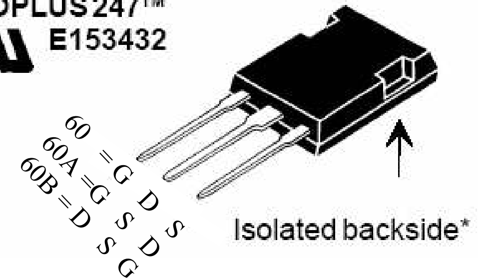
IXYS RF

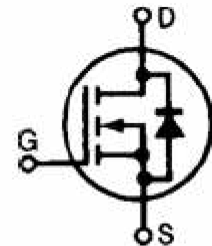
IXZR16N60 & IXZR16N60A/B
Z-MOS RF Power MOSFET

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_{DSS}	=	600 V
I_{D25}	=	18 A
$R_{DS(on)}$	≤	0.56 Ω
P_{DC}	=	350

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	600	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	600	V
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_c = 25°C	18	A
I_{DM}	T_c = 25°C, pulse width limited by T_{JM}	90	A
I_{AR}	T_c = 25°C	18	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	Characteristic Values (T_J = 25°C unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 4 ma	600			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}, V_{GS}=0, T_J = 25C			50	µA
	T_J =125C			1	mA
$R_{DS(on)}$	V_{GS} = 20 V, I_D = 0.5I_{D25} Pulse test, t ≤ 300µS, duty cycle d ≤ 2%		0.53		Ω
g_{fs}	V_{DS} = 50V, I_D = 0.5I_{D25}, pulse test		6.4		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

- High Performance RF Z-MOS™
- Optimized for RF and high speed
- Common Source RF Package
  A = Gate Source Drain
  B = Drain Source Gate
- Isolated Package, no insulator required

Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) min.	typ.	max.	
R_G				1	Ω
C_{iss}	V_{GS} = 0 V, V_{DS} = 0.8 $V_{DSS(max)}$, f = 1 MHz		2040		pF
C_{oss}			160		pF
C_{rss}			20		pF
C_{stray}	Back Metal to any Pin		33		pF
$T_{d(on)}$	V_{GS} = 15 V, V_{DS} = 0.8 V_{DSS} I_D = 0.5 I_{DM} R_G = 1 Ω (External)		4		ns
T_{on}			4		ns
$T_{d(off)}$			4		ns
T_{off}			6		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS} I_D = 0.5 I_{D25} IG = 3mA		42		nC
Q_{gs}			13		nC
Q_{gd}			18		nC

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V			18	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			108	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

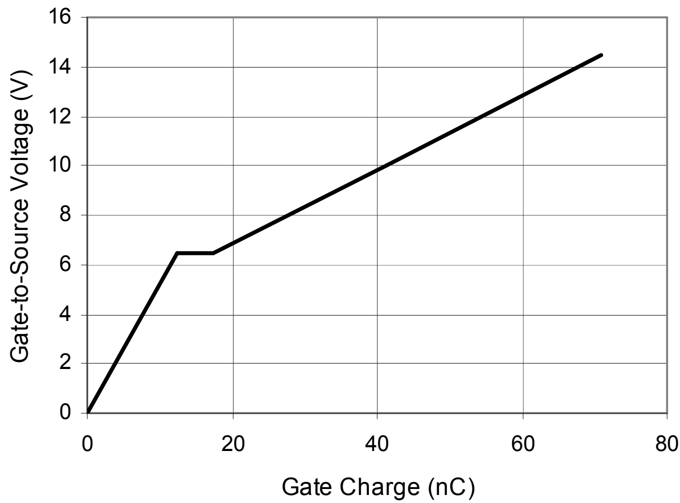


Fig. 2

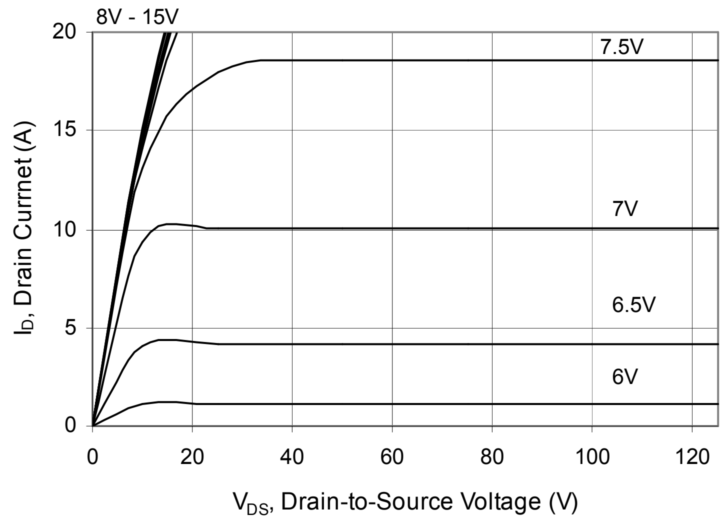


Fig. 3

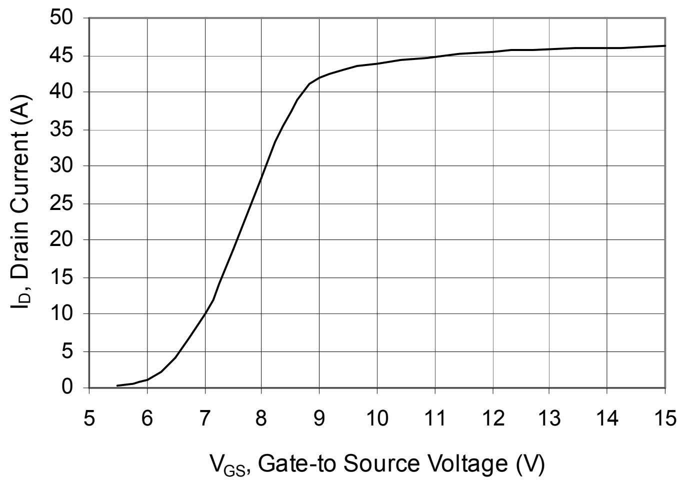


Fig. 4

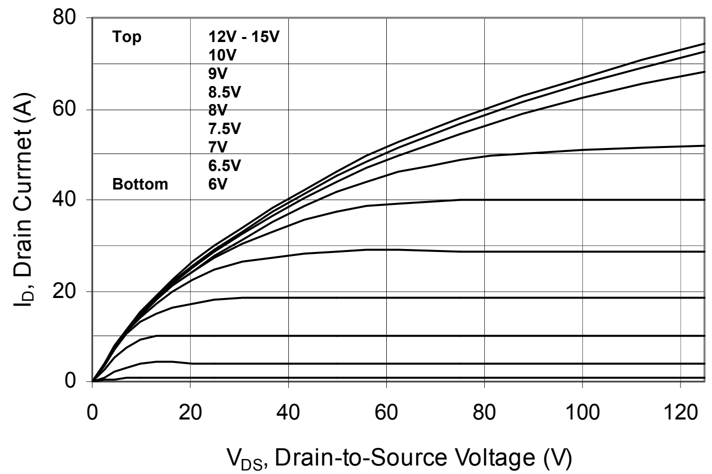


Fig. 5