

# HiPerFET™ Power MOSFETs

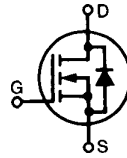
## ISOPLUS247™

IXFR 26N50

IXFR 24N50

(Electrically Isolated Back Surface)

N-Channel Enhancement Mode  
High dV/dt, Low  $t_{rr}$ , HDMOS™ Family



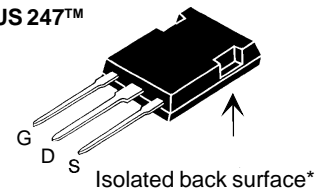
Symbol	Test Conditions	Maximum Ratings		
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	500	V	
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1\text{ M}\Omega$	500	V	
$V_{GS}$	Continuous	$\pm 20$	V	
$V_{GSM}$	Transient	$\pm 30$	V	
$I_{D25}$	$T_C = 25^\circ\text{C}$	26N50	26	A
		24N50	24	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , Pulse width limited by $T_{JM}$	26N50	104	A
		24N50	96	A
$I_{AR}$	$T_C = 25^\circ\text{C}$	26N50	26	A
		24N50	24	A
$E_{AR}$	$T_C = 25^\circ\text{C}$	30	mJ	
$dv/dt$	$I_S \leq I_{DM}$ , $di/dt \leq 100\text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ $T_J \leq 150^\circ\text{C}$ , $R_G = 2\ \Omega$	5	V/ns	
$P_D$	$T_C = 25^\circ\text{C}$	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 (0.062 in.) from case for 10 s	300	$^\circ\text{C}$	
$V_{ISOL}$	50/60 Hz, RMS $t = 1$ minute leads-to-tab	2500	V~	
<b>Weight</b>		6	g	

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0\text{ V}$ , $I_D = 250\mu\text{A}$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 4\text{mA}$	2	4	V
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}_{DC}$ , $V_{DS} = 0$			$\pm 100\text{ nA}$
$I_{DSS}$	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0\text{ V}$			$T_J = 25^\circ\text{C}$ 200 $\mu\text{A}$ $T_J = 125^\circ\text{C}$ 1 mA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$ , $I_D = I_T$ Notes 1 & 2			26N50 0.20 $\Omega$ 24N50 0.23 $\Omega$

$V_{DSS}$	$I_{D25}$	$R_{DS(on)}$
500 V	24 A	0.20 $\Omega$
500 V	22 A	0.23 $\Omega$

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

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

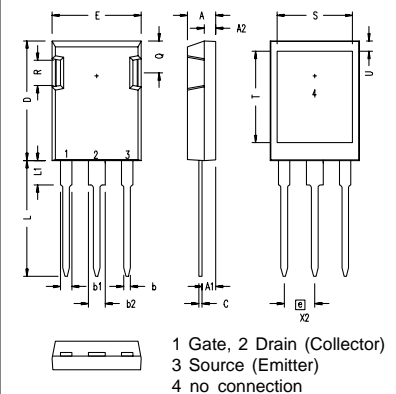
Symbol	Test Conditions	Characteristic Values			
		(T <sub>J</sub> = 25°C, unless otherwise specified)			
		min.	typ.	max.	
<b>g<sub>fs</sub></b>	V <sub>DS</sub> = 15 V; I <sub>D</sub> = I <sub>T</sub> Note 1	11	21	S	
<b>C<sub>iss</sub></b>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		4200	pF	
<b>C<sub>oss</sub></b>			450	pF	
<b>C<sub>rss</sub></b>			135	pF	
<b>t<sub>d(on)</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 • V <sub>DSS</sub> , I <sub>D</sub> = I <sub>T</sub> R <sub>G</sub> = 1 Ω (External),		16	25	ns
<b>t<sub>r</sub></b>			33	45	ns
<b>t<sub>d(off)</sub></b>			65	80	ns
<b>t<sub>f</sub></b>			30	40	ns
<b>Q<sub>g(on)</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 • V <sub>DSS</sub> , I <sub>D</sub> = I <sub>T</sub>		135	160	nC
<b>Q<sub>gs</sub></b>			28	40	nC
<b>Q<sub>gd</sub></b>			62	85	nC
<b>R<sub>thJC</sub></b>			0.50	K/W	
<b>R<sub>thCK</sub></b>		0.15		K/W	

### Source-Drain Diode

Symbol	Test Conditions	Characteristic Values			
		(T <sub>J</sub> = 25°C, unless otherwise specified)			
		min.	typ.	max.	
<b>I<sub>S</sub></b>	V <sub>GS</sub> = 0 V			26 A	
<b>I<sub>SM</sub></b>	Repetitive; pulse width limited by T <sub>JM</sub>			104 A	
<b>V<sub>SD</sub></b>	I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0 V, Note 1			1.5 V	
<b>t<sub>rr</sub></b>	I <sub>F</sub> = I <sub>S</sub> , -di/dt = 100 A/μs, V <sub>R</sub> = 100 V	T <sub>J</sub> = 25°C		250 ns	
		T <sub>J</sub> = 125°C		400 ns	
<b>Q<sub>RM</sub></b>		T <sub>J</sub> = 25°C	1	1.5	μC
		T <sub>J</sub> = 125°C	2		μC
<b>I<sub>RM</sub></b>		T <sub>J</sub> = 25°C	10	A	
		T <sub>J</sub> = 125°C	15	A	

- Note: 1. Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %  
 2. I<sub>T</sub> test current: IXFR26N50 I<sub>T</sub> = 13A  
 IXFR24N50 I<sub>T</sub> = 12A  
 3. See IXFH26N50 data sheet for characteristic curves.

### ISOPLUS 247 (IXFR) OUTLINE



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	.190	.205
A <sub>1</sub>	2.29	2.54	.090	.100
A <sub>2</sub>	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b <sub>1</sub>	1.91	2.13	.075	.084
b <sub>2</sub>	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