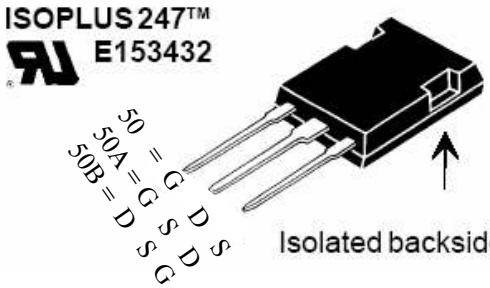
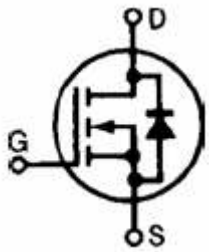
IXZR18N50 & IXZR18N50A/B
Z-MOS RF Power MOSFET

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
$R_{DS(on)}$	≤	0.37 Ω
P_{DC}	=	350 W

ISOPLUS247™
E153432





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}		350	W
P_{DHS}	T_c = 25°C, Derate 4.4W/°C above 25°C	TBD	W
P_{DAMB}	T_c = 25°C	3.0	W
R_{thJC}		TBD	C/W
R_{thJHS}		TBD	C/W

Symbol	Test Conditions (T_J = 25°C unless otherwise specified)	Characteristic Values 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		4.6		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%		0.37		Ω
g_{fs}	V_{DS} = 50 V, I_D = 0.5I_{D25}, pulse test		6.7		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}			2020		pF
C_{oss}	V_{GS} = 0 V, V_{DS} = 0.8 $V_{DSS(max)}$, f = 1 MHz		172		pF
C_{rss}			21		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}		4		ns
$T_{d(off)}$	I_D = 0.5 I_{DM} R_G = 1 Ω (External)		4		ns
T_{off}			5		ns
$Q_{g(on)}$			42		nC
Q_{gs}	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS} I_D = 0.5 I_{D25} I_G = 3mA		14		nC
Q_{gd}			21		nC

Source-Drain Diode		Characteristic Values (T_J = 25°C unless otherwise specified) min.	typ.	max.	
Symbol	Test Conditions				
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.

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					

Fig. 1

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

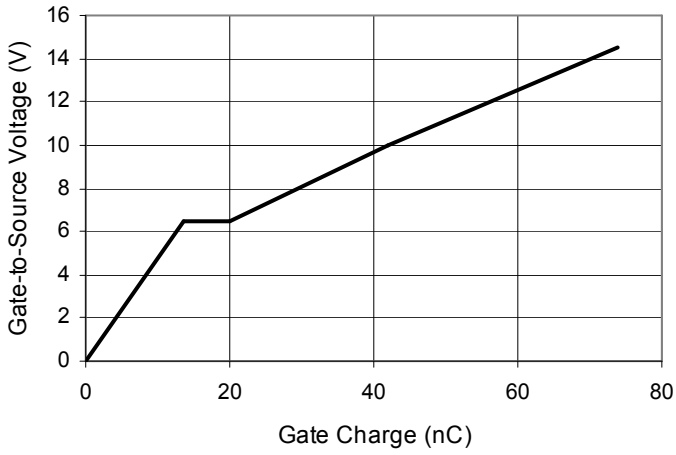


Fig. 2

Typical Output Characteristics

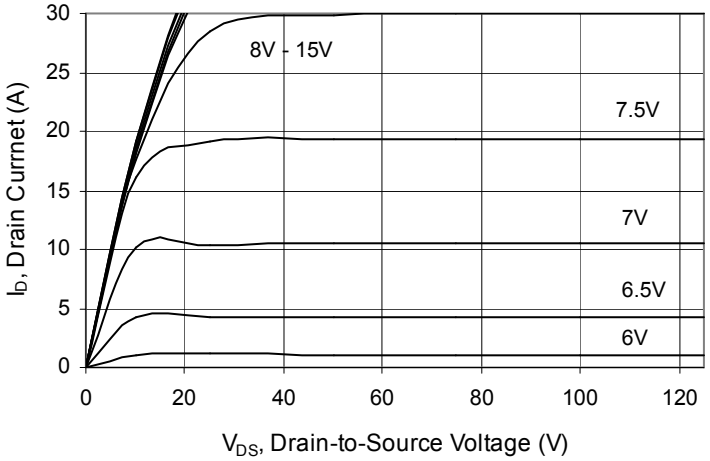


Fig. 3

Typical Transfer Characteristics
V_{DS} = 50V

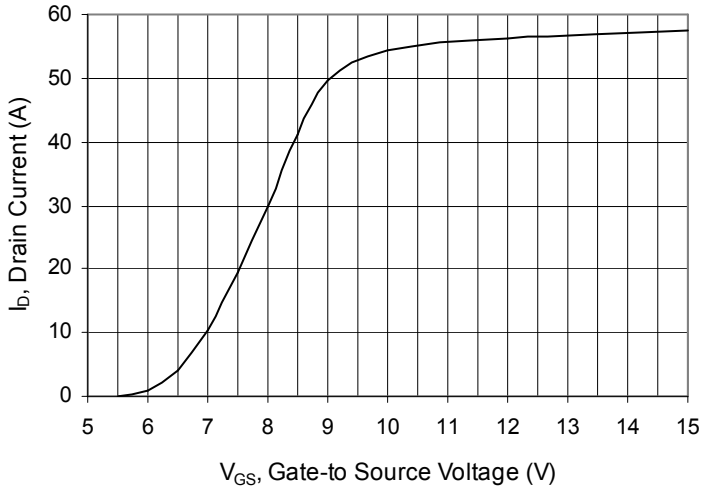


Fig. 4

Extended Typical Output Characteristics

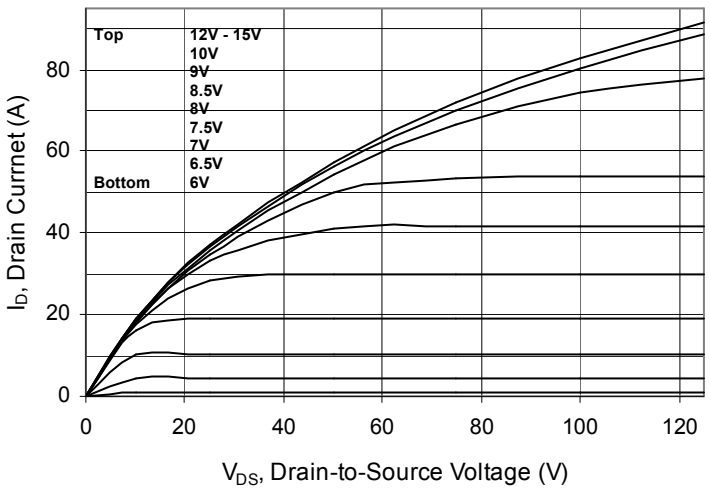


Fig. 5

V_{DS} vs. Capacitance

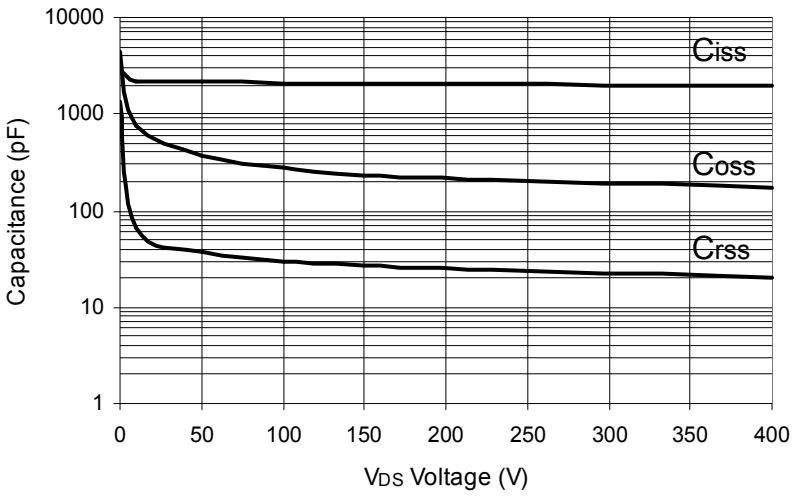
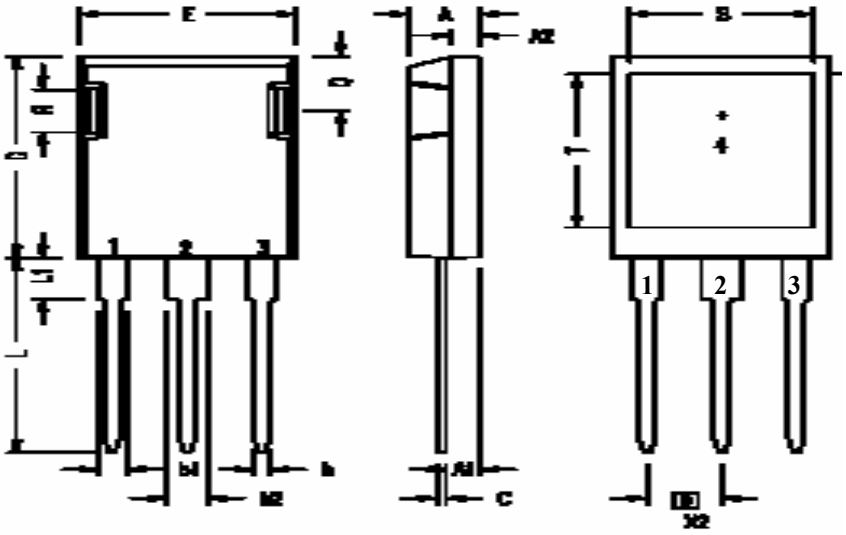


Fig. 6 Package Drawing

ISOPLUS 247 OUTLINE



50: 1=G, 2=D, 3=S
50A: 1=G, 2=S, 3= D
50B: 1=D, 2=S, 3=G

Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	4.83	5.21	.190	.205
A_1	2.29	2.54	.090	.100
A_2	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b_1	1.91	2.13	.075	.084
b_2	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	.244
R	4.32	4.83	.170	.190

Doc #dsIXZR18N50_A/B REV 08/09

IXYS RF
An IXYS Company
2401 Research Blvd., Suite 108
Fort Collins, CO USA 80526
970-493-1901 Fax: 970-493-1903
Email: sales@ixyscolorado.com
Web: http://www.ixyscolorado.com