

HiPerFET™ Power MOSFETs IXFR 24N100 ISOPLUS247™

(Electrically Isolated Back Surface)

$$\begin{aligned} V_{DSS} &= 1000 \text{ V} \\ I_{D25} &= 22 \text{ A} \\ R_{DS(on)} &= 0.39 \Omega \end{aligned}$$

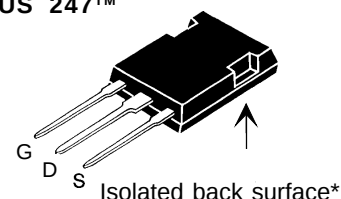
$$t_{rr} \leq 250 \text{ ns}$$

Single MOSFET Die



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1000	V
V_{DGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GS} = 1 \text{ M}\Omega$	1000	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	22	A
I_{DM}	$T_C = 25^\circ\text{C, Note 1}$	96	A
I_{AR}	$T_C = 25^\circ\text{C}$	24	A
E_{AR}	$T_C = 25^\circ\text{C}$	60	mJ
E_{AS}	$T_C = 25^\circ\text{C}$	3	J
dv/dt	$I_S \leq I_{DM}, di/dt \leq 100 \text{ A}/\mu\text{s}, V_{DD} \leq V_{DSS}$ $T_J \leq 150^\circ\text{C}, R_G = 2 \Omega$	5	V/ns
P_D	$T_C = 25^\circ\text{C}$	400	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 $t = 1 \text{ min}$	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(<30pF)
- 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}	$V_{GS} = 0 \text{ V}, I_D = 3 \text{ mA}$	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 8 \text{ mA}$	2.5		5.0 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0$			$\pm 100 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$			$100 \mu\text{A}$ 2 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}, I_D = 24 \text{ A}$ Note 1			0.39Ω

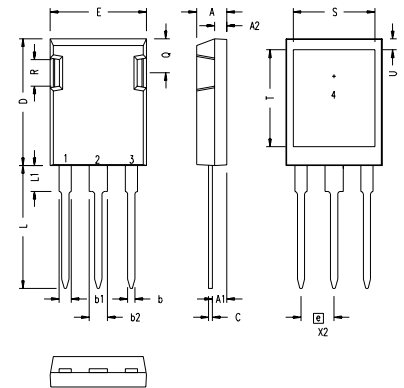
Symbol	Test Conditions		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
			min.	typ.	max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 24\text{ A}$	Note 2	15	22	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$			7000	pF
C_{oss}				750	pF
C_{rss}				260	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 24\text{ A}$ $R_G = 1\ \Omega$ (External),			35	ns
t_r				35	ns
$t_{d(off)}$				75	ns
t_f				21	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 24\text{ A}$			250	nC
Q_{gs}				55	nC
Q_{gd}				135	nC
R_{thJC}				0.30	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	$V_{GS} = 0\text{ V}$			24 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			96 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V}$, Note 1			1.5 V
t_{rr}	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$			250 ns
Q_{RM}				1.0 μC
I_{RM}				8 A

Note: 1. Pulse width limited by T_{JM}
2. Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$

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.



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