

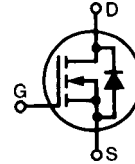
# HiPerFET™ Power MOSFETs

## ISOPLUS247™

IXFR 26N50Q  
IXFR 24N50Q

(Electrically Isolated Back Surface)

N-Channel Enhancement Mode  
High dV/dt, Low t<sub>rr</sub>, HDMOS™ Family



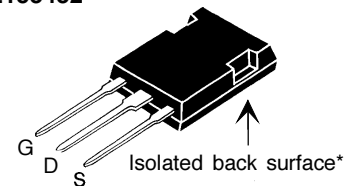
V <sub>DSS</sub>	I <sub>D25</sub>	R <sub>DS(on)</sub>
500 V	24 A	0.20 Ω
500 V	22 A	0.23 Ω

t<sub>rr</sub> ≤ 250 ns

Symbol	Test Conditions	Maximum Ratings	
V <sub>DSS</sub>	T <sub>J</sub> = 25°C to 150°C	500	V
V <sub>DGR</sub>	T <sub>J</sub> = 25°C to 150°C; R <sub>GS</sub> = 1 MΩ	500	V
V <sub>GS</sub>	Continuous	±20	V
V <sub>GSM</sub>	Transient	±30	V
I <sub>D25</sub>	T <sub>C</sub> = 25°C	26N50Q 24	A
		24N50Q 22	A
I <sub>DM</sub>	T <sub>C</sub> = 25°C, Pulse width limited by T <sub>JM</sub>	26N50Q 104	A
		24N50Q 96	A
I <sub>AR</sub>	T <sub>C</sub> = 25°C	26N50Q 26	A
		24N50Q 24	A
E <sub>AR</sub>	T <sub>C</sub> = 25°C	30	mJ
E <sub>AS</sub>	T <sub>C</sub> = 25°C	1.5	J
dv/dt	I <sub>S</sub> ≤ I <sub>DM</sub> , di/dt ≤ 100 A/μs, V <sub>DD</sub> ≤ V <sub>DSS</sub> T <sub>J</sub> ≤ 150°C, R <sub>G</sub> = 2 Ω	5	V/ns
P <sub>D</sub>	T <sub>C</sub> = 25°C	250	W
T <sub>J</sub>		-55 ... +150	°C
T <sub>JM</sub>		150	°C
T <sub>stg</sub>		-55 ... +150	°C
T <sub>L</sub>	1.6 mm (0.062 in.) from case for 10 s	300	°C
V <sub>ISOL</sub>	50/60 Hz, RMS t = 1 minute leads-to-tab	2500	V~
Weight		5	g

ISOPLUS247™

E153432



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(<35pF)
- Low R<sub>DS(on)</sub> 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: no screws, or isolation foils required
- Space savings
- High power density
- Low collector capacitance to ground (low EMI)

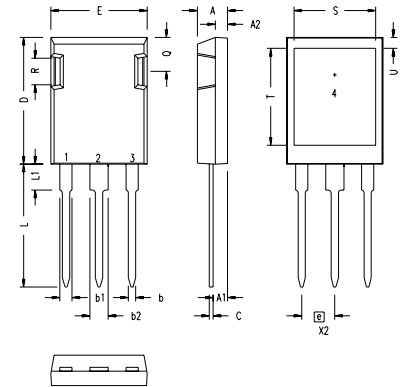
Symbol	Test Conditions	Characteristic Values (T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
V <sub>DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250μA	500		V
V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 4mA	2.5		V
I <sub>GSS</sub>	V <sub>GS</sub> = ±20 V <sub>DC</sub> , V <sub>DS</sub> = 0			±100 nA
I <sub>DSS</sub>	V <sub>DS</sub> = 0.8 V <sub>DSS</sub> V <sub>GS</sub> = 0 V			25 μA 1 mA
R <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = I <sub>T</sub> Notes 1 & 2			26N50Q 0.20 Ω 24N50Q 0.23 Ω

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
			min.	typ.	max.
$g_{fs}$	$V_{DS} = 15\text{ V}; I_D = I_T$ Note 1		14	24	S
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$			3900	pF
$C_{oss}$				500	pF
$C_{rss}$				130	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = I_T$ $R_G = 1\ \Omega$ (External),			28	ns
$t_r$				30	ns
$t_{d(off)}$				55	ns
$t_f$				16	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = I_T$			95	nC
$Q_{gs}$				27	nC
$Q_{gd}$				40	nC
$R_{thJC}$				0.50	K/W
$R_{thCK}$			0.15		K/W

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
			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			1.3	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
$Q_{RM}$		$T_J = 25^\circ\text{C}$	0.85	1.5	$\mu\text{C}$
$I_{RM}$		$T_J = 25^\circ\text{C}$	8		A

- Note: 1. Pulse test,  $t \leq 300\ \mu\text{s}$ , duty cycle  $d \leq 2\%$   
 2.  $I_T$  test current: IXFR26N50Q  $I_T = 13\text{ A}$   
 IXFR24N50Q  $I_T = 12\text{ A}$   
 3. See IXFH26N50Q data sheet for characteristic curves.

### 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.

IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETS and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715  
 4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025