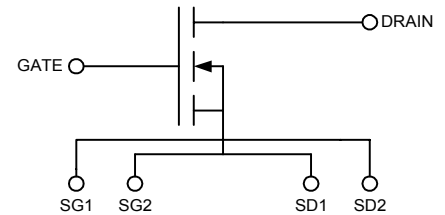
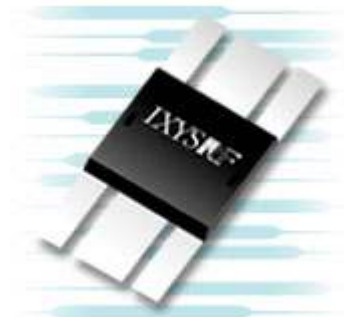


N-Channel Enhancement Mode Switch Mode RF MOSFET  
 Low Capacitance Z-MOS™ MOSFET Process  
 Optimized for RF Operation  
 Ideal for Class C, D, & E Applications

**V<sub>DSS</sub>** = **1200 V**  
**I<sub>D25</sub>** = **8.0 A**  
**R<sub>DS(on)</sub>** = **2.1 Ω**  
**P<sub>DC</sub>** = **880 W**

Symbol	Test Conditions	Maximum Ratings	
<b>V<sub>DSS</sub></b>	T <sub>J</sub> = 25°C to 150°C	1200	V
<b>V<sub>DGR</sub></b>	T <sub>J</sub> = 25°C to 150°C; R <sub>GS</sub> = 1 MΩ	1200	V
<b>V<sub>GS</sub></b>	Continuous	±20	V
<b>V<sub>GSM</sub></b>	Transient	±30	V
<b>I<sub>D25</sub></b>	T <sub>c</sub> = 25°C	8	A
<b>I<sub>DM</sub></b>	T <sub>c</sub> = 25°C, pulse width limited by T <sub>JM</sub>	40	A
<b>I<sub>AR</sub></b>	T <sub>c</sub> = 25°C	8	A
<b>E<sub>AR</sub></b>	T <sub>c</sub> = 25°C	TBD	mJ
<b>dv/dt</b>	I <sub>s</sub> ≤ I <sub>DM</sub> , di/dt ≤ 100A/μs, V <sub>DD</sub> ≤ V <sub>DSS</sub> , T <sub>J</sub> ≤ 150°C, R <sub>G</sub> = 0.2Ω	5	V/ns
	I <sub>s</sub> = 0	>200	V/ns
<b>P<sub>DC</sub></b>		880	W
<b>P<sub>DHS</sub></b>	T <sub>c</sub> = 25°C, Derate 4.4W/°C above 25°C	440	W
<b>P<sub>DAMB</sub></b>	T <sub>c</sub> = 25°C	3.0	W
<b>R<sub>thJC</sub></b>		0.17	C/W
<b>R<sub>thJHS</sub></b>		0.34	C/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<sub>DS(on)</sub>
- Very low insertion inductance (<2nH)
- No beryllium oxide (BeO) or other hazardous materials

**Advantages**

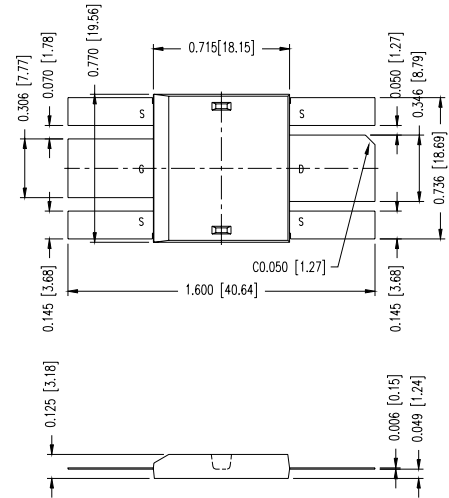
- Optimized for RF and high speed
- Easy to mount—no insulators needed
- High power density

		min.	typ.	max.	
<b>V<sub>DSS</sub></b>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 4 ma	1200			V
<b>V<sub>GS(th)</sub></b>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	3.5		6.5	V
<b>I<sub>GSS</sub></b>	V <sub>GS</sub> = ±20 V <sub>DC</sub> , V <sub>DS</sub> = 0			±100	nA
<b>I<sub>DSS</sub></b>	V <sub>DS</sub> = 0.8V <sub>DSS</sub> V <sub>GS</sub> =0		T <sub>J</sub> = 25C	50	μA
				T <sub>J</sub> = 125C	1
<b>R<sub>DS(on)</sub></b>	V <sub>GS</sub> = 20 V, I <sub>D</sub> = 0.5I <sub>D25</sub> Pulse test, t ≤ 300μS, duty cycle d ≤ 2%		2.1		Ω
<b>g<sub>fs</sub></b>	V <sub>DS</sub> = 50 V, I <sub>D</sub> = 0.5I <sub>D25</sub> , pulse test		10.1		S
<b>T<sub>J</sub></b>		-55		+175	°C
<b>T<sub>JM</sub></b>			175		°C
<b>T<sub>stg</sub></b>		-55		+ 175	°C
<b>T<sub>L</sub></b>	1.6mm(0.063 in) from case for 10 s		300		°C
<b>Weight</b>			3.5		g

# PRELIMINARY

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

		min.	typ.	max.
$R_G$				1 $\Omega$
$C_{iss}$			1960	pF
$C_{oss}$	$V_{GS} = 0\text{ V}, V_{DS} = 0.8 V_{DSS(max)}, f = 1\text{ MHz}$		59	pF
$C_{rss}$			9.2	pF
$C_{stray}$	Back Metal to any Pin		33	pF
$T_{d(on)}$			4	ns
$T_{on}$	$V_{GS} = 15\text{ V}, V_{DS} = 0.8 V_{DSS}, I_D = 0.5 I_{DM}$		5	ns
$T_{d(off)}$	$R_G = 1\ \Omega$ (External)		4	ns
$T_{off}$			6	ns



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

Symbol	Test Conditions	min.	typ.	max.
$I_S$	$V_{GS} = 0\text{ V}$			8 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$			48 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

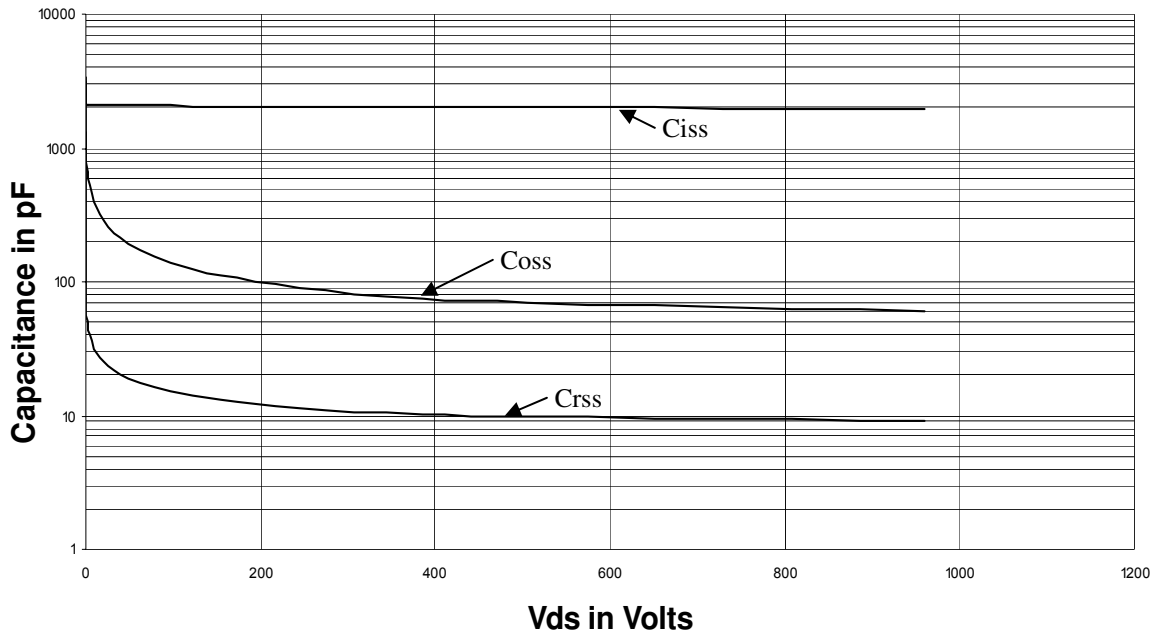
For detailed device mounting and installation instructions, see the “*DE-Series MOSFET Mounting Instructions*” technical note on IXYS RF’s web site at [www.ixysrf.com/Technical\\_Support/App\\_notes.html](http://www.ixysrf.com/Technical_Support/App_notes.html)

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**



**IXZ308N120 Capacitances verses Vds**

Doc #dsIXZ308N12 REV 06/04  
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