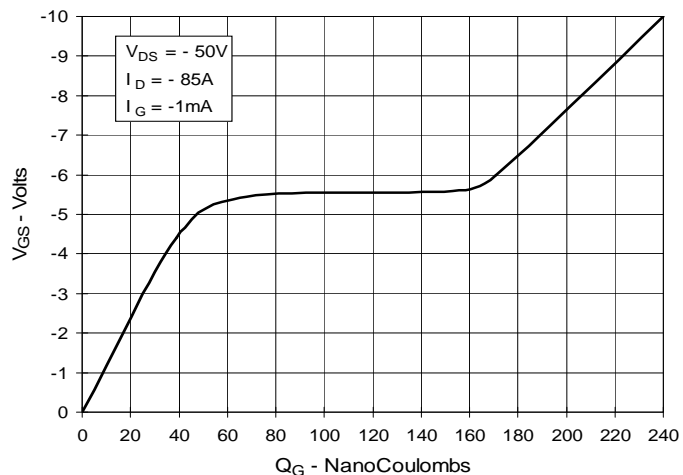


Fig. 11. Capacitance

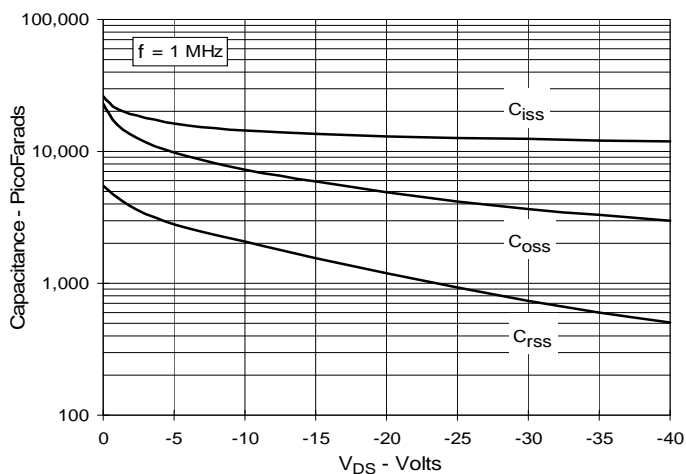


Fig. 12. Forward-Bias Safe Operating Area

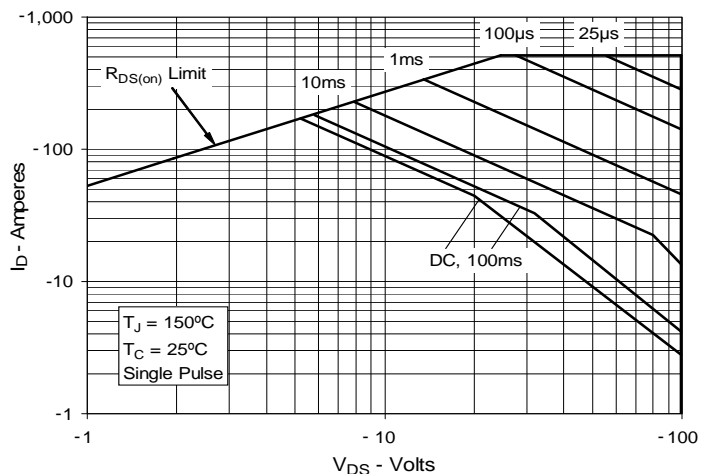


Fig. 13. Maximum Transient Thermal Impedance

