Polar™ HiPerFET Power MOSFET
IXFR 200N10P
Electrically Isolated Tab

V_{DSS}	= 100	V
I_{D25}	= 133	A
$R_{DS(on)}$	≤ 9	mΩ
t_{RR}	≤ 150	ns

N-Channel Enhancement Mode
Fast Recovery Diode, Avavanche Rated

ISOPLUS247 (IXFR)
Ⓤ E153432

ISOLATED TAB

G = Gate   D = Drain
S = Source
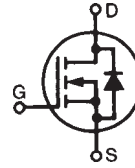
Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 175°C	100	V
V_{DGR}	T_J = 25°C to 175°C; R_{GS} = 1 MΩ	100	V
V_{GS}	Continous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	133	A
$I_{D(RMS)}$	External lead current limit	75	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	400	A
I_{AR}	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 ≤ I_{DM}, di/dt ≤ 100 A/µs, V_{DD} ≤ V_{DSS}, T_J ≤ 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

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 = 8 mA	3.0		5.0	V
I_{GSS}	V_{GS} = ±20 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 = 100 A, Note 1			9	mΩ
	V_{GS} = 15 V, I_D = 400A, Note 1		6.0		mΩ

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

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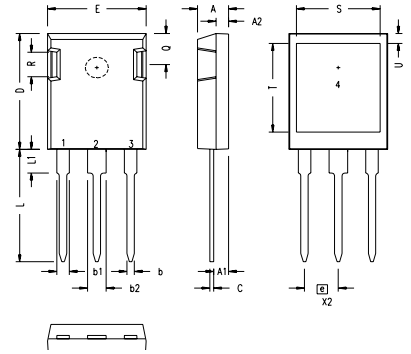- DC choppers
- AC motor control

Advantages
- Easy assembly
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values $(T_J = 25°C$ unless otherwise specified)			
		Min.	Typ.	Max.	
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	$R_G = 3.3\ \Omega$ (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	K/W
R_{thCS}			0.15		K/W

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values $(T_J = 25°C$, unless otherwise specified)			
		Min.	Typ.	Max.	
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			150	ns
Q_{RM}	$V_R = 50$ V, $V_{GS} = 0$ V		0.4		µC
I_{RM}			6		A

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

ISOPLUS247 Outline

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	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

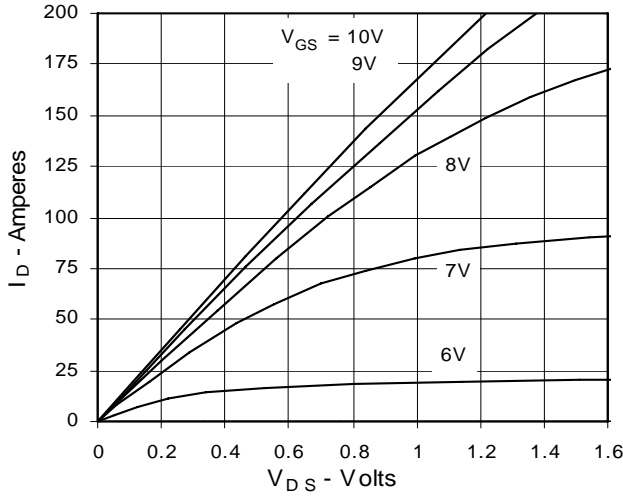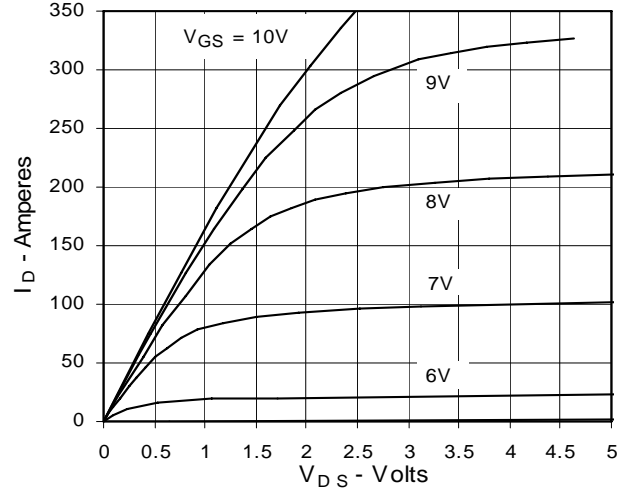NOTE: This drawing will meet all dimensions requirement of JEDEC outline TO−247AD except screw hole.
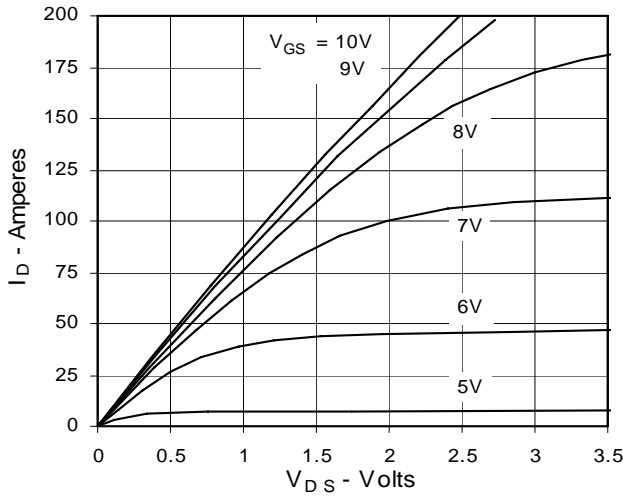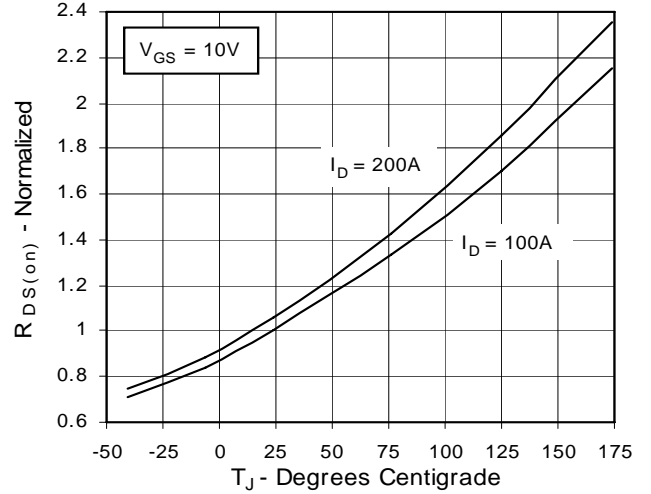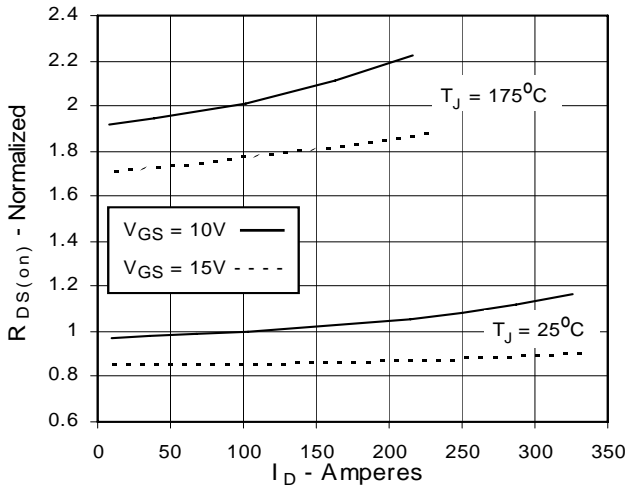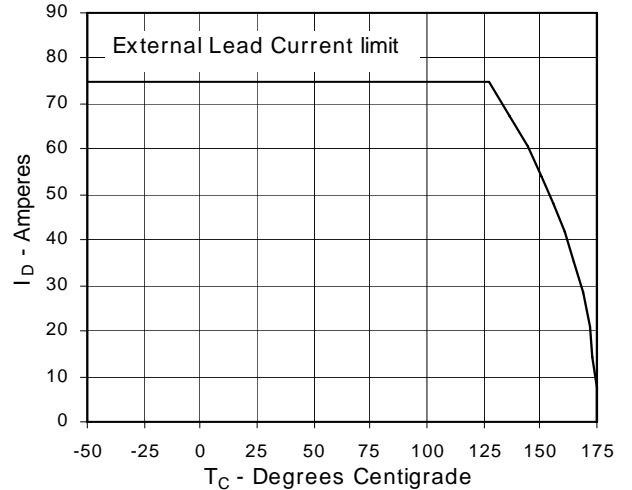
Fig. 1. Output Characteristics @ 25⁰C

Fig. 2. Extended Output Characteristics @ 25⁰C

Fig. 3. Output Characteristics @ 150⁰C

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
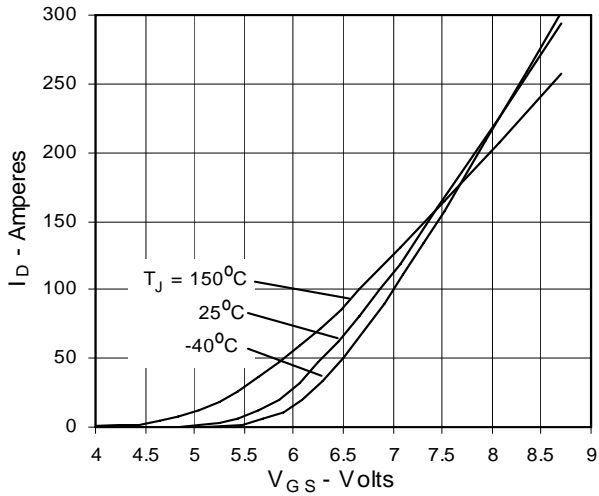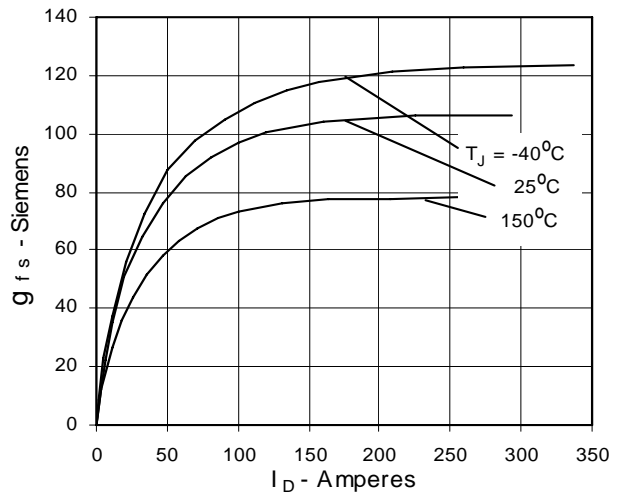
Fig. 7. Input Admittance

Fig. 8. Transconductance
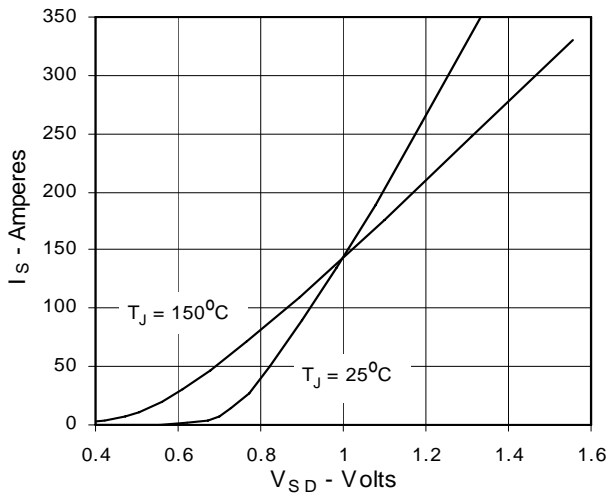

Fig. 9. Source Current vs. Source-To-Drain Voltage

Fig. 10. Gate Charge
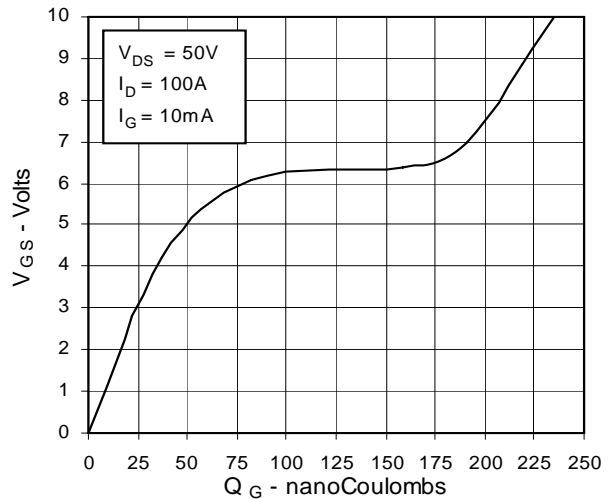
Fig. 11. Capacitance
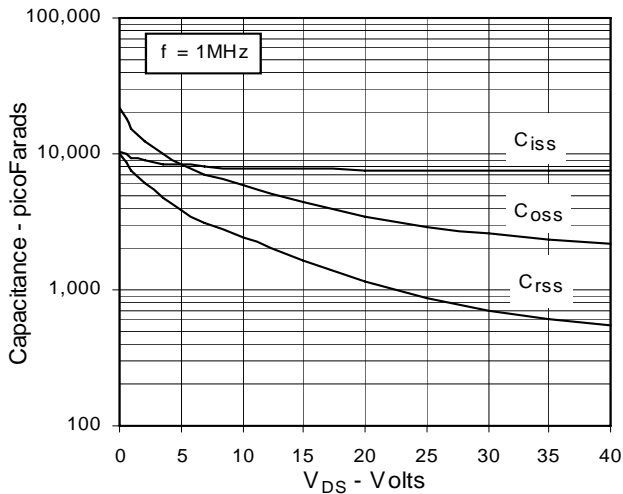
Fig. 12. Forward-Bias Safe Operating Area

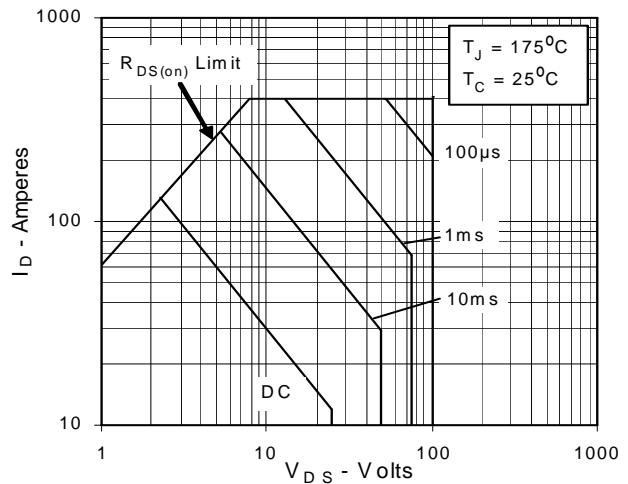IXYS reserves the right to change limits, test conditions, and dimensions.

Fig. 13. Maximum Transient Thermal Resistance

IXYS REF: T_200N10P (88) 03-22-06-E.xls