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[IXYS Corporation](#)

[IXFL70N60Q2](#)

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HiPerFET™ Power MOSFET Q2-Class

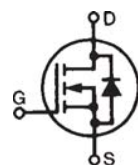
IXFL70N60Q2

(Electrically Isolated Tab)

N-Channel Enhancement Mode

Avalanche Rated, Low Q_g , Low Intrinsic R_g

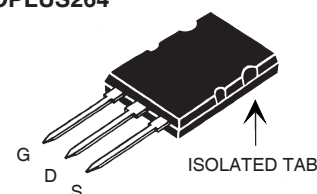
High dV/dt , Low t_{rr}



$$\begin{aligned} V_{DSS} &= 600V \\ I_{D25} &= 37A \\ R_{DS(on)} &\leq 92m\Omega \\ t_{rr} &\leq 250ns \end{aligned}$$

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ C$ to $150^\circ C$	600	V
V_{DGR}	$T_J = 25^\circ C$ to $150^\circ C$, $R_{GS} = 1M\Omega$	600	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	$T_C = 25^\circ C$	37	A
I_{DM}	$T_C = 25^\circ C$, Pulse Width Limited by T_{JM}	280	A
I_A	$T_C = 25^\circ C$	35	A
E_{AS}	$T_C = 25^\circ C$	5	J
dV/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ C$	20	V/ns
P_D	$T_C = 25^\circ C$	360	W
T_J		-55 ... +150	$^\circ C$
T_{JM}		150	$^\circ C$
T_{stg}		-55 ... +150	$^\circ C$
T_L	1.6 mm (0.063 in.) from Case for 10s	300	$^\circ C$
T_{SOLD}	Plastic body for 10s	260	$^\circ C$
F_C	Mounting Force	40..120 / 9..27	N/lb.
V_{ISOL}	50/60 Hz, RMS $t = 1$ min $I_{ISOL} \leq 1$ mA $t = 1$ s	2500 3000	V~ V~
Weight		8	g

ISOPLUS264



G = Gate D = Drain
S = Source

Features

- Silicon Chip on Direct-Copper Bond (DCB) Substrate
- Isolated Mounting Surface
- 2500V Electrical Isolation
- Fast Intrinsic Diode
- Avalanche Rated
- Low Q_g
- Low Package Inductance

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

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

Symbol	Test Conditions ($T_J = 25^\circ C$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0$ V, $I_D = 1$ mA	600		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 8$ mA	3.0		5.5 V
I_{GSS}	$V_{GS} = \pm 30$ V, $V_{DS} = 0$ V			± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0$ V $T_J = 125^\circ C$			100 μA 5 mA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 35$ A, Note 1			92 m Ω



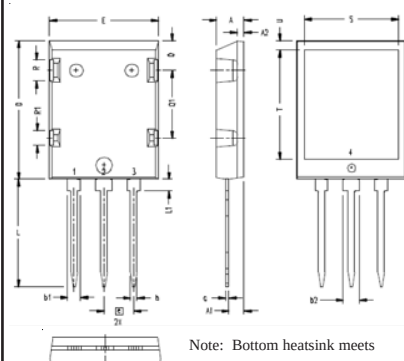
IXFL70N60Q2

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{V}$, $I_D = 35\text{A}$, Note 1	36	50	S
C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		12	nF
C_{oss}			1340	pF
C_{rss}			345	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 35\text{A}$ $R_G = 1\Omega$ (External)		26	ns
t_r			25	ns
$t_{d(off)}$			60	ns
t_f			12	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 35\text{A}$		265	nC
Q_{gs}			57	nC
Q_{gd}			120	nC
R_{thJC}				0.35 $^\circ\text{C/W}$
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	$V_{GS} = 0\text{V}$			70 A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			280 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}			1.2	μC
I_{RM}			8.0	A

ISOPLUS264™ (IXFL) Outline



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	20.29
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

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

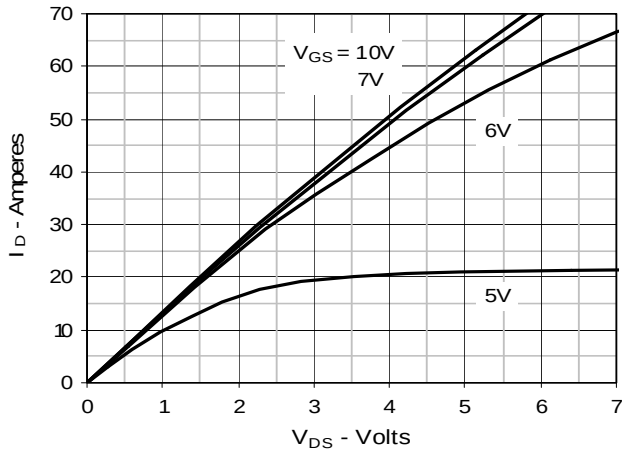


Fig. 2. Extended Output Characteristics
@ 25°C

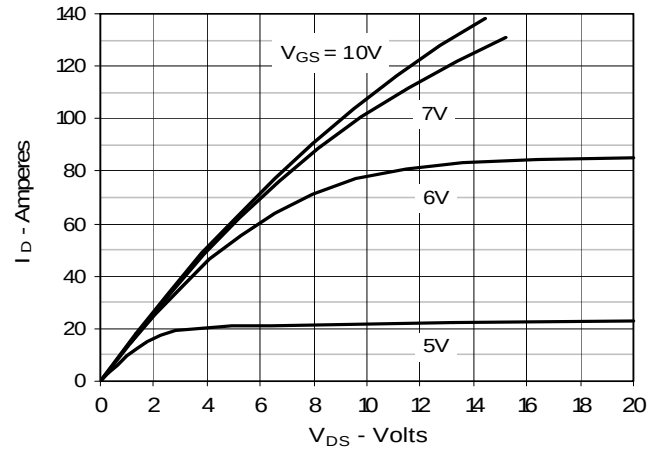


Fig. 3. Output Characteristics
@ 125°C

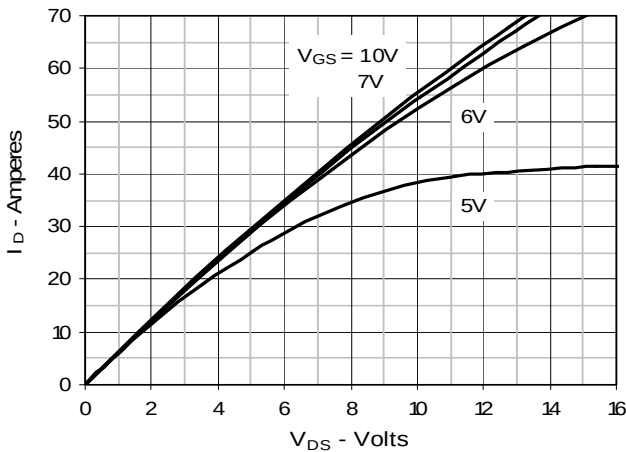


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

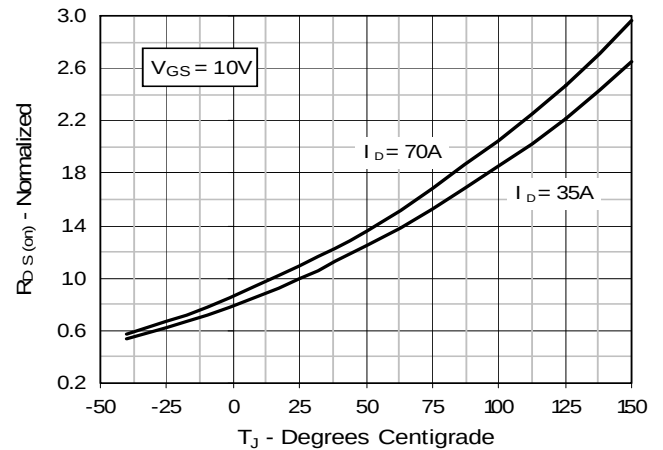


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

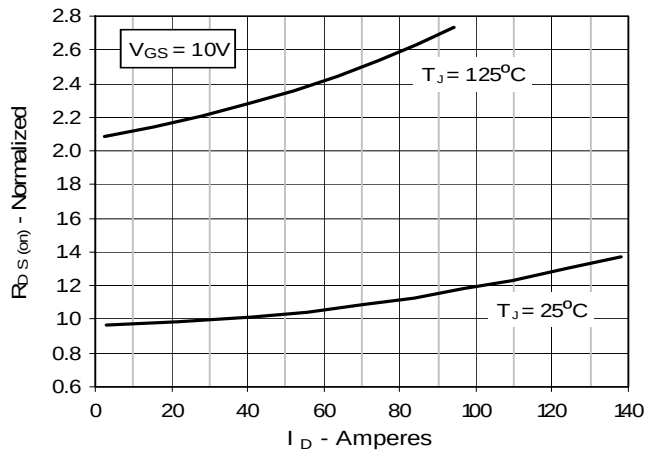


Fig. 6. Drain Current vs. Case Temperature

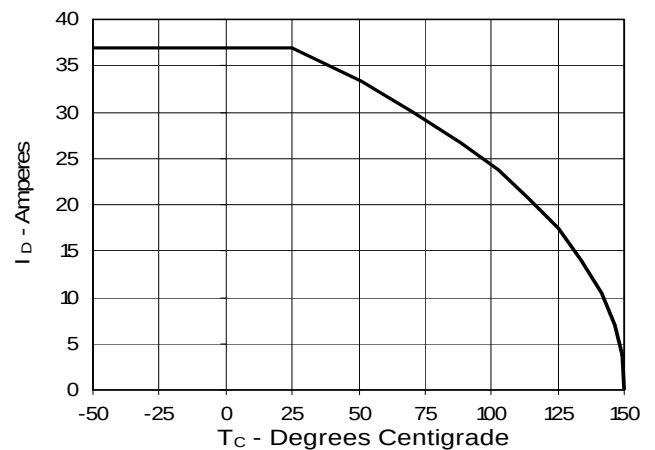


Fig. 7. Input Admittance

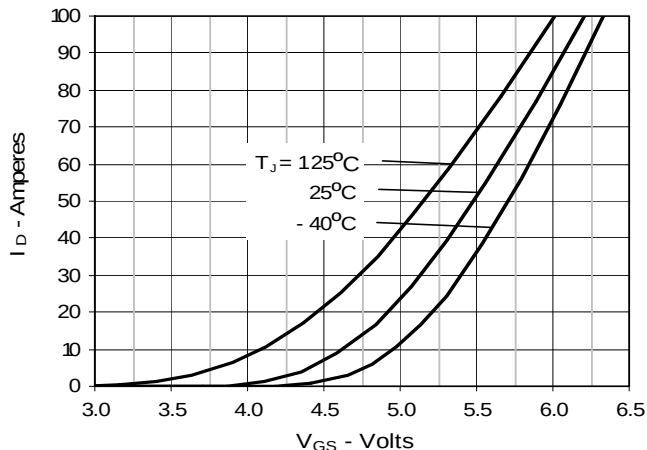


Fig. 8. Transconductance

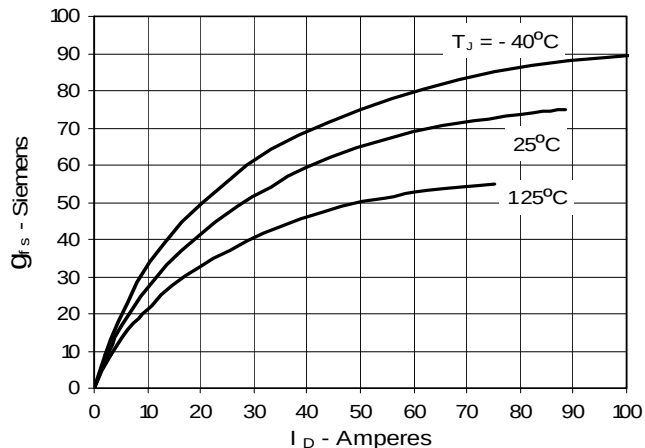


Fig. 9. Source Current vs. Source-To-Drain Voltage

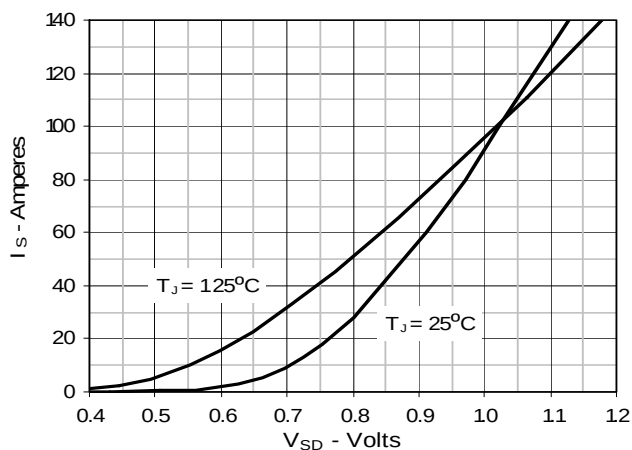


Fig. 10. Gate Charge

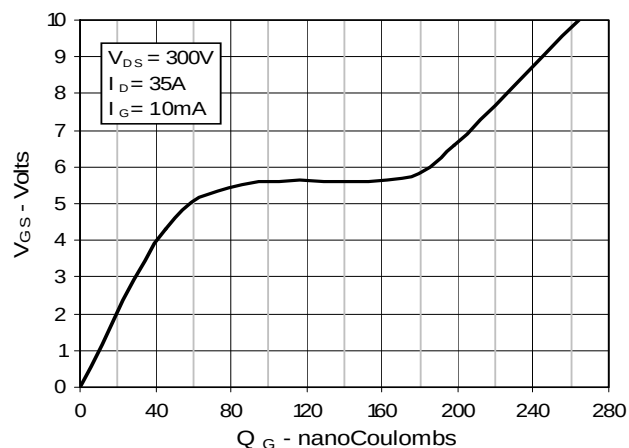


Fig. 11. Capacitance

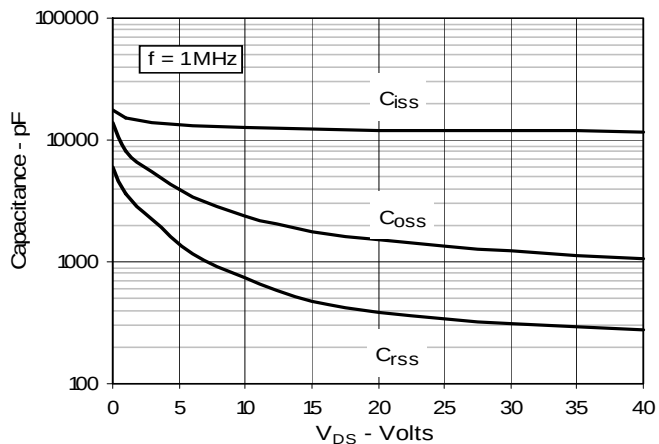


Fig. 12. Maximum Transient Thermal Impedance

