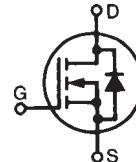


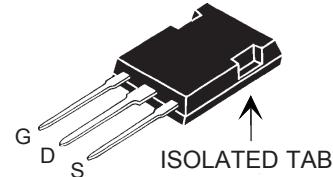
PolarHV™ HiPerFET **IXFR 44N50P**
Power MOSFET
ISOPLUS247™
(Electrically Isolated Back Surface)

N-Channel Enhancement
Avalanche Rated
Fast Intrinsic Diode



V_{DSS} = 500 V
I_{D25} = 24 A
R_{DS(on)} ≤ 150 mΩ
t_{rr} ≤ 200 ns

ISOPLUS247 (IXFR)
 E153432



G = Gate D = Drain
S = Source

Symbol	Test Conditions	Maximum Ratings		
V _{DSS}	T _J = 25°C to 175°C	500	V	
V _{DGR}	T _J = 25°C to 175°C; R _{GS} = 1 MΩ	500	V	
V _{GSM}	Transient	±40	V	
V _{GSM}	Continuous	±30	V	
I _{D25}	T _C = 25°C	24	A	
I _{DM}	T _C = 25°C, pulse width limited by T _{JM}	132	A	
I _{AR}	T _C = 25°C	44	A	
E _{AR}	T _C = 25°C	55	mJ	
E _{AS}	T _C = 25°C	1.7	J	
dv/dt	I _S ≤ I _{DM} , di/dt ≤ 100 A/μs, V _{DD} ≤ V _{DSS} , T _J ≤ 150°C, R _G = 10 Ω	10	V/ns	
P _D	T _C = 25°C	208	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	
V _{ISOL}	50/60 Hz, RMS, 1 minute	2500	V~	
F _c	Mounting Force	20..120 / 4.5..25	N/lb	
Weight		5	g	

Features

- International standard isolated package
- UL recognized package
- Silicon chip on Direct-Copper-Bond substrate
 - High power dissipation
 - Isolated mounting surface
 - 2500V electrical isolation
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
 - easy to drive and to protect
- Fast intrinsic diode

Advantages

- Easy to mount
- 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	500		V
V _{GS(th)}	V _{DS} = V _{GS} , I _D = 4 mA	2.5		V
I _{GSS}	V _{GS} = ±30 V _{DC} , V _{DS} = 0		±100	nA
I _{DSS}	V _{DS} = V _{DSS} V _{GS} = 0 V		25 500	μA
R _{DS(on)}	V _{GS} = 10 V, I _D = 22 A		150	mΩ

Symbol Test Conditions

Characteristic Values

(T_J = 25°C, unless otherwise specified)

Min. Typ. Max.

g_{fs}	V _{DS} = 20 V; I _D = 22 A, Note 1	32	S
C_{iss} C_{oss} C_{rss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz	5440	pF
		639	pF
		40	pF
t_{d(on)} t_r t_{d(off)} t_f	V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 22 A R _G = 3 Ω (External)	25	ns
		27	ns
		70	ns
		18	ns
Q_{g(on)} Q_{gs} Q_{gd}	V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 22 A	98	nC
		35	nC
		30	nC
R_{thJC}		0.6 °C/W	
R_{thcs}			0.15 °C/W

Source-Drain Diode

Characteristic Values

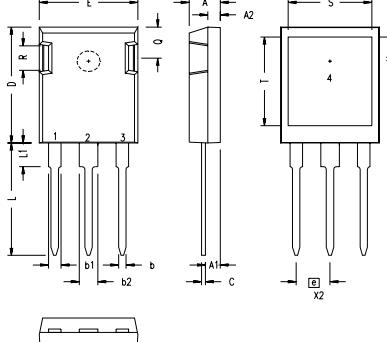
(T_J = 25°C, unless otherwise specified)

Min. Typ. Max.

I_s	V _{GS} = 0 V	30	A
I_{SM}	Repetitive	132	A
V_{SD}	I _F = I _s , V _{GS} = 0 V, Note 1	1.5	V
t_{rr}	I _F = 22 A,	200	ns
Q_{RM}	-di/dt = 100 A/μs	0.6	μC
I_{RM}	V _R = 100V	6.0	A

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

ISOPLUS247 Outline

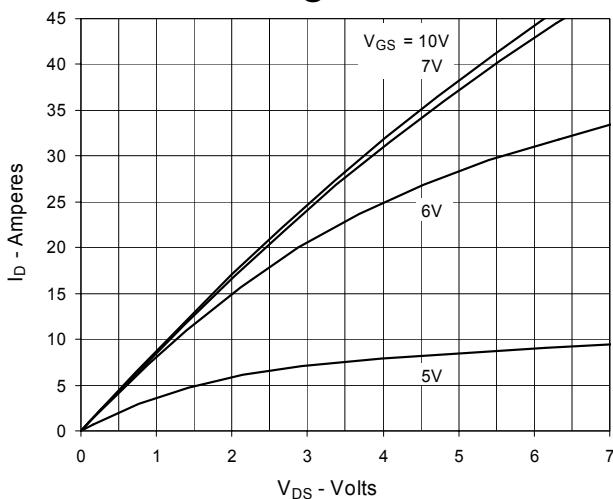


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b1	.075	.084	1.91	2.13
b2	.115	.123	2.92	3.12
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
E	.620	.635	15.75	16.13
e	.215	BSC	5.45	BSC
L	.780	.800	19.81	20.32
L1	.150	.170	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

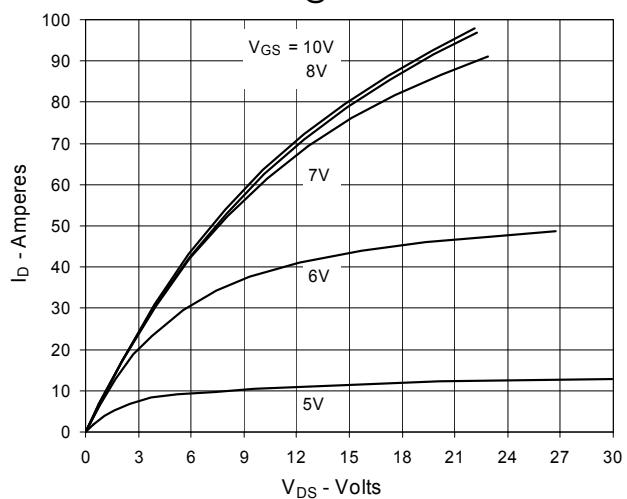
- 1 - GATE
2 - DRAIN (COLLECTOR)
3 - SOURCE (EMITTER)
4 - NO CONNECTION

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

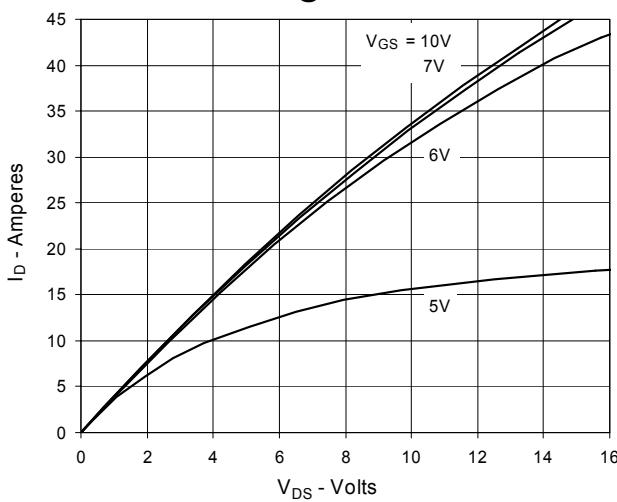
**Fig. 1. Output Characteristics
@ 25°C**



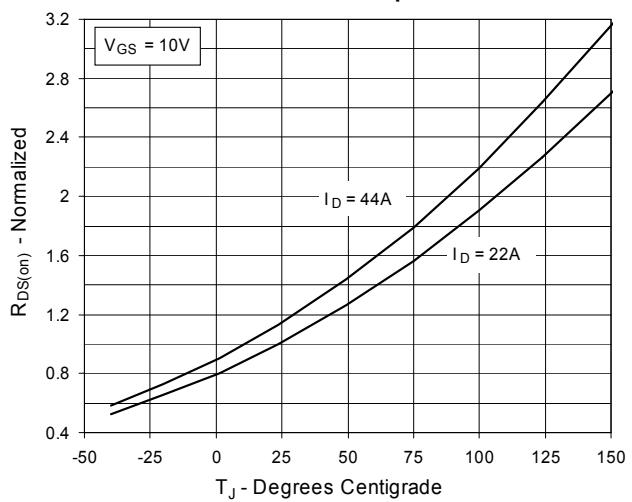
**Fig. 2. Extended Output Characteristics
@ 25°C**



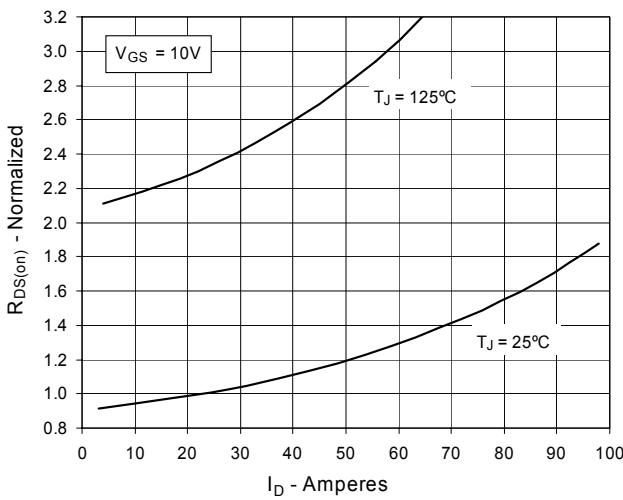
**Fig. 3. Output Characteristics
@ 125°C**



**Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 22A$ Value
vs. Junction Temperature**



**Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 22A$ Value
vs. Drain Current**



**Fig. 6. Maximum Drain Current vs.
Case Temperature**

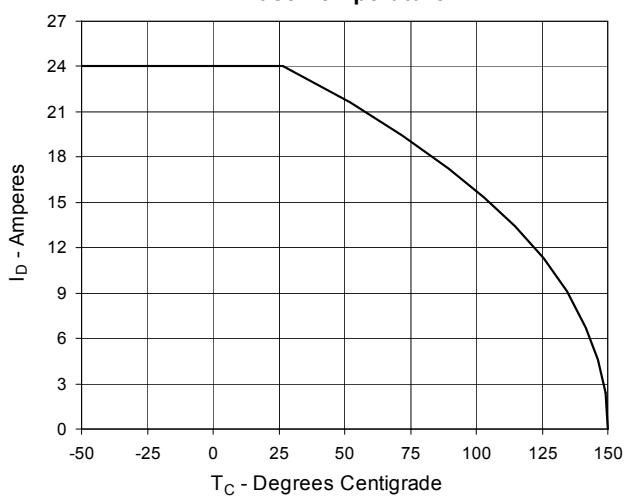


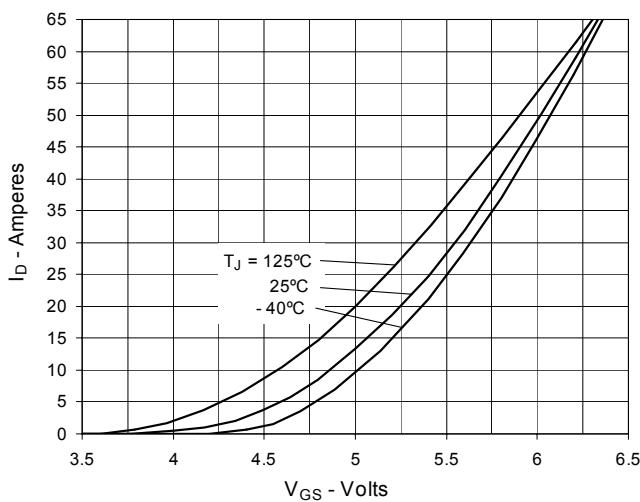
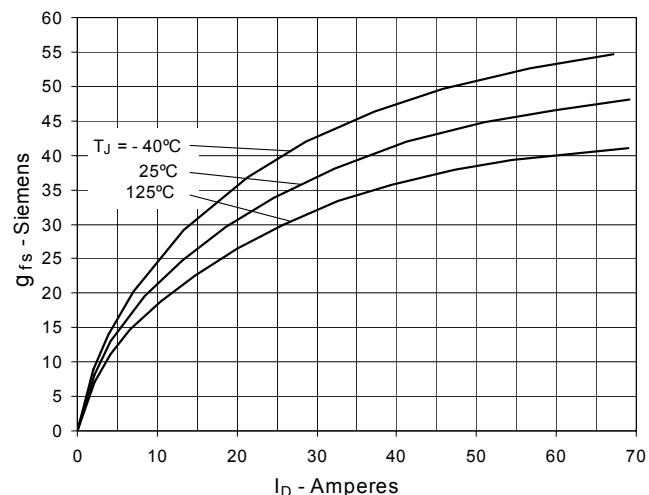
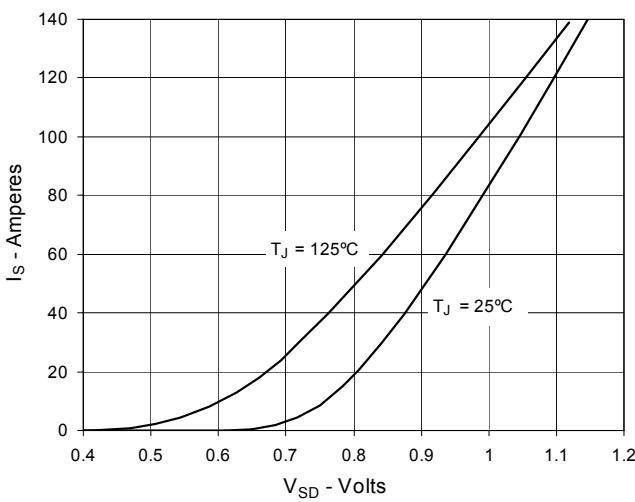
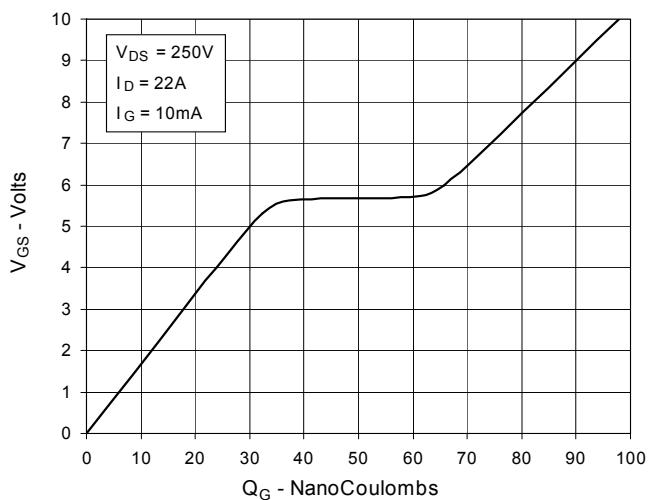
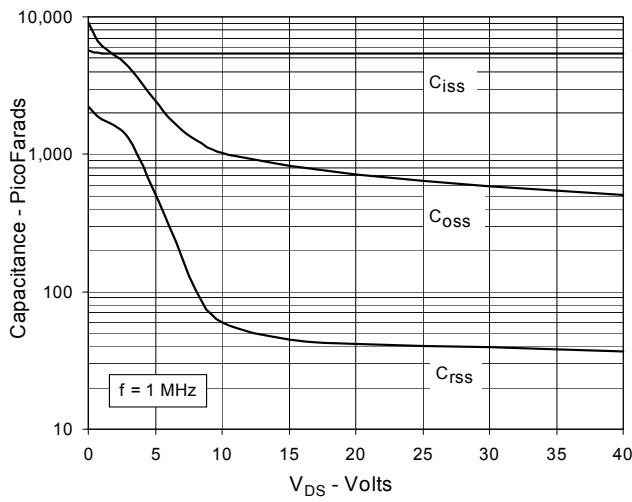
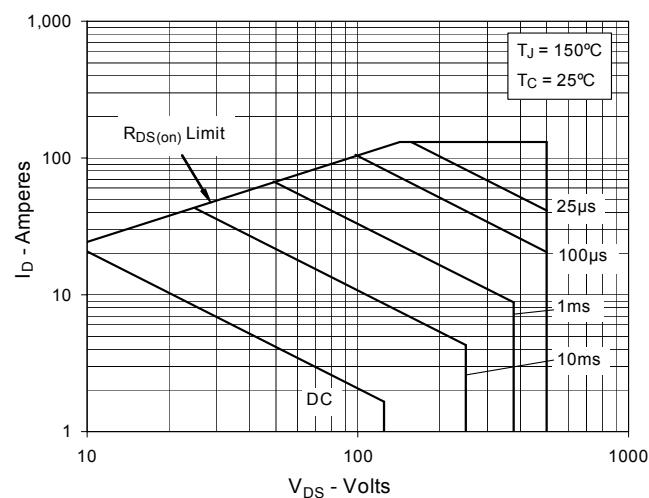
Fig. 7. Input Admittance**Fig. 8. Transconductance****Fig. 9. Forward Voltage Drop of Intrinsic Diode****Fig. 10. Gate Charge****Fig. 11. Capacitance****Fig. 12. Forward-Bias Safe Operating Area**

Fig. 13. Maximum Transient Thermal Resistance