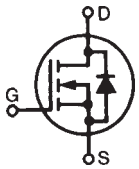
IXYS

PolarHV™ HiPerFET Power MOSFET

IXFB 82N60P

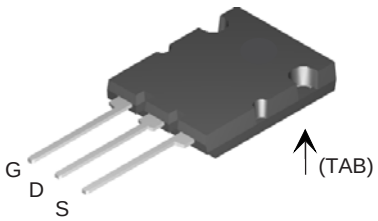
V_{DSS} = 600 V
I_{D25} = 82 A
$R_{DS(on)}$ ≤ 75 mΩ
t_{rr} ≤ 200 ns

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	600	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	600	V
V_{GSS}	Continuous	±30	V
V_{GSM}	Transient	±40	V
I_{D25}	T_C = 25°C	82	A
I_{DRMS}	External lead current limit	75	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	200	A
I_{AR}	T_C = 25°C	82	A
E_{AR}	T_C = 25°C	100	mJ
E_{AS}	T_C = 25°C	5	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$, R_G = 2 Ω	20	V/ns
P_D	T_C = 25°C	1250	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
T_{SOLD}	Plastic body for 10 s	260	°C
F_C	Mounting force	30..120/7.5...2.7	N/lb
Weight		10	g

PLUS264™ (IXFB)



G = Gate D = Drain
S = Source TAB = Drain

Features

- International standard packages
- Fast recovery diode
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
  - easy to drive and to protect

Advantages

- Plus 264™ package for clip or spring
- 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 = 3 mA	600			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8 mA	3.0		5.0	V
I_{GSS}	V_{GS} = ±30 V_{DC}, V_{DS} = 0			±200	nA
I_{DSS}	$V_{DS} = V_{DSS}$			25	µA
	V_{GS} = 0 V, T_J = 125°C			2000	µA
$R_{DS(on)}$	V_{GS} = 10 V, $I_D = 0.5\ I_{D25}$, Note 1			75	mΩ

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 20 V; I_D = 0.5 I_{D25}, Note 1	50	80		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		23		nF
C_{oss}			1490		pF
C_{rss}			200		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D =0.5 I_{D25} R_G = 1 Ω (External)		28		ns
t_r			23		ns
$t_{d(off)}$			79		ns
t_f			24		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}		240		nC
Q_{gs}			96		nC
Q_{gd}			67		nC
R_{thJC}				0.10	°C/W
R_{thCS}			0.13		°C/W

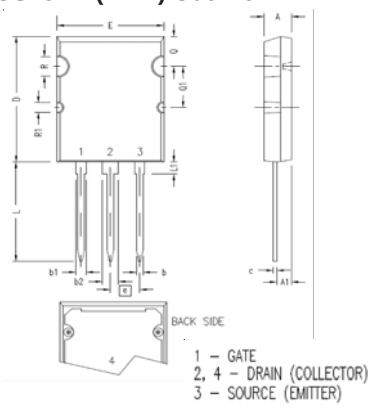
Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0 V			82	A
I_{SM}	Repetitive			200	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Note 1			1.5	V
t_{rr}	I_F = 25A, -di/dt = 100 A/µs			200	ns
Q_{RM}	V_R = 100V		0.6		µC
I_{RM}			6.0		A

Notes:

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

PLUS264™ (IXFB) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.185	.209	4.70	5.31
A1	.102	.118	2.59	3.00
b	.037	.055	0.94	1.40
b1	.087	.102	2.21	2.59
b2	.110	.126	2.79	3.20
c	.017	.029	0.43	0.74
D	1.007	1.047	25.58	26.59
E	.760	.799	19.30	20.29
e	.215 BSC		5.46 BSC	
L	.779	.842	19.79	21.39
L1	.087	.102	2.21	2.59
Q	.240	.256	6.10	6.50
Q1	.330	.346	8.38	8.79
ØR	.155	.187	3.94	4.75
ØR1	.085	.093	2.16	2.36

Fig. 1. Output Characteristics @ 25ºC

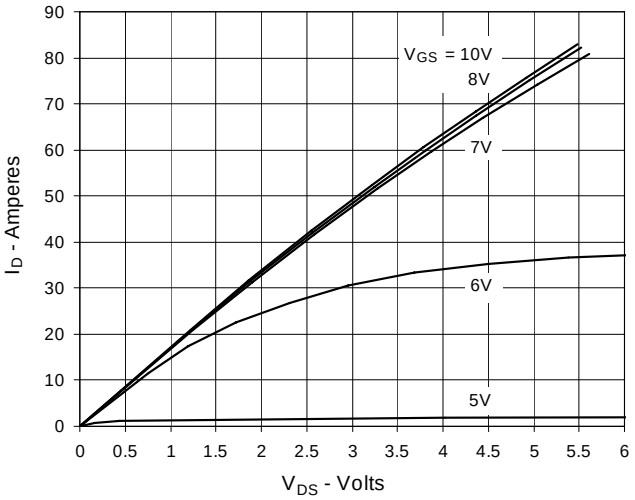


Fig. 2. Extended Output Characteristics @ 25ºC

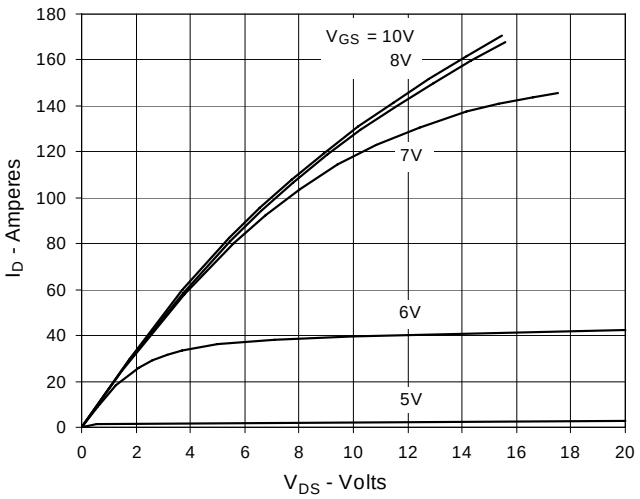


Fig. 3. Output Characteristics @ 125ºC

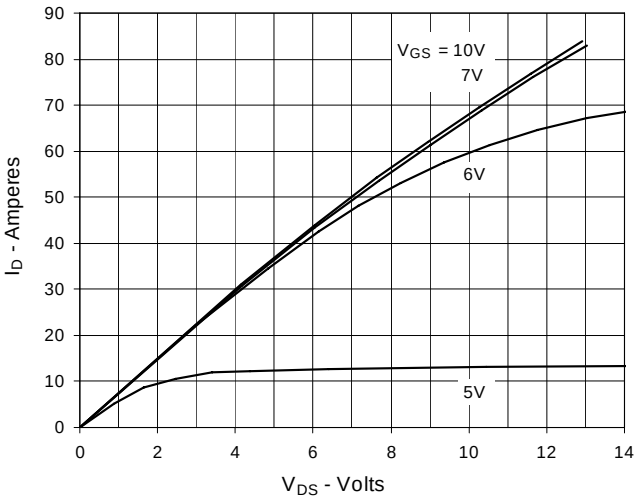


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 41A Value vs. Junction Temperature

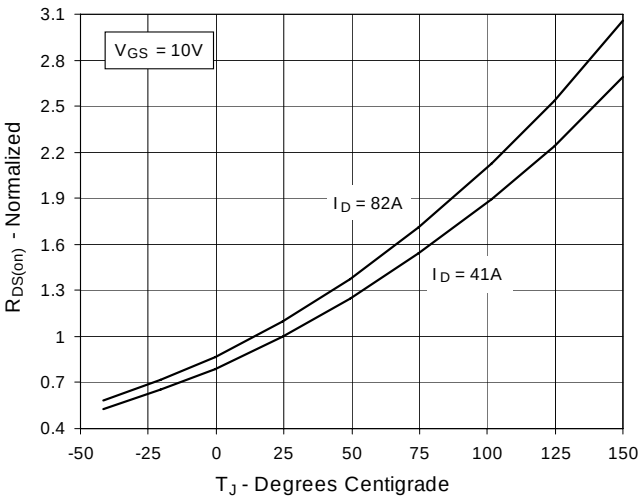


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 41A Value vs. Drain Current

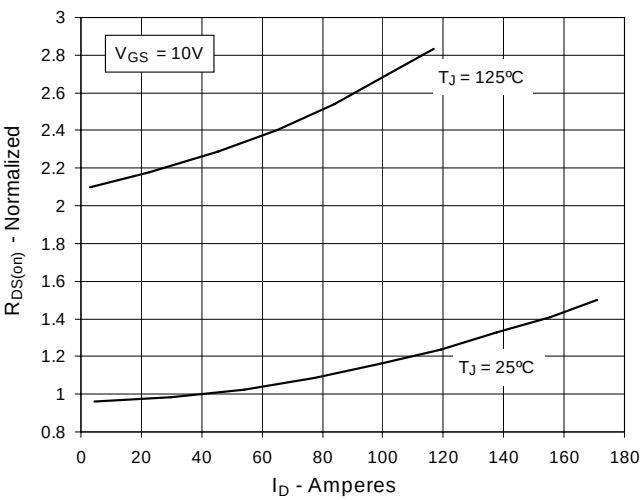


Fig. 6. Maximum Drain Current vs. Case Temperature

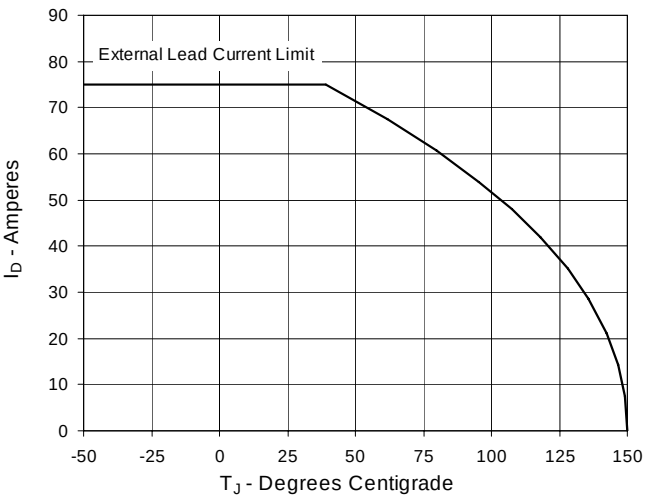


Fig. 7. Input Admittance

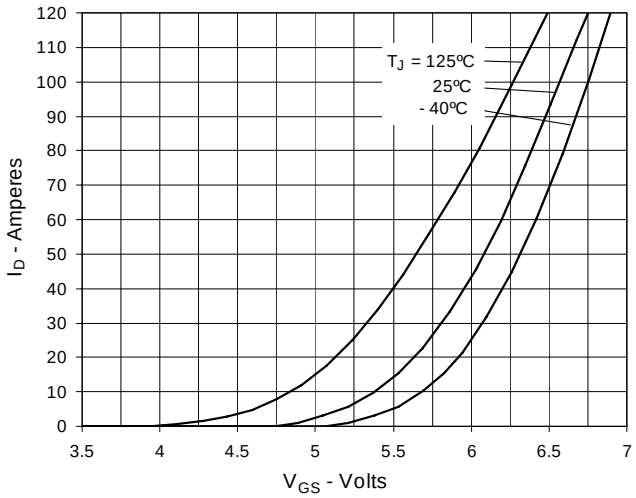


Fig. 8. Transconductance

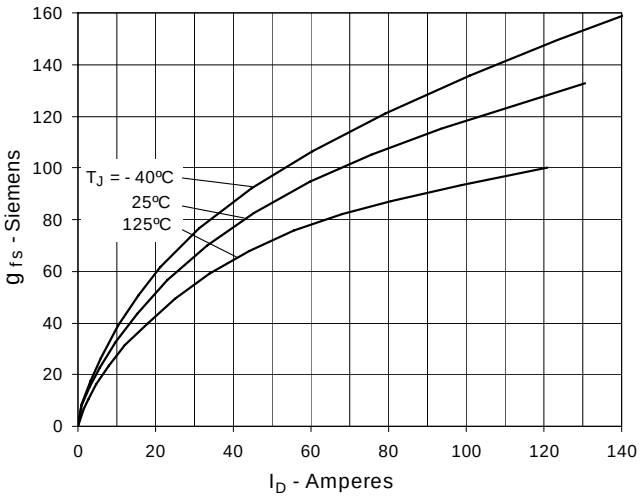


Fig. 9. Forward Voltage Drop of Intrinsic Diode

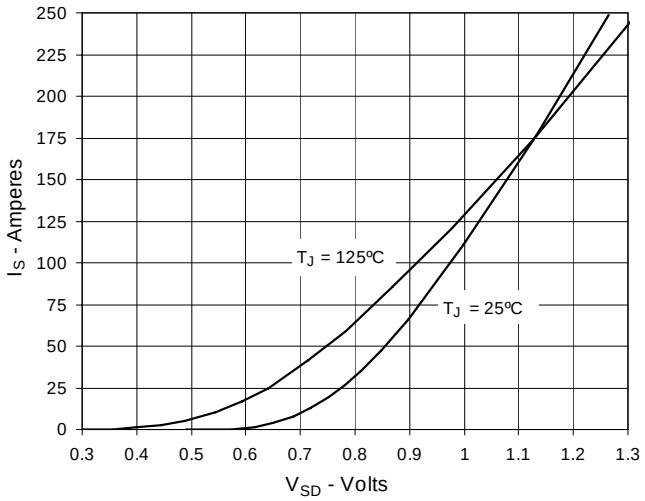


Fig. 10. Gate Charge

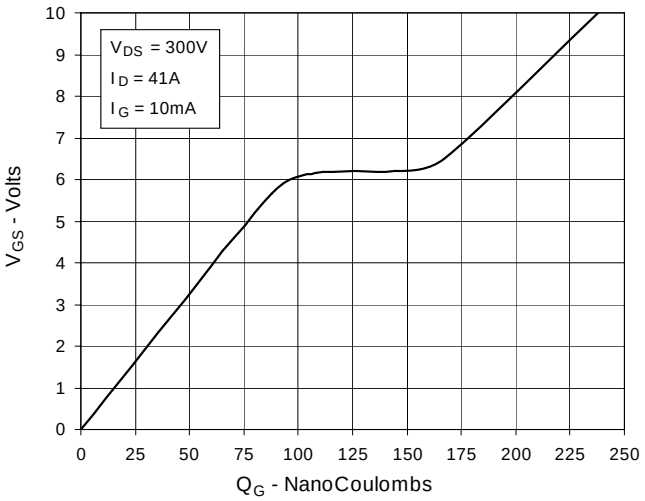


Fig. 11. Capacitance

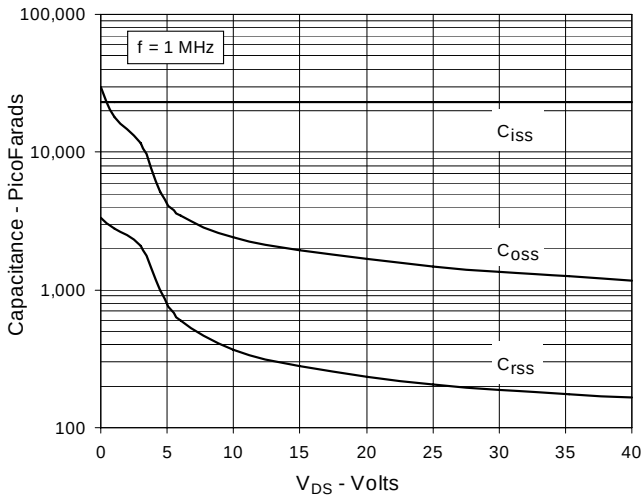


Fig. 12. Forward-Bias Safe Operating Area

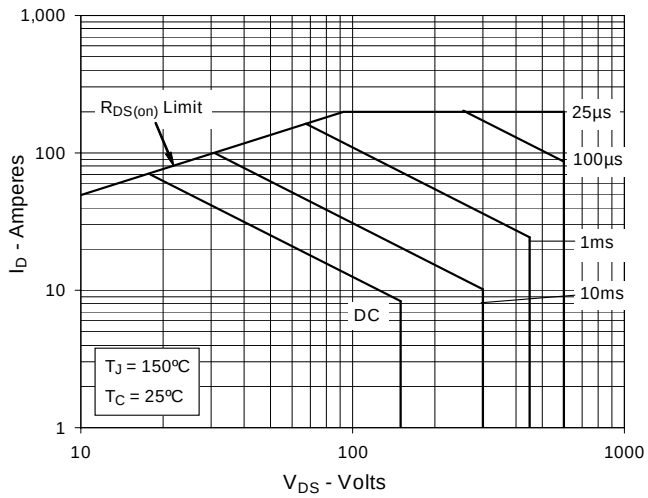
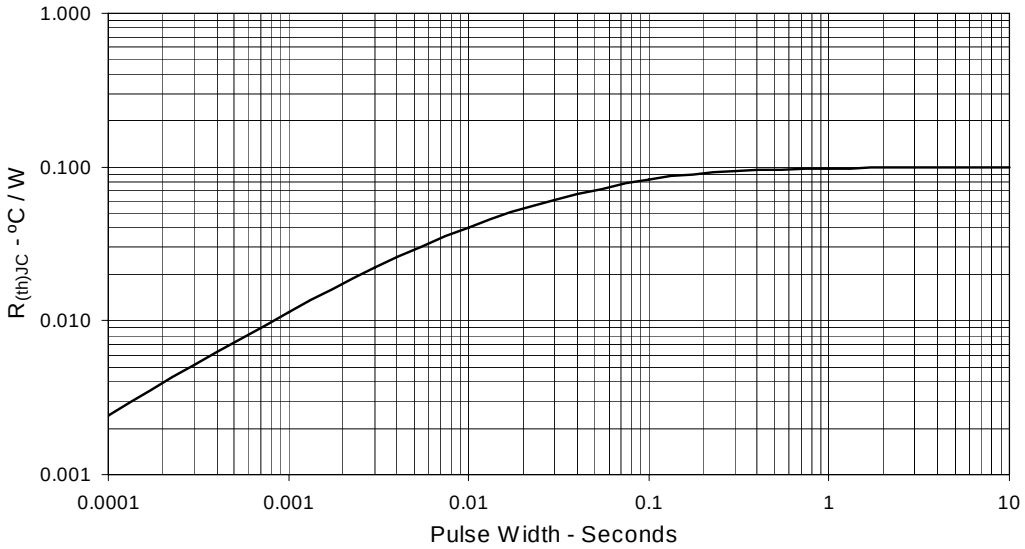


Fig. 13. Maximum Transient Thermal Resistance



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