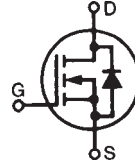


**HiperFET™**  
**Power MOSFETs**  
**Q-Class**

**IXFA4N100Q**  
**IXFP4N100Q**

**V<sub>DSS</sub> = 1000V**  
**I<sub>D25</sub> = 4A**  
**R<sub>DS(on)</sub> ≤ 3.0Ω**

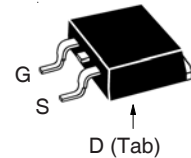
N-Channel Enhancement Mode  
 Avalanche Rated  
 Fast Intrinsic Diode



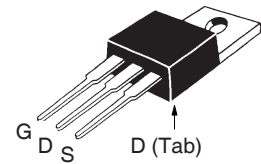
Symbol	Test Conditions	Maximum Ratings	
V <sub>DSS</sub>	T <sub>J</sub> = 25°C to 150°C	1000	V
V <sub>DGR</sub>	T <sub>J</sub> = 25°C to 150°C, R <sub>GS</sub> = 1MΩ	1000	V
V <sub>GSS</sub>	Continuous	± 20	V
V <sub>GSM</sub>	Transient	± 30	V
I <sub>D25</sub>	T <sub>C</sub> = 25°C	4	A
I <sub>DM</sub>	T <sub>C</sub> = 25°C, Pulse Width Limited by T <sub>JM</sub>	16	A
I <sub>A</sub>	T <sub>C</sub> = 25°C	4	A
E <sub>AS</sub>	T <sub>C</sub> = 25°C	700	mJ
dv/dt	I <sub>S</sub> ≤ I <sub>DM</sub> , V <sub>DD</sub> ≤ V <sub>DSS</sub> , T <sub>J</sub> ≤ 150°C	5	V/ns
P <sub>D</sub>	T <sub>C</sub> = 25°C	150	W
T <sub>J</sub>		-55 ... +150	°C
T <sub>JM</sub>		150	°C
T <sub>stg</sub>		-55 ... +150	°C
T <sub>L</sub>	Maximum Lead Temperature for Soldering	300	°C
T <sub>SOLD</sub>	Plastic Body for 10s	260	°C
M <sub>C</sub>	Mounting Force (TO-263)	10..65/2.2..14.6	Nm/lb.in.
M <sub>d</sub>	Mounting Torque (TO-220)	1.13/10	Nm/lb.in.
Weight	TO-263	2.5	g
	TO-220	3.0	g

Symbol	Test Conditions (T <sub>J</sub> = 25°C, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 1mA	1000		V
V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1.5mA	2.5		V
I <sub>GSS</sub>	V <sub>GS</sub> = ± 20V, V <sub>DS</sub> = 0V			± 100 nA
I <sub>DSS</sub>	V <sub>DS</sub> = V <sub>DSS</sub> , V <sub>GS</sub> = 0V T <sub>J</sub> = 125°C			50 μA 1 mA
R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.5 • I <sub>D25</sub> , Note 1			3.0 Ω

**TO-263 AA (IXFA)**



**TO-220AB (IXFP)**



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

**Features**

- International Standard Packages
- Avalanche Rated
- Fast Intrinsic Diode
- Low Q<sub>G</sub>
- Low R<sub>DS(on)</sub>
- Low Drain-to-Tab Capacitance
- Low Package Inductance

**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

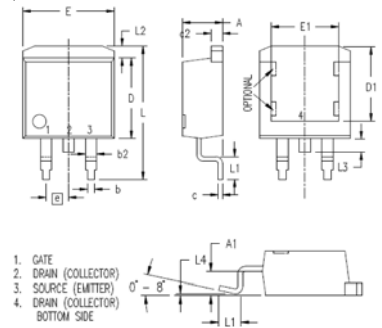
Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$V_{DS} = 20\text{V}, I_D = 0.5 \cdot I_{D25}$ , Note 1	1.5	2.5	S
$C_{iss}$	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		1050	pF
$C_{oss}$			120	pF
$C_{rss}$			30	pF
$t_{d(on)}$	<b>Resistive Switching Times</b> $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 4.7\Omega$ (External)		17	ns
$t_r$			15	ns
$t_{d(off)}$			32	ns
$t_f$			18	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		39	nC
$Q_{gs}$			9	nC
$Q_{gd}$			23	nC
$R_{thJC}$				$0.80^\circ\text{C/W}$
$R_{thCS}$	TO-220	0.50		$^\circ\text{C/W}$

### Source-Drain Diode

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$I_S$	$V_{GS} = 0\text{V}$			4 A
$I_{SM}$	Repetitive, Pulse Width Limited by $T_{JM}$			16 A
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{V}$ , Note 1			1.5 V
$t_{rr}$	$I_F = I_S, -di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}, V_{GS} = 0\text{V}$			250 ns
$Q_{RM}$			0.52	$\mu\text{C}$
$I_{RM}$			1.80	A

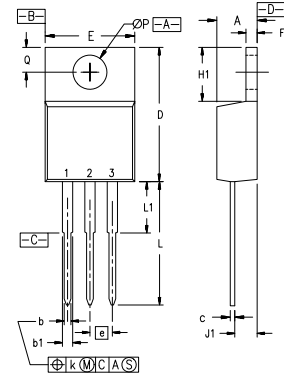
Note 1. Pulse test,  $t \leq 300\mu\text{s}$ , duty cycle,  $d \leq 2\%$ .

### TO-263 Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.160	.190	4.06	4.83
A1	.080	.110	2.03	2.79
b	.020	.039	0.51	0.99
b2	.045	.055	1.14	1.40
c	.016	.029	0.40	0.74
c2	.045	.055	1.14	1.40
D	.340	.380	8.64	9.65
D1	.315	.350	8.00	8.89
E	.380	.410	9.65	10.41
E1	.245	.320	6.22	8.13
e	.100 BSC		2.54 BSC	
L	.575	.625	14.61	15.88
L1	.090	.110	2.29	2.79
L2	.040	.055	1.02	1.40
L3	.050	.070	1.27	1.78
L4	0	.005	0	0.13

### TO-220 Outline



Pins: 1 - Gate 2 - Drain  
3 - Source

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

IXYS MOSFETs and IGBTs are covered 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  
by one or more of the following U.S. patents: 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

Figure 1. Output Characteristics at 25°C

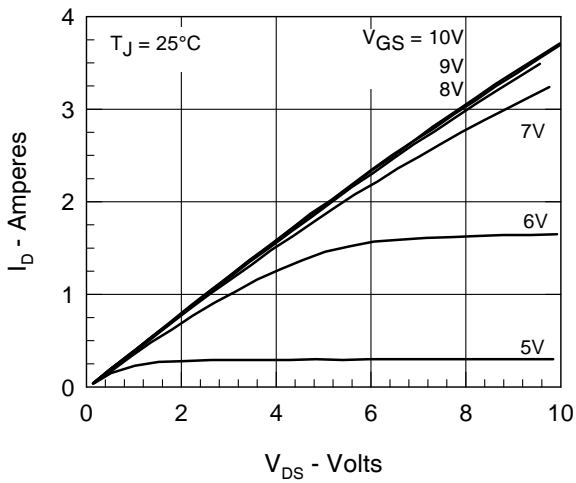


Figure 2. Extended Output Characteristics at 125°C

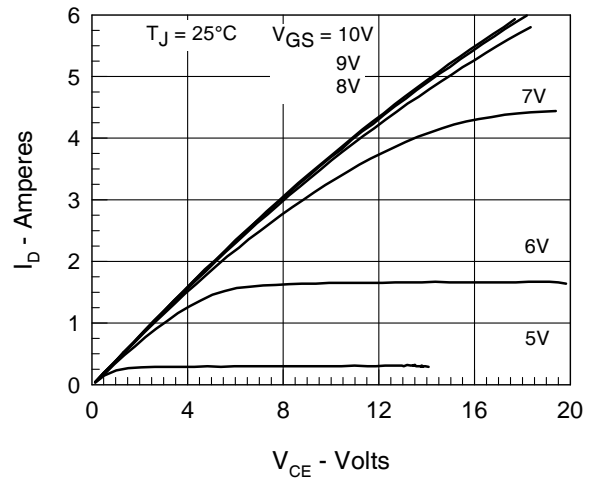


Figure 3. Output characteristics at 125°C

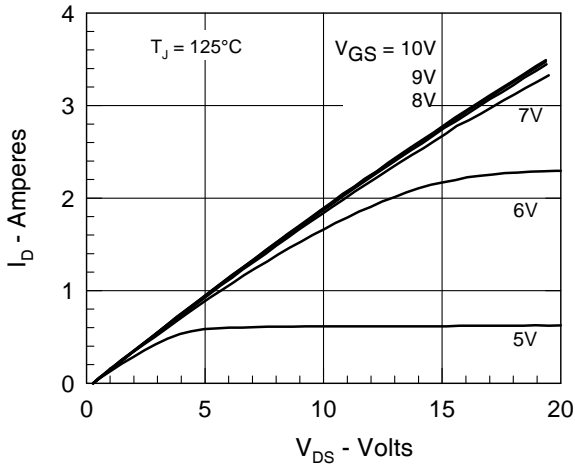


Figure 4. Admittance Curves

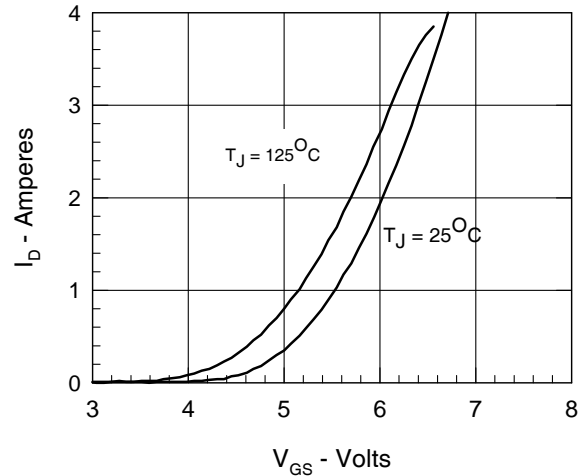


Figure 5.  $R_{DS(on)}$  normalized to 0.5  $I_{D25}$  value vs.  $I_D$

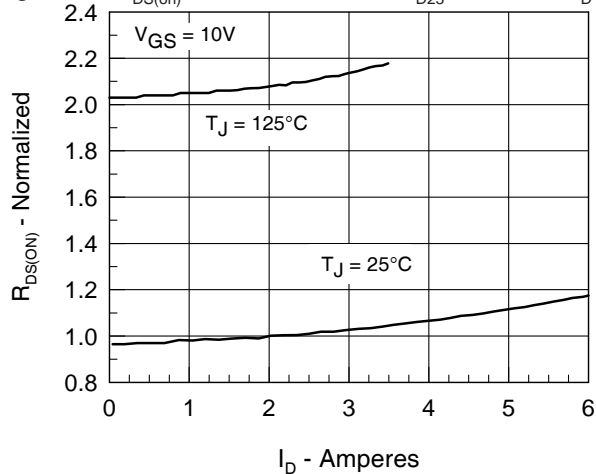


Figure 6.  $R_{DS(on)}$  normalized to 0.5  $I_{D25}$  value vs.  $T_J$

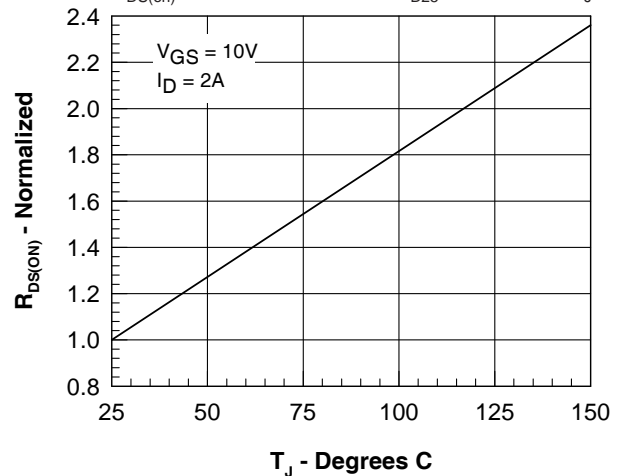


Figure 7. Gate Charge

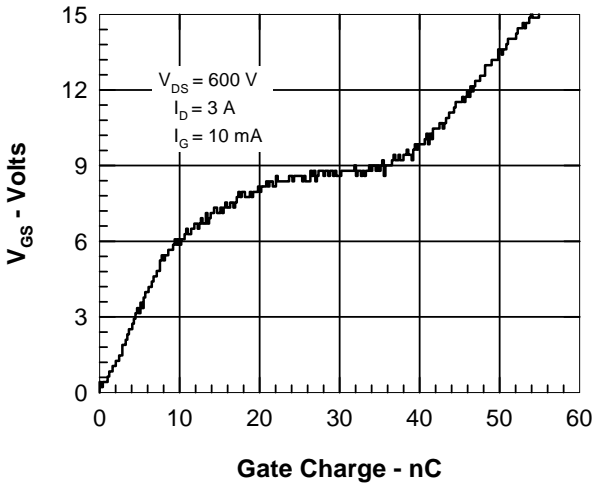


Figure 8. Capacitance Curves

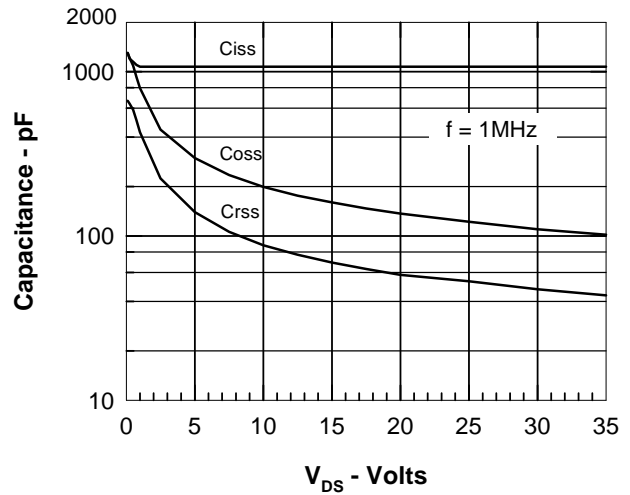


Figure 9. Forward Voltage Drop of the Intrinsic Diode

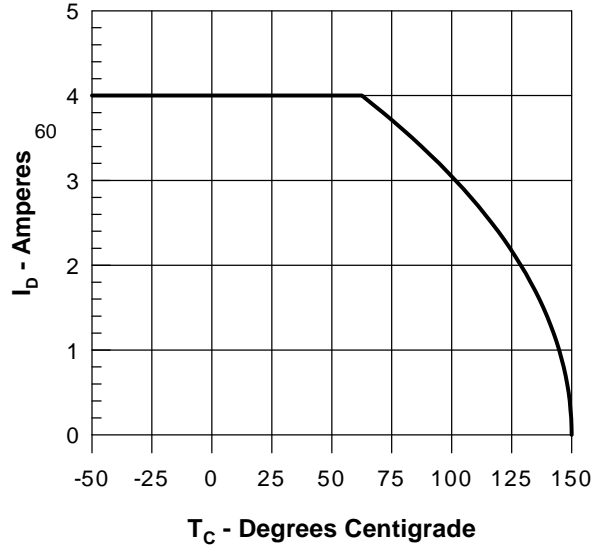
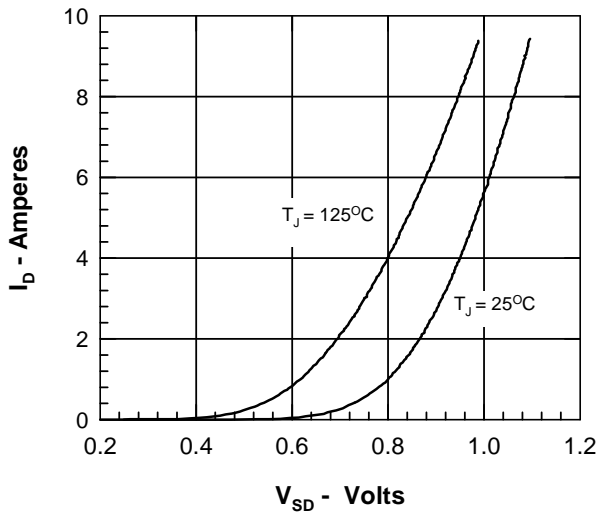
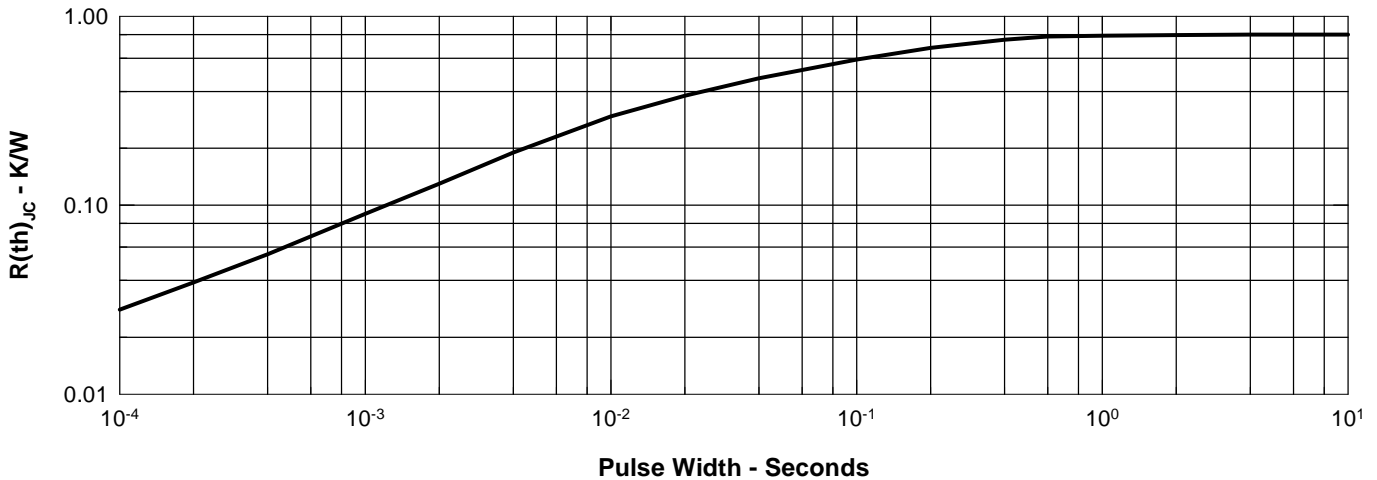


Figure 11. Transient Thermal Resistance





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