

HiPerFET™ Power MOSFETs

ISOPLUS247™ Q CLASS

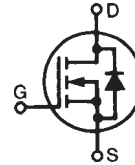
IXFR 12N100Q
IXFR 10N100Q

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

(Electrically Isolated Back Surface)

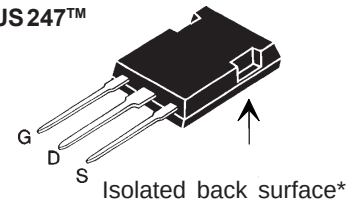
$t_{rr} \leq 300 \mu s$

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



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 10N100	10 9 A
I_{DM}	$T_C = 25^\circ C$, Pulse width limited by T_{JM}	12N100 10N100	48 40 A
I_{AR}	$T_C = 25^\circ C$	12N100 10N100	12 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

ISOPLUS247™



G = Gate D = Drain
S = Source

* Patent pending

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

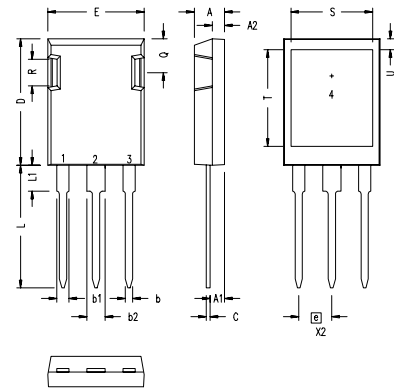
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ C$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0 V$, $I_D = 3mA$	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4mA$	2.5		5.5 V
I_{GSS}	$V_{GS} = \pm 20 V_{DC}$, $V_{DS} = 0$			± 100 nA
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0 V$	$T_J = 25^\circ C$ $T_J = 125^\circ C$		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)		
			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 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.



Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.