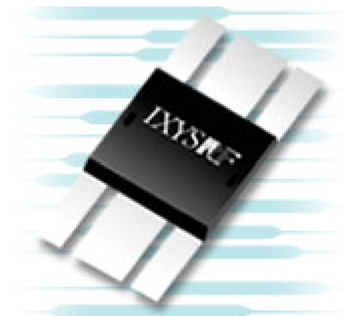
IXYS RF

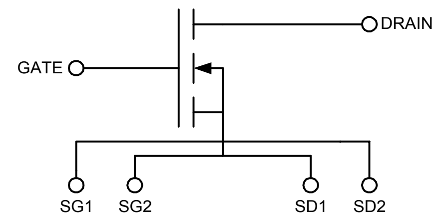
IXZ318N50
Z-MOS RF Power MOSFET

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

V_{DSS}	=	500 V
I_{D25}	=	19.0 A
$R_{DS(on)}$	=	0.325 Ω
P_{DC}	=	880 W

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	500	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	500	V
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_c = 25°C	19	A
I_{DM}	T_c = 25°C, pulse width limited by T_{JM}	95	A
I_{AR}	T_c = 25°C	19	A
E_{AR}	T_c = 25°C	TBD	mJ
dv/dt	$I_S \le I_{DM}$, di/dt $\le$ 100A/µs, $V_{DD} \le V_{DSS}$, $T_j \le$ 150°C, R_G = 0.2Ω	5	V/ns
	I_S = 0	>200	V/ns
P_{DC}		880	W
P_{DHS}	T_c = 25°C, Derate 4.4W/°C above 25°C	440	W
P_{DAMB}	T_c = 25°C	3.0	W
R_{thJC}		0.17	C/W
R_{thJHS}		0.34	C/W





Characteristic Values (T_J = 25°C unless otherwise specified)

Symbol	Test Conditions	min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 4 ma	500			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250µA	3.5		6.5	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0			±100	nA
I_{DSS}	V_{DS} = 0.8V_{DSS} V_{GS}=0 — T_J = 25C			50	µA
	T_J =125C			1	mA
$R_{DS(on)}$	V_{GS} = 20 V, I_D = 0.5I_{D25} Pulse test, t ≤ 300µS, duty cycle d ≤ 2%		0.325		Ω
g_{fs}	V_{DS} = 50 V, I_D = 0.5I_{D25}, pulse test		14		S
T_J		-55		+175	°C
T_{JM}			175		°C
T_{stg}		-55		+ 175	°C
T_L	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 $R_{DS(on)}$
- 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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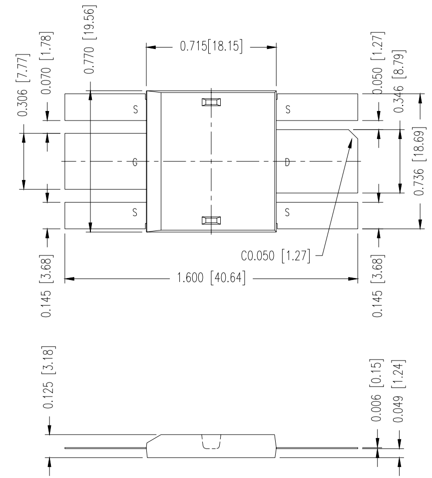
Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) min.	typ.	max.	
R_G				1	Ω
C_{iss}	V_{GS} = 0 V, V_{DS} = 0.8 $V_{DSS(max)}$, f = 1 MHz		1960		pF
C_{oss}			139		pF
C_{rss}			19		pF
C_{stray}	Back Metal to any Pin		33		pF
$T_{d(on)}$	V_{GS} = 15 V, V_{DS} = 0.8 V_{DSS} I_D = 0.5 I_{DM} R_G = 1 Ω (External)		4		ns
T_{on}			4		ns
$T_{d(off)}$			4		ns
T_{off}			5		ns



Source-Drain Diode

Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V			19	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			114	A
V_{SD}	I_F = I_S, V_{GS}=0 V, Pulse test, t ≤ 300μs, duty cycle ≤2%			1.5	V
T_{rr}			TBD		ns

For detailed device mounting and installation instructions, see the "*DE-Series MOSFET Mounting Instructions*" technical note on IXYS RF's web site at www.ixysrf.com/Technical_Support/App_notes.html

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	6,404,065	6,583,505	6,710,463	6,727,585
6,731,002					

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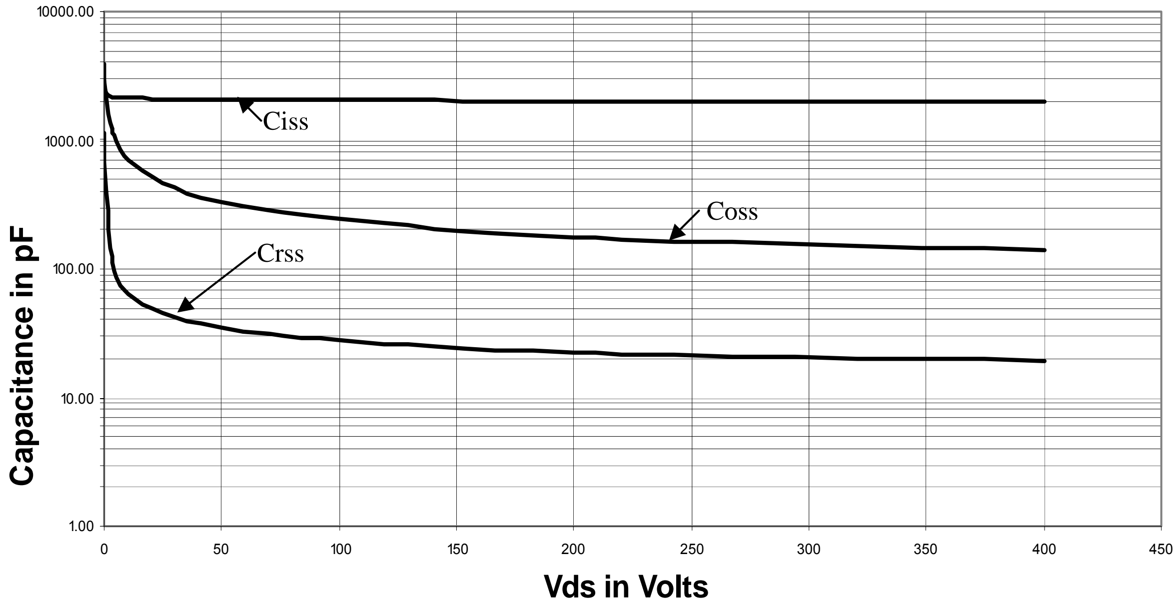

IXZ318N50 Capacitance verses Vds

Doc #dsIXZ318N50 REV 06/04
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An IXYS Company
2401 Research Blvd., Suite 108
Fort Collins, CO USA 80526
970-493-1901 Fax: 970-493-1903
Email: info@ixysrf.com
Web: http://www.ixysrf.com

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