☐IXYS

HiPerFET™ Power MOSFETs
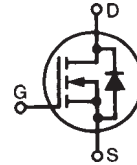## ISOPLUS247™ Q CLASS

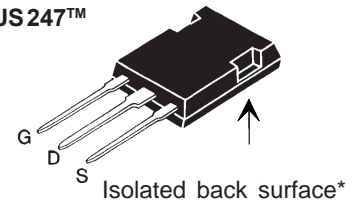|	V_{DSS}	I_{D25}	$R_{DS(on)}$
IXFR 12N100Q	1000 V	10 A	1.1 Ω
IXFR 10N100Q	1000 V	9 A	1.20 Ω

$t_{rr} \leq 300\ \mu s$

(Electrically Isolated Back Surface)

N-Channel Enhancement Mode
Avalanche Rated, High dV/dt
Low Gate Charge and Capacitances

ISOPLUS 247™

Isolated back surface*

G = Gate   D = Drain
S = Source

* Patent pending

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	12N100	10	A
		10N100	9	A
I_{DM}	T_C = 25°C, Pulse width limited by T_{JM}	12N100	48	A
		10N100	40	A
I_{AR}	T_C = 25°C	12N100	12	A
		10N100	10	A
E_{AR}	T_C = 25°C		30	mJ
dv/dt	$I_S \leq I_{DM}$, di/dt ≤ 100 A/μs, $V_{DD} \leq V_{DSS}$ $T_J \leq 150°C$, R_G = 2 Ω		5	V/ns
P_D	T_C = 25°C		250	W
T_J			-55 ... +150	°C
T_{JM}			150	°C
T_{stg}			-55 ... +150	°C
T_L	1.6 mm (0.063 in.) from case for 10 s		300	°C
V_{ISOL}	50/60 Hz, RMS t = 1 min		2500	V~
Weight			5	g

Features

- Silicon chip on Direct-Copper-Bond substrate
  - High power dissipation
  - Isolated mounting surface
  - 2500V electrical isolation
- Low drain to tab capacitance(<50pF)
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Fast intrinsic Rectifier

Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control

Advantages

- Easy assembly
- Space savings
- High power density

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified)		
			min.	typ.	max.
V_{DSS}	V_{GS} = 0 V, I_D = 3mA		1000		V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 4mA		2.5		5.5	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0				±100	nA
I_{DSS}	V_{DS} = 0.8•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 = I_T	12N100			1.1	Ω
	Notes 1 & 2	10N100			1.2	Ω

DS98589-B (10/02)

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Symbol	Test Conditions	Characteristic Values $(T_J = 25°C$, unless otherwise specified)			
		min.	typ.	max.	
g_{fs}	$V_{DS} = 15$ V; $I_D = I_T$ Note 1	4	10		S
C_{iss}			2900		pF
C_{oss}	$V_{GS} = 0$ V, $V_{DS} = 25$ V, $f = 1$ MHz		315		pF
C_{rss}			50		pF
$t_{d(on)}$			20		ns
t_r	$V_{GS} = 10$ V, $V_{DS} = 0.5 • V_{DSS}$, $I_D = I_T$		23		ns
$t_{d(off)}$	$R_G = 1$ Ω (External),		40		ns
t_f			15		ns
$Q_{g(on)}$			90		nC
Q_{gs}	$V_{GS} = 10$ V, $V_{DS} = 0.5 • V_{DSS}$, $I_D = I_T$		30		nC
Q_{gd}			40		nC
R_{thJC}				0.50	K/W
R_{thCK}			0.15		K/W

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values $(T_J = 25°C$, unless otherwise specified)			
		min.	typ.	max.	
I_S	$V_{GS} = 0$ V			12	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			48	A
V_{SD}	$I_F = I_S$, $V_{GS} = 0$ V, Note 1			1.3	V
t_{rr}			200	300	ns
Q_{RM}	$I_F = I_s$, $-di/dt = 100$ A/μs, $V_R = 100$ V		1.6		μC
I_{RM}			7		A

Note: 1. Pulse test, $t ≤ 300$ μs, duty cycle $d ≤ 2$ %
2. I_T test current: IXFR10N100 $I_T = 5$A
                         IXFR12N100 $I_T = 6$A

ISOPLUS 247 OUTLINE
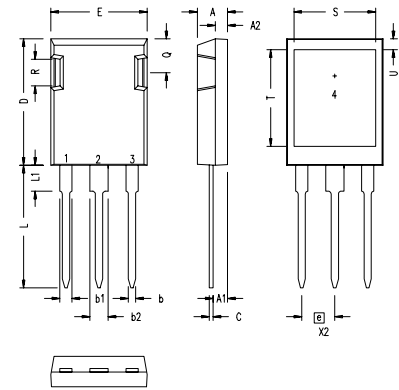
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b1	.075	.084	1.91	2.13
b2	.115	.123	2.92	3.12
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
E	.620	.635	15.75	16.13
e	.215 BSC		5.45 BSC	
L	.780	.800	19.81	20.32
L1	.150	.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: Please see IXFH12N100Q Data Sheet for characteristic curves.

IXYS reserves the right to change limits, test conditions, and dimensions.