

HiPerFET™ Power MOSFETs Q-Class

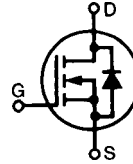
IXFA 4N100Q
IXFP 4N100Q

V_{DSS} = 1000 V
I_{D25} = 4 A
R_{DS(on)} = 3.0 Ω

t_{rr} ≤ 250 ns

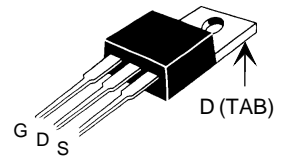
N-Channel Enhancement Mode
Avalanche Rated, Low Q_g, High dv/dt

Preliminary Data Sheet

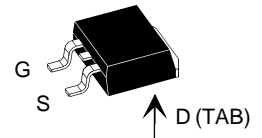


Symbol	Test Conditions	Maximum Ratings	
V _{DSS}	T _J = 25°C to 150°C	1000	V
V _{DGR}	T _J = 25°C to 150°C; R _{GS} = 1 MΩ	1000	V
V _{GS}	Continuous	±20	V
V _{GSM}	Transient	±30	V
I _{D25}	T _C = 25°C	4	A
I _{DM}	T _C = 25°C, pulse width limited by T _{JM}	16	A
I _{AR}	T _C = 25°C	4	A
E _{AR}	T _C = 25°C	20	mJ
E _{AS}		700	mJ
dv/dt	I _S ≤ I _{DM} , di/dt ≤ 100 A/μs, V _{DD} ≤ V _{DSS} , T _J ≤ 150°C, R _G = 2 Ω	5	V/ns
P _D	T _C = 25°C	150	W
T _J		-55 to +150	°C
T _{JM}		150	°C
T _{stg}		-55 to +150	°C
T _L	1.6 mm (0.063 in) from case for 10 s	300	°C
M _d	Mounting torque (TO-220)	1.13/10	Nm/lb.in.
Weight	TO-220	4	g
	TO-263	2	g

TO-220 (IXFP)



TO-263 (IXFA)



G = Gate D = Drain
S = Source TAB = Drain

Symbol	Test Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
V _{DSS}	V _{GS} = 0 V, I _D = 1 mA	1000		V
V _{GS(th)}	V _{DS} = V _{GS} , I _D = 1.5 mA	3.0		V
I _{GSS}	V _{GS} = ±20 V _{DC} , V _{DS} = 0			±100 nA
I _{DSS}	V _{DS} = V _{DSS} V _{GS} = 0 V	T _J = 25°C		50 μA
		T _J = 125°C		1 mA
R _{DS(on)}	V _{GS} = 10 V, I _D = 0.5 I _{D25} Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			3.0 Ω

Features

- IXYS advanced low Q_g process
- Low gate charge and capacitances
 - easier to drive
 - faster switching
- International standard packages
- Low R_{DS(on)}
- Rated for unclamped Inductive load Switching (UIS)
- Molding epoxies meet UL 94 V-0 flammability classification

Advantages

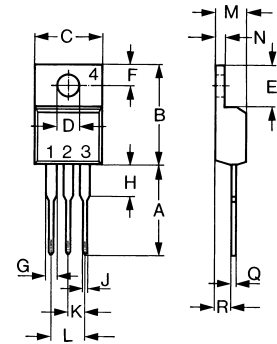
- Easy to mount
- Space savings
- High power density

Symbol Test Conditions
Characteristic Values
 ($T_J = 25^\circ\text{C}$, unless otherwise specified)

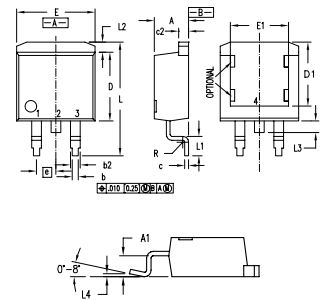
		min.	typ.	max.	
g_{fs}	$V_{DS} = 20\text{ V}; I_D = 0.5 \cdot I_{D25}$, pulse test	1.5	2.5		S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		1050		pF
C_{oss}			120		pF
C_{rss}			30		pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}; I_D = 0.5 \cdot I_{D25}$ $R_G = 4.7\ \Omega$ (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}			22		nC
R_{thJC}				0.8	K/W
R_{thCK}	(TO-220)		0.25		K/W

Source-Drain Diode
Characteristic Values
 ($T_J = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions	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}	$I_F = I_S, V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$			1.5	V
t_{rr}	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$			250	ns
Q_{RM}			0.52		μC
I_{RM}			1.8		A

TO-220 AB (IXFP) Outline


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.70	13.97	0.500	0.550
B	14.73	16.00	0.580	0.630
C	9.91	10.66	0.390	0.420
D	3.54	4.08	0.139	0.161
E	5.85	6.85	0.230	0.270
F	2.54	3.18	0.100	0.125
G	1.15	1.65	0.045	0.065
H	2.79	5.84	0.110	0.230
J	0.64	1.01	0.025	0.040
K	2.54	BSC	0.100	BSC
M	4.32	4.82	0.170	0.190
N	1.14	1.39	0.045	0.055
Q	0.35	0.56	0.014	0.022
R	2.29	2.79	0.090	0.110

TO-263 AA (IXFA) Outline


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	.160	.190
A1	2.03	2.79	.080	.110
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.46	0.74	.018	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	7.11	8.13	.280	.320
E	9.65	10.29	.380	.405
E1	6.86	8.13	.270	.320
e	2.54	BSC	.100	BSC
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.38	0	.015
R	0.46	0.74	.018	.029

Figure 1. Output Characteristics at 25°C

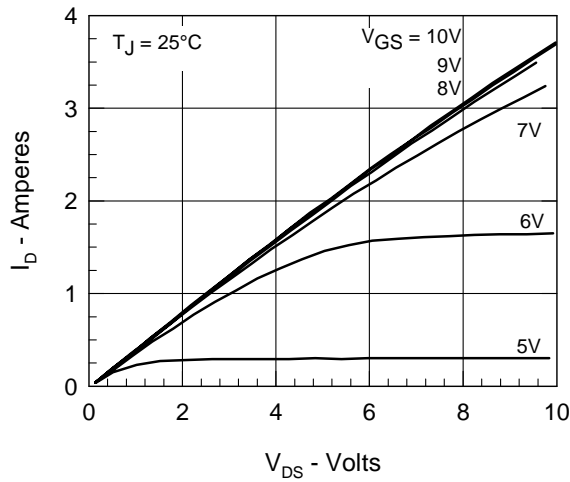


Figure 2. Extended Output Characteristics at 125°C

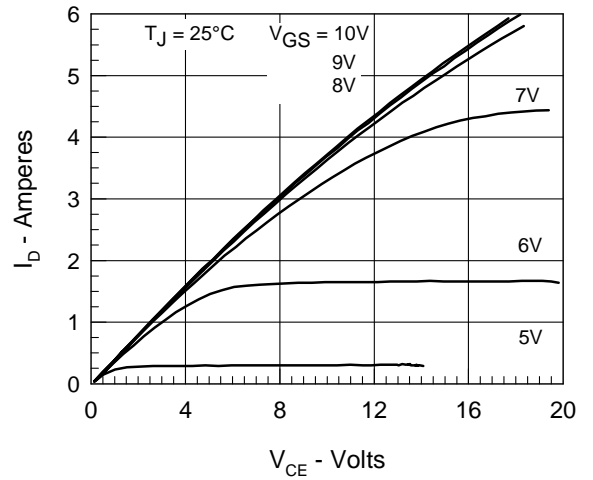


Figure 3. Output characteristics at 125°C

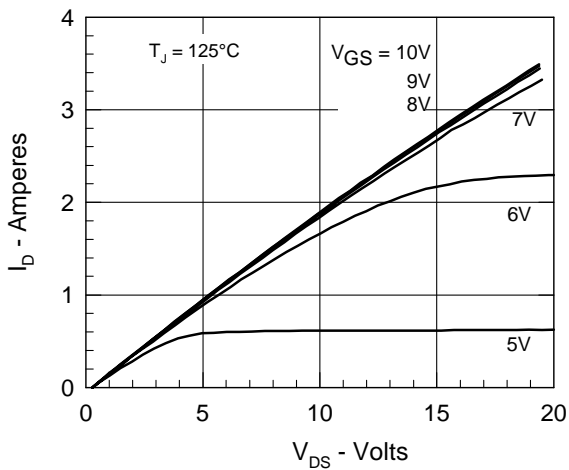


Figure 4. Admittance Curves

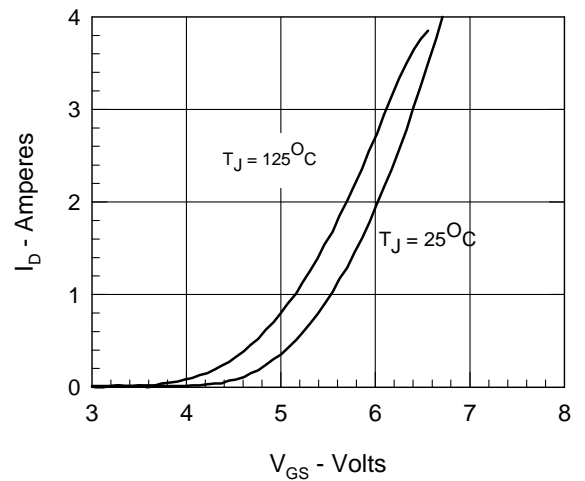


Figure 5. $R_{DS(on)}$ normalized to 0.5 I_{D25} value vs. I_D

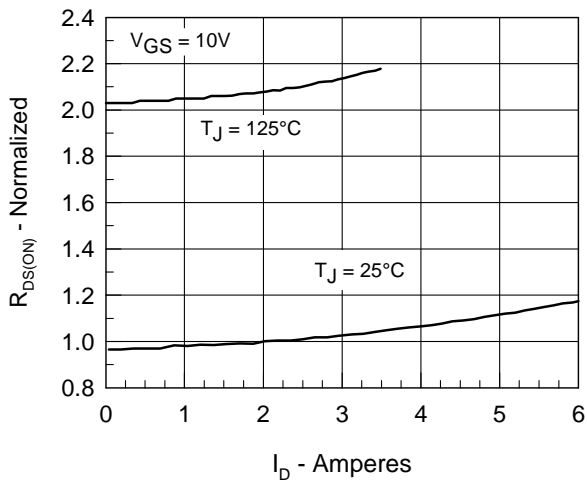
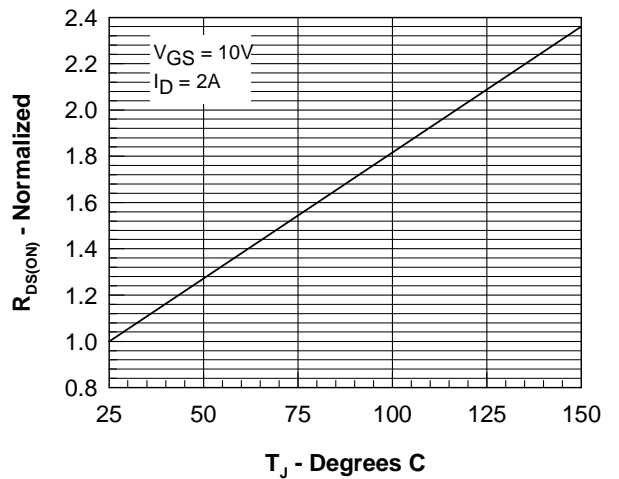


Figure 6. $R_{DS(on)}$ normalized to 0.5 I_{D25} value vs. T_J



www.DataSheet4U.com Figure 7. Gate Charge

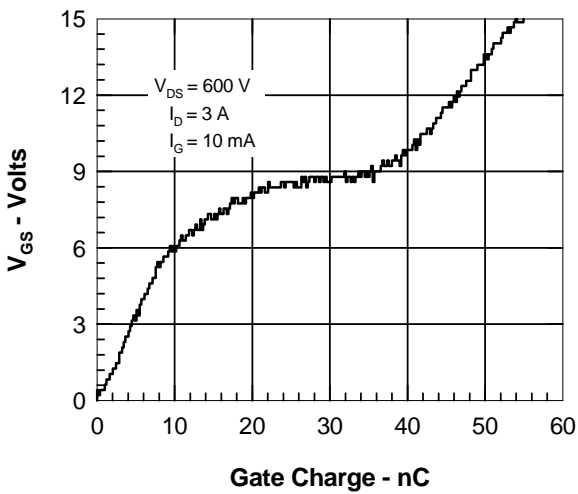


Figure 8. Capacitance Curves

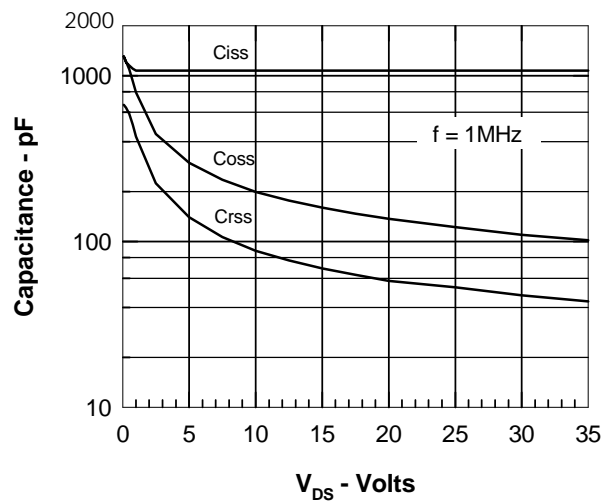


Figure 9. Forward Voltage Drop of the Intrinsic Diode

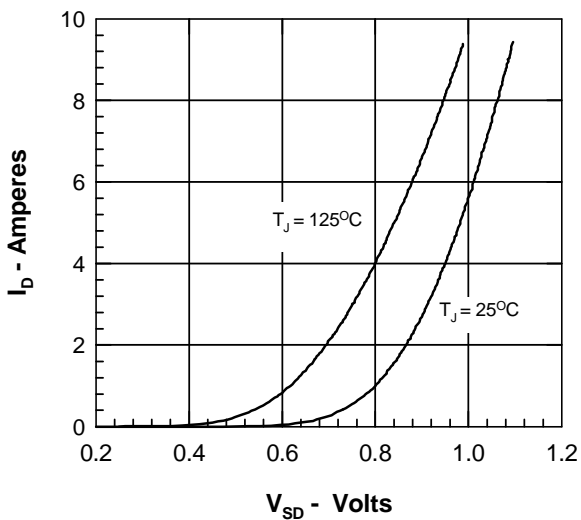


Figure 10. Drain Current vs. Case Temperature

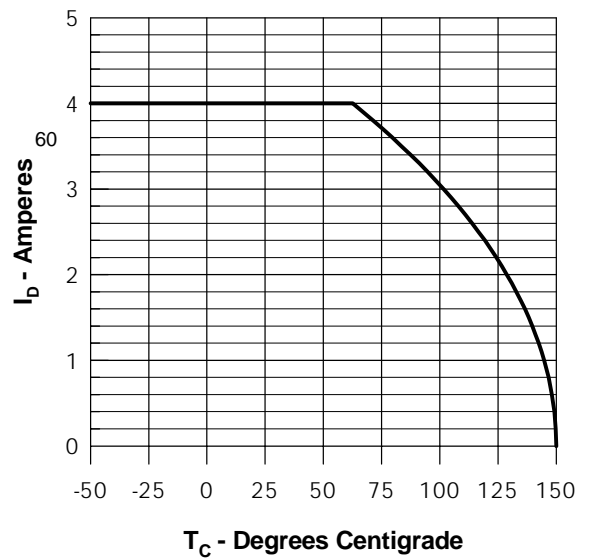


Figure 11. Transient Thermal Resistance

