

HiPerFET™ Power MOSFETs

ISOPLUS247™ Q CLASS

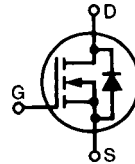
IXFR 12N100Q
IXFR 10N100Q

V_{DSS}	I_{D25}	$R_{DS(on)}$
1000 V	10 A	1.05 Ω
1000 V	9 A	1.20 Ω

(Electrically Isolated Back Surface)

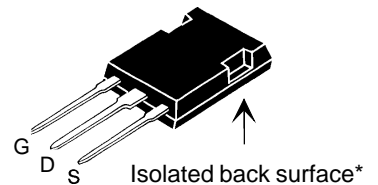
$t_{rr} \leq 200$ ns

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



Symbol	Test Conditions	Maximum Ratings		
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	1000	V	
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1$ M Ω	1000	V	
V_{GS}	Continuous	± 20	V	
V_{GSM}	Transient	± 30	V	
I_{D25}	$T_C = 25^\circ\text{C}$	12N100	10	A
		10N100	9	A
I_{DM}	$T_C = 25^\circ\text{C}$, Pulse width limited by T_{JM}	12N100	48	A
		10N100	40	A
I_{AR}	$T_C = 25^\circ\text{C}$	12N100	12	A
		10N100	10	A
E_{AR}	$T_C = 25^\circ\text{C}$	30	mJ	
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100$ A/ μs , $V_{DD} \leq V_{DSS}$ $T_J \leq 150^\circ\text{C}$, $R_G = 2$ Ω	5	V/ns	
P_D	$T_C = 25^\circ\text{C}$	250	W	
T_J		-55 ... +150	$^\circ\text{C}$	
T_{JM}		150	$^\circ\text{C}$	
T_{stg}		-55 ... +150	$^\circ\text{C}$	
T_L	1.6 mm (0.063 in.) from case for 10 s	300	$^\circ\text{C}$	
V_{ISOL}	50/60 Hz, RMS $t = 1$ min	2500	V~	
Weight		5	g	

ISOPLUS 247™



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 ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0$ V, $I_D = 3$ mA	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4$ mA	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	$T_J = 25^\circ\text{C}$		50 μA
		$T_J = 125^\circ\text{C}$		1 mA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = I_T$ Notes 1 & 2	12N100		1.05 Ω
		10N100		1.2 Ω

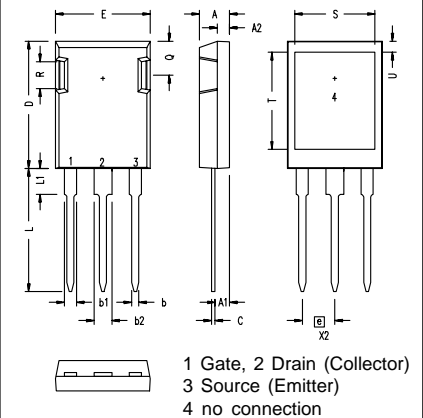
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$V_{DS} = 15\text{ V}; I_D = I_T$ Note 1	4	10	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		2900	pF
C_{oss}			315	pF
C_{rss}			50	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$ $R_G = 1\ \Omega$ (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

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		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 (IXFR) OUTLINE



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	.190	.205
A ₁	2.29	2.54	.090	.100
A ₂	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b ₁	1.91	2.13	.075	.084
b ₂	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	.244
R	4.32	4.83	.170	.190
S	13.21	13.72	.520	.540
T	15.75	16.26	.620	.640
U	1.65	3.03	.065	.080