

IXZ318N50 Z-MOS RF Power MOSFET

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

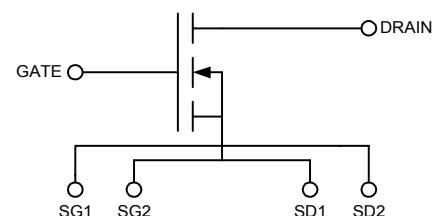
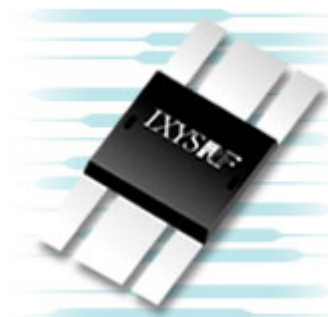
$$V_{DSS} = 500 \text{ V}$$

$$I_{D25} = 19.0 \text{ A}$$

$$R_{DS(on)} = 0.325 \Omega$$

$$P_{DC} = 880 \text{ W}$$

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



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

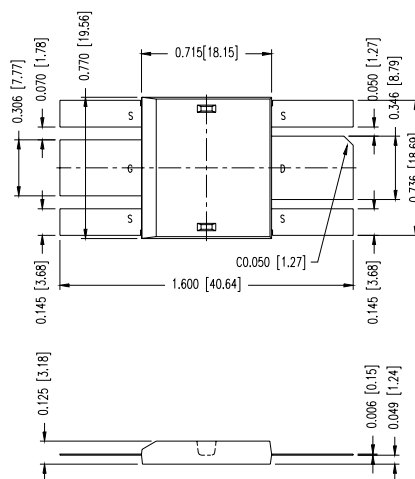
- Optimized for RF and high speed
- Easy to mount—no insulators needed
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 4 \text{ ma}$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu\text{A}$	3.5		V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 100 \text{ nA}$
I_{DSS}	$V_{DS} = 0.8 V_{DSS}$, $T_J = 25^\circ\text{C}$ $V_{GS} = 0$, $T_J = 125^\circ\text{C}$			50 μA 1 mA
$R_{DS(on)}$	$V_{GS} = 20 \text{ V}$, $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2\%$		0.325	Ω
g_{fs}	$V_{DS} = 50 \text{ V}$, $I_D = 0.5 I_{D25}$, pulse test		14	S
T_J		-55		$^\circ\text{C}$
T_{JM}			175	$^\circ\text{C}$
T_{stg}		-55		$^\circ\text{C}$
T_L	1.6mm(0.063 in) from case for 10 s		300	$^\circ\text{C}$
Weight			3.5	g

PRELIMINARY

Symbol Test Conditions Characteristic Values
 ($T_J = 25^\circ\text{C}$ unless otherwise specified)

		min.	typ.	max.
R_G				1 Ω
C_{iss}			1960	pF
C_{oss}	$V_{GS} = 0\text{ V}, V_{DS} = 0.8 V_{DSS(max)},$ $f = 1\text{ MHz}$		139	pF
C_{rss}			19	pF
C_{stray}	Back Metal to any Pin		33	pF
$T_{d(on)}$			4	ns
T_{on}	$V_{GS} = 15\text{ V}, V_{DS} = 0.8 V_{DSS}$ $I_D = 0.5 I_{DM}$		4	ns
$T_{d(off)}$	$R_G = 1\text{ } \Omega$ (External)		4	ns
T_{off}			5	ns



Source-Drain Diode Characteristic Values
 ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Test Conditions	min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			19 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			114 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V},$ Pulse test, $t \leq 300\mu\text{s},$ duty cycle $\leq 2\%$			1.5 V
T_{rr}			TBD	ns

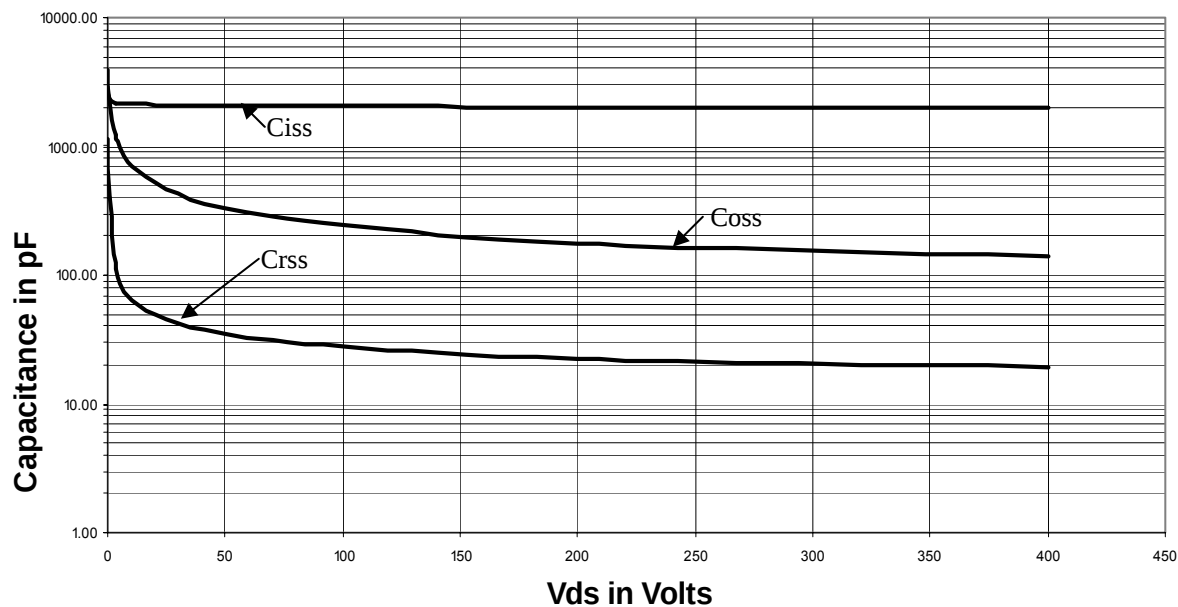
For detailed device mounting and installation instructions, see the “*DE-Series MOSFET Mounting Instructions*” technical note on IXYS RF’s web site at www.ixysrf.com/Technical_Support/App_notes.html

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					

PRELIMINARY



IXZ318N50 Capacitance verses Vds