

HiPerFET™

Power MOSFET

Q2-Class

IXFL70N60Q2

$$V_{DSS} = 600V$$

$$I_{D25} = 37A$$

$$R_{DS(on)} \leq 88m\Omega$$

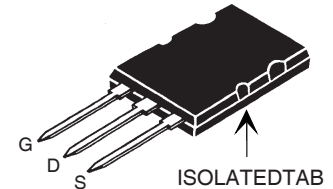
$$t_{rr} \leq 250ns$$

(Electrically Isolated Tab)



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

ISOPLUS264



G = Gate D = Drain
 S = Source

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/lbs
V_{ISOL}	50/60 Hz, RMS $t = 1$ min	2500	V~
	$I_{ISOL} \leq 1$ mA $t = 1$ s	3000	V~
Weight		10	g

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	Characteristic Values ($T_J = 25^\circ C$, unless otherwise specified)		
		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			100 μ A 5 mA $T_J = 125^\circ C$
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 35$ A, Note 1			88 m Ω

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{V}, I_D = 35\text{A}$, 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

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

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

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.

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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	

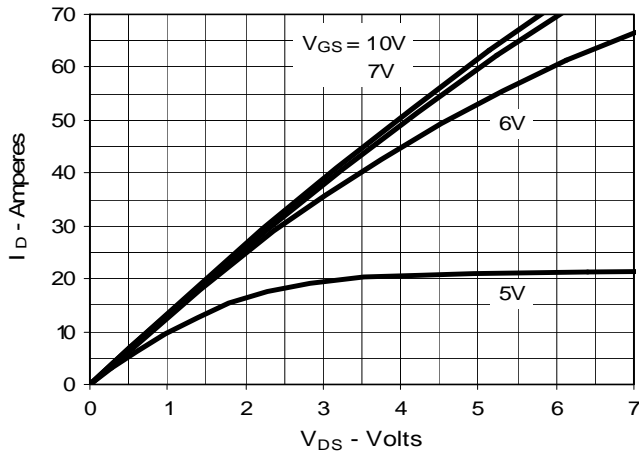
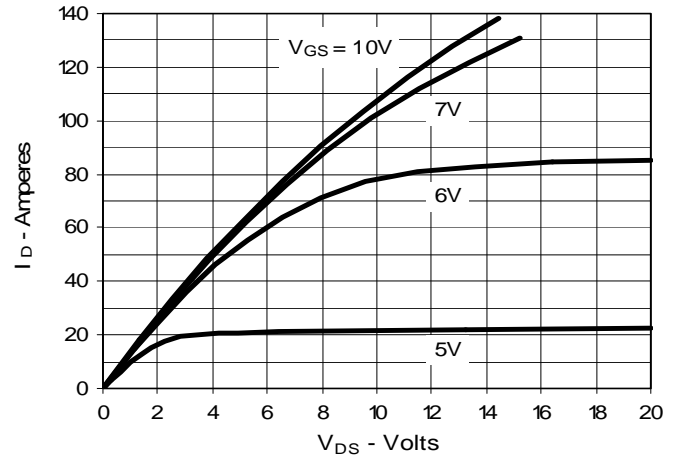
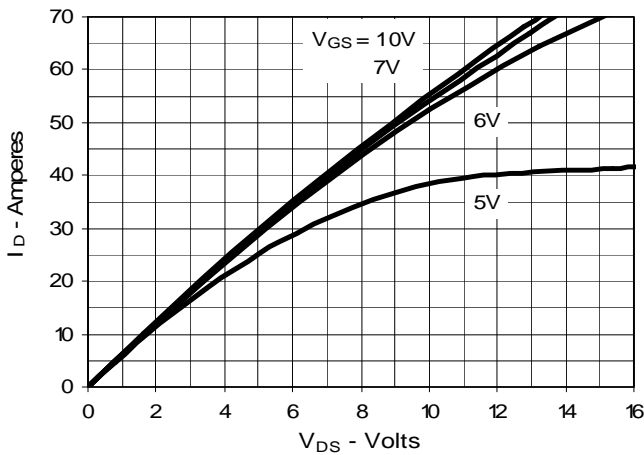
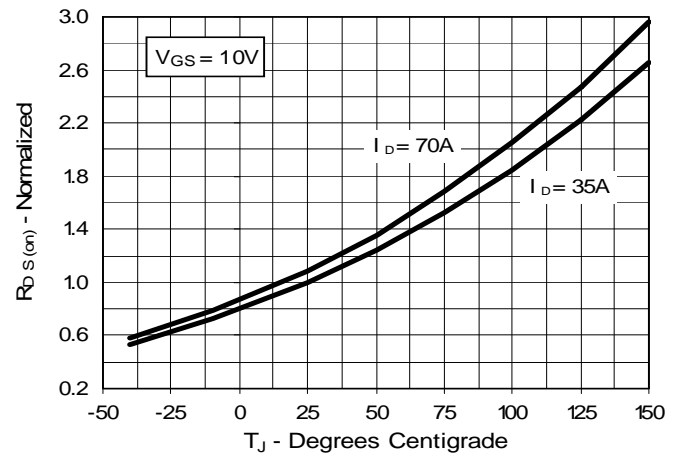
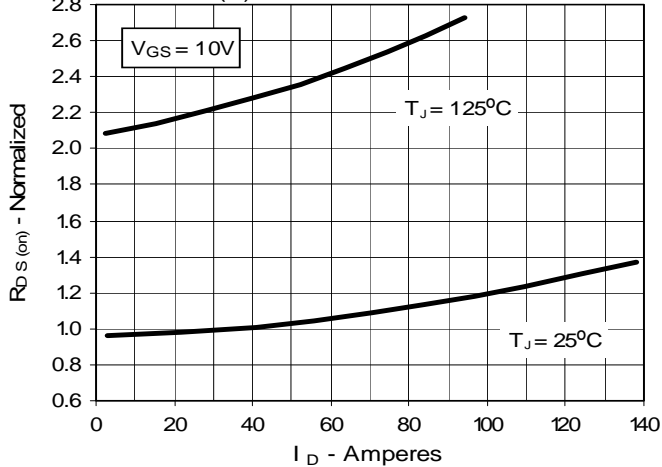
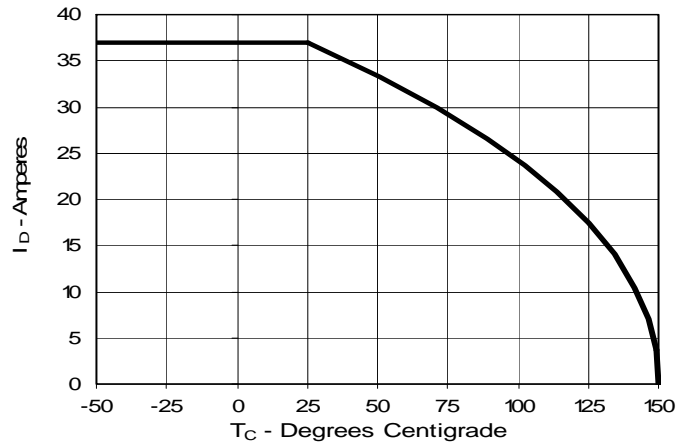
Fig. 1. Output Characteristics
 @ 25°C

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

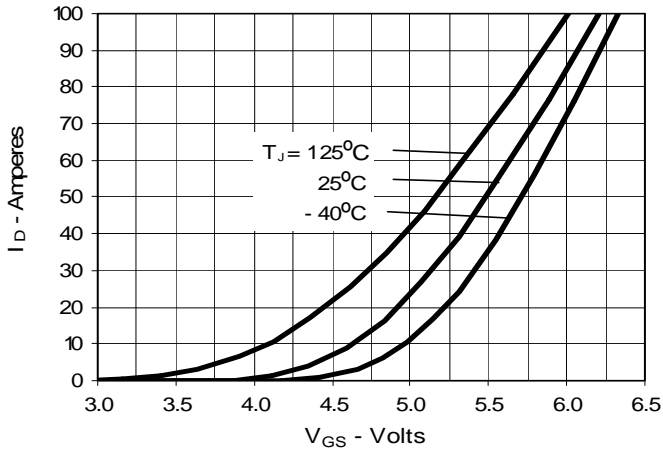


Fig. 8. Transconductance

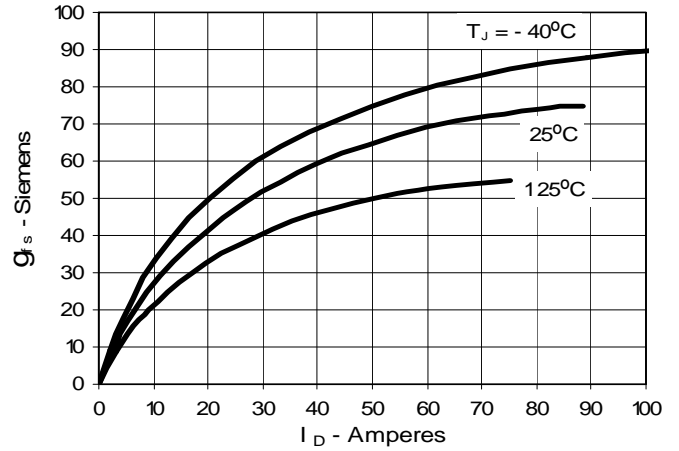


Fig. 9. Source Current vs. Source-To-Drain Voltage

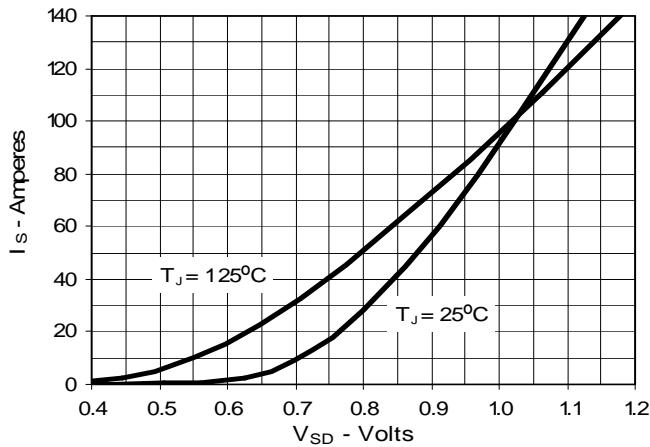


Fig. 10. Gate Charge

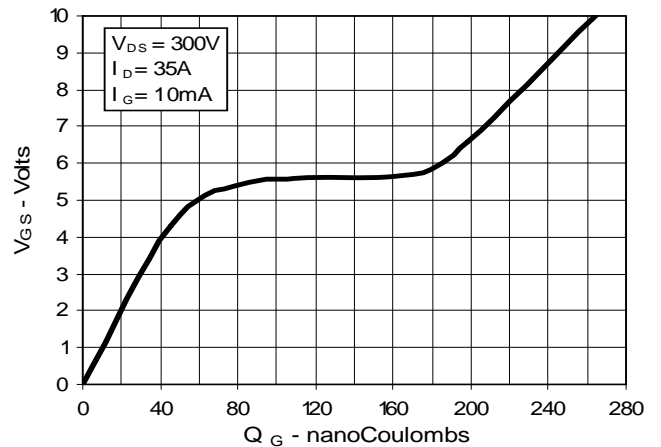


Fig. 11. Capacitance

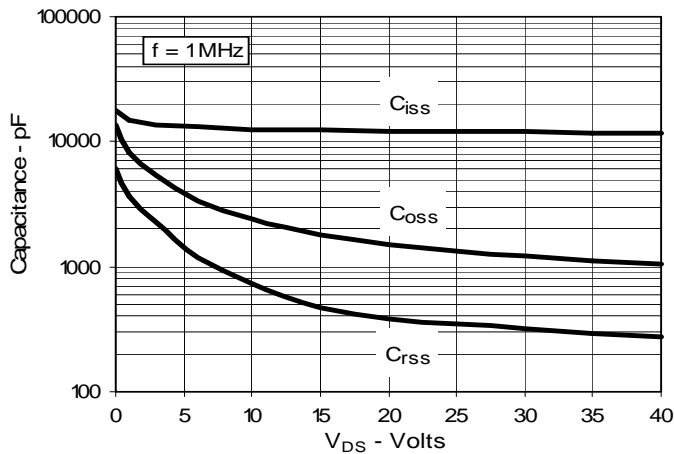


Fig. 12. Maximum Transient Thermal Impedance

