IXZ210N50L2
RF Power MOSFET

N-channel enhancement mode linear RF power MOSFET

Ideal for class AB and C industrial, scientific, medical, and commercial applications.

V_{DSS} = 500 V

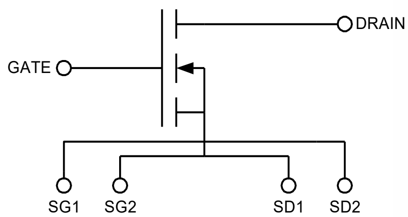
I_{D25} = 10 A

Features

- Isolated Substrate
  - high isolation voltage (>2500V)
  - excellent thermal transfer
  - Increased temperature and power cycling capability
- IXYS RF Low Capacitance Z-MOS™ Process
- Very low insertion inductance (<2nH)
- No beryllium oxide (BeO) or other hazardous materials

Advantages

- High Performance RF Package
- Easy to mount—no insulators needed



Maximum Ratings

Symbol	Parameter	Test Conditions	Maximum	Units
V_{DSS}	Drain-source voltage	T_J = 25°C to 150°C	500	V
V_{DGR}	Drain-gate voltage	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	500	
V_{GS}	Gate-source voltage	Continuous	±20	
V_{GSM}		Transient	±30	
I_{D25}	Continuous drain current	T_c = 25°C	10	A
P_{DC}	Package power dissipation	T_c = 25°C	390	W
P_{DHS}	Dissipation to heat-sink	T_c = 25°C, Derate 6.0W/°C above 25°C	220	
P_{DAMB}	Ambient power dissipation	T_{AMB} = 25°C	10	
R_{thJC}	Thermal resistance junction to case		0.32	° C/W
R_{thJHS}	Thermal resistance junction to heat-sink		0.57	
T_J, T_{STG}	Operating and storage junction temperature range		-55 - 150	° C
T_L	Lead temperature	1.6mm(0.063 in) from case for 10 s	300	

Electrical Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Static						
BV_{DSS}	Breakdown voltage drain to source	V_{GS} = 0 V, I_D = 4 ma	500			V
I_{DSS}	Drain leakage current	V_{DS} = 0.8V_{DSS} T_J = 25C V_{GS}= 0 T_J =125C			50 1	µA mA
I_{GSS}	Gate leakage current	V_{GS} = ±20 V_{DC}, V_{DS} = 0			±100	nA
g_{fs}	Transconductance	V_{DS} = 60 V, I_D = 0.5I_{D25}, pulse test		3.1		S
$V_{GS(th)}$	Threshold voltage	V_{DS} = V_{GS}, I_D = 250µA	4.0	5.4	6.5	V

Electrical Characteristics cont.

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Dynamic						
$R_{DS(on)}$	Drain to source ON resistance	V_{GS} = 15 V, I_D = 0.5 I_{D25} Pulse test, t ≤ 300μS, duty cycle d ≤ 2%		1		Ω
C_{ISS}	Input capacitance	V_{GS} = 0 V, V_{DS} = 0.8 V_{DSS}, f = 1 MHz		611		pF
C_{OSS}	Output capacitance			100		pF
C_{RSS}	Reverse transfer capacitance			6		pF
$t_{D(ON)}$	Turn-on delay time	V_{GS} = 15 V, V_{DS} = 0.8 V_{DSS}		4		ns
t_R	Rise time			3		ns
$t_{D(OFF)}$	Turn-off delay time			4		ns
t_F	Fall time			5		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.

For detailed device mounting and installation instructions, see the "*Device Installation & Mounting Instructions*" technical note on the IXYS Colorado web site.

Fig. 1

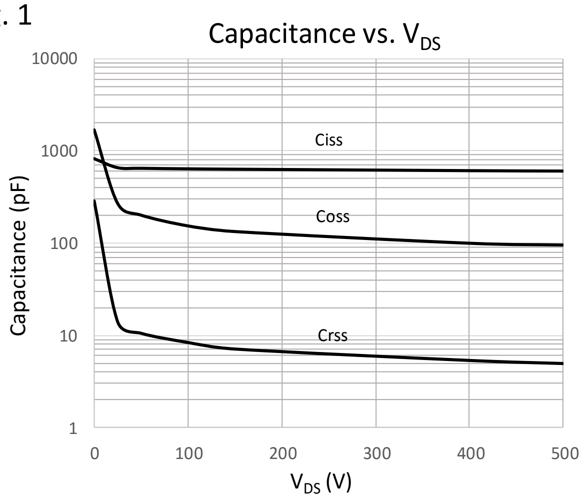


Fig. 2

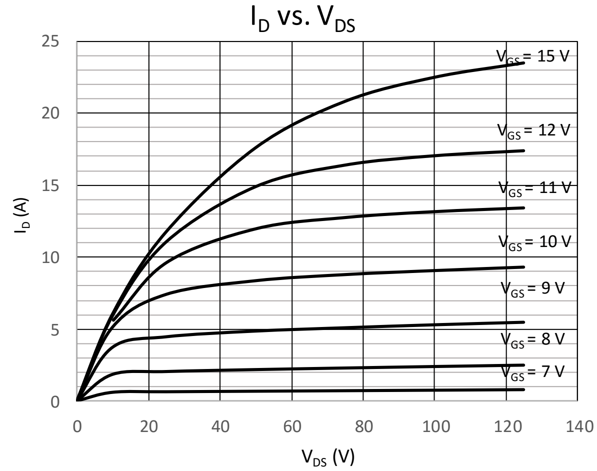


Fig. 3

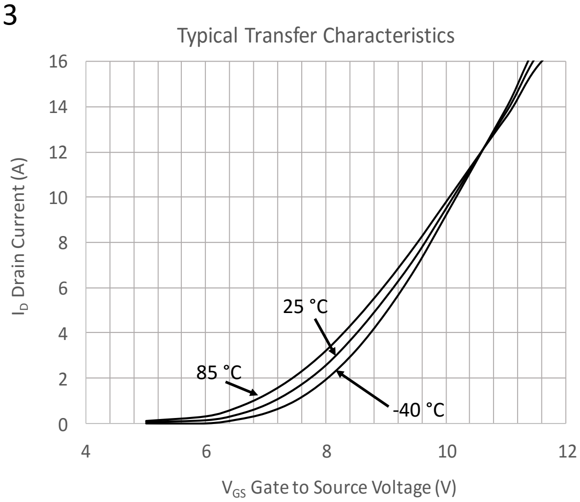


Fig. 4

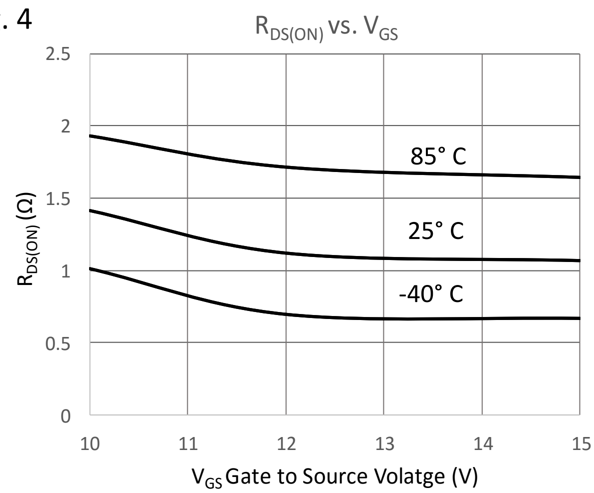


Fig. 5

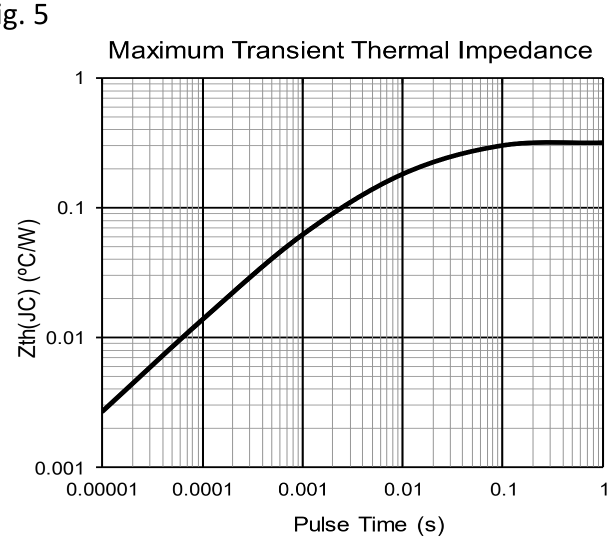


Fig. 6

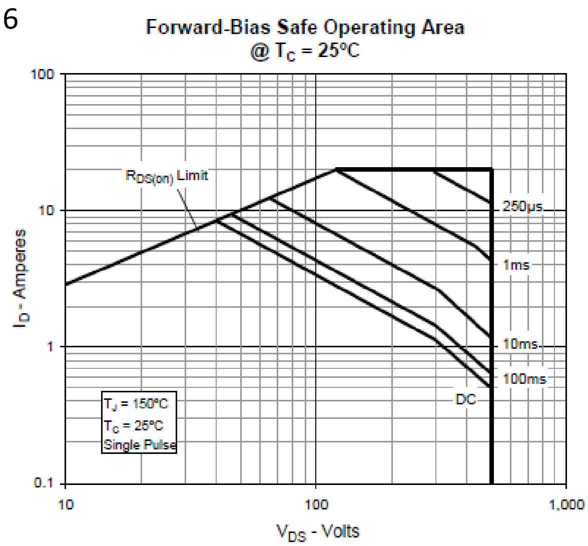


Fig. 7

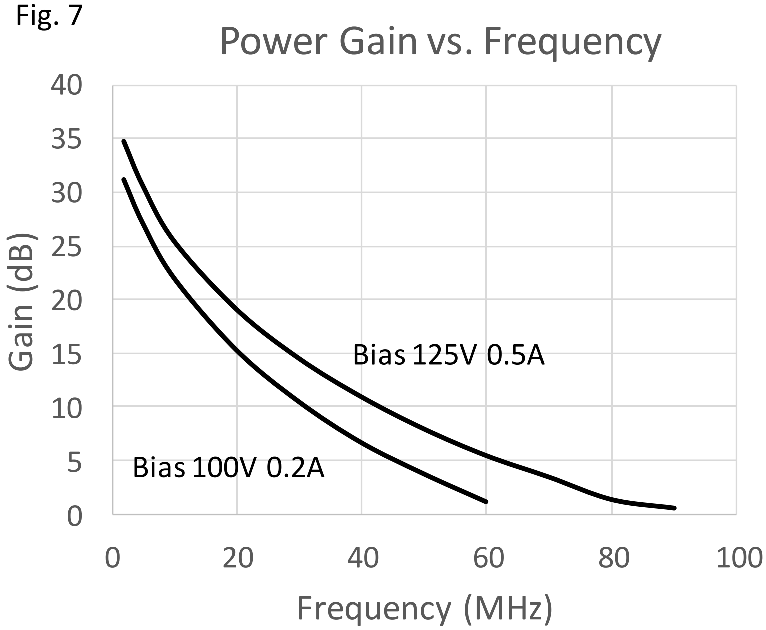


Table 1
S Parameters
V_{DS} = 100V I_{BIAS} = 0.2A

Freq. (MHz)	Mag. S11	Phase S11	Mag. S12	Phase S12	Mag. S21	Phase S21	Mag. S22	Phase S22
2	1	-56	0.011	66	35.6	155.4	0.886	-3.7
5	0.95	-106.4	0.018	31	23.2	118.6	0.727	-36
10	0.934	-138.5	0.019	5.4	12.6	92.9	0.664	-61
13.56	0.937	-149.1	0.018	-4.2	8.45	82.1	0.674	-75
15	0.938	-151.9	0.018	-7.3	7.8	78.3	0.69	-80
20	0.945	-158.6	0.016	-16	5.5	67.8	0.725	-94.7
25	0.95	-162.7	0.015	-20.9	4.3	60	0.77	-107.3
27.12	0.954	-164.2	0.014	-22.4	3.97	57.3	0.782	-111.4
30	0.959	-165.2	0.013	-24.6	3.3	54	0.798	-117.2
35	0.96	-168	0.011	-26.8	2.76	48.8	0.83	-125.3
40	0.962	-169.7	0.009	-26.3	2.19	44.5	0.856	-132.5
45	0.965	-171.4	0.008	-24.4	1.88	41.4	0.87	-137.9
50	0.969	-172.2	0.007	-19.6	1.55	38	0.89	-143.4
60	0.971	-174.3	0.005	-2	1.19	33	0.909	-151
70	0.972	-175.8	0.005	26.3	0.93	28.7	0.92	-159
80	0.9724	-177.4	0.006	45.8	0.746	25.4	0.935	-165
90	0.972	-178.3	0.008	54.1	0.68	26.8	0.901	-167.24
100	0.972	-179.3	0.009	60	0.585	20	0.939	-172.3
105	0.973	-179.7	0.01	61.5	0.5	19.7	0.94	-174.6
110	0.971	179.7	0.011	64.3	0.468	17.1	0.939	-176.76

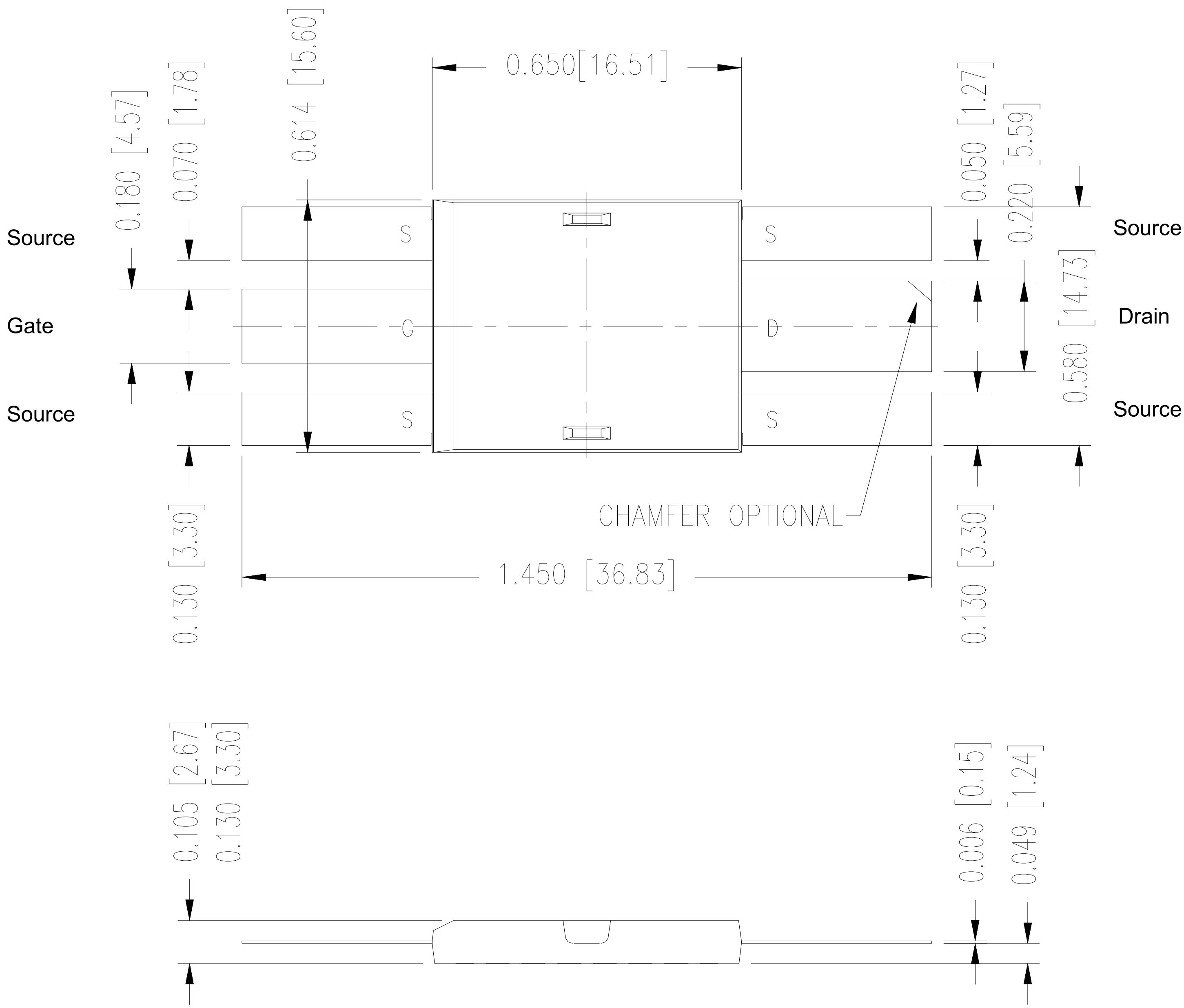
Table 2
S Parameters
V_{DS} = 100V I_{BIAS} = 0.6A

Freq. (MHz)	Mag. S11	Phase S11	Mag. S12	Phase S12	Mag. S21	Phase S21	Mag. S22	Phase S22
2	1	-67.8	0.01	61.9	62.5	151	0.79	-15
5	0.924	-117	0.015	26.6	36.5	114	0.57	-53
10	0.91	-145.7	0.016	5.3	19.7	91	0.51	-76
13.56	0.916	-154	0.015	-2.2	14.3	81.6	0.53	-88
15	0.92	-157	0.015	-4.6	12.9	78.1	0.54	-92
20	0.927	-161	0.014	-11	9.3	68.7	0.59	-105
25	0.933	-165	0.012	-15	6.9	61.2	0.62	-115.6
27.12	0.935	-166	0.011	-15.5	6.3	58.4	0.65	-118
30	0.939	-167.5	0.011	-17.4	5.4	55.2	0.702	-123
35	0.945	-169.5	0.01	-19	4.3	50	0.74	-130
40	0.95	-171	0.008	-17.6	3.6	45.6	0.78	-136
45	0.955	-172.3	0.008	-13	3	42.1	0.805	-141
50	0.96	-173.4	0.006	-9	2.5	38.6	0.825	-146
60	0.964	-175.4	0.0057	8	1.94	33.1	0.86	-154
70	0.967	-177	0.005	31	1.49	28.6	0.885	-160.5
80	0.97	-178.3	0.006	47	1.19	25.3	0.897	-166.5
90	0.972	-178.5	0.008	56	1.05	27.8	0.865	-169.7
100	0.971	-179.5	0.01	61	0.903	19.7	0.905	-173.7
105	0.972	-179.9	0.01	62	0.82	18	0.912	-175.8
110	0.972	179.5	0.011	64	0.78	16.7	0.912	-177.8

Table 3
S Parameters
V_{DS} = 125V I_{BIAS} = 0.5A

Freq. (MHz)	Mag. S11	Phase S11	Mag. S12	Phase S12	Mag. S21	Phase S21	Mag. S22	Phase S22
2	1	-60	0.009	64	55	153	0.825	-9.5
5	0.935	-112	0.015	29	34	116	0.618	-43
10	0.922	-142	0.016	6.5	18.7	92	0.54	-66
13.56	0.925	-151	0.016	-1.4	13.7	83	0.55	-79
15	0.927	-155	0.015	-3.7	12.5	79.6	0.56	-83
20	0.933	-160	0.014	-11.2	9	70.1	0.61	-97
25	0.939	-164	0.0128	-15.1	6.7	62.4	0.67	-107
27.12	0.942	-165.8	0.0123	-16.3	6	59.8	0.68	-111
30	0.944	-167	0.0116	-17.5	5.3	56.5	0.72	-116
35	0.95	-169	0.01	-18	4.2	51.3	0.76	-124
40	0.955	-171	0.0089	-17.8	3.3	47	0.79	-130
45	0.959	-172	0.008	-15	2.8	43.4	0.81	-136
50	0.961	-173.2	0.007	-11	2.4	39	0.83	-141
60	0.967	-175	0.0055	6	1.8	34.5	0.86	-150
70	0.97	-177	0.0055	31	1.4	29.6	0.88	-157
80	0.971	-178.3	0.0064	44.5	1.1	26.3	0.9	-164
90	0.972	-179.6	0.0084	56	1.04	28.5	0.86	-165
100	0.972	-179.4	0.0095	61	0.88	20.6	0.908	-171
105	0.97	-179.9	0.01	61.7	0.8	19	0.91	-173
110	0.97	179	0.011	64	0.74	17.5	0.91	-175

Fig. 8 Package Dimensions



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