IXYS

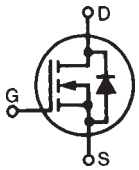
PolarHV™ HiPerFET Power MOSFET ISOPLUS264™

(Electrically Isolated Back Surface)

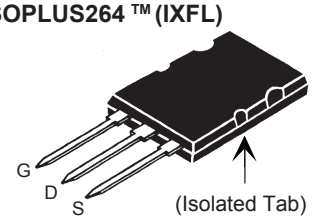
IXFL 82N60P

V_{DSS} = 600 V
I_{D25} = 82 A
$R_{DS(on)}$ ≤ 78 mΩ
t_{rr} ≤ 200 ns

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



ISOPLUS264 ™ (IXFL)



G = Gate D = Drain
S = Source

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		55	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 ≤150° C, R_G = 2 Ω		20	V/ns
P_D	T_C = 25° C		625	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	t = 1 min	2500	V~
	I_{ISOL} ≤1 mA	t = 1 s	3000	V~
F_C	Mounting force		28..150 / 6.4..30	N/lb
Weight			10	g

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			1000	μA
$R_{DS(on)}$	V_{GS} = 10 V, $I_D = I_T$, Note 1				78	mΩ

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.	
g_{fs}	V_{DS} = 20 V; I_D = I_T, 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 = I_T 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 = I_T		240		nC
Q_{gs}			96		nC
Q_{gd}			67		nC
R_{thJC}				0.20	°C/W
R_{thCS}			0.13		°C/W

Source-Drain Diode

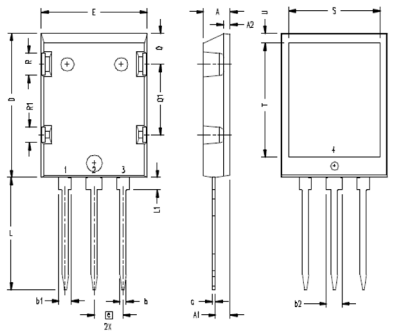
Symbol	Test Conditions (T_J = 25° C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0 V			82	A
I_{SM}	Repetitive			200	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Note 1			1.5	V
t_{rr}	I_F = 25A, -di/dt = 100 A/µs V_R = 100V			200	ns
Q_{RM}			0.6		µC
I_{RM}			6.0		A

Notes:

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

Test Current I_T = 41A

ISOPLUS264 (IXFL) Outline



Note: Bottom heatsink meets 2500Vrms Isolation to the other pins.

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.190	.205	4.83	5.21
A1	.102	.118	2.59	3.00
A2	.046	.055	1.17	1.40
b	.045	.055	1.14	1.40
b1	.087	.102	2.21	2.59
b2	.111	.126	2.82	3.20
c	.020	.029	0.51	0.74
D	1.020	1.040	25.91	26.42
E	.770	.789	19.56	20.29
e	.215 BSC		5.46 BSC	
L	.780	.820	19.81	20.83
L1	.080	.102	2.03	2.59
Q	.210	.235	5.33	5.97
Q1	.490	.513	12.45	13.03
R	.150	.180	3.81	4.57
R1	.100	.130	2.54	3.30
S	.668	.690	16.97	17.53
T	.801	.821	20.34	20.85
U	.065	.080	1.65	2.03

Ref: IXYS CO 0128 R0

Fig. 1. Output Characteristics @ 25ºC

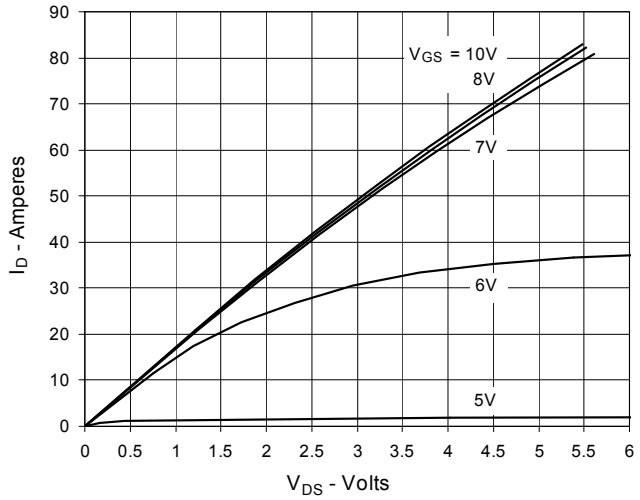


Fig. 2. Extended Output Characteristics @ 25ºC

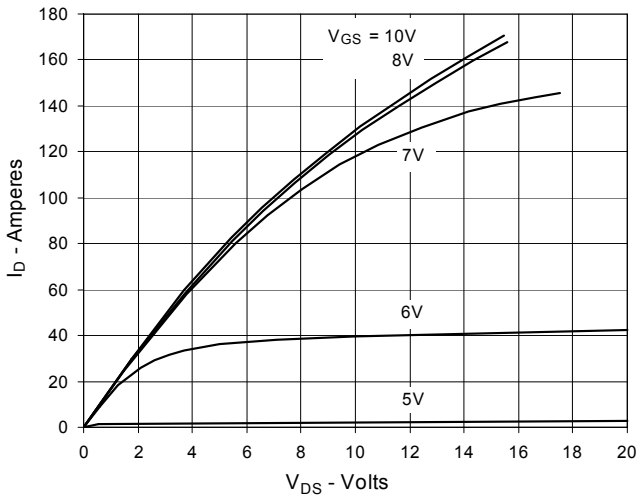


Fig. 3. Output Characteristics @ 125ºC

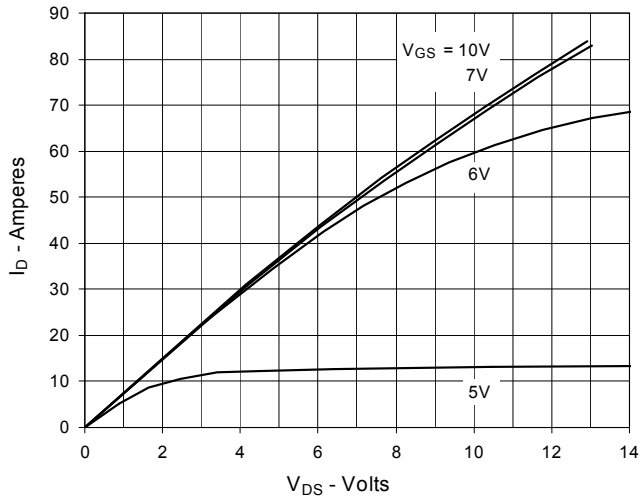


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 41A Value vs. Junction Temperature

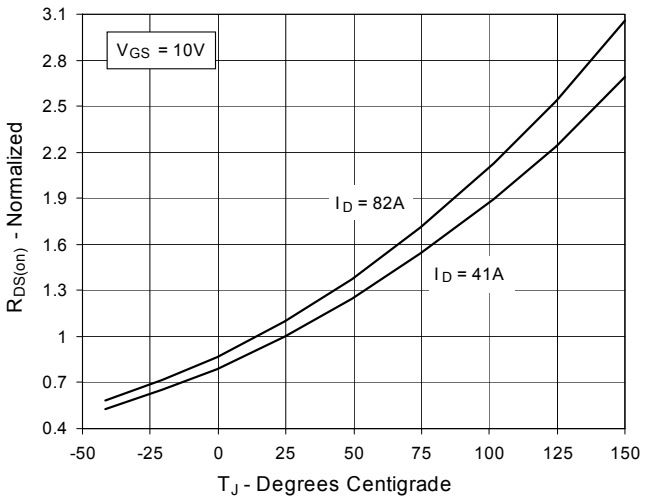


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 41A Value vs. Drain Current

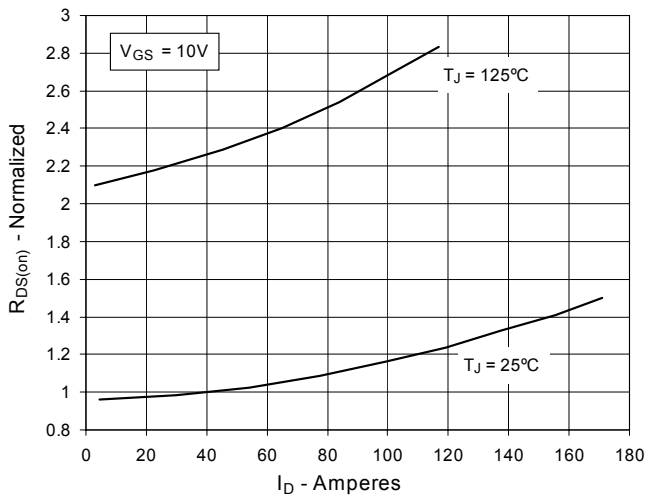


Fig. 6. Maximum Drain Current vs. Case Temperature

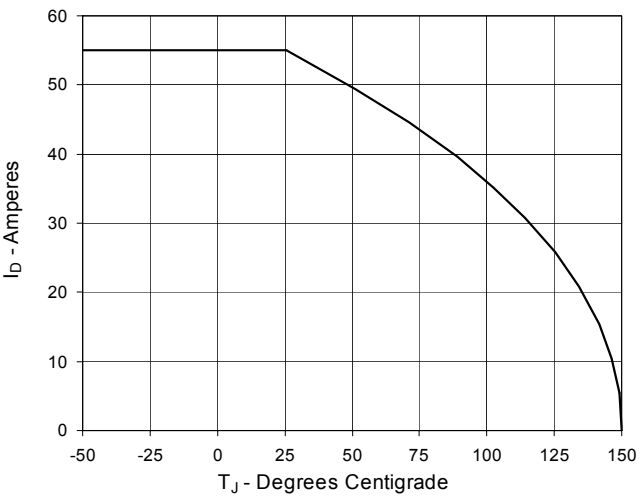


Fig. 7. Input Admittance

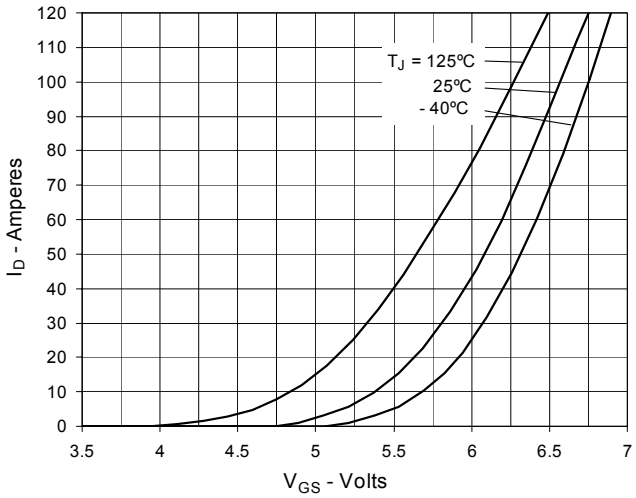


Fig. 8. Transconductance

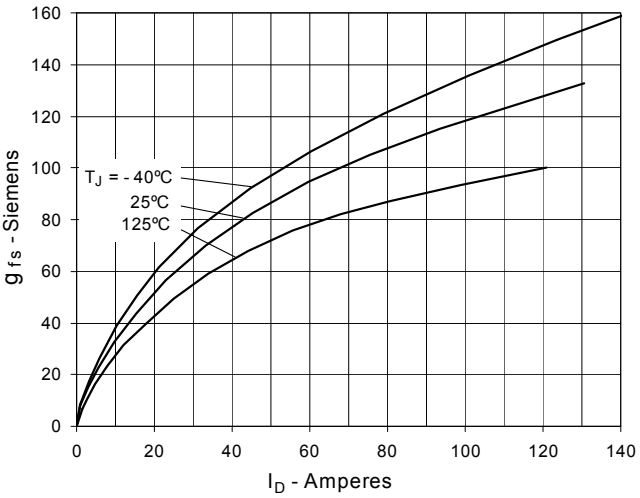


Fig. 9. Forward Voltage Drop of Intrinsic Diode

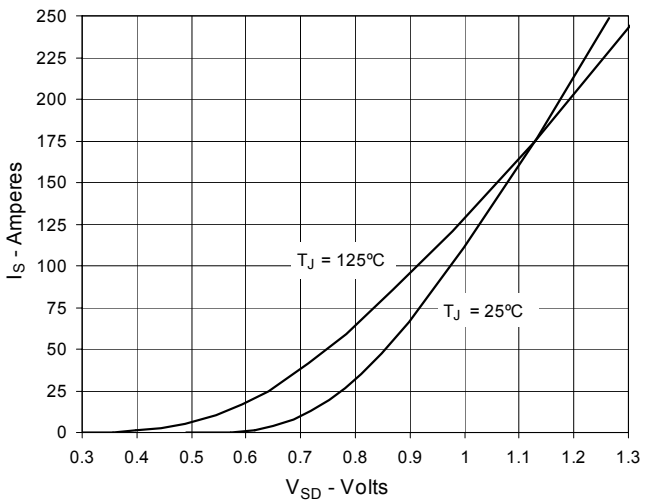


Fig. 10. Gate Charge

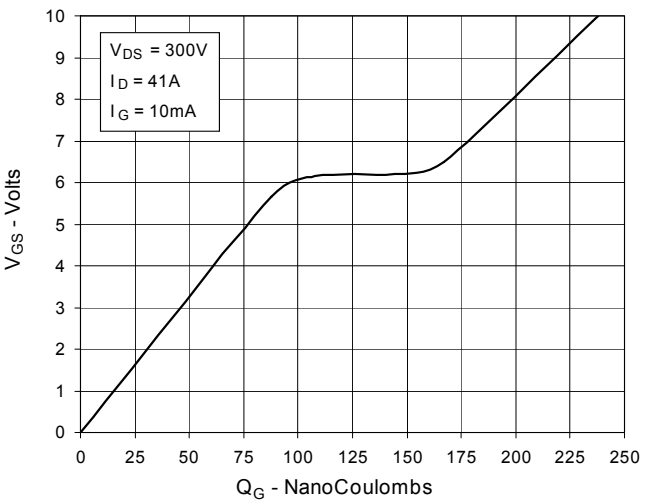


Fig. 11. Capacitance

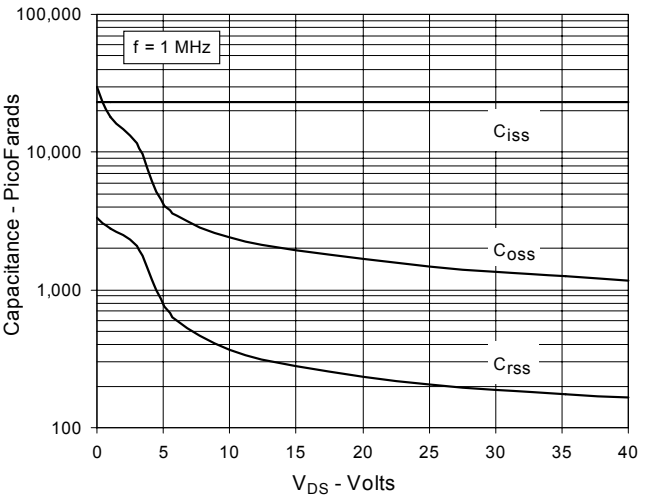


Fig. 12. Forward-Bias Safe Operating Area

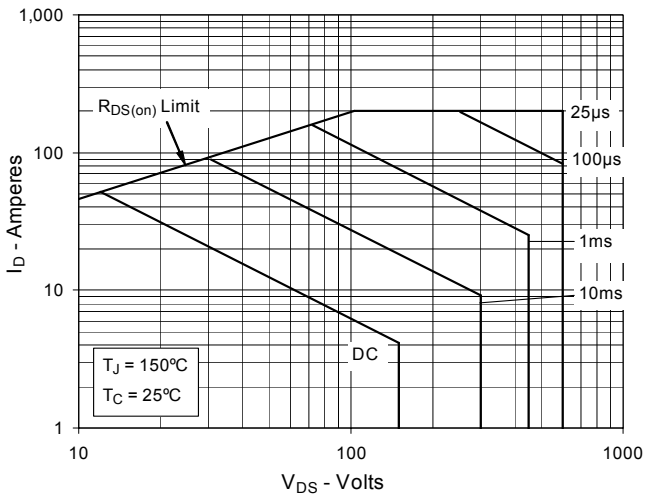


Fig. 13. Maximum Transient Thermal Resistance