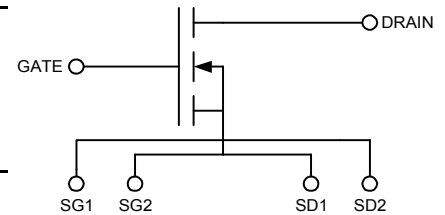


N-Channel Enhancement Mode  
 Low  $Q_g$  and  $R_g$   
 High  $dv/dt$   
 Nanosecond Switching  
 Ideal for Class C, D, & E Applications

$V_{DSS} = 1000\text{ V}$   
 $I_{D25} = 10\text{ A}$   
 $R_{DS(on)} \leq 1.2\ \Omega$   
 $P_{DC} = 940\text{ W}$

Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	1000	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1\text{ M}\Omega$	1000	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_c = 25^\circ\text{C}$	10	A
$I_{DM}$	$T_c = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	60	A
$I_{AR}$	$T_c = 25^\circ\text{C}$	10	A
$E_{AR}$	$T_c = 25^\circ\text{C}$	30	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
$P_{DC}$		940	W
$P_{DHS}$	$T_c = 25^\circ\text{C}$ Derate $4.4\text{ W}/^\circ\text{C}$ above $25^\circ\text{C}$	425	W
$P_{DAMB}$	$T_c = 25^\circ\text{C}$	4.5	W
$R_{thJC}$		0.16	C/W
$R_{thJHS}$		0.23	C/W



Symbol	Test Conditions	Characteristic Values		
		$T_J = 25^\circ\text{C}$ unless otherwise specified		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0\text{ V}$ , $I_D = 3\text{ ma}$	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 250\ \mu\text{A}$	2.5	3.1	5.5 V
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}_{DC}$ , $V_{DS} = 0$			$\pm 100\text{ nA}$
$I_{DSS}$	$V_{DS} = 0.8\text{ V}_{DSS}$ , $T_J = 25^\circ\text{C}$ $V_{GS} = 0$ , $T_J = 125^\circ\text{C}$			50 $\mu\text{A}$ 1 mA
$R_{DS(on)}$	$V_{GS} = 15\text{ V}$ , $I_D = 0.5I_{D25}$ Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$			1.2 $\Omega$
$g_{fs}$	$V_{DS} = 20\text{ V}$ , $I_D = 0.5I_{D25}$ , pulse test	4	6	S
$T_J$		-55		+150 $^\circ\text{C}$
$T_{JM}$			150	$^\circ\text{C}$
$T_{stg}$		-55		+150 $^\circ\text{C}$
$T_L$	1.6mm (0.063 in) from case for 10 s		300	$^\circ\text{C}$
<b>Weight</b>			3	g

### Features

- Isolated Substrate
  - high isolation voltage (>2500V)
  - excellent thermal transfer
  - Increased temperature and power cycling capability
- IXYS advanced low  $Q_g$  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 switching at frequencies to 50MHz
- Easy to mount—no insulators needed
- High power density

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C unless otherwise specified)		
		min.	typ.	max.
R <sub>G</sub>			0.3	Ω
C <sub>iss</sub>			2750	pF
C <sub>oss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 0.8 V <sub>DSS(max)</sub> , f = 1 MHz		110	pF
C <sub>rss</sub>			20	pF
C <sub>stray</sub>	Back Metal to any Pin		33	pF
T <sub>d(on)</sub>			5	ns
T <sub>on</sub>	V <sub>GS</sub> = 15 V, V <sub>DS</sub> = 0.8 V <sub>DSS</sub> I <sub>D</sub> = 0.5 I <sub>DM</sub>		3	ns
T <sub>d(off)</sub>	R <sub>G</sub> = 0.2 Ω (External)		5	ns
T <sub>off</sub>			8	ns
Q <sub>g(on)</sub>			81	nC
Q <sub>gs</sub>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 V <sub>DSS</sub> I <sub>D</sub> = 0.5 I <sub>D25</sub>		16	nC
Q <sub>gd</sub>			42	nC

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C unless otherwise specified)		
		min.	typ.	max.
I <sub>S</sub>	V <sub>GS</sub> = 0 V			10 A
I <sub>SM</sub>	Repetitive; pulse width limited by T <sub>JM</sub>			80 A
V <sub>SD</sub>	I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0 V, Pulse test, t ≤ 300 μs, duty cycle ≤ 2%			1.5 V
T <sub>rr</sub>			200	ns
Q <sub>RM</sub>	I <sub>F</sub> = I <sub>S</sub> , -di/dt = 100A/μs, V <sub>R</sub> = 100V		0.6	μC
I <sub>RM</sub>			7	A

For detailed device mounting and installation instructions, see the “*Device Installation & Mounting Instructions*” technical note on the IXYSRF web site at;

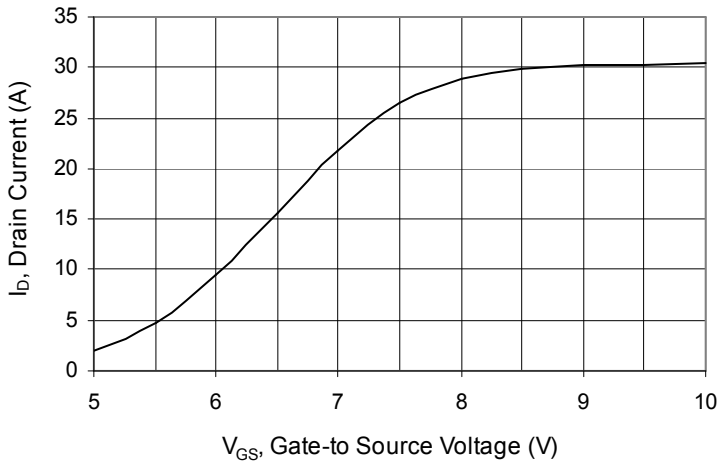
[http://www.ixysrf.com/pdf/switch\\_mode/appnotes/7de\\_series\\_mosfet\\_installation\\_instructions.pdf](http://www.ixysrf.com/pdf/switch_mode/appnotes/7de_series_mosfet_installation_instructions.pdf)

IXYS RF reserves the right to change limits, test conditions and dimensions.

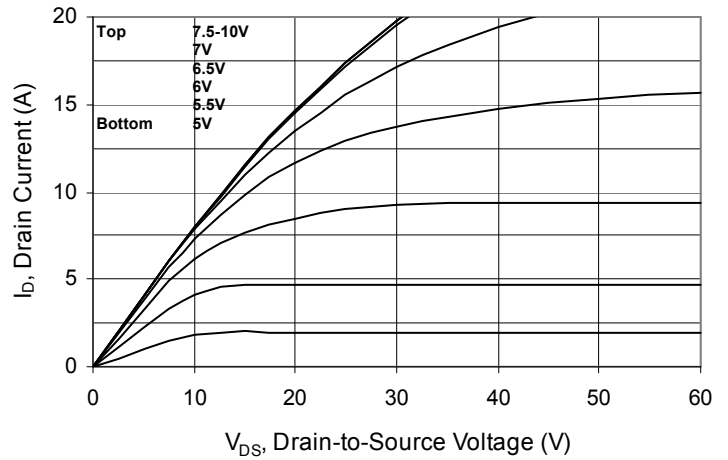
IXYS RF MOSFETS are covered by one or more of the following U.S. patents:

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				

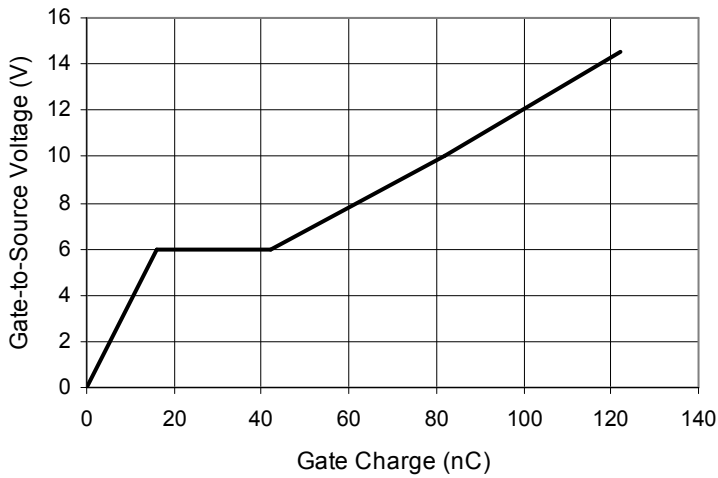
**Fig. 1** Typical Transfer Characteristics  
 $V_{DS} = 60V, PW = 4\mu S$



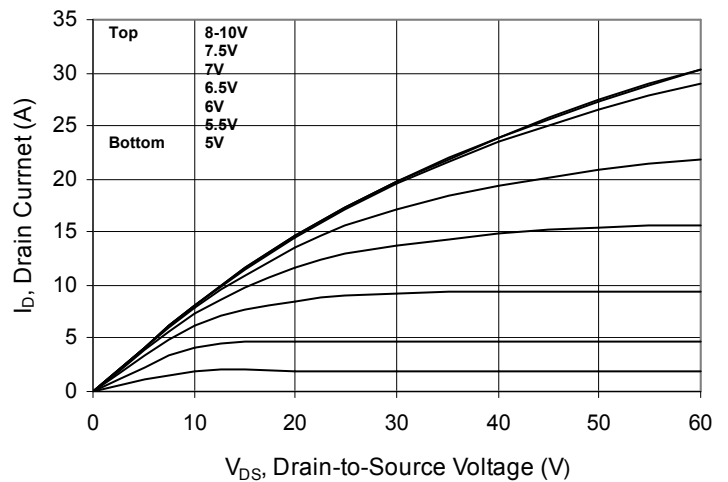
**Fig. 2** Typical Output Characteristics



**Fig. 3** Gate Charge vs. Gate-to-Source Voltage  
 $V_{DS} = 500V, I_D = 5A$



**Fig. 4** Extended Typical Output Characteristics



**Fig. 5**  $V_{DS}$  vs. Capacitance

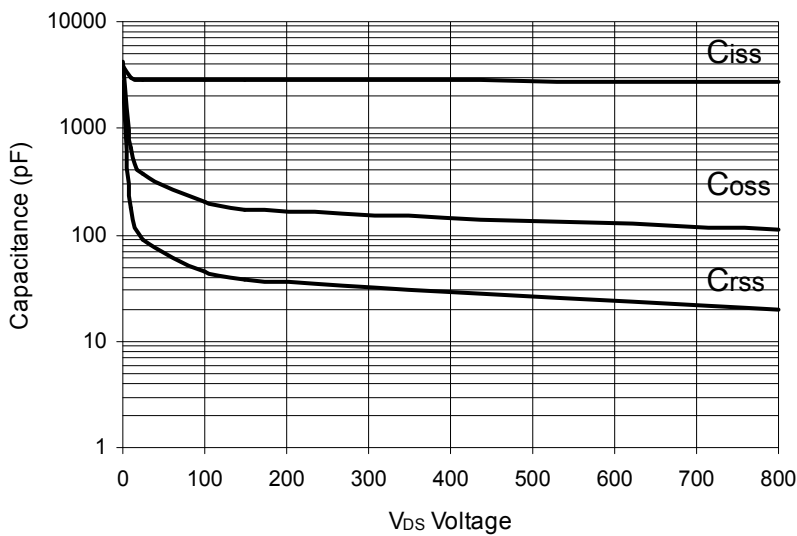


Fig. 6 Package Drawing

