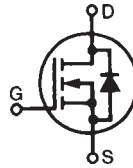


# HiPerFET™ Power MOSFET Q2-Class

## IXFR14N100Q2

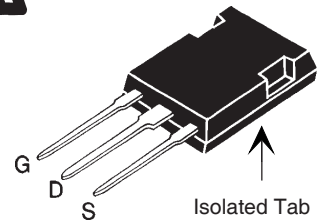
N-Channel Enhancement Mode  
Avalanche Rated, High dv/dt, Low  $Q_g$   
Low intrinsic  $R_g$ , low  $t_{rr}$



$V_{DSS} = 1000V$   
 $I_{D25} = 9.5A$   
 $R_{DS(on)} \leq 1.1\Omega$   
 $t_{rr} \leq 300ns$

Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ C$ to $150^\circ C$	1000	V
$V_{DGR}$	$T_J = 25^\circ C$ to $150^\circ C$ , $R_{GS} = 1M\Omega$	1000	V
$V_{GSS}$	Continuous	$\pm 30$	V
$V_{GSM}$	Transient	$\pm 40$	V
$I_{D25}$	$T_C = 25^\circ C$	9.5	A
$I_{DM}$	$T_C = 25^\circ C$ , Pulse Width Limited by $T_{JM}$	56	A
$I_A$	$T_C = 25^\circ C$	14	A
$E_{AS}$	$T_C = 25^\circ C$	2.5	J
$dv/dt$	$I_S \leq I_{DM}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ C$	20	V/ns
$P_D$	$T_C = 25^\circ C$	200	W
$T_J$		-55 ... +150	$^\circ C$
$T_{JM}$		150	$^\circ C$
$T_{stg}$		-55 ... +150	$^\circ C$
$T_L$	Maximum Lead Temperature for Soldering	300	$^\circ C$
$T_{SOLD}$	Plastic Body for 10s	260	$^\circ C$
$V_{ISOL}$	50/60 Hz, RMS, 1 minute	2500	V~
$F_C$	Mounting Force	20..120/4.5..27	N/lb.
<b>Weight</b>		5	g

ISOPLUS247  
E153432



G = Gate      D = Drain  
S = Source

### Features

- Double Metal Process for Low Gate Resistance
- International Standard Package
- Epoxy Meet UL 94 V-0, Flammability Classification
- Low  $R_{DS(on)}$ , Low  $Q_g$
- Avalanche Energy and Current Rated
- Fast Intrinsic Rectifier

### Applications

- DC-DC Converters
- Switched-Mode and Resonant-Mode Power Supplies, >500kHz Switching
- DC Choppers
- Pulse Generation
- Laser Drivers

### Advantages

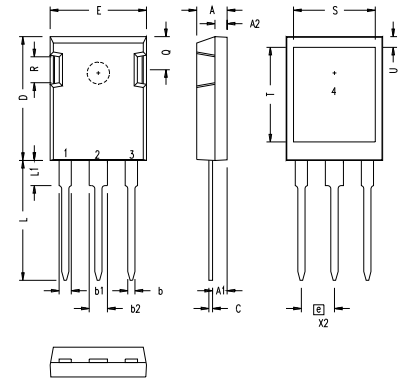
- Easy to Mount
- Space Savings
- High Power Density

Symbol	Test Conditions ( $T_J = 25^\circ C$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{DSS}$	$V_{GS} = 0V$ , $I_D = 250\mu A$	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 4mA$	3.0		5.5 V
$I_{GSS}$	$V_{GS} = \pm 30V$ , $V_{DS} = 0V$			$\pm 200$ nA
$I_{DSS}$	$V_{DS} = V_{DSS}$ $V_{GS} = 0V$ $T_J = 125^\circ C$			25 $\mu A$ 1 mA
$R_{DS(on)}$	$V_{GS} = 10V$ , $I_D = 7A$ , Note 1			1.1 $\Omega$

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$V_{DS} = 10\text{V}, I_D = 7\text{A}, \text{Note 1}$	10	14	S
$C_{iss}$	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$		2800	pF
$C_{oss}$			287	pF
$C_{rss}$			100	pF
$t_{d(on)}$	<b>Resistive Switching Times</b> $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 7\text{A}$ $R_G = 2\Omega$ (External)		12	ns
$t_r$			10	ns
$t_{d(off)}$			28	ns
$t_f$			12	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 7\text{A}$		83	nC
$Q_{gs}$			20	nC
$Q_{gd}$			40	nC
$R_{thJC}$				0.62 $^\circ\text{C/W}$
$R_{thCS}$		0.15		$^\circ\text{C/W}$

Source-Drain Diode		Characteristic Values		
$T_J = 25^\circ\text{C}$ Unless Otherwise Specified)		Min.	Typ.	Max.
$I_s$	$V_{GS} = 0\text{V}$			14 A
$I_{SM}$	Repetitive, Pulse Width Limited by $T_{JM}$			56 A
$V_{SD}$	$I_F = I_s, V_{GS} = 0\text{V}, \text{Note 1}$			1.5 V
$t_{rr}$	$I_F = 14\text{A}, -di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}, V_{GS} = 0\text{V}$			300 ns
$Q_{RM}$			0.8	$\mu\text{C}$
$I_{RM}$			7	A

### ISOPLUS247 (IXFR) Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b1	.075	.084	1.91	2.13
b2	.115	.123	2.92	3.12
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
E	.620	.635	15.75	16.13
e	.215 BSC		5.45 BSC	
L	.780	.800	19.81	20.32
L1	.150	.170	3.81	4.32
Q	.220	.244	5.59	6.20
R	.170	.190	4.32	4.83
S	.520	.540	13.21	13.72
T	.620	.640	15.75	16.26
U	.065	.080	1.65	2.03

- 1 - GATE
- 2 - DRAIN (COLLECTOR)
- 3 - SOURCE (EMITTER)
- 4 - NO CONNECTION

NOTE: This drawing will meet all dimensions requirement of JEDEC outline TO-247AD except screw hole.

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	

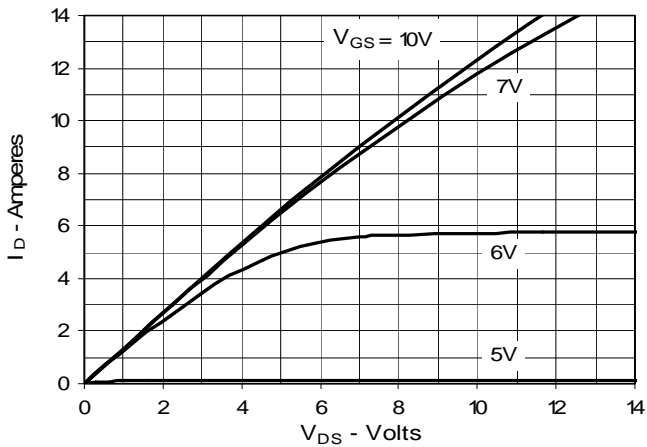
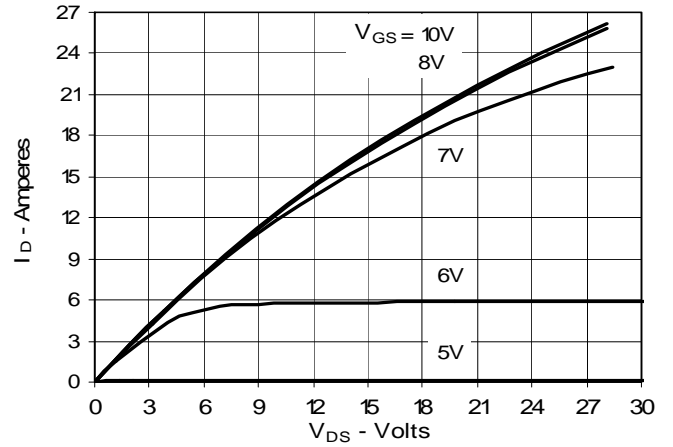
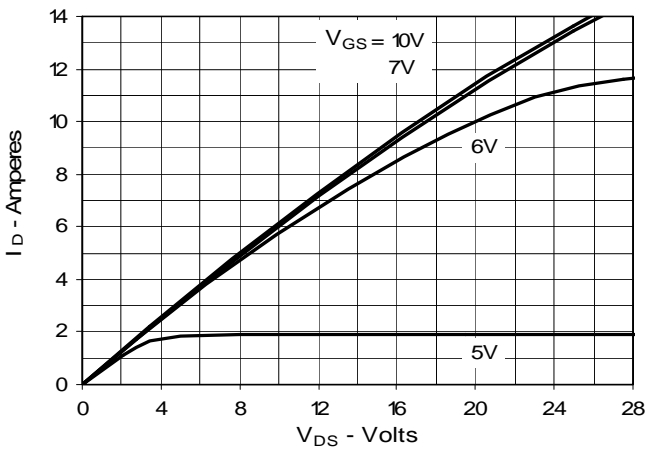
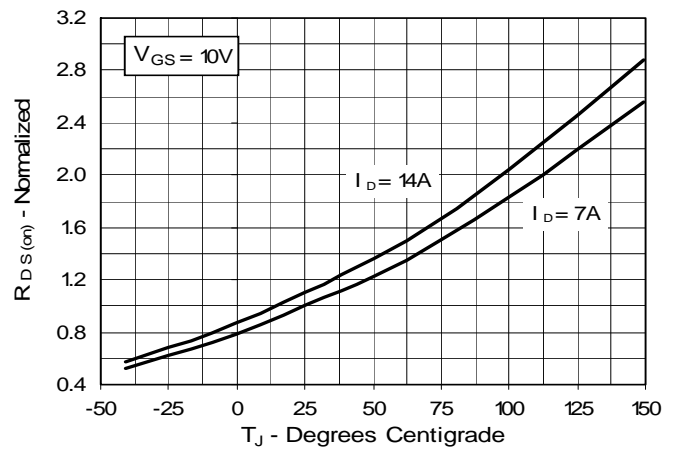
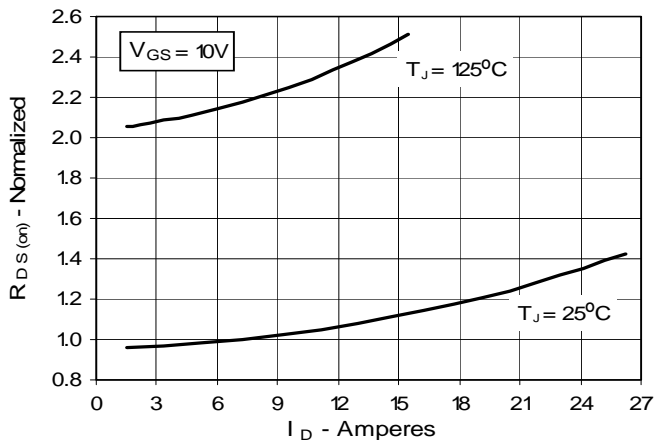
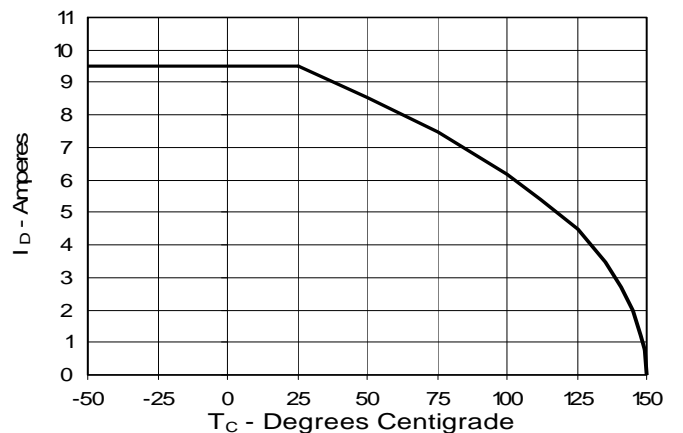
**Fig. 1. Output Characteristics  
@ 25°C**

**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

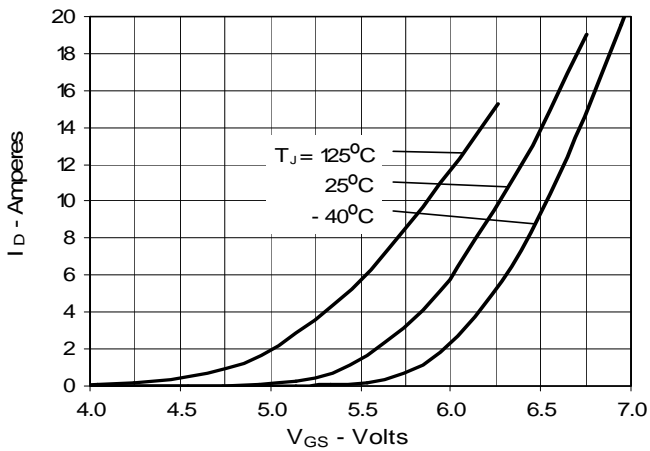


Fig. 8. Transconductance

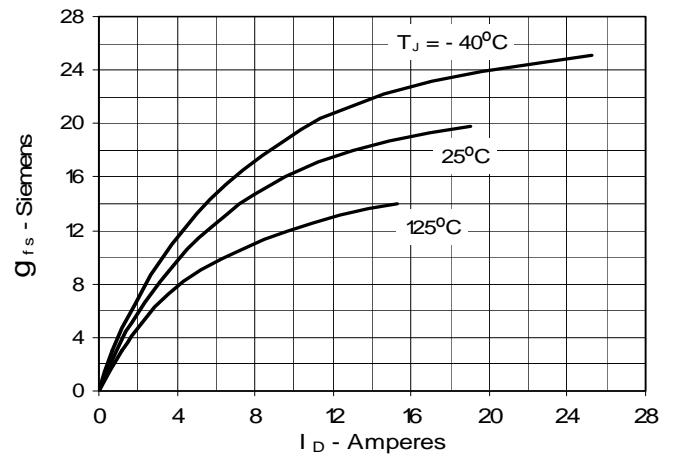


Fig. 9. Source Current vs. Source-To-Drain Voltage

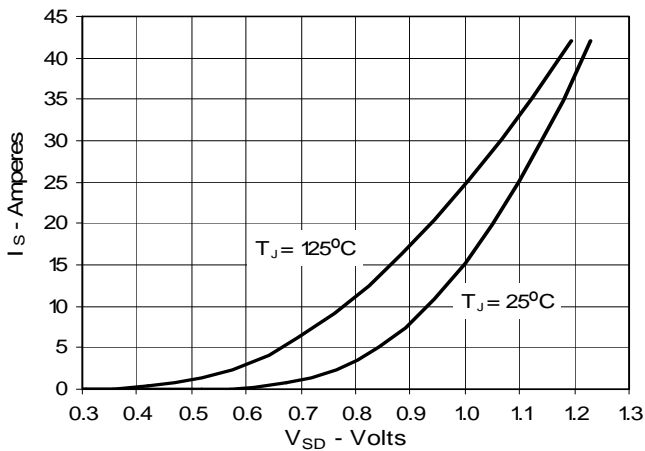


Fig. 10. Gate Charge

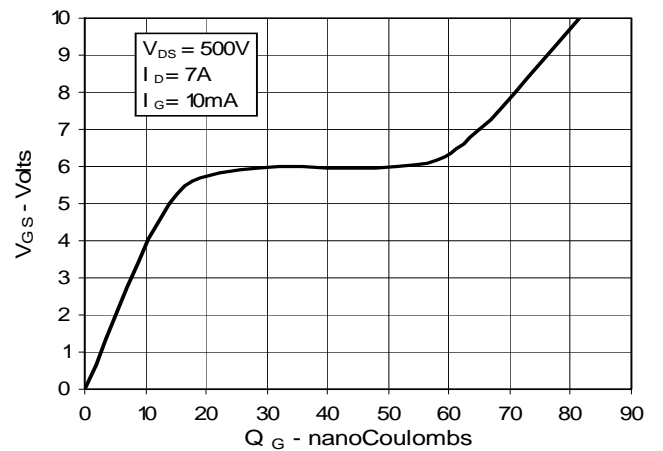


Fig. 11. Capacitance

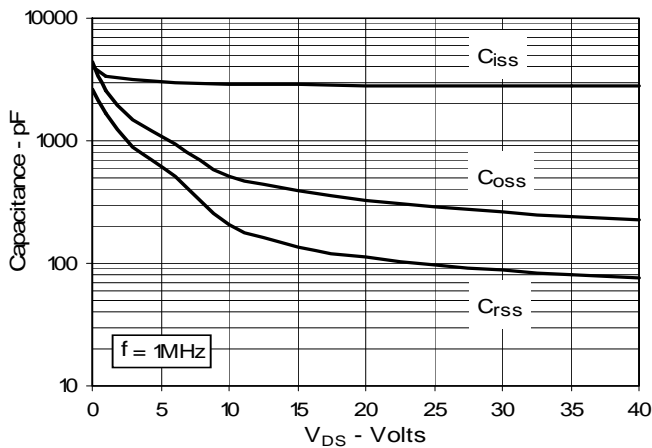


Fig. 12. Maximum Transient Thermal Impedance

