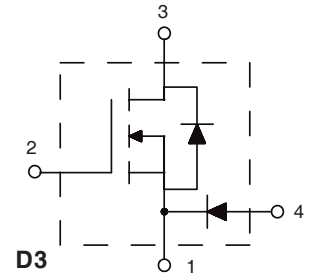
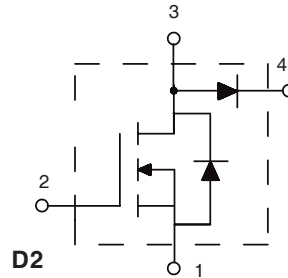


# HiPerFET™

## Power MOSFETs

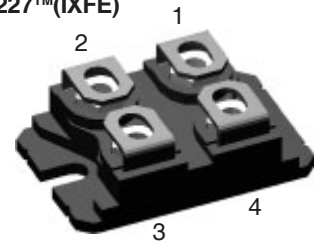
	$V_{DSS}$	$I_{D(cont)}$	$R_{DS(on)}$	$t_{rr}$
IXFE44N50QD2 IXFE44N50QD3	500 V	39 A	0.12 $\Omega$	35 ns
IXFE48N50QD2 IXFE48N50QD3	500 V	41A	0.11 $\Omega$	35 ns

Buck & Boost Configurations for PFC & Motor Control Circuits



Symbol	Test Conditions	Maximum Ratings			
HiPerFET MOSFET	$V_{DSS}$	$T_J = 25^\circ\text{C}$ 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	
	$I_{D25}$	$T_C = 25^\circ\text{C}$	44N50Q 48N50Q	39 41	A
	$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by max. $T_{JM}$	44N50Q 48N50Q	176 192	A
	$I_{AR}$	$T_C = 25^\circ\text{C}$		48	A
	$E_{AR}$	$T_C = 25^\circ\text{C}$		60	mJ
	$E_{AS}$	$T_C = 25^\circ\text{C}$		2.5	J
	$dv/dt$	$I_S \leq I_{DM1}$ , $-di/dt \leq 100\text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS1}$ , $T_J \leq 150^\circ\text{C}$ , $R_G = 2\ \Omega$		15	V/ns
$P_D$	$T_C = 25^\circ\text{C}$		400	W	
DIODE	$V_{RRM}$		600	V	
	$I_{FAVM}$	$T_C = 70^\circ\text{C}$ ; rectangular, $d = 0.5$	60	A	
	$I_{FRM}$	$t_p < 10\ \mu\text{s}$ ; pulse width limited by $T_J$	800	A	
	$P_D$	$T_C = 25^\circ\text{C}$	180	W	
CASE	$T_J$		-40 ... +150	$^\circ\text{C}$	
	$T_{JM}$		150	$^\circ\text{C}$	
	$T_{stg}$		-40 ... +150	$^\circ\text{C}$	
	$V_{ISOL}$	50/60 Hz, RMS $I_{ISOL} \leq 1\text{ mA}$	$t = 1\text{ min}$ $t = 1\text{ s}$	2500 3000	V~ V~
	$M_d$	Mounting torque Terminal connection torque (M4)		1.5/13 1.5/13	Nm/lb.in. Nm/lb.in.
<b>Weight</b>			19	g	

ISOPLUS227™(IXFE)



2 = Gate      3 = Drain  
1 = Source    4 = Anode/Cathode

### Features

- Popular Buck & Boost circuit topologies
- Conforms to SOT-227B outline
- Isolation voltage 3000 V~
- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Low drain-to-case capacitance (<60 pF)
  - reduced RFI
- Ultra-fast FRED diode with soft reverse recovery

### Applications

- Power factor controls and buck regulators
- DC servo and robotic drives
- DC choppers
- Switch reluctance motor controls

### Advantages

- Easy to mount with 2 screws
- Space savings
- Tightly coupled FRED

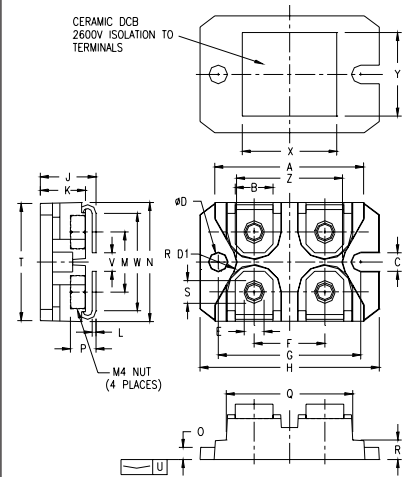
Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
V <sub>DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 1 mA	500		V
V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 4 mA	2		V
I <sub>GSS</sub>	V <sub>GS</sub> = ±20 V <sub>DC</sub> , V <sub>DS</sub> = 0			±100 nA
I <sub>DSS</sub>	V <sub>DS</sub> = V <sub>DSS</sub> V <sub>GS</sub> = 0 V			100 μA 2 mA
R <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = I <sub>T</sub>			0.12 Ω 0.11 Ω
	Pulse test, t ≤ 300 μs, duty cycle δ ≤ 2 %			

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
g <sub>fs</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = I <sub>T</sub> , pulse test	30	36	S
C <sub>iss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		8000	pF
C <sub>oss</sub>			930	pF
C <sub>rss</sub>			220	pF
t <sub>d(on)</sub>	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> = 1Ω (External)		33	ns
t <sub>r</sub>			22	ns
t <sub>d(off)</sub>			75	ns
t <sub>f</sub>			10	ns
Q <sub>g(on)</sub>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 V <sub>DSS</sub> , I <sub>D</sub> = I <sub>T</sub>		190	nC
Q <sub>gs</sub>			40	nC
Q <sub>gd</sub>			86	nC
R <sub>thJC</sub>			0.31	K/W
R <sub>thCK</sub>		0.07		K/W

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
I <sub>R</sub>	T <sub>J</sub> = 25°C; V <sub>R</sub> = V <sub>RRM</sub> T <sub>J</sub> = 150°C; V <sub>R</sub> = 0.8V <sub>RRM</sub>			200 μA 2.5 mA
V <sub>F</sub>	I <sub>F</sub> = 60A, V <sub>GS</sub> = 0 V			2.05 V
	Note1 T <sub>J</sub> = 150°C			1.4 V
t <sub>rr</sub>	I <sub>F</sub> = 1A, di/dt = -200 A/μs, V <sub>R</sub> = 30 V, T <sub>J</sub> = 25°C		35	50 ns
I <sub>RM</sub>	I <sub>F</sub> = 60A, di/dt = -100 A/μs, V <sub>R</sub> = 100 V, T <sub>J</sub> = 100°C			8.3 A
R <sub>thJC</sub>				0.7 K/W
R <sub>thJK</sub>		0.05		K/W

Note: 1. Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %  
2. IXFE44N50 I<sub>T</sub> = 22A  
IXFE48N50 I<sub>T</sub> = 24A

### ISOPLUS-227 B



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.240	1.270	31.50	32.26
B	.310	.330	7.87	8.38
C	.155	.165	3.94	4.19
D	.155	.165	3.94	4.19
D1	.150	.157	3.81	3.98
E	.160	.168	4.06	4.27
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.489	1.505	37.80	38.23
J	.465	.481	11.81	12.22
K	.370	.380	9.40	9.65
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.100	.105	2.54	2.67
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.160	.170	4.06	4.32
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.001	.002	-0.03	0.05
V	.130	.160	3.30	4.06
W	.780	.830	19.81	21.08
X	.770	.810	19.56	20.57
Y	.680	.720	17.27	18.29
Z	.885	.892	22.48	22.66

Please note:

For characteristic curves please see IXFK48N50Q

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



LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

[LittleDiode.com](http://LittleDiode.com)

Looking forward to providing you with the best possible service.