IXYS

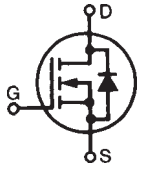
Preliminary Technical Information

HiperFET™ Power MOSFET Q3-Class

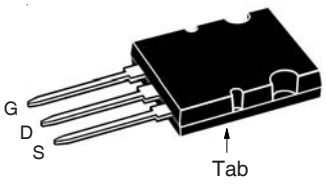
IXFB62N80Q3

V_{DSS} = 800V
I_{D25} = 62A
$R_{DS(on)}$ ≤ 140mΩ
t_{rr} ≤ 300ns

N-Channel Enhancement Mode
Fast Intrinsic Rectifier
Avalanche Rated



PLUS264™



G = Gate D = Drain
S = Source Tab = Drain

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	800	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	800	V
V_{GSS}	Continuous	±30	V
V_{GSM}	Transient	±40	V
I_{D25}	T_C = 25°C	62	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	180	A
I_A	T_C = 25°C	62	A
E_{AS}	T_C = 25°C	5	J
dv/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$	50	V/ns
P_D	T_C = 25°C	1560	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	1.6mm (0.062 in.) from Case for 10s	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
F_C	Mounting Force	30..120/6.7..27	N/lb.
Weight		10	g

Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 3mA	800			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8mA	3.5		6.5	V
I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±200	nA
I_{DSS}	$V_{DS} = 0.8 \bullet V_{DSS}$, V_{GS} = 0V			50	μA
	T_J = 125°C			4	mA
$R_{DS(on)}$	V_{GS} = 10V, $I_D = 0.5 \bullet I_{D25}$, Note 1			140	mΩ

Features

- Low Intrinsic Gate Resistance
- Low Package Inductance
- Avalanche Rated
- Fast Intrinsic Rectifier
- Low $R_{DS(on)}$ and Q_G

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

- DC-DC Converters
- Battery Chargers
- Switch-Mode and Resonant-Mode Power Supplies
- DC Choppers
- Temperature and Lighting Controls

Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 20V, I_D = I_D = 0.5 • I_{D25}, Note 1	28	48		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		13.6		nF
C_{oss}			1260		pF
C_{rss}			100		pF
R_{Gi}	Gate Input Resistance		0.13		Ω
$t_{d(on)}$	**Resistive Switching Times**		54		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		20		ns
$t_{d(off)}$	R_G = 1Ω (External)		62		ns
t_f			11		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = I_D = 0.5 • I_{D25}		270		nC
Q_{gs}			90		nC
Q_{gd}			120		nC
R_{thJC}				0.08	°C/W
R_{thCS}			0.13		°C/W

Source-Drain Diode

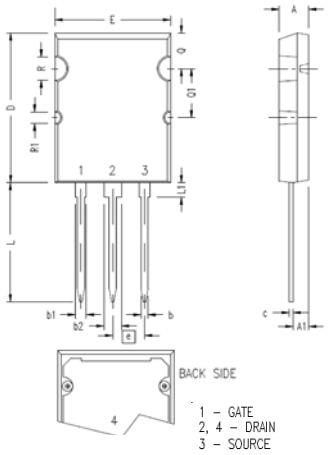
Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			62	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			250	A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.5	V
t_{rr}	I_F = 31A, -di/dt = 100A/μs			300	ns
Q_{RM}	V_R = 100V, V_{GS} = 0V		1.6		μC
I_{RM}			13.4		A

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

PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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 @ T_J = 25ºC

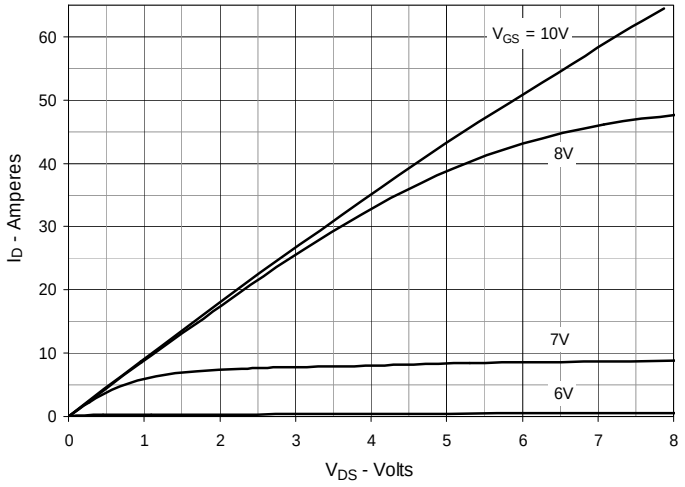


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

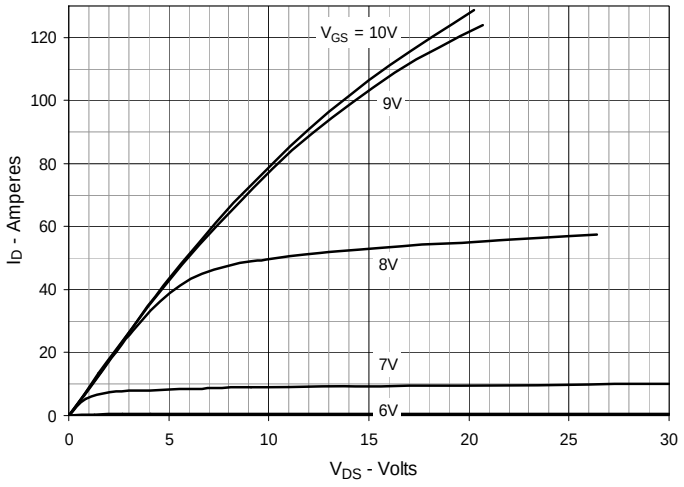


Fig. 3. Output Characteristics @ T_J = 125ºC

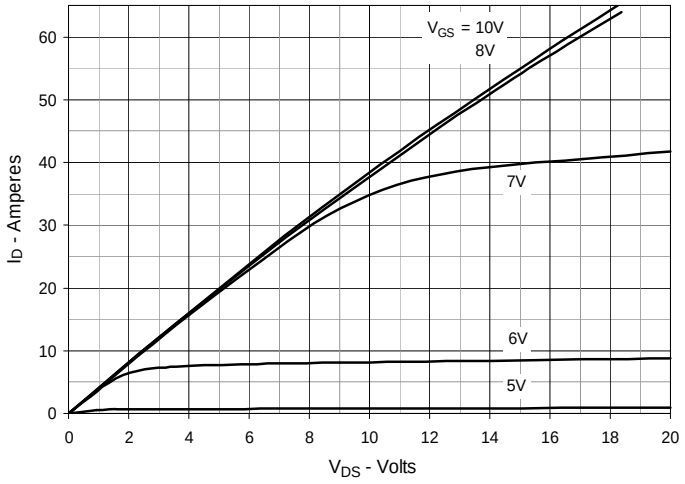


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 31A Value vs. Junction Temperature

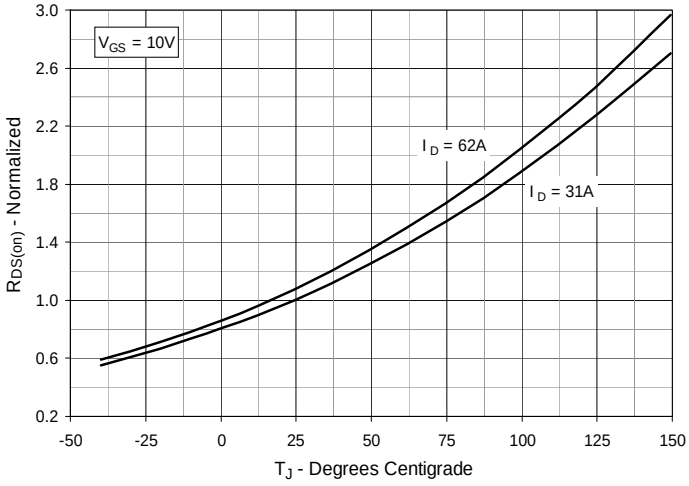


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 31A Value vs. Drain Current

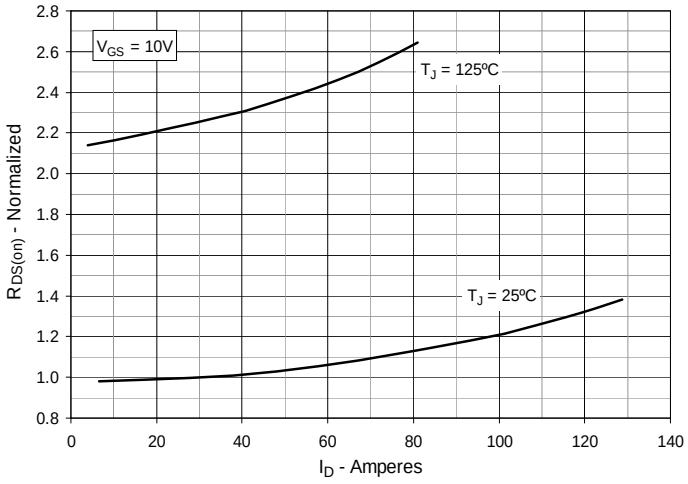


Fig. 6. Maximum Drain Current vs. Case Temperature

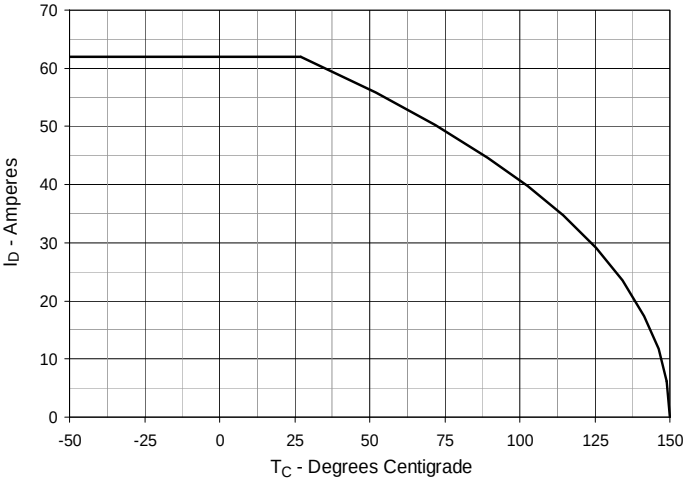


Fig. 7. Input Admittance

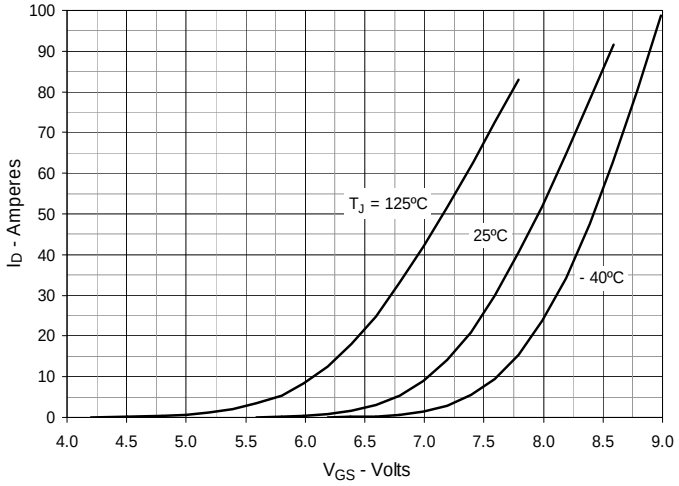


Fig. 8. Transconductance

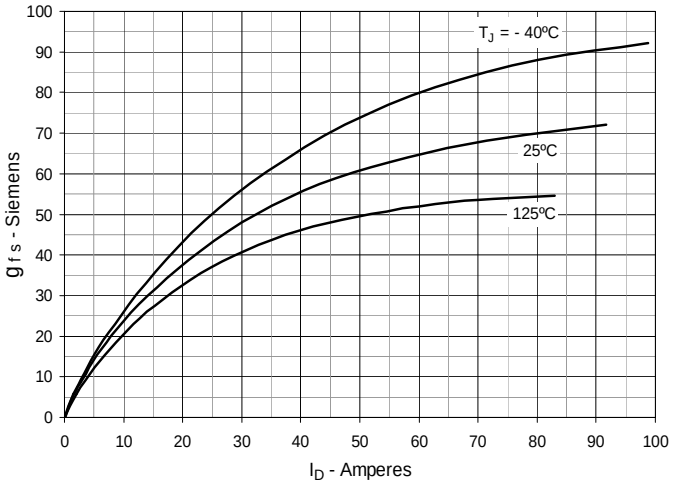


Fig. 9. Forward Voltage Drop of Intrinsic Diode

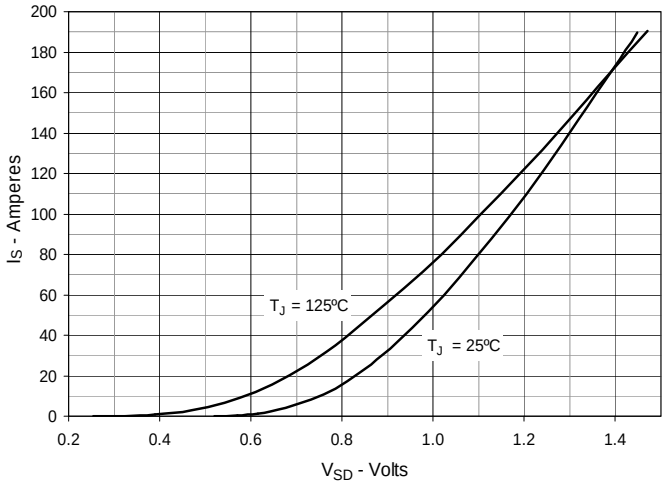


Fig. 10. Gate Charge

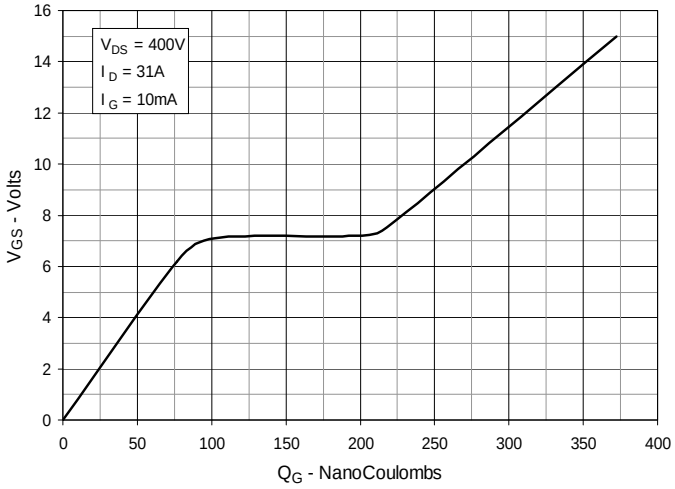


Fig. 11. Capacitance

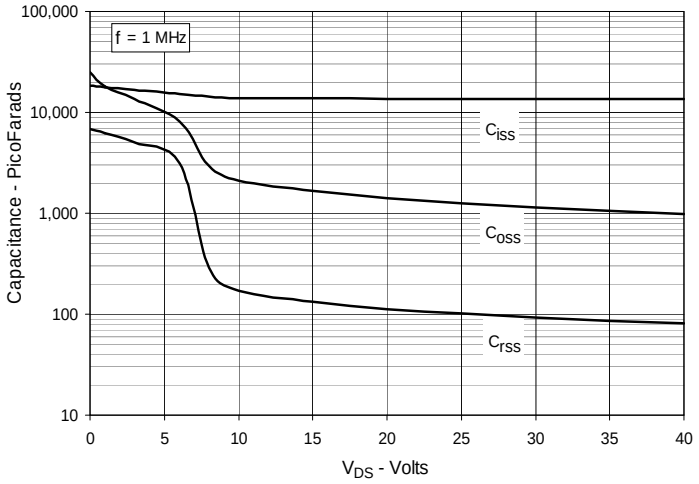


Fig. 12. Forward-Bias Safe Operating Area

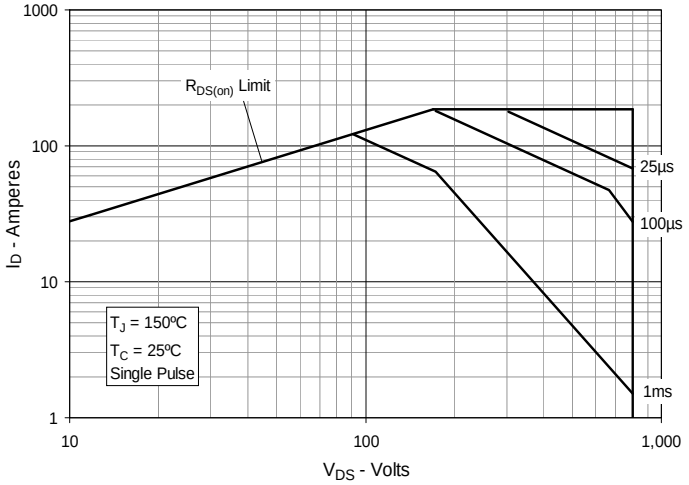


Fig. 13. Maximum Transient Thermal Impedance