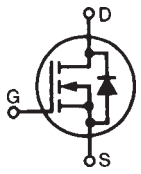
IXYS

HiPerFET™ Power MOSFET Q2-Class

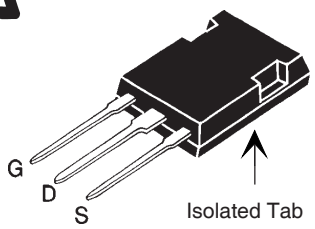
IXFR14N100Q2

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

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



ISOPLUS247
E153432



G = Gate D = Drain
S = Source

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} = 1MΩ	1000	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	T_C = 25°C	9.5	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	56	A
I_A	T_C = 25°C	14	A
E_{AS}	T_C = 25°C	2.5	J
dV/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$	20	V/ns
P_D	T_C = 25°C	200	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
V_{ISOL}	50/60 Hz, RMS, 1 minute	2500	V~
F_C	Mounting Force	20..120/4.5..27	N/lb.
Weight		5	g

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

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 Recfifier

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

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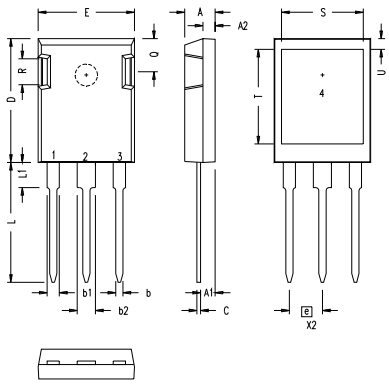
Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.
g_{fs}	V_{DS} = 10V, I_D = 7A, Note 1	10	14	S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		2800	pF
C_{oss}			287	pF
C_{rss}			100	pF
$t_{d(on)}$	**Resistive Switching Times**		12	ns
t_r	V_{GS} = 10V, V_{DS}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

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

Note 1: Pulse test, t ≤ 300μs; duty cycle, d ≤ 2%.

ISOPLUS247 (IXFR) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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.

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

IXYS MOSFETs and IGBTs are covered by one or moreof the following U.S. patents: 4,835,592 4,850,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

Fig. 1. Output Characteristics @ 25ºC

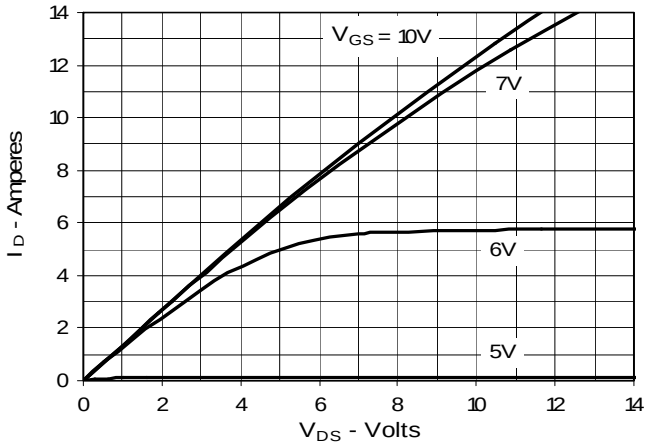


Fig. 2. Extended Output Characteristics @ 25ºC

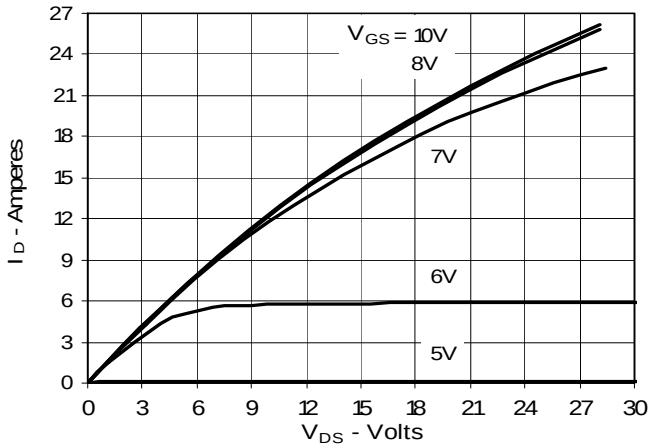


Fig. 3. Output Characteristics @ 125ºC

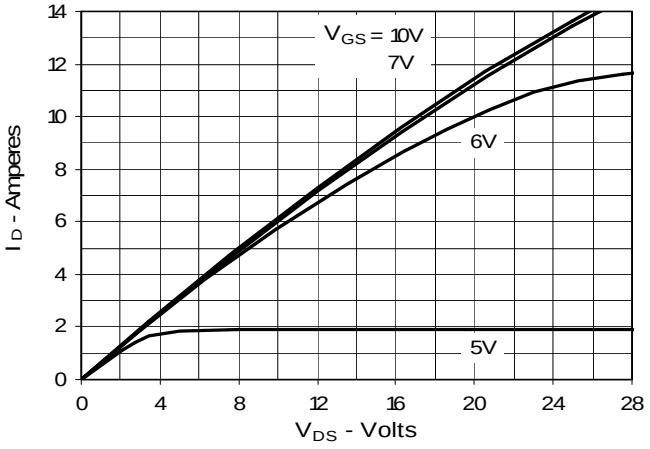


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

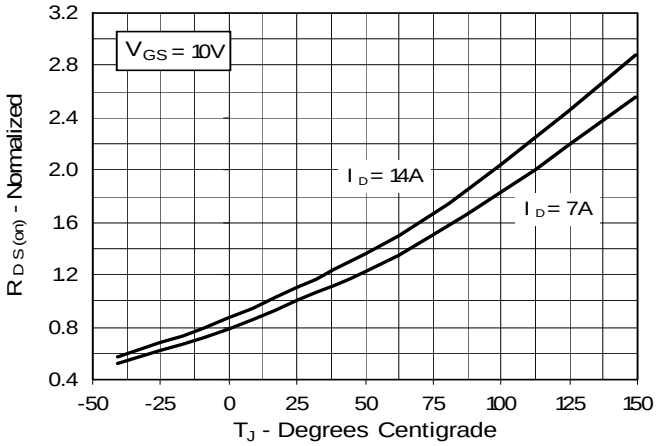


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

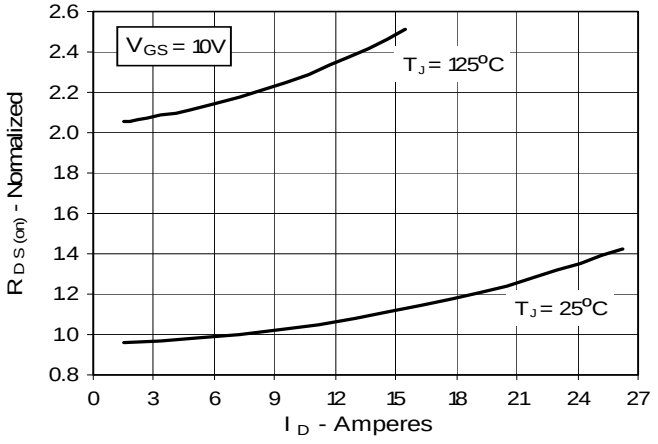


Fig. 6. Drain Current vs. Case Temperature

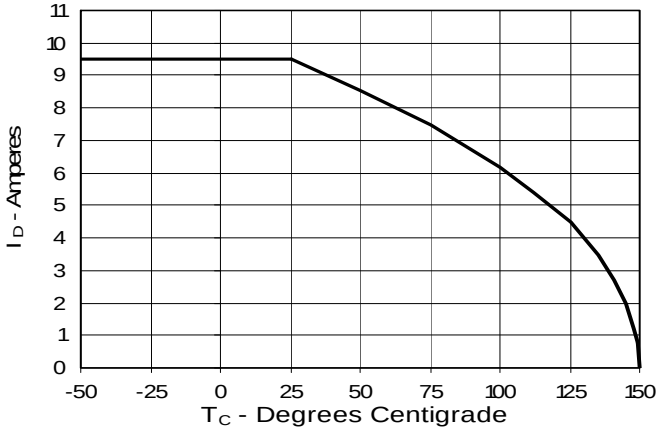


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Fig. 7. Input Admittance

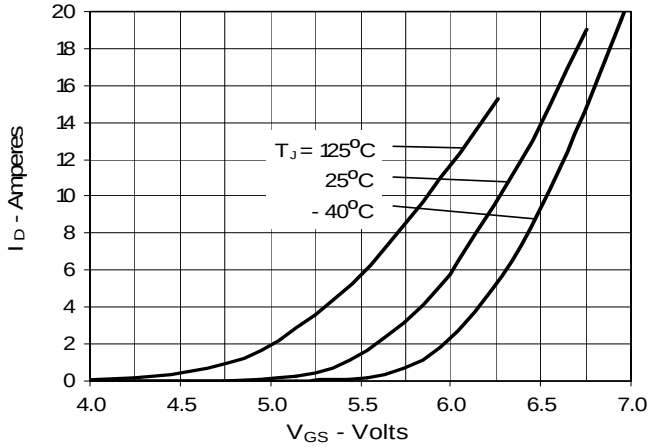


Fig. 8. Transconductance

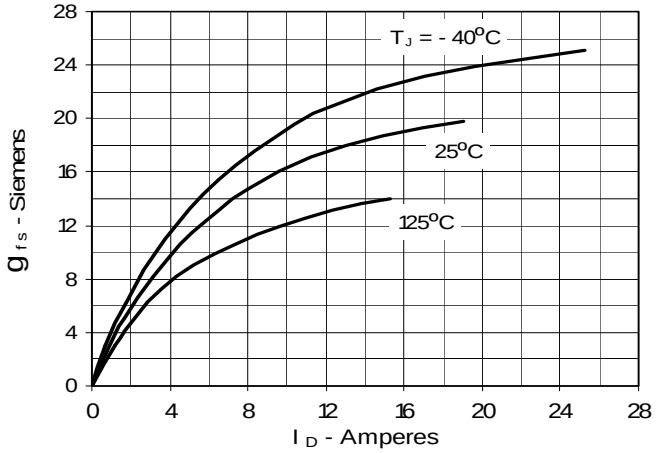


Fig. 9. Source Current vs. Source-To-Drain Voltage

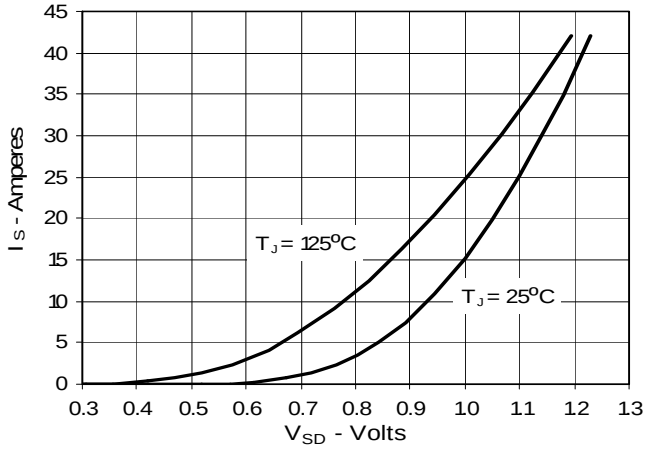


Fig. 10. Gate Charge

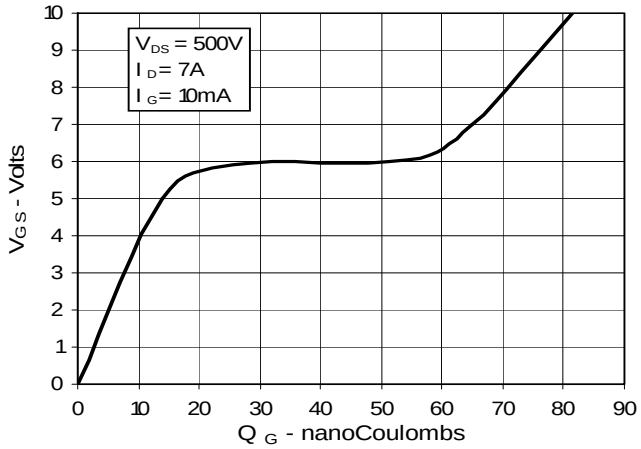


Fig. 11. Capacitance

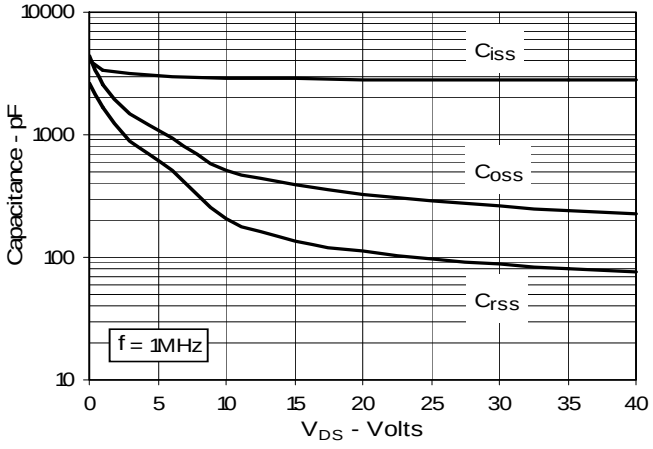
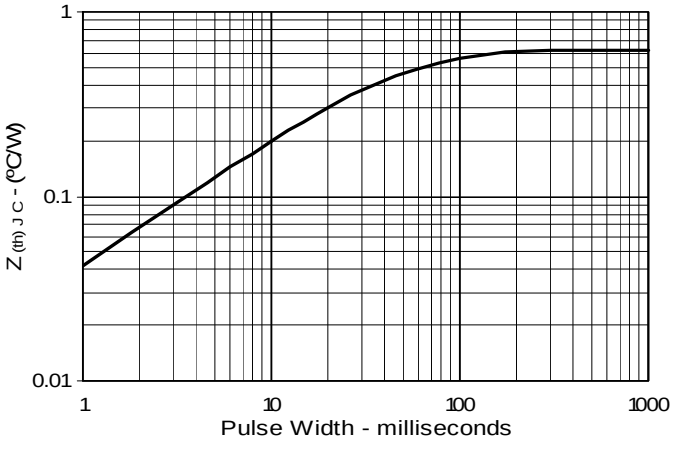


Fig. 12. Maximum Transient Thermal Impedance



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