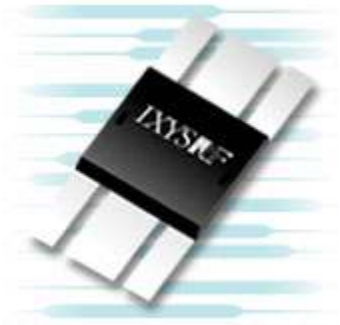
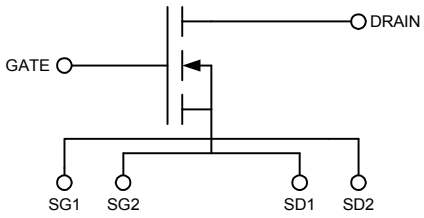
IXZ318N50
Z-MOS RF Power MOSFET

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 A
$R_{DS(on)}$ ≤ 0.34 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 ≤ 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	440	W
P_{DAMB}	T_{amb} = 25°C	3.0	W
R_{thJC}		0.17	C/W
R_{thJHS}		0.34	C/W

Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) 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	4.9	6.5	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0			±100	nA
I_{DSS}	V_{DS} = 0.8V_{DSS} T_J = 25C V_{GS}=0 T_J =125C			50 1	μA mA
$R_{DS(on)}$	V_{GS} = 20 V, I_D = 0.5I_{D25} Pulse test, t ≤ 300μS, duty cycle d ≤ 2%		.32	.34	Ω
g_{fs}	V_{DS} = 50 V, I_D = 0.5I_{D25}, pulse test	5.0	5.4	6.0	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

Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) min.	typ.	max.	
R_G				1	Ω
C_{iss}			1950		pF
C_{oss}	V_{GS} = 0 V, V_{DS} = 0.8 $V_{DSS(max)}$, f = 1 MHz		175		pF
C_{rss}			17		pF
C_{stray}	Back Metal to any Pin		33		pF
$T_{d(on)}$			4		ns
T_{on}	V_{GS} = 15 V, V_{DS} = 0.8 V_{DSS} I_D = 0.5 I_{DM}		4		ns
$T_{d(off)}$	R_G = 1 Ω (External)		5		ns
T_{off}			6		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}			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

Fig. 1

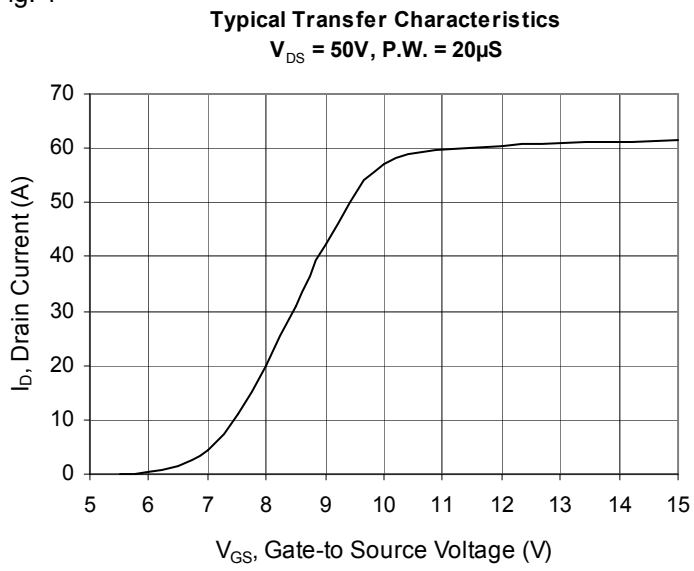


Fig. 2

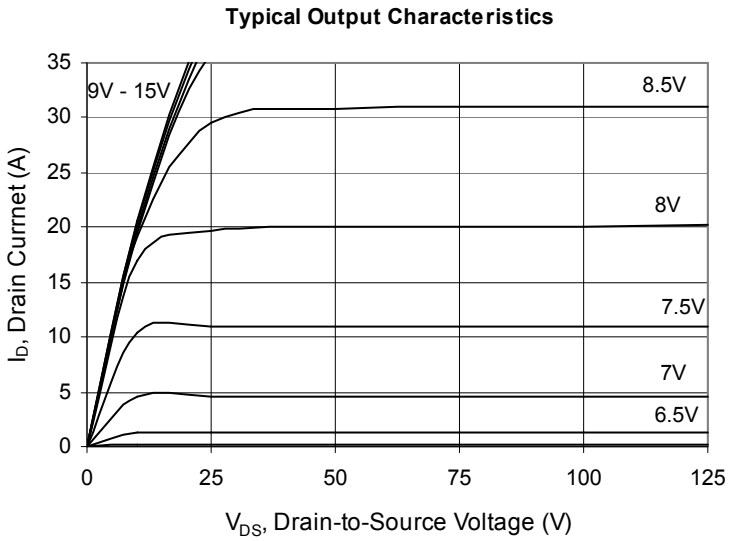


Fig. 3

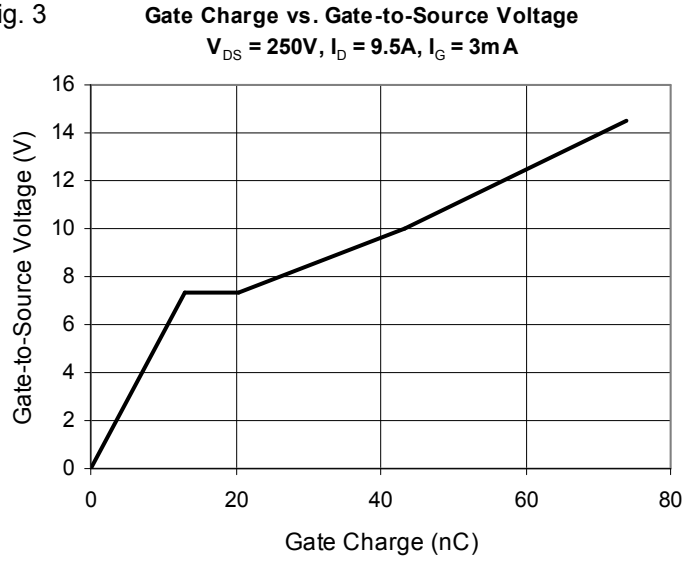


Fig. 4

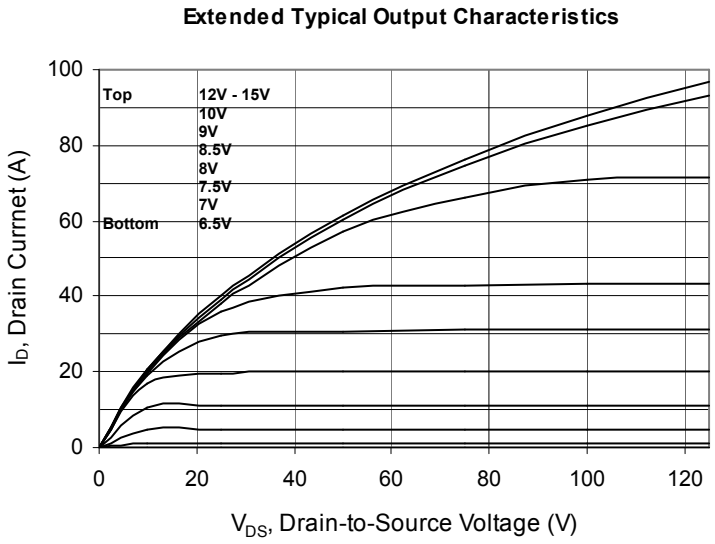


Fig. 5

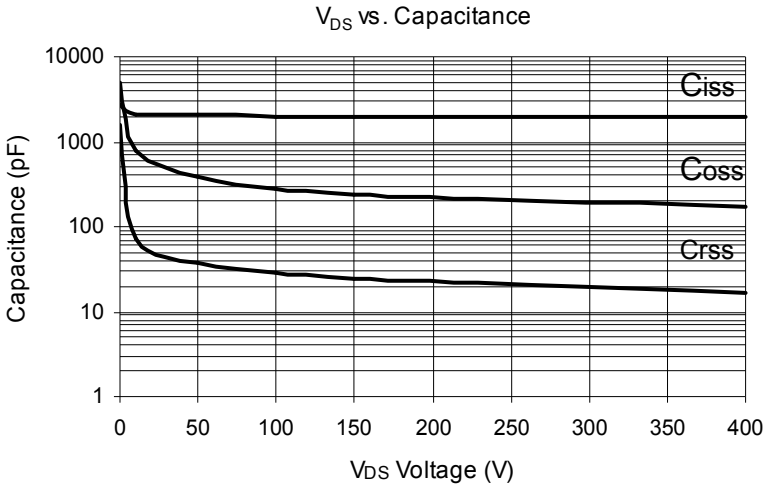
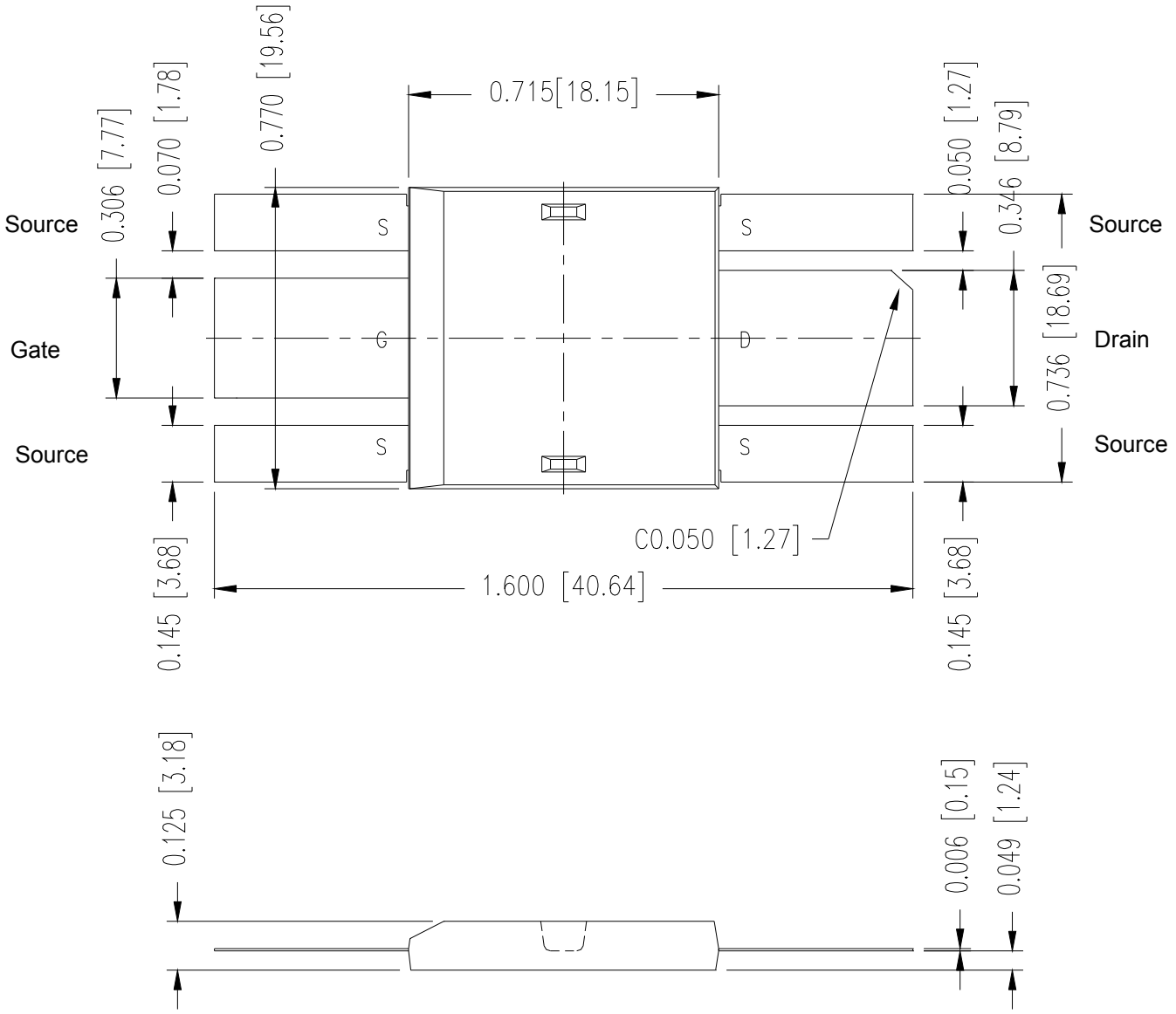


Fig. 6 Package Drawing



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