

HiPerFET™ Power MOSFETs

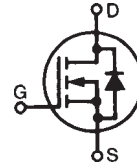
ISOPLUS247™ Q CLASS

	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

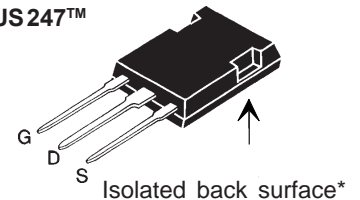
(Electrically Isolated Back Surface)

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

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



ISOPLUS247™



G = Gate D = Drain
S = Source

* Patent pending

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 $150^\circ C$; $R_{GS} = 1 M\Omega$	1000	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ C$	12N100	10 A
		10N100	9 A
I_{DM}	$T_C = 25^\circ C$, Pulse width limited by T_{JM}	12N100	48 A
		10N100	40 A
I_{AR}	$T_C = 25^\circ C$	12N100	12 A
		10N100	10 A
E_{AR}	$T_C = 25^\circ C$	30	mJ
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 A/\mu s$, $V_{DD} \leq V_{DSS}$ $T_J \leq 150^\circ C$, $R_G = 2 \Omega$	5	V/ns
P_D	$T_C = 25^\circ C$	250	W
T_J		-55 ... +150	$^\circ C$
T_{JM}		150	$^\circ C$
T_{stg}		-55 ... +150	$^\circ C$
T_L	1.6 mm (0.063 in.) from case for 10 s	300	$^\circ C$
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

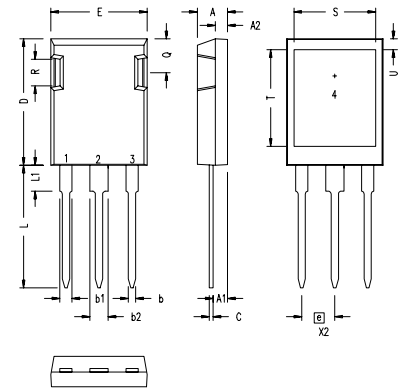
- Easy assembly
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ C$, 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		V
I_{GSS}	$V_{GS} = \pm 20 V_{DC}$, $V_{DS} = 0$			± 100 nA
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0 V$	$T_J = 25^\circ C$ $T_J = 125^\circ C$		50 μA 1 mA
$R_{DS(on)}$	$V_{GS} = 10 V$, $I_D = I_T$ Notes 1 & 2	12N100 10N100		1.1 Ω 1.2 Ω

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

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

Note: 1. Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$
 2. I_T test current: IXFR10N100 $I_T = 5\text{ A}$
 IXFR12N100 $I_T = 6\text{ A}$

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.



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