



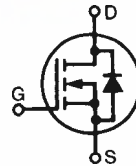
Advance Technical Information

**HiPerRF™**  
**Power MOSFETs**  
**F-Class: MegaHertz Switching**

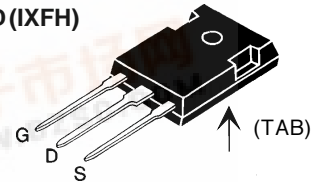
**IXFH 28N50F**  
**IXFT 28N50F**

**V<sub>DSS</sub> = 500V**  
**I<sub>D25</sub> = 28A**  
**R<sub>DS(on)</sub> = 190mΩ**  
**t<sub>rr</sub> ≤ 250 ns**

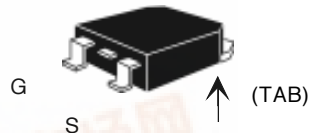
N-Channel Enhancement Mode  
Avalanche Rated, Low Q<sub>g</sub>, Low Intrinsic R<sub>g</sub>  
High dV/dt, Low t<sub>rr</sub>



TO-247 AD (IXFH)



TO-268 (IXFT) Case Style



G = Gate, D = Drain,  
S = Source, TAB = Drain

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	28	A
I <sub>DM</sub>	T <sub>C</sub> = 25°C, pulse width limited by T <sub>JM</sub>	112	A
I <sub>AR</sub>	T <sub>C</sub> = 25°C	28	A
E <sub>AR</sub>	T <sub>C</sub> = 25°C	35	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	10	V/ns
P <sub>D</sub>	T <sub>C</sub> = 25°C	315	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 (0.063 in.) from case for 10 s	300	°C
M <sub>d</sub>	Mounting torque	TO-247 1.13/10	Nm/lb.in.
Weight		TO-247 6	g
		TO-268 4	g

**Features**

- RF capable MOSFETs
- Double metal process for low gate resistance
- Unclamped Inductive Switching (UIS) rated
- Low package inductance - easy to drive and to protect
- Fast intrinsic rectifier

**Applications**

- DC-DC converters
- Switched-mode and resonant-mode power supplies, >500kHz switching
- DC choppers
- 13.5 MHz industrial applications
- Pulse generation
- Laser drivers
- RF amplifiers

**Advantages**

- Space savings
- High power density

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> = 1mA	500		V
V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 4mA	2.0		V
I <sub>GSS</sub>	V <sub>GS</sub> = ±20 V, 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 T <sub>J</sub> = 125°C			50 μA 1.5 mA
R <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 0.5 I <sub>D25</sub> Note 1			190 mΩ

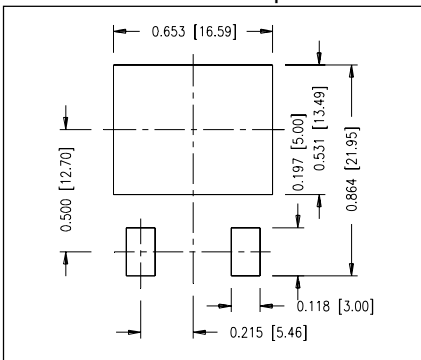


Symbol	Test Conditions	Characteristic Values			S
		(T <sub>J</sub> = 25°C, unless otherwise specified)			
		min.	typ.	max.	
<b>g<sub>fs</sub></b>	V <sub>DS</sub> = 10 V; I <sub>D</sub> = 0.5 I <sub>D25</sub> Note 1	12	18		
<b>C<sub>iss</sub></b>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		3000		pF
<b>C<sub>oss</sub></b>			500		pF
<b>C<sub>rss</sub></b>			130		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> = 0.5 I <sub>D25</sub> R <sub>G</sub> = 2.0 Ω (External)		15		ns
<b>t<sub>r</sub></b>			13		ns
<b>t<sub>d(off)</sub></b>			41		ns
<b>t<sub>f</sub></b>			8		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> = 0.5 I <sub>D25</sub>		95		nC
<b>Q<sub>gs</sub></b>			20		nC
<b>Q<sub>gd</sub></b>			38		nC
<b>R<sub>thJC</sub></b>				0.39	K/W
<b>R<sub>thCK</sub></b>	(TO-247)		0.25		K/W

Symbol	Test Conditions	Characteristic Values			A
		(T <sub>J</sub> = 25°C, unless otherwise specified)			
		min.	typ.	max.	
<b>I<sub>S</sub></b>	V <sub>GS</sub> = 0 V			28	A
<b>I<sub>SM</sub></b>	Repetitive; pulse width limited by T <sub>JM</sub>			112	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			250	ns
<b>Q<sub>RM</sub></b>			1.0		μC
<b>I<sub>RM</sub></b>				12	A

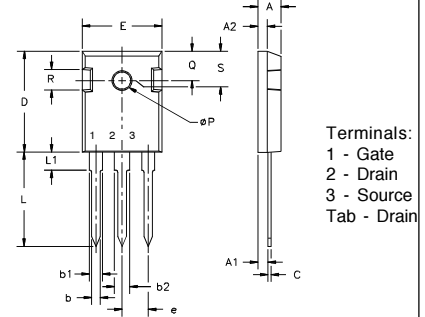
Note: 1. Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %

### Min Recommended Footprint



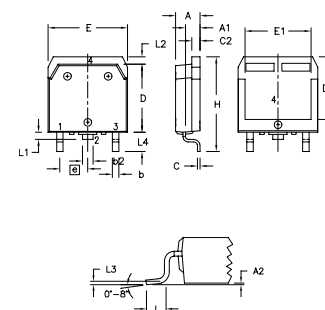
IXYS reserves the right to change limits, test conditions, and dimensions.

### TO-247 AD Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A <sub>1</sub>	2.2	2.54	.087	.102
A <sub>2</sub>	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b <sub>1</sub>	1.65	2.13	.065	.084
b <sub>2</sub>	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S		6.15 BSC		242 BSC

### TO-268 Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.9	5.1	.193	.201
A <sub>1</sub>	2.7	2.9	.106	.114
A <sub>2</sub>	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b <sub>2</sub>	1.9	2.1	.75	.83
C	.4	.65	.016	.026
D	13.80	14.00	.543	.551
E	15.85	16.05	.624	.632
E <sub>1</sub>	13.3	13.6	.524	.535
e	5.45 BSC		.215 BSC	
H	18.70	19.10	.736	.752
L	2.40	2.70	.094	.106
L1	1.20	1.40	.047	.055
L2	1.00	1.15	.039	.045
L3		0.25 BSC		.010 BSC
L4	3.80	4.10	.150	.161