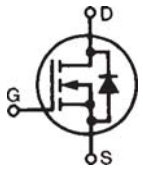
IXYS

HiPerFET™ Power MOSFETs Q-Class

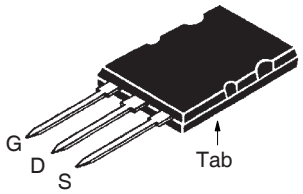
IXFB50N80Q2

V_{DSS} = 800V
I_{D25} = 50A
$R_{DS(on)}$ ≤ 160mΩ
t_{rr} ≤ 300ns

N-Channel Enhancement Mode
Avalanche Rated, Low Q_g, Low Intrinsic R_G
High dV/dt, Low t_{rr}



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	50	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	200	A
I_A	T_C = 25°C	50	A
E_{AS}	T_C = 25°C	5	J
dv/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$	20	V/ns
P_D	T_C = 25°C	1135	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
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 = 1mA	800			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8mA	3.0		5.5	V
I_{GSS}	V_{GS} = ± 30V, V_{DS} = 0V			± 200	nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS} = 0V			50	μA
	T_J = 125°C			3	mA
$R_{DS(on)}$	V_{GS} = 10V, $I_D = 0.5 \bullet I_{D25}$, Note 1			160	mΩ

Features

- Double Metal Process for Low Gate Resistance
- Avalanche Rated
- Low Package Inductance
- Fast Intrinsic Rectifier

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- Switch-Mode and Resonant-Mode Power Supplies >500kHz Switching
- DC-DC Converters
- DC Choppers
- Pulse Generation
- Laser Drivers

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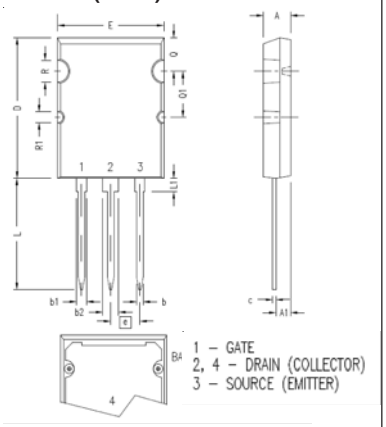
Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10V, I_D = 0.5 • I_{D25}, Note 1	32	48		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		7200		pF
C_{oss}			1200		pF
C_{rss}			230		pF
$t_{d(on)}$	**Resistive Switching Times**		26		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		25		ns
$t_{d(off)}$	R_G = 1Ω (External)		60		ns
t_f			13		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		260		nC
Q_{gs}			56		nC
Q_{gd}			120		nC
R_{thJC}				0.11	°C/W
R_{thCK}			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			50	A
I_{SM}	Repetitive Pulse Width Limited by T_{JM}			200	A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.5	V
t_{rr}	I_F = 25A, V_{GS} = 0V			300	ns
Q_{RM}	-di/dt = 100A/μs		1.1		μC
I_{RM}	V_R = 100V		8.0		A

Note: 1. Pulse test, t ≤ 300μs, 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

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IXYS MOSFETs and IGBTs are covered by one or moreof the following U.S. patents: 4,835,592 4,850,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

Fig. 1. Output Characteristics @ T_J = 25ºC

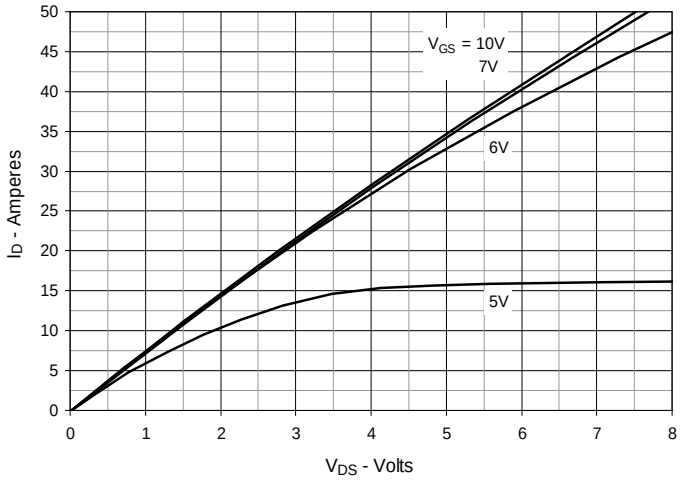


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

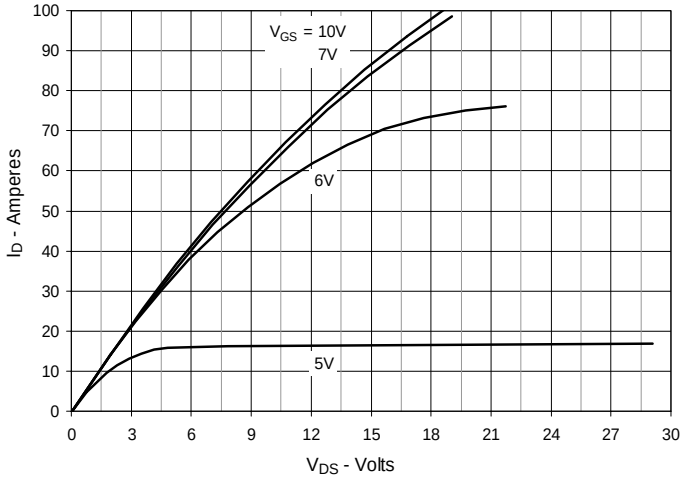


Fig. 3. Output Characteristics @ T_J = 125ºC

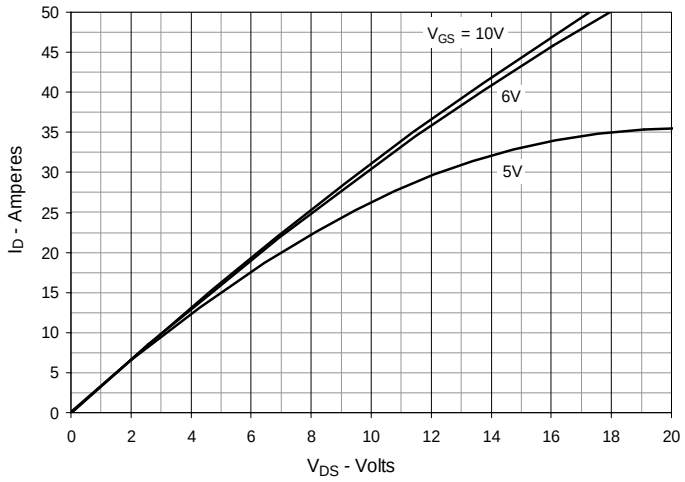


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 25A Value vs. Junction Temperature

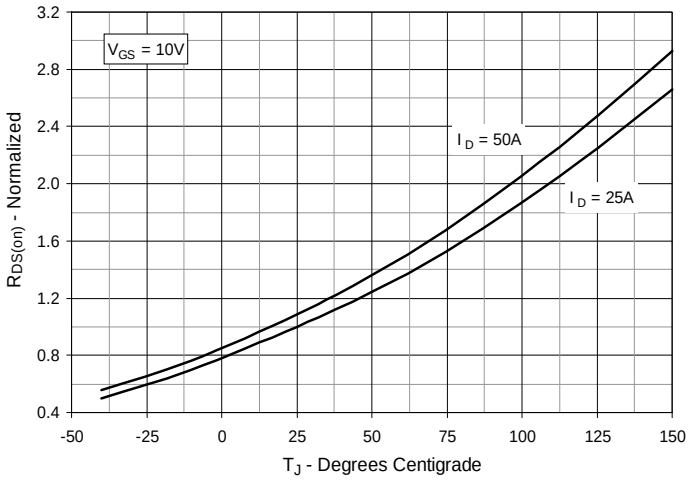


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 25A Value vs. Drain Current

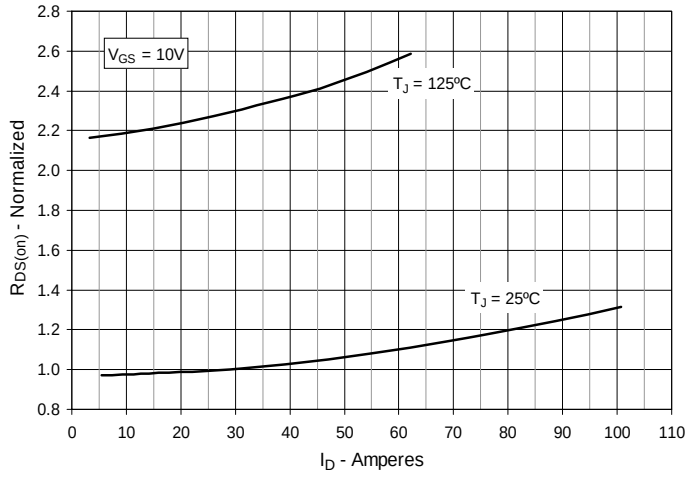
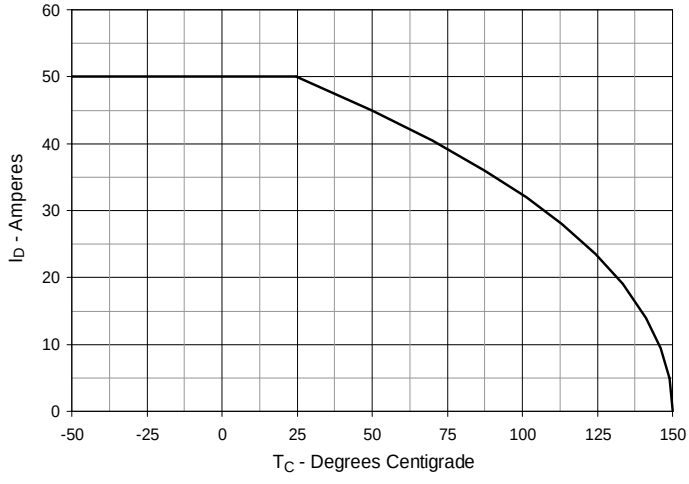


Fig. 6. Maximum Drain Current vs. Case Temperature



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Fig. 7. Input Admittance

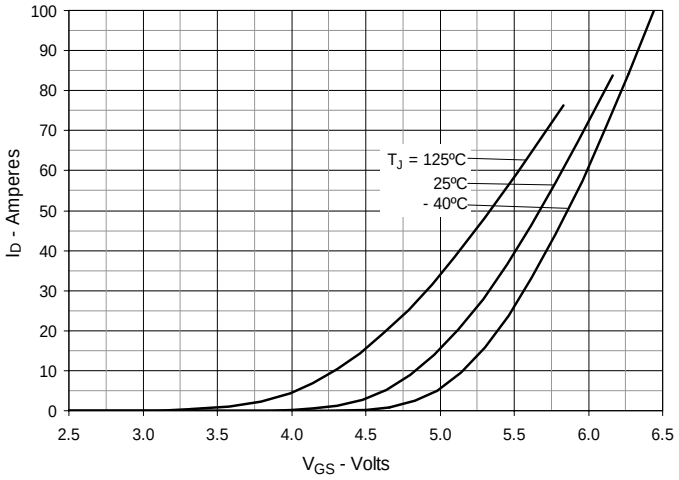


Fig. 8. Transconductance

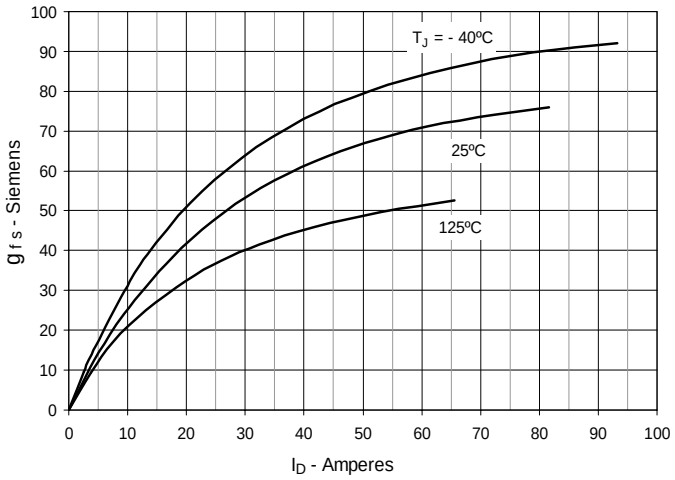


Fig. 9. Forward Voltage Drop of Intrinsic Diode

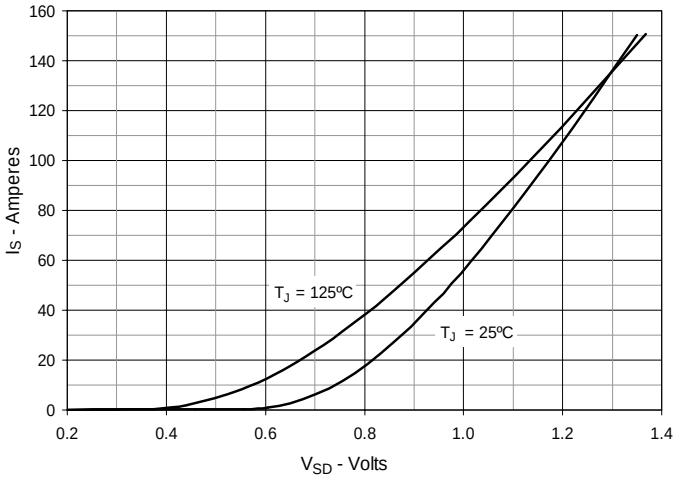


Fig. 10. Gate Charge

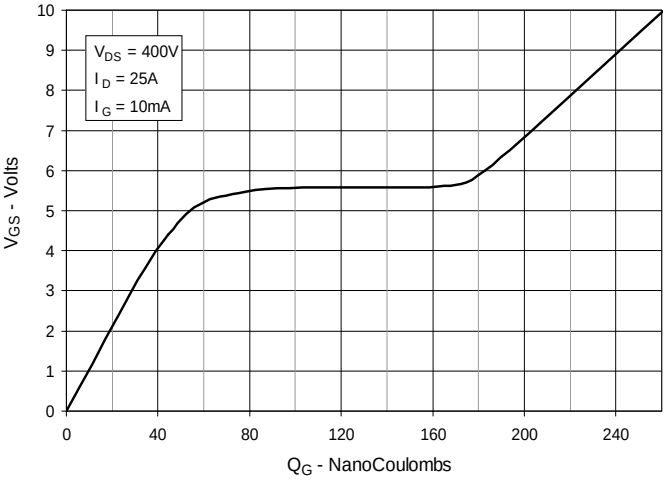


Fig. 11. Capacitance

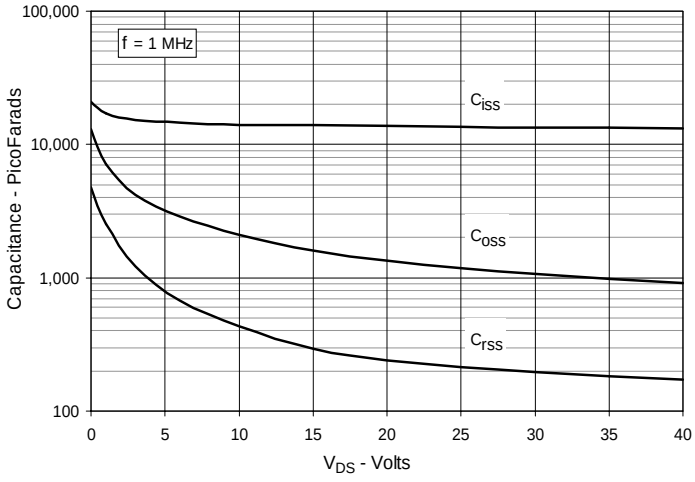
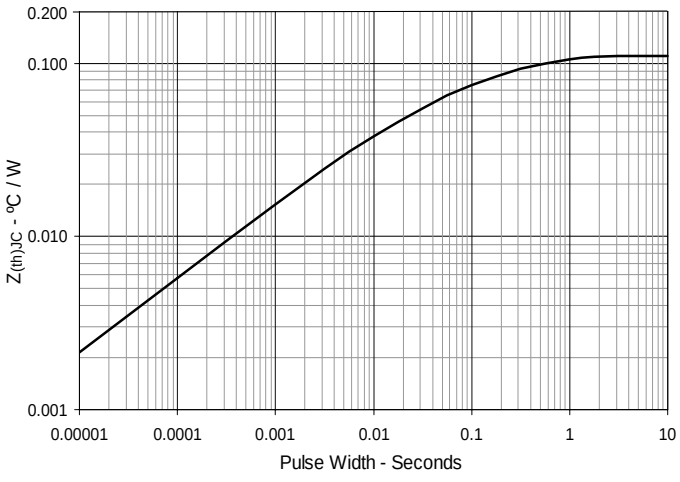


Fig. 12. Maximum Transient Thermal Impedance



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