

HiPerFET™ Power MOSFET Q2-Class

IXFL80N50Q2

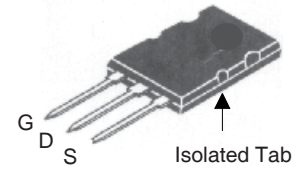
(Electrically Isolated Tab)

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



$$\begin{aligned} V_{DSS} &= 500V \\ I_{D25} &= 55A \\ R_{DS(on)} &\leq 66m\Omega \\ t_{rr} &\leq 250ns \end{aligned}$$

ISOPLUS264™ (IXFL)



G = Gate D = Drain
S = Source

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	500	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C , $R_{GS} = 1M\Omega$	500	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	$T_C = 25^\circ\text{C}$	55	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	320	A
I_A	$T_C = 25^\circ\text{C}$	80	A
E_{AS}	$T_C = 25^\circ\text{C}$	5	J
dV/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$	20	V/ns
P_D	$T_C = 25^\circ\text{C}$	380	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6 mm (0.063 in.) from case for 10s	300	$^\circ\text{C}$
T_{SOLD}	Plastic body for 10s	260	$^\circ\text{C}$
F_C	Mounting force	30..120/6.7..27	N/lbs
V_{ISOL}	50/60 Hz, RMS $t = 1$ min <small>www.ixys.com/ixfl</small> $I_{ISOL} \leq 1$ mA $t = 1$ s	2500 3000	V~ V~
Weight		10	g

Features

- Electrically isolated mounting tab
- Double metal process for low gate resistance
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
- easy to drive and to protect
- Fast intrinsic diode

Applications

- DC-DC converters
- Switched-mode and resonant-mode power supplies
- DC choppers
- Pulse generation
- Laser drivers

Advantages

- 2500 V~ Electrical isolation
- ISOPLUS 264™ package for clip or spring mounting
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0$ V, $I_D = 1$ mA	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 8$ mA	3.0		V
I_{GSS}	$V_{GS} = \pm 30$ V, $V_{DS} = 0$ V			± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0$ V $T_J = 125^\circ\text{C}$			100 μA 5 mA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 40$ A, Note 1			66 m Ω

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{V}, I_D = 40\text{A}$, Note 1	50	65	S
C_{iss}	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		12.8	nF
C_{oss}			1640	pF
C_{rss}			440	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 40\text{A}$ $R_G = 1\Omega$ (External)		29	ns
t_r			25	ns
$t_{d(off)}$			60	ns
t_f			11	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 40\text{A}$		250	nC
Q_{gs}			80	nC
Q_{gd}			120	nC
R_{thJC}			0.33	$^\circ\text{C/W}$
R_{thCS}		0.15		$^\circ\text{C/W}$

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
I_S	$V_{GS} = 0\text{V}$			80 A
I_{SM}	Repetitive, pulse width limited by T_{JM}			320 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{V}$, Note 1			1.5 V
t_{rr}	$I_F = 25\text{A}, V_{GS} = 0\text{V}$ $-di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}$			250 ns
Q_{RM}			1.4	μC
I_{RM}			12	A

ISOPLUS264™ (IXFL) Outline

Note: Bottom heatsink meets

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	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	.788	19.56	20.09
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

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

IXYS reserves the right to change limits, test conditions, and dimensions.

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

Fig. 1. Output Characteristics @ 25°C

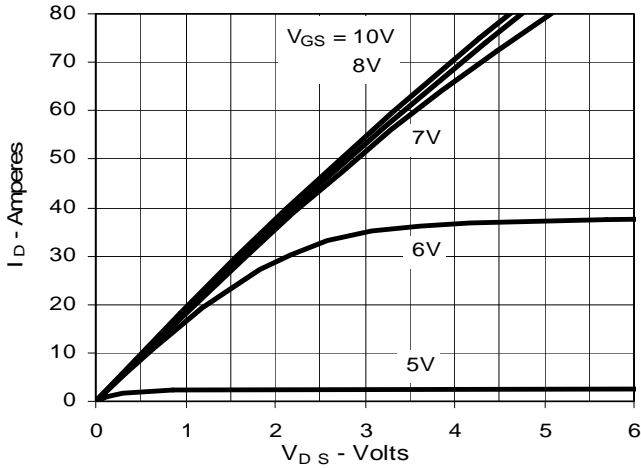


Fig. 2. Extended Output Characteristics @ 25°C

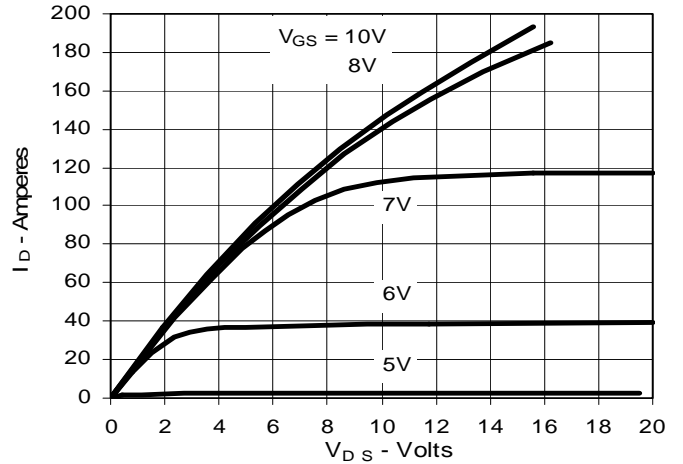


Fig. 3. Output Characteristics @ 125°C

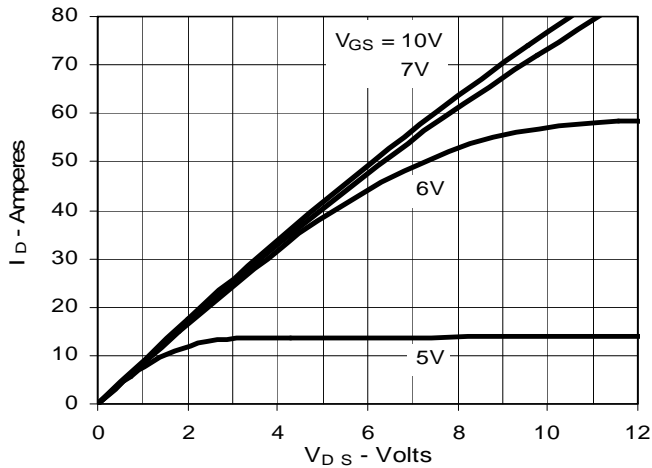


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 40A$ Value vs. Junction Temperature

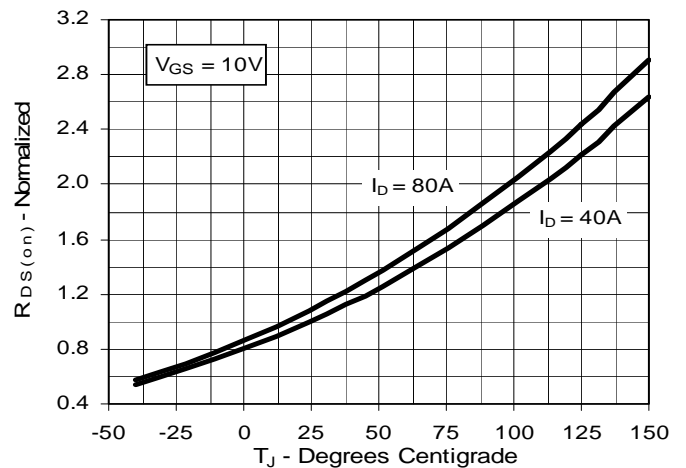


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 40A$ Value vs. Drain Current

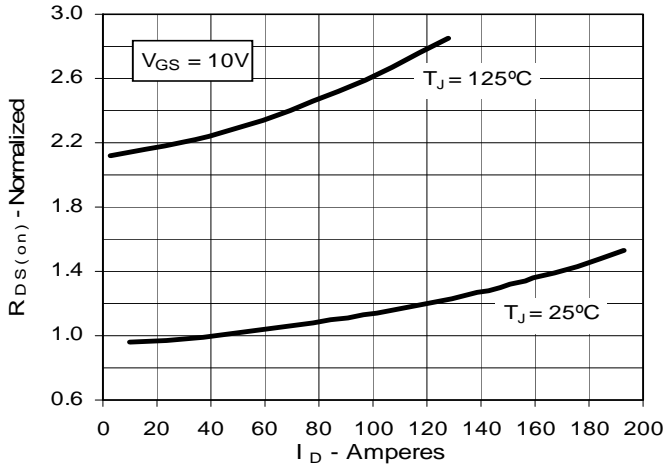


Fig. 6. Drain Current vs. Case Temperature

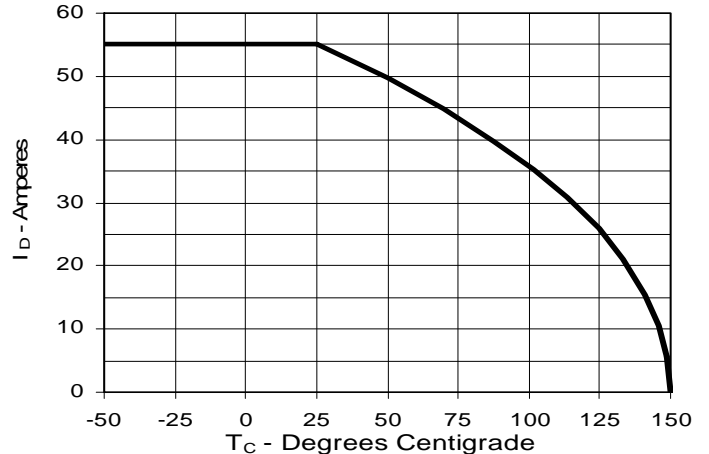


Fig. 7. Input Admittance

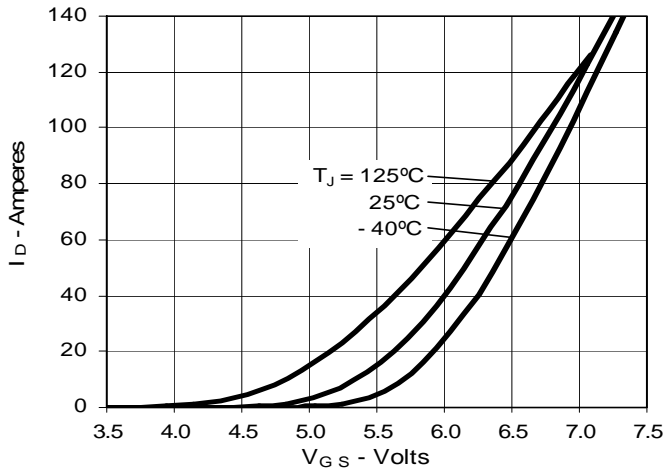


Fig. 8. Transconductance

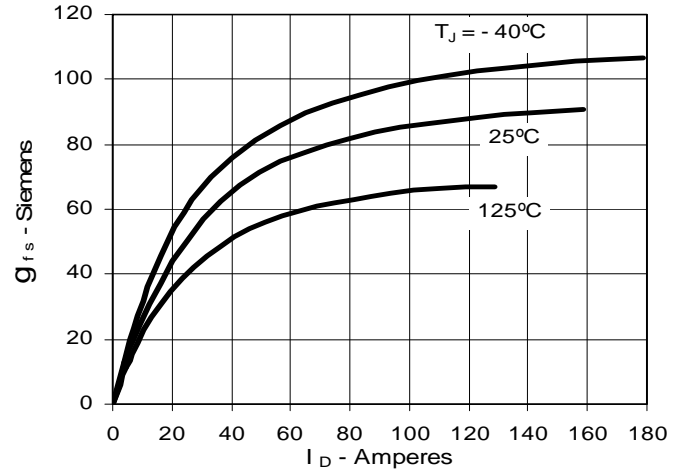


Fig. 9. Source Current vs. Source-To-Drain Voltage

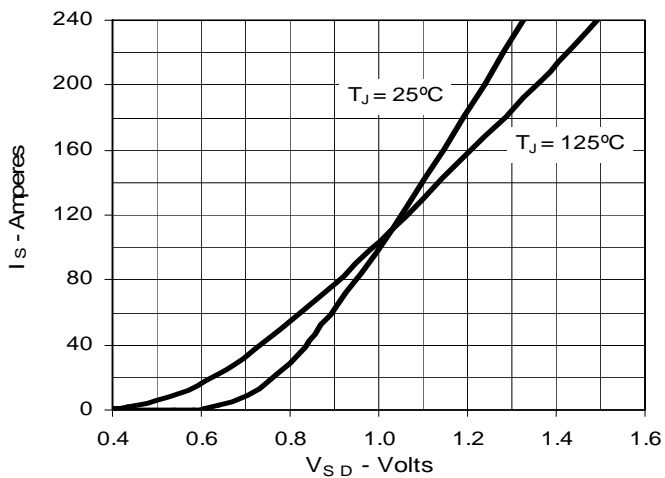


Fig. 10. Gate Charge

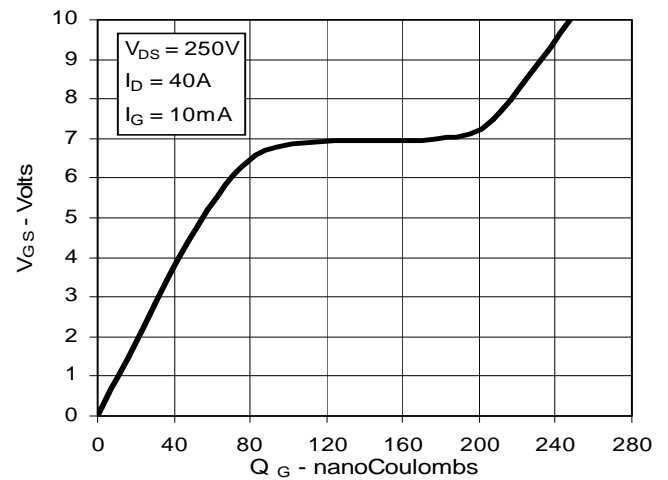


Fig. 11. Capacitance

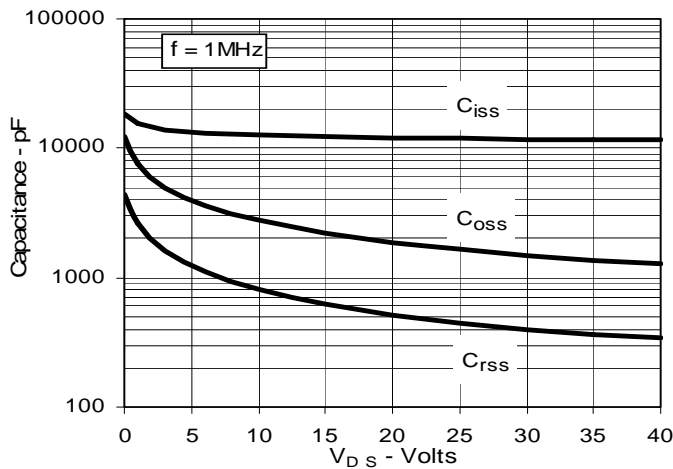


Fig. 12. Maximum Transient Thermal Impedance

