

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

$$V_{DSS} = 1200 \text{ V}$$

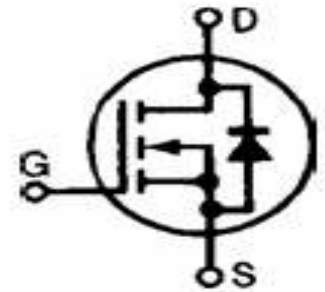
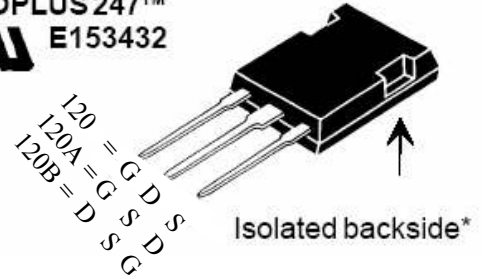
$$I_{D25} = 8.0 \text{ A}$$

$$R_{DS(on)} \leq 1.5 \Omega$$

$$P_{DC} = 250 \text{ W}$$

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	1200	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	1200	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_c = 25^\circ\text{C}$	8	A
I_{DM}	$T_c = 25^\circ\text{C}$, pulse width limited by T_{JM}	40	A
I_{AR}	$T_c = 25^\circ\text{C}$	8	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}		250	W
P_{DHS}	$T_c = 25^\circ\text{C}$, Derate $4.4 \text{ W}/^\circ\text{C}$ above 25°C	180	W
P_{DAMB}	$T_c = 25^\circ\text{C}$	3.0	W
R_{thJC}		0.60	C/W
R_{thJHS}		0.85	C/W

ISOPLUS247™
E153432



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 switching at frequencies to 100MHz
- Common Source RF Package
- Easy to mount—no insulators needed

		min.	typ.	max.	
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 4 \text{ ma}$	1200			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu\text{A}$	4	4.9	6	V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$			± 100	nA
I_{DSS}	$V_{DS} = 0.8 V_{DSS}$, $V_{GS} = 0$, $T_J = 25^\circ\text{C}$, $T_J = 125^\circ\text{C}$			50 1	μA mA
$R_{DS(on)}$	$V_{GS} = 15 \text{ V}$, $I_D = 0.5 I_{D25}$, Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2\%$		1.4		Ω
g_{fs}	$V_{DS} = 20 \text{ V}$, $I_D = 0.5 I_{D25}$, pulse test	4	5.5	6.5	S
T_J		-55		+175	$^\circ\text{C}$
T_{JM}			175		$^\circ\text{C}$
T_{stg}		-55		+ 175	$^\circ\text{C}$
T_L	1.6mm(0.063 in) from case for 10 s		300		$^\circ\text{C}$
Weight			3.5		g



IXZR08N120 & IXZR08N120A/B

Z-MOS RF Power MOSFET

Symbol	Test Conditions	Characteristic Values		
		(T _J = 25°C unless otherwise specified)		
		min.	typ.	max.
R _G			0.3	Ω
C _{iss}			1900	pF
C _{oss}	V _{GS} = 0 V, V _{DS} = 0.8 V _{DSS(max)} , f = 1 MHz		86	pF
C _{rss}			11	pF
C _{stray}	Back Metal to any Pin		33	pF
T _{d(on)}			4	ns
T _{on}	V _{GS} = 15 V, V _{DS} = 0.8 V _{DSS} I _D = 0.5 I _{DM}		5	ns
T _{d(off)}	R _G = 0.2 Ω (External)		4	ns
T _{off}			6	ns
Q _{g(on)}			39	nC
Q _{gs}	V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} I _D = 0.5 I _{D25} I _G = 3mA		11	nC
Q _{gd}			19	nC

Source-Drain Diode

Characteristic Values

(T_J = 25°C unless otherwise specified)

Symbol	Test Conditions	min.	typ.	max.
I _S	V _{GS} = 0 V			8 A
I _{SM}	Repetitive; pulse width limited by T _{JM}			48 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.

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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

Gate Charge vs. Gate-to-Source Voltage
 $V_{DS} = 600V$, $I_D = 4A$, $I_G = 3mA$

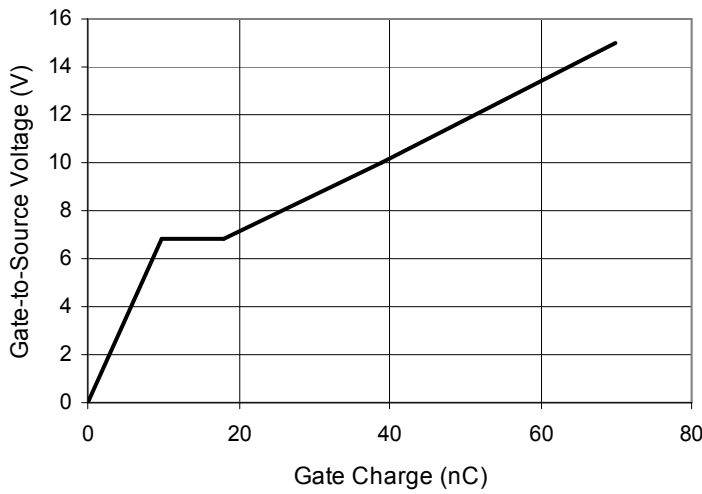


Fig. 2

Typical Output Characteristics

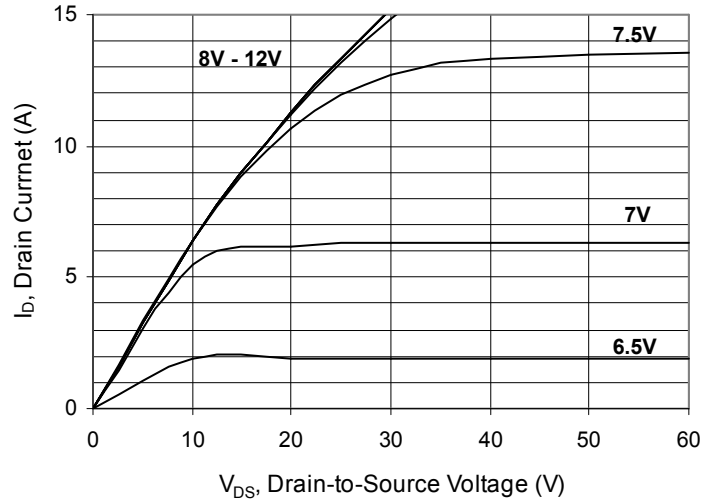


Fig. 3

Typical Transfer Characteristics
 $V_{DS} = 60V$, $PW = 30\mu s$

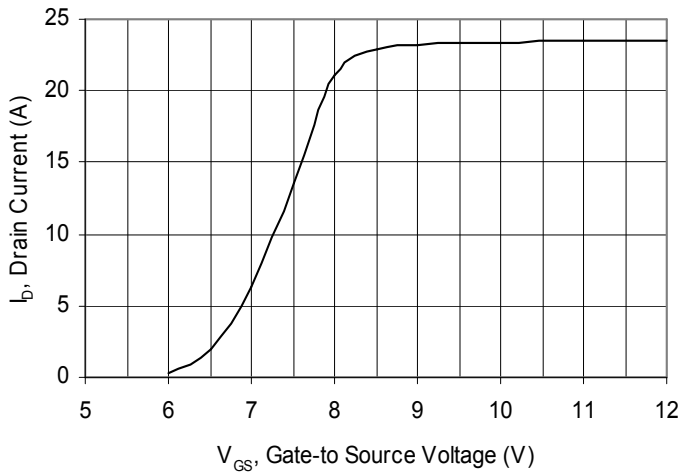


Fig. 4

Extended Typical Output Characteristics

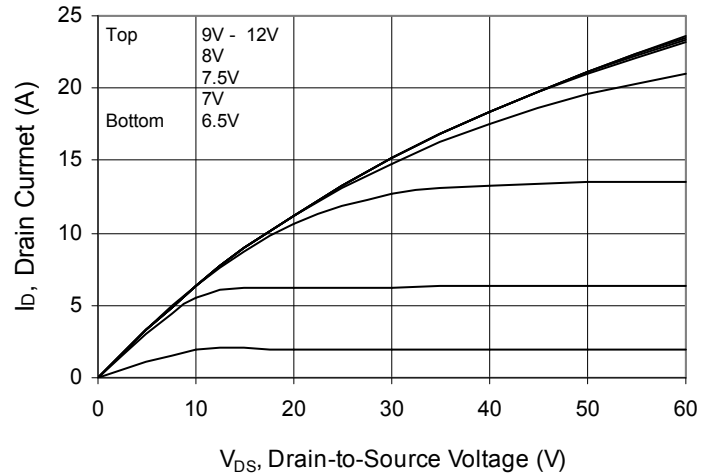


Fig. 5

V_{DS} vs. Capacitance

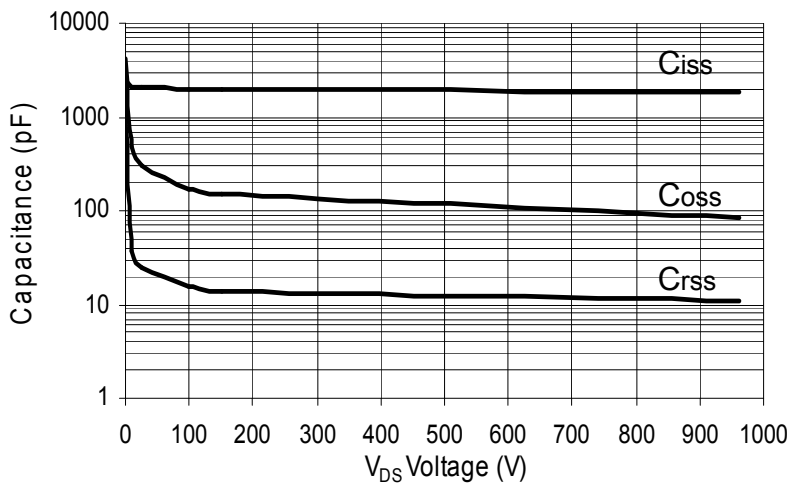
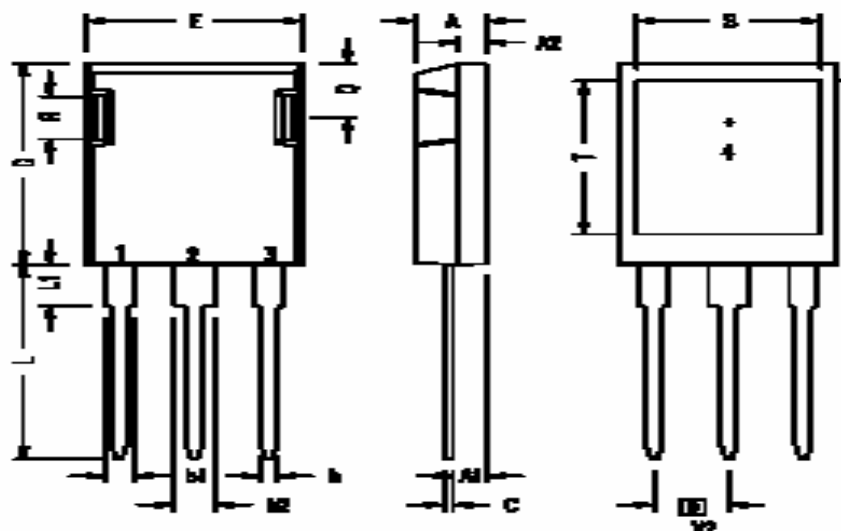
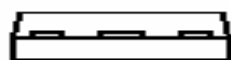


Fig. 6 Package Drawing

ISOPLUS 247 OUTLINE



120: 1=G, 2=D, 3=S
120A: 1=G, 2=S, 3= D
120B: 1=D, 2=S, 3=G



1 Gate, 2 Drain (Collector)
3 Source (Emitter)
4 no connection

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	.190	.205
A ₁	2.29	2.54	.090	.100
A ₂	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b ₁	1.91	2.13	.075	.084
b ₂	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	.244
R	4.32	4.83	.170	.190

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