

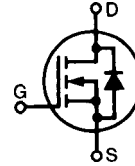
HiPerFET™ MOSFET ISOPLUS220™

Electrically Isolated Back Surface

N-Channel Enhancement Mode
High dv/dt, Low t_{rr} , HDMOS™ Family

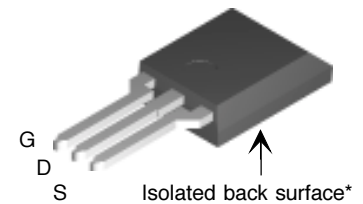
IXFC 60N20

$$\begin{aligned} V_{DSS} &= 200 \text{ V} \\ I_{D25} &= 60 \text{ A} \\ R_{DS(on)} &= 33 \text{ m}\Omega \\ t_{rr} &\leq 250 \text{ ns} \end{aligned}$$



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	200	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	200	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	60	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	240	A
I_{AR}	$T_C = 25^\circ\text{C}$	60	A
E_{AR}	$T_C = 25^\circ\text{C}$	30	mJ
E_{AS}	$T_C = 25^\circ\text{C}$	1.0	J
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2 \Omega$	5	V/ns
P_D	$T_C = 25^\circ\text{C}$	230	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
Weight		3	g

ISOPLUS220™



G = Gate,
S = Source
D = Drain,

* Patent pending

Features

- Silicon chip on Direct-Copper-Bond substrate
- High power dissipation
- Isolated mounting surface
- 2500V electrical isolation
- Low drain to tab capacitance (<35pF)
- Low $R_{DS(on)}$
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Fast intrinsic Rectifier

Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control

Advantages

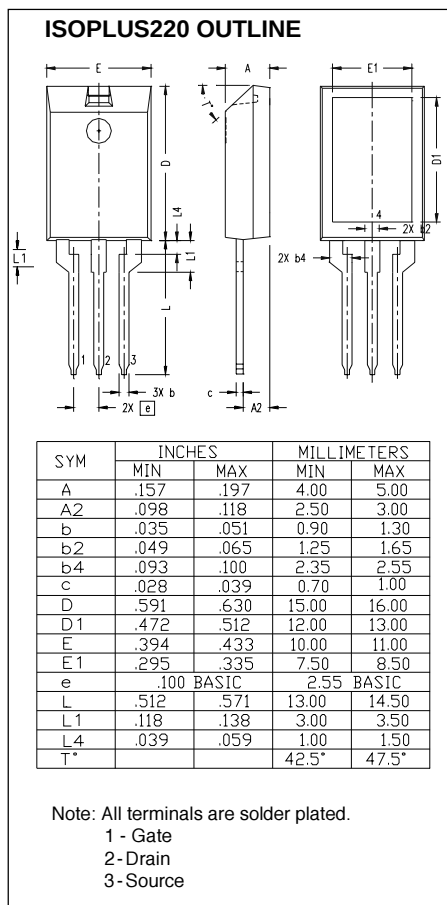
- Easy assembly: no screws or isolation foils required
- Space savings
- High power density
- Low collector capacitance to ground (low EMI)

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \mu\text{A}$	200		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4 \text{ mA}$	2		4 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 100 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0 \text{ V}$			25 μA 1 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = I_T$ Notes 1, 2			33 m Ω

Symbol	Test Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	V _{DS} = 10 V; I _D = I _T Notes 1, 2	30	40	S
C_{iss}	} V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		5200	pF
C_{oss}			880	pF
C_{rss}			260	pF
t_{d(on)}	} V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = 0.5 I _{D25} , R _G = 2.5 Ω (External)		38	ns
t_r			63	ns
t_{d(off)}			85	ns
t_f			26	ns
Q_{g(on)}	} V _{GS} = 10 V, V _{DS} = 0.5 V _{DSS} , I _D = I _T Notes 2		155	nC
Q_{gs}			38	nC
Q_{gd}			55	nC
R_{thJC}			0.30	0.90 K/W
R_{thCK}				K/W

Source-Drain Diode		Characteristic Values (T _J = 25°C, unless otherwise specified)	
Symbol	Test Conditions	min.	typ. max.
I _S	V _{GS} = 0 V		60 A
I _{SM}	Repetitive; pulse width limited by T _{JM}		240 A
V _{SD}	I _F = I _S , V _{GS} = 0 V, Note 1		1.5 V
t _{rr}	$\left\{ \begin{array}{l} I_F = 25A \\ -di/dt = 100 A/\mu s, \\ V_R = 50 V \end{array} \right.$	0.7	250 ns
Q _{RM}			μC
I _{RM}			8 A

Note: 1. Pulse test, $t \leq 300 \mu s$, duty cycle $d \leq 2 \%$
2. $I_T = 30A$



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

IXYS MOSFETS and IGBTs are covered by one or more of the following U.S. patents:	4,835,592	4,881,106	5,017,508	5,049,961	5,187,117	5,486,715
	4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025