IXYS

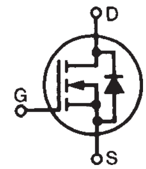
Polar™ HiPerFET Power MOSFET

Electrically Isolated Tab

IXTR 200N10P

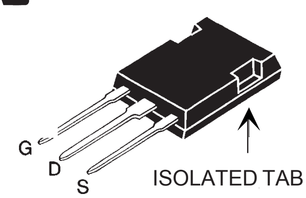
V_{DSS} = 100 V
I_{D25} = 120 A
$R_{DS(on)} \leq$ 8 mΩ

N-Channel Enhancement Mode
Avalanche Rated
Fast Recovery Diode



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25° C to 175° C	100	V
V_{DGR}	T_J = 25° C to 175° C; R_{GS} = 1 MΩ	100	V
V_{GS}		±20	V
V_{GSM}		±30	V
I_{D25}	T_C = 25° C	120	A
$I_{D(RMS)}$	External lead current limit	75	A
I_{DM}	T_C = 25° C, pulse width limited by T_{JM}	400	A
I_{AR}	T_C = 25° C	60	A
E_{AR}	T_C = 25° C	100	mJ
E_{AS}	T_C = 25° C	4	J
dv/dt	$I_S \leq I_{DM}$, di/dt ≤100 A/μs, $V_{DD} \leq V_{DSS}$, $T_J \leq$150° C, R_G = 4 Ω	10	V/ns
P_D	T_C = 25° C	300	W
T_J		-55 ... +175	°C
T_{JM}		175	°C
T_{stg}		-55 ... +150	°C
V_{ISOL}	50/60 Hz, RMS, 1 minute	2500	V~
F_C	Mounting Force	20..120/4.6..20	Nm/lb
Weight		5	g

ISOPLUS 247™ (IXTR)
E153432



G = Gate D = Drain
S = Source

Features

- Silicon chip on Direct-Copper-Bond substrate
  - High power dissipation
  - Isolated mounting surface
  - 2500V electrical isolation
- Low drain to tab capacitance(<30pF)
- Avalanche voltage rated
- Fast recovery intrinsic diode

Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control

Advantages

- Easy assembly
- Space savings
- High power density

Symbol	Test Conditions (T_J = 25° C, unless otherwise specified)		Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0 V, I_D = 250 μA		100			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 500μA		3.0		5.0	V
I_{GSS}	V_{GS} = ±30 V_{DC}, V_{DS} = 0				±100	nA
I_{DSS}	V_{DS} = V_{DSS}				25	μA
	V_{GS} = 0 V	T_J = 150° C			250	μA
	V_{GS} = 0 V	T_J = 175° C			1000	μA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 60 A				8.0	mΩ
	V_{GS} = 15 V, I_D = 400A			5.5		mΩ

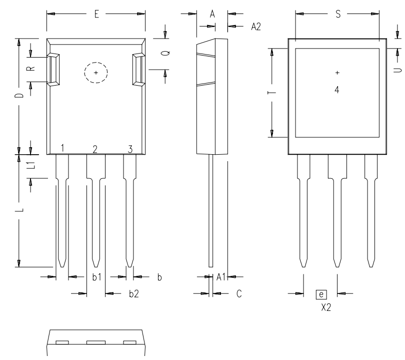
Symbol	Test Conditions	Min.	Typ.	Max.	
	Characteristic Values (T_J = 25° C, unless otherwise specified)				
g_{fs}	V_{DS}= 10 V; I_D = 100 A, Note 1	60	97		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		7600		pF
C_{oss}			2900		pF
C_{rss}			860		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 60 A		30		ns
t_r	R_G = 3.3 Ω (External)		35		ns
$t_{d(off)}$			150		ns
t_f			90		ns
$Q_{g(on)}$	V_{GS}= 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 100 A		235		nC
Q_{gs}			50		nC
Q_{gd}			135		nC
R_{thJC}				0.5	°C/W
R_{thCS}			0.15		°C/W

Source-Drain Diode

Symbol	Test Conditions	Min.	Typ.	Max.	
	Characteristic Values (T_J = 25° C, unless otherwise specified)				
I_S	V_{GS} = 0 V			200	A
I_{SM}	Repetitive			400	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Note 1			1.5	V
t_{rr}	I_F = 25 A, dI/dt = 100 A/µs		100		ns

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

ISOPLUS247 (IXTR) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b1	.075	.084	1.91	2.13
b2	.115	.123	2.92	3.12
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
E	.620	.635	15.75	16.13
e	.215 BSC		5.45 BSC	
L	.780	.800	19.81	20.32
L1	.150	.170	3.81	4.32
Q	.220	.244	5.59	6.20
R	.170	.190	4.32	4.83
S	.520	.540	13.21	13.72
T	.620	.640	15.75	16.26
U	.065	.080	1.65	2.03

1 – GATE
2 – DRAIN (COLLECTOR)
3 – SOURCE (EMITTER)
4 – NO CONNECTION

NOTE: This drawing will meet all dimensions requirement of JEDEC outline TO-247AD except screw hole.

Fig. 1. Output Characteristics @ 25ºC

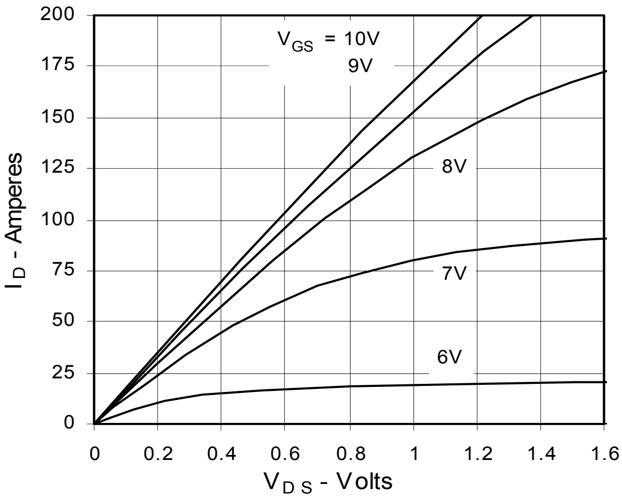


Fig. 2. Extended Output Characteristics @ 25ºC

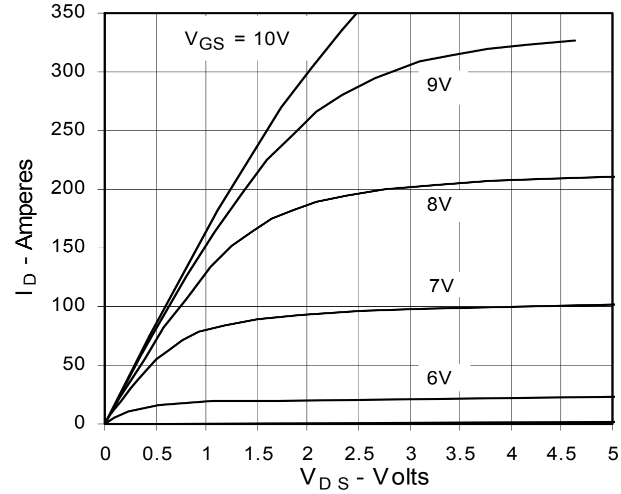


Fig. 3. Output Characteristics @ 150ºC

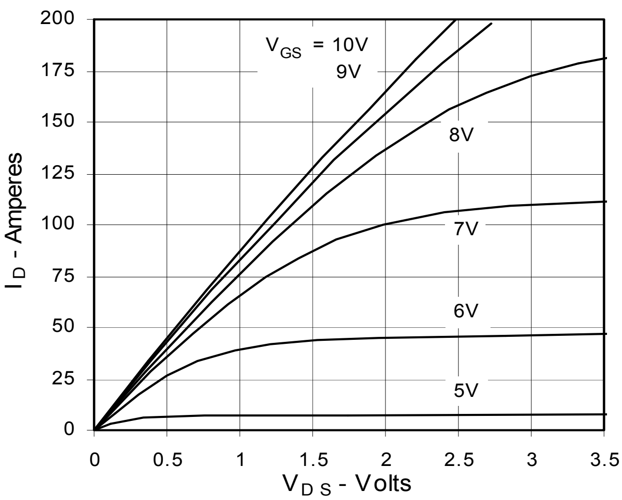


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 100A Value vs. Junction Temperature

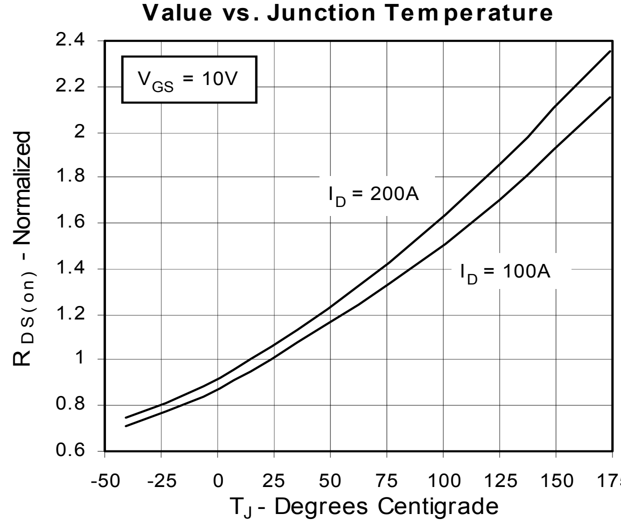


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 100A Value vs. Drain Current

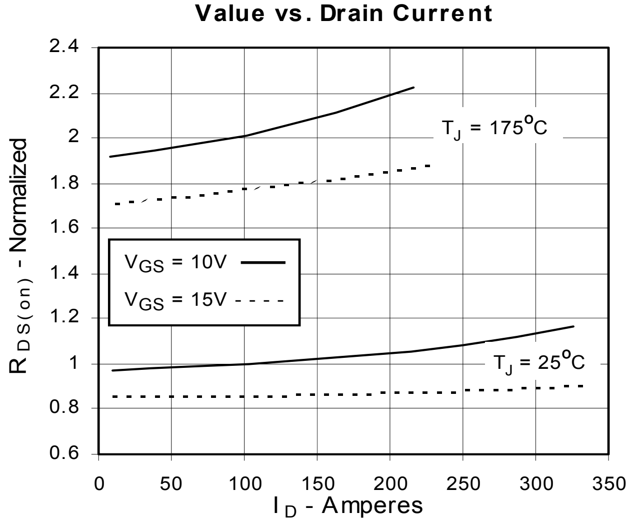


Fig. 6. Drain Current vs. Case Temperature

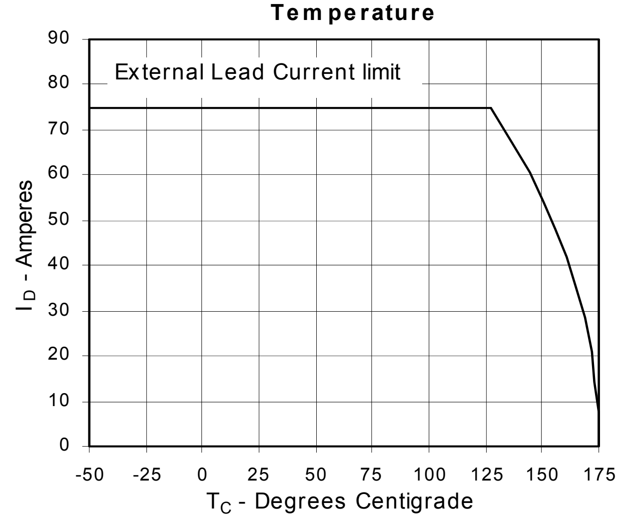


Fig. 7. Input Admittance

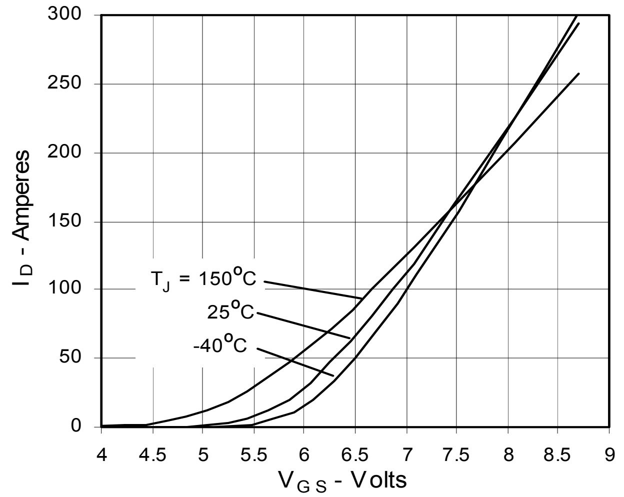


Fig. 8. Transconductance

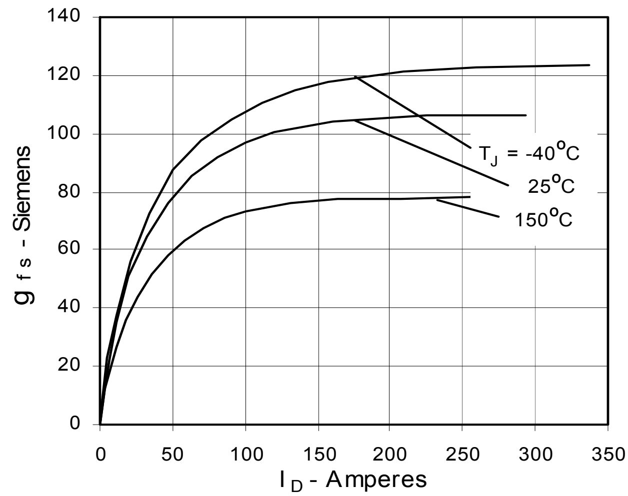


Fig. 9. Source Current vs. Source-To-Drain Voltage

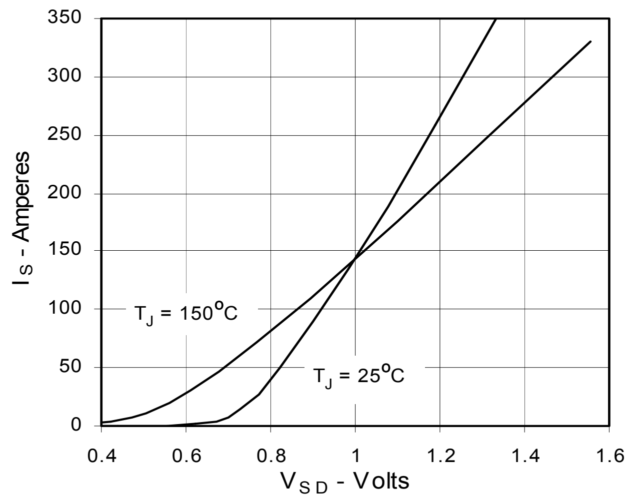


Fig. 10. Gate Charge

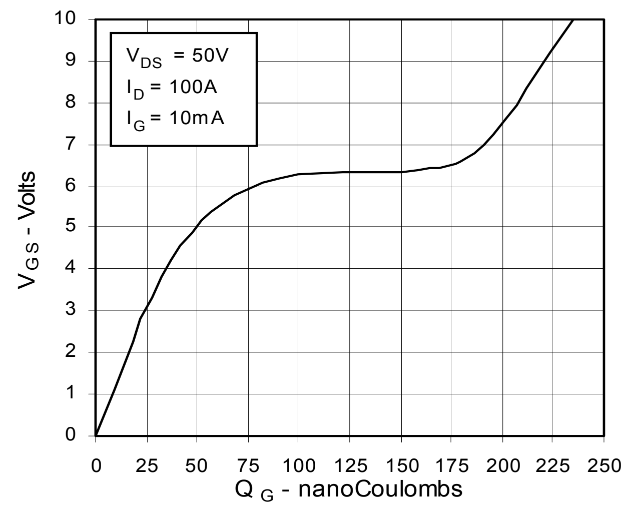


Fig. 11. Capacitance

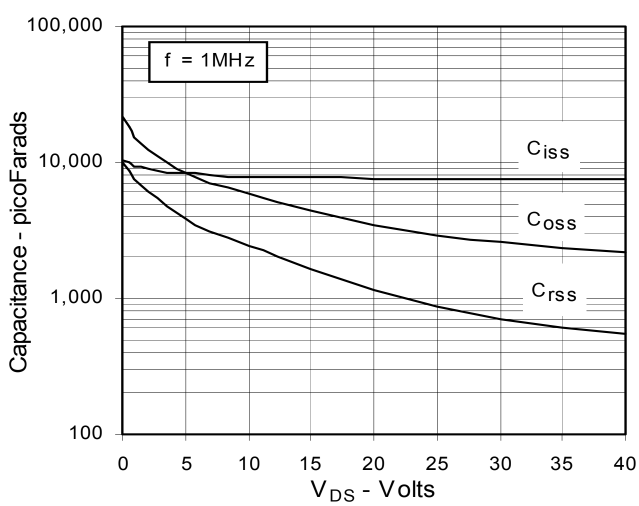
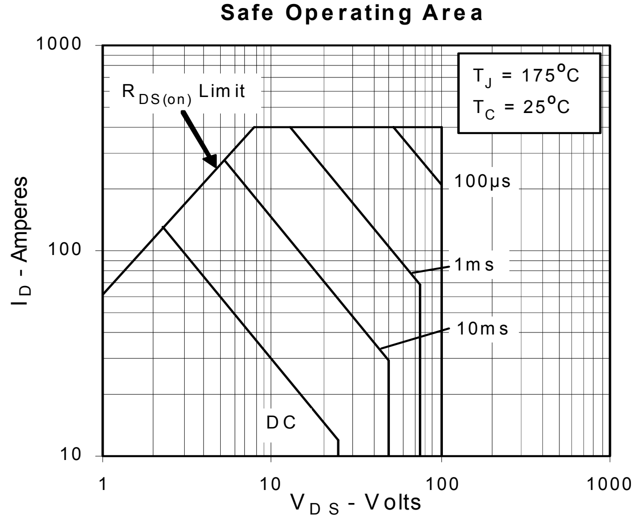


Fig. 12. Forward-Bias Safe Operating Area



IXYS reserves the right to change limits, test conditions, and dimensions.

Fig. 13. Maximum Transient Thermal Resistance