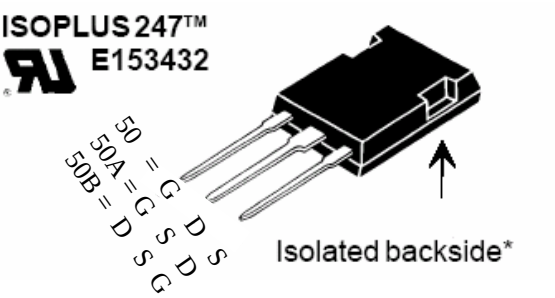
IXYS RF

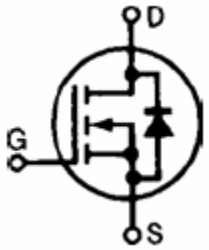
IXZR18N50 & IXZR18N50A/B
Z-MOS RF Power MOSFET

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} = 19.0 A
$R_{DS(on)}$ = 0.325 Ω
P_{DC} = TBD W

ISOPLUS 247™
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}		TBD	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}			C/W
R_{thJHS}			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		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%		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

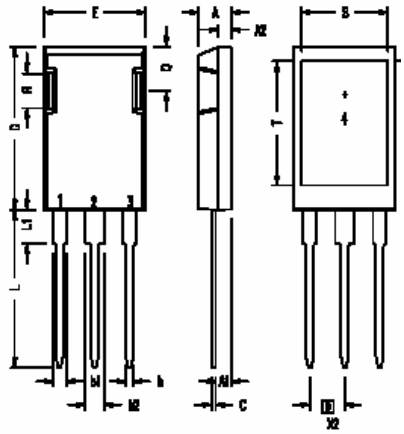
PRELIMINARY

Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) min.	typ.	max.	
R_G				1	Ω
C_{iss}			1960		pF
C_{oss}	V_{GS} = 0 V, V_{DS} = 0.8 $V_{DSS(max)}$, f = 1 MHz		139		pF
C_{rss}			19		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)		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

ISOPLUS 247 OUTLINE



1 2 3

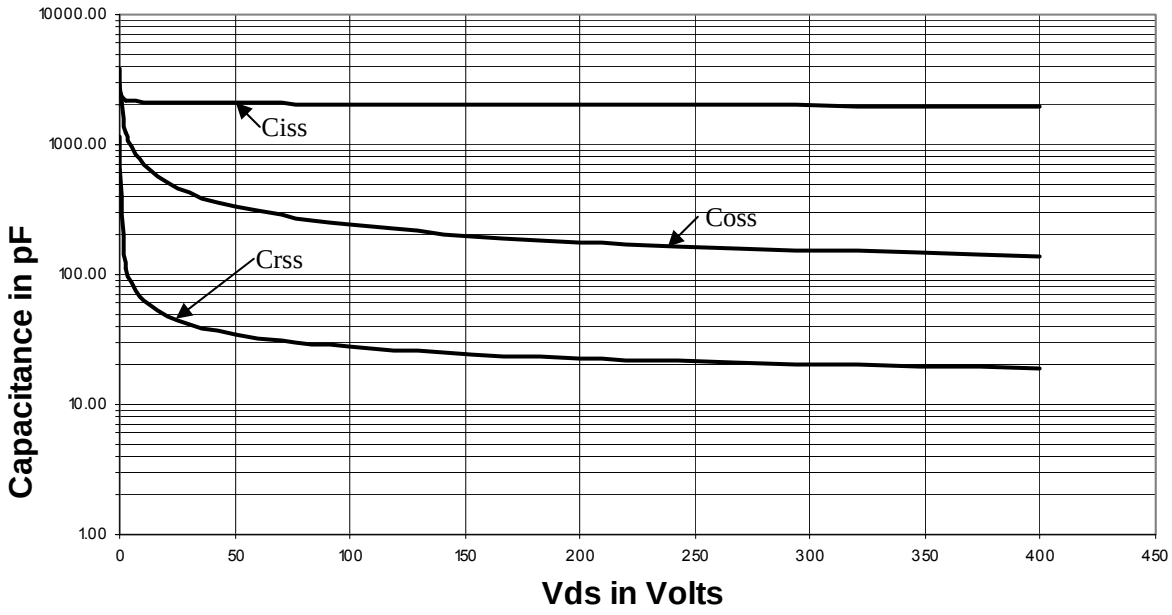
50: 1=G, 2=D, 3=S
50A: 1=G, 2=S, 3= D
50B: 1=D, 2=S, 3=G

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

PRELIMINARY

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



IXZ318N50A/B Capacitance verses Vds

Doc #dsIXZR18N50_A/B REV 07/04

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