

# HiPerFET™ Power MOSFETs

## ISOPLUS247™

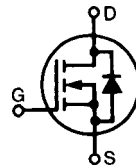
IXFR 26N50  
IXFR 24N50

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

(Electrically Isolated Back Surface)

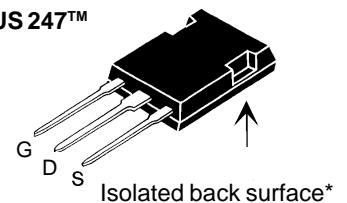
$t_{rr} \leq 250$  ns

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 $150^\circ\text{C}$ ; $R_{GS} = 1$ 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	
$dv/dt$	$I_S \leq I_{DM}$ , $di/dt \leq 100$ 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	

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, $I_D = 250$ $\mu\text{A}$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 4$ mA	2	4	V
$I_{GSS}$	$V_{GS} = \pm 20$ V <sub>DC</sub> , $V_{DS} = 0$			$\pm 100$ nA
$I_{DSS}$	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0$ V	$T_J = 25^\circ\text{C}$	200	$\mu\text{A}$
		$T_J = 125^\circ\text{C}$	1	mA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = I_T$ Notes 1 & 2	26N50	0.20	$\Omega$
		24N50	0.23	$\Omega$

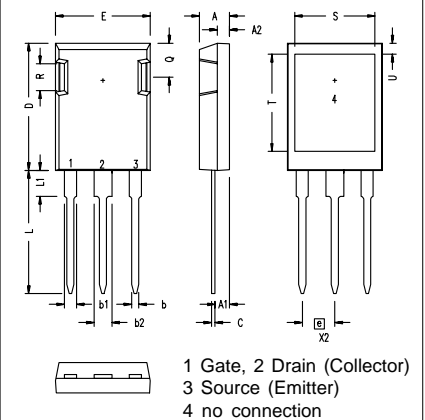
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)			
		min.	typ.	max.	
$g_{fs}$	$V_{DS} = 15\text{ V}; I_D = I_T$ Note 1	11	21	S	
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		4200	pF	
$C_{oss}$			450	pF	
$C_{rss}$			135	pF	
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$ $R_G = 1\ \Omega$ (External),		16	25	ns
$t_r$			33	45	ns
$t_{d(off)}$			65	80	ns
$t_f$			30	40	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$		135	160	nC
$Q_{gs}$			28	40	nC
$Q_{gd}$			62	85	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.	
$I_S$	$V_{GS} = 0\text{ V}$			26	A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$			104	A
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{ V}$ , Note 1			1.5	V
$t_{rr}$	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$	$T_J = 25^\circ\text{C}$		250	ns
$Q_{RM}$		$T_J = 125^\circ\text{C}$		400	ns
		$T_J = 25^\circ\text{C}$	1	1.5	$\mu\text{C}$
$I_{RM}$		$T_J = 125^\circ\text{C}$	2		$\mu\text{C}$
	$T_J = 25^\circ\text{C}$	10		A	
	$T_J = 125^\circ\text{C}$	15		A	

- Note: 1. Pulse test,  $t \leq 300\ \mu\text{s}$ , duty cycle  $d \leq 2\%$   
 2.  $I_T$  test current: IXFR26N50  $I_T = 13\text{ A}$   
 IXFR24N50  $I_T = 12\text{ A}$   
 3. See IXFR26N50 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
L <sub>1</sub>	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