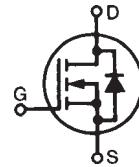


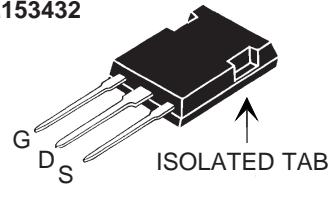
Polar™ HiPerFET Power MOSFET Electrically Isolated Tab

N-Channel Enhancement Mode
Fast Recovery Diode, Avalanche Rated



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

ISOPLUS247 (IXFR)
E153432



G = Gate D = Drain
S = Source

Symbol	Test Conditions	Maximum Ratings		
V_{DSS}	$T_J = 25^\circ\text{C}$ to 175°C	100		V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 175°C ; $R_{GS} = 1 \text{ M}\Omega$	100		V
V_{GS}	Continous	±20		V
V_{GSM}	Transient	±30		V
I_{D25}	$T_c = 25^\circ\text{C}$	133		A
$I_{D(\text{RMS})}$	External lead current limit	75		A
I_{DM}	$T_c = 25^\circ\text{C}$, pulse width limited by T_{JM}	400		A
I_{AR}	$T_c = 25^\circ\text{C}$	60		A
E_{AR}	$T_c = 25^\circ\text{C}$	100		mJ
E_{AS}	$T_c = 25^\circ\text{C}$	4		J
dv/dt	$I_s \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 4 \Omega$	10		V/ns
P_D	$T_c = 25^\circ\text{C}$	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	Characteristic Values		
	($T_J = 25^\circ\text{C}$ unless otherwise specified)	Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \mu\text{A}$	100		V
$V_{GS(\text{th})}$	$V_{DS} = V_{GS}$, $I_D = 8 \text{ mA}$	3.0		V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$		±100	nA
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$ $V_{GS} = 0 \text{ V}$	$T_J = 150^\circ\text{C}$	25 250 1000	μA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 100 \text{ A}$, Note 1 $V_{GS} = 15 \text{ V}$, $I_D = 400 \text{ A}$, Note 1	6.0	9	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		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10 \text{ V}; I_D = 100 \text{ A}$, Note 1	60	97	S
C_{iss} C_{oss} C_{rss}	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	7600	pF	
		2900	pF	
		860	pF	
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10 \text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 60 \text{ A}$ $R_G = 3.3 \Omega$ (External)	30	ns	
		35	ns	
		150	ns	
		90	ns	
$Q_{g(on)}$ Q_{gs} Q_{gd}	$V_{GS} = 10 \text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 100 \text{ A}$	235	nC	
		50	nC	
		135	nC	
R_{thJC}			0.5 K/W	
R_{thcs}		0.15	K/W	

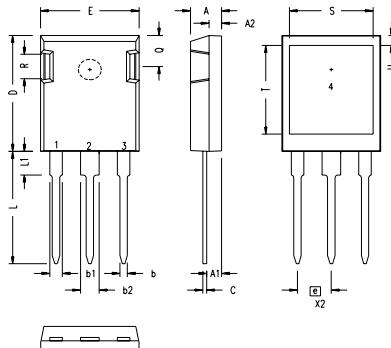
Source-Drain Diode

Characteristic Values
($T_j = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions	Min.	Typ.	Max.
I_s	$V_{GS} = 0 \text{ V}$		200	A
I_{SM}	Repetitive		400	A
V_{SD}	$I_F = I_S, V_{GS} = 0 \text{ V}$, Note 1		1.5	V
t_{rr} Q_{RM} I_{RM}	$I_F = 25 \text{ A}, dI/dt = 100 \text{ A}/\mu\text{s}$ $V_R = 50 \text{ V}, V_{GS} = 0 \text{ V}$		150	ns
		0.4		μC
		6		A

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

ISOPLUS247 Outline

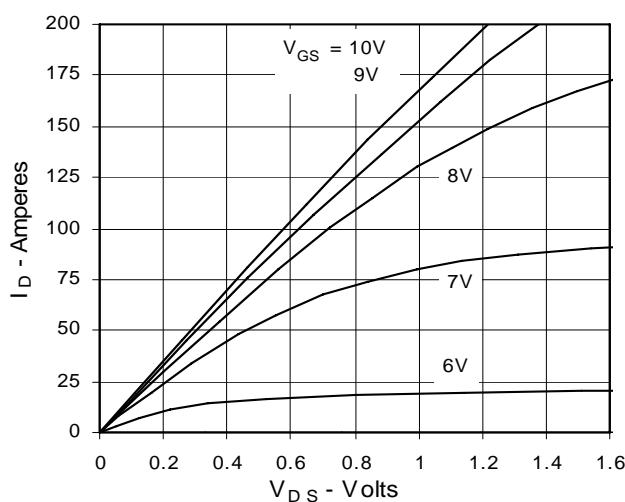


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b1	.075	.084	1.91	2.13
b2	.115	.123	2.92	3.12
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
E	.620	.635	15.75	16.13
e	.215	BSC	5.45	BSC
L	.780	.800	19.81	20.32
L1	.150	.170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

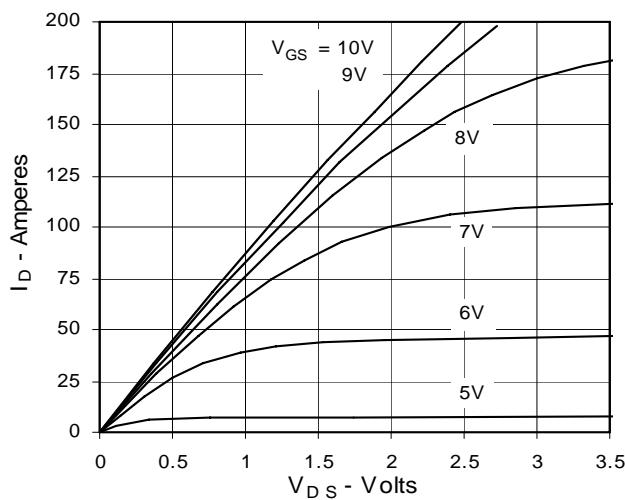
1 - GATE
2 - DRAIN (COLLECTOR)
3 - SOURCE (EMITTER)
4 - NO CONNECTION

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

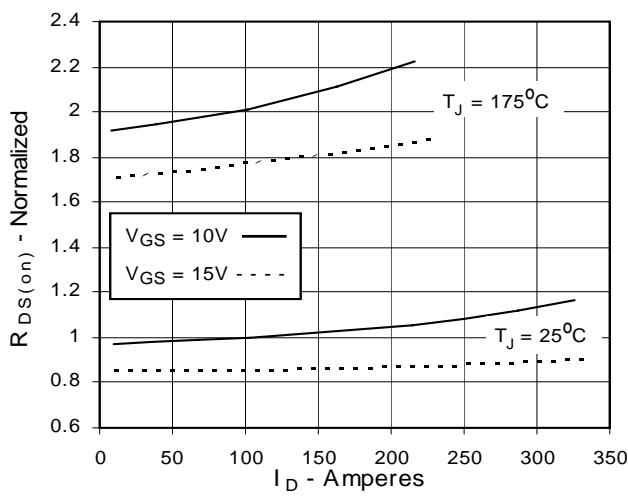
**Fig. 1. Output Characteristics
@ 25°C**



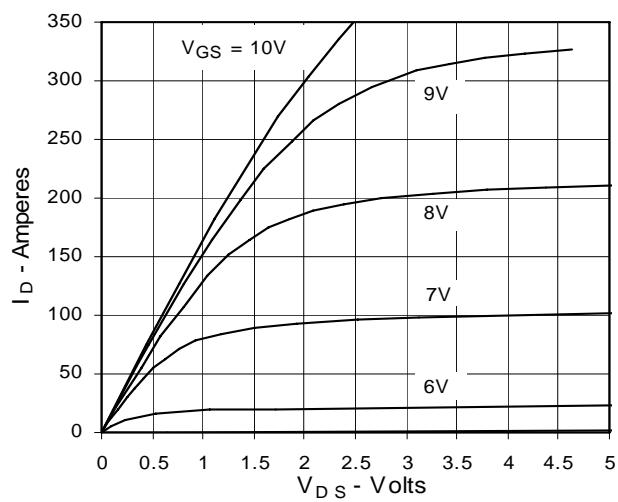
**Fig. 3. Output Characteristics
@ 150°C**



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



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



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

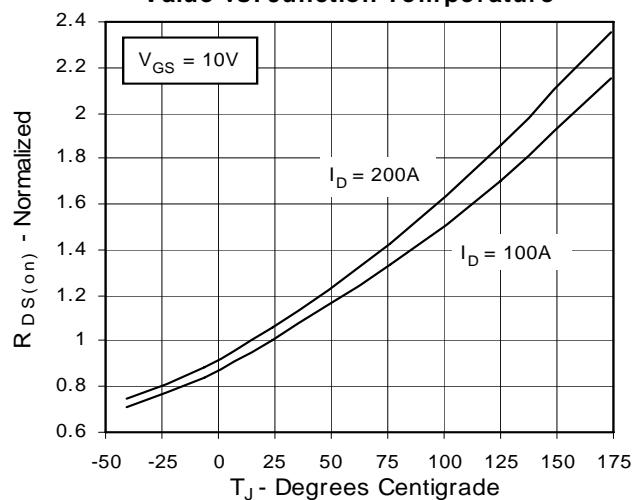


Fig. 6. Drain Current vs. Case Temperature

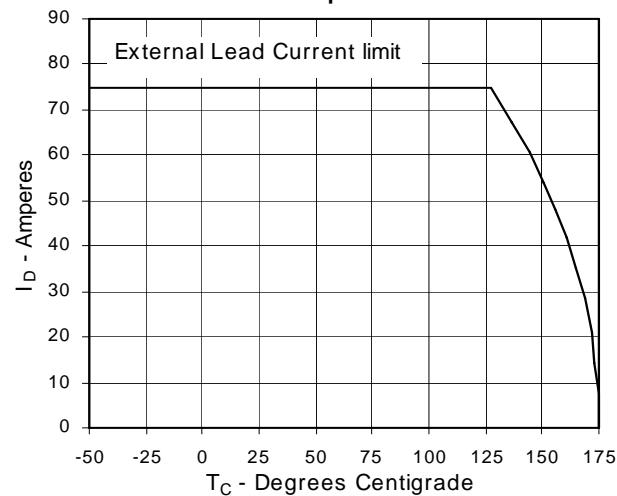


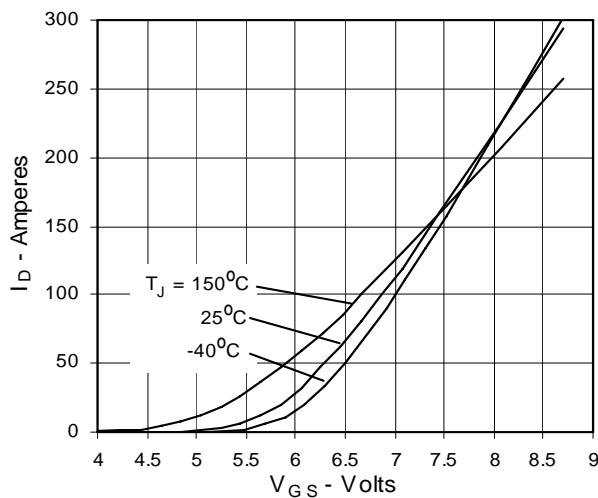
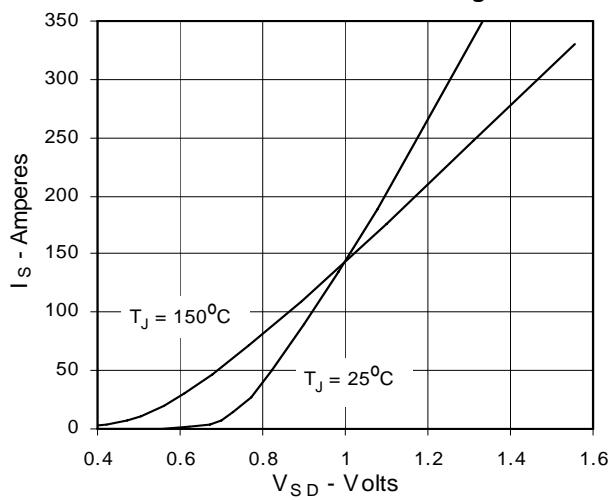
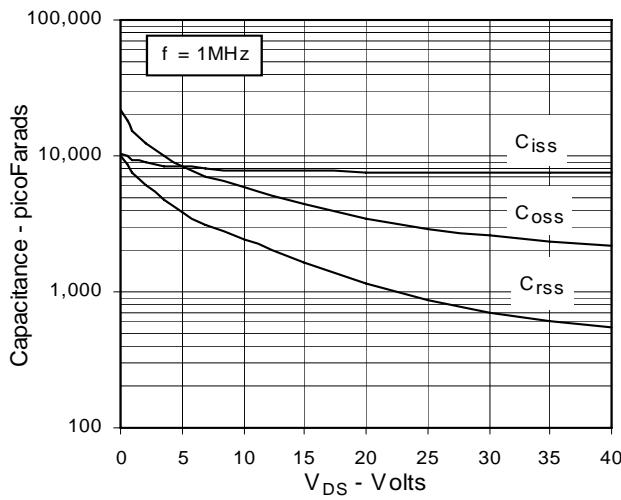
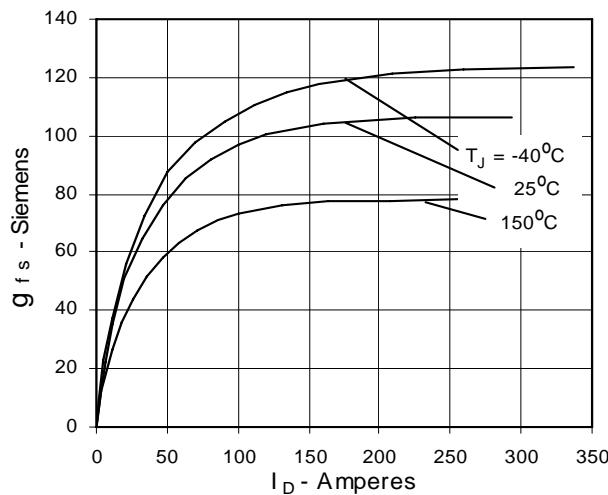
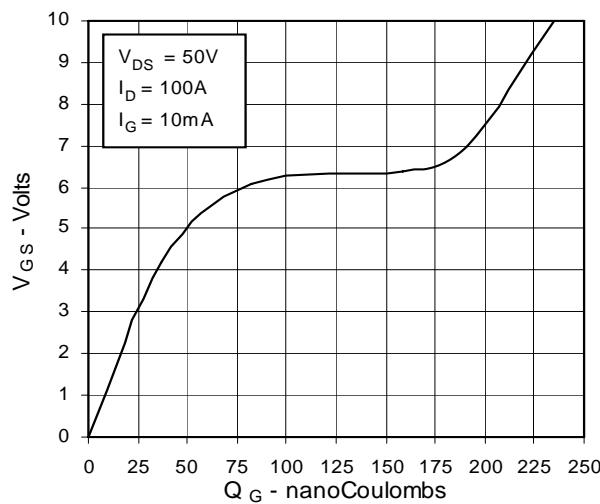
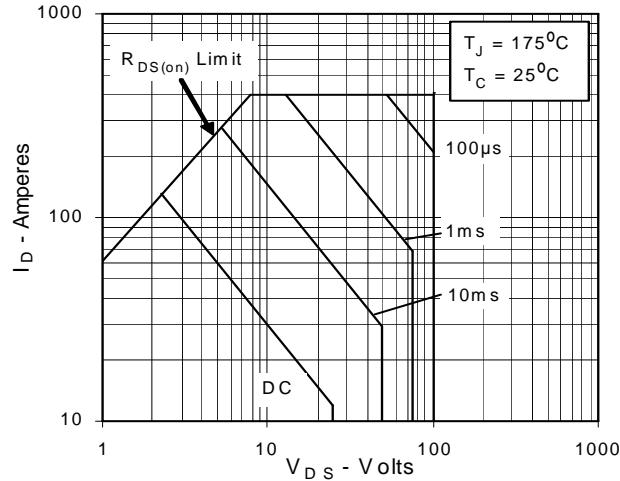
Fig. 7. Input Admittance**Fig. 9. Source Current vs. Source-To-Drain Voltage****Fig. 11. Capacitance****Fig. 8. Transconductance****Fig. 10. Gate Charge****Fig. 12. Forward-Bias Safe Operating Area**

Fig. 13. Maximum Transient Thermal Resistance