



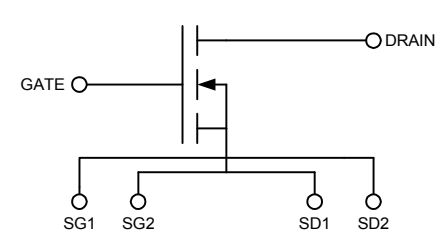
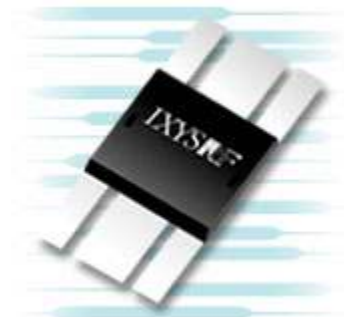
# IXZ318N50 Z-MOS RF Power MOSFET

N-Channel Enhancement Mode Switch Mode RF MOSFET  
 Low Capacitance Z-MOS™ MOSFET Process  
 Optimized for RF Operation  
 Ideal for Class C, D, & E Applications

**V<sub>DSS</sub>** = **500 V**  
**I<sub>D25</sub>** = **19 A**  
**R<sub>DS(on)</sub>** ≤ **0.34 Ω**  
**P<sub>DC</sub>** = **880 W**

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	19	A
I <sub>DM</sub>	T <sub>c</sub> = 25°C, pulse width limited by T <sub>JM</sub>	95	A
I <sub>AR</sub>	T <sub>c</sub> = 25°C	19	A
E <sub>AR</sub>	T <sub>c</sub> = 25°C	TBD	mJ
dv/dt	I <sub>S</sub> ≤ I <sub>DM</sub> , di/dt ≤ 100A/μs, V <sub>DD</sub> ≤ V <sub>DSS</sub> , T <sub>J</sub> ≤ 150°C, R <sub>G</sub> = 0.2Ω	5	V/ns
	I <sub>S</sub> = 0	>200	V/ns
P <sub>DC</sub>		880	W
P <sub>DHS</sub>	T <sub>c</sub> = 25°C	440	W
P <sub>DAMB</sub>	T <sub>amb</sub> = 25°C	3.0	W
R <sub>thJC</sub>		0.17	C/W
R <sub>thJHS</sub>		0.34	C/W

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> = 4 ma	500		
V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	3.5	4.9	6.5
I <sub>GSS</sub>	V <sub>GS</sub> = ±20 V <sub>DC</sub> , V <sub>DS</sub> = 0			±100
I <sub>DSS</sub>	V <sub>DS</sub> = 0.8V <sub>DSS</sub> V <sub>GS</sub> =0			50 1
				μA mA
R <sub>DS(on)</sub>	V <sub>GS</sub> = 20 V, I <sub>D</sub> = 0.5I <sub>D25</sub> Pulse test, t ≤ 300μs, duty cycle d ≤ 2%		.32	.34
				Ω
g <sub>fs</sub>	V <sub>DS</sub> = 50 V, I <sub>D</sub> = 0.5I <sub>D25</sub> , pulse test	5.0	5.4	6.0
				S
T <sub>J</sub>		-55		+175
				°C
T <sub>JM</sub>			175	
				°C
T <sub>stg</sub>		-55		+ 175
				°C
T <sub>L</sub>	1.6mm(0.063 in) from case for 10 s		300	
				°C
Weight			3.5	
				g



### Features

- Isolated Substrate
  - high isolation voltage (>2500V)
  - excellent thermal transfer
  - Increased temperature and power cycling capability
- IXYS advanced Z-MOS process
- Low gate charge and capacitances
  - easier to drive
  - faster switching
- Low R<sub>DS(on)</sub>
- Very low insertion inductance (<2nH)
- No beryllium oxide (BeO) or other hazardous materials

### Advantages

- Optimized for RF and high speed
- Easy to mount—no insulators needed
- High power density



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Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C unless otherwise specified)		
		min.	typ.	max.
R <sub>G</sub>				1 Ω
C <sub>iss</sub>			1950	pF
C <sub>oss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 0.8 V <sub>DSS(max)</sub> , f = 1 MHz		175	pF
C <sub>rss</sub>			17	pF
C <sub>stray</sub>	Back Metal to any Pin		33	pF
T <sub>d(on)</sub>			4	ns
T <sub>on</sub>	V <sub>GS</sub> = 15 V, V <sub>DS</sub> = 0.8 V <sub>DSS</sub> I <sub>D</sub> = 0.5 I <sub>DM</sub>		4	ns
T <sub>d(off)</sub>	R <sub>G</sub> = 1 Ω (External)		5	ns
T <sub>off</sub>			6	ns

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C unless otherwise specified)		
		min.	typ.	max.
I <sub>S</sub>	V <sub>GS</sub> = 0 V			19 A
I <sub>SM</sub>	Repetitive; pulse width limited by T <sub>JM</sub>			114 A
V <sub>SD</sub>	I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0 V, Pulse test, t ≤ 300 μs, duty cycle ≤ 2%			1.5 V
T <sub>rr</sub>			200	ns

CAUTION: Operation at or above the Maximum Ratings values may impact device reliability or cause permanent damage to the device.

Information in this document is believed to be accurate and reliable. IXYSRF reserves the right to make changes to information published in this document at any time and without notice.

For detailed device mounting and installation instructions, see the “*Device Installation & Mounting Instructions*” technical note on the IXYSRF web site at;

[http://www.ixysrf.com/pdf/switch\\_mode/appnotes/7de\\_series\\_mosfet\\_installation\\_instructions.pdf](http://www.ixysrf.com/pdf/switch_mode/appnotes/7de_series_mosfet_installation_instructions.pdf)

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

IXYS RF MOSFETS are covered by one or more of the following U.S. patents:

4,835,592	4,860,072	4,881,106	4,891,686	4,931,844	5,017,508
5,034,796	5,049,961	5,063,307	5,187,117	5,237,481	5,486,715
5,381,025	5,640,045				

Fig. 1

**Typical Transfer Characteristics**  
 $V_{DS} = 50V, P.W. = 20\mu S$

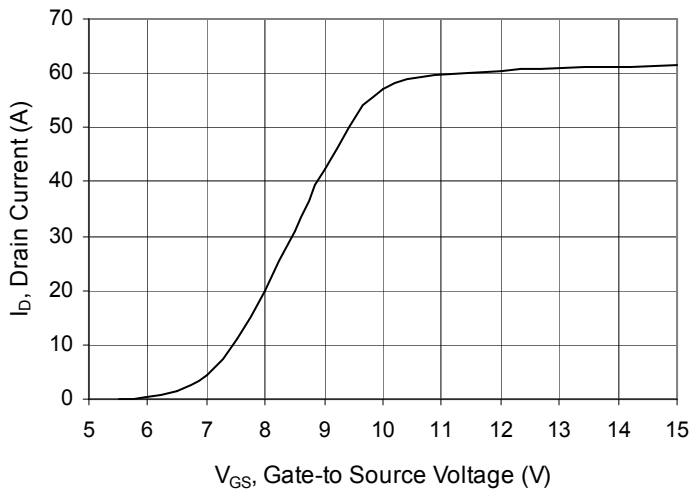


Fig. 2

**Typical Output Characteristics**

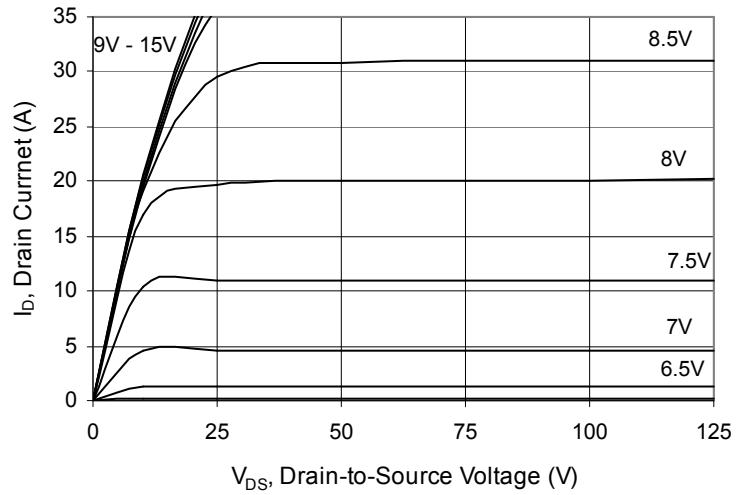


Fig. 3

**Gate Charge vs. Gate-to-Source Voltage**  
 $V_{DS} = 250V, I_D = 9.5A, I_G = 3mA$

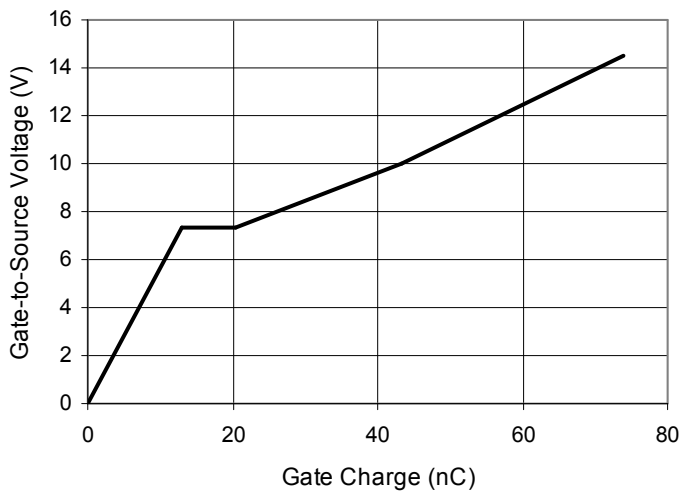


Fig. 4

**Extended Typical Output Characteristics**

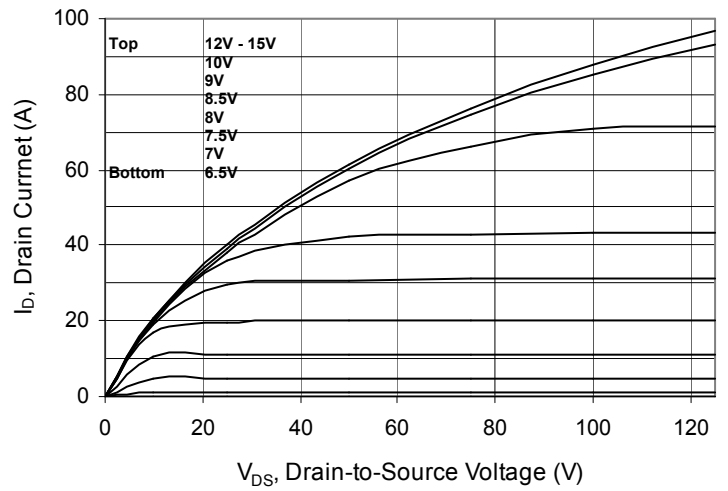


Fig. 5

$V_{DS}$  vs. Capacitance

