

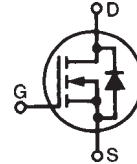
HiPerFET™ MOSFET ISOPLUS220™

Electrically Isolated Back Surface

IXFC 80N08
IXFC 80N085

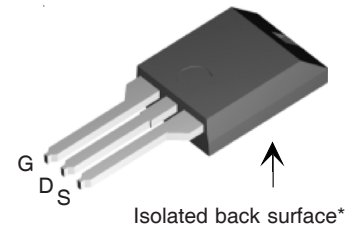
V_{DSS}	I_{D25}	$R_{DS(on)}$
80 V	80 A	11 mΩ
85 V	80 A	11 mΩ

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



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	80N08	80 V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1\text{ M}\Omega$	80N085	85 V
V_{GS}	Continuous		± 20 V
V_{GSM}	Transient		± 30 V
I_{D25}	$T_C = 25^\circ\text{C}$		80 A
$I_{L(RMS)}$	Lead current limit		80 A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}		75 A
I_{AR}	$T_C = 25^\circ\text{C}$		320 A
E_{AR}	$T_C = 25^\circ\text{C}$		30 mJ
E_{AS}			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	$^\circ\text{C}$
F_C	Mounting force	11..65/2.4..11	Nm/lb
V_{ISOL}	50/60 Hz, RMS $t = 1$ minute leads-to-tab	2500	V~
Weight		2	g

ISOPLUS220™



G = Gate, D = Drain,
S = Source

* 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)

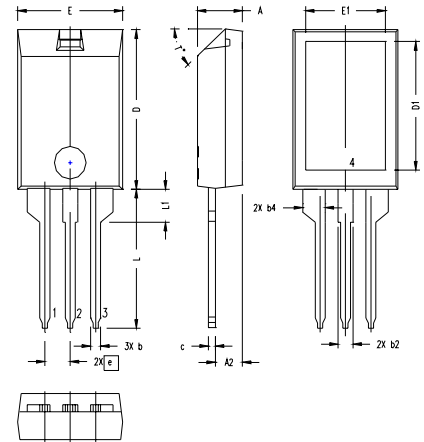
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0\text{ V}$, $I_D = 250\ \mu\text{A}$	80N08 80N085	80 85	V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4\text{ mA}$		2.0	4.0 V
I_{GSS}	$V_{GS} = \pm 20\text{ V}_{DC}$, $V_{DS} = 0$			$\pm 100\text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0\text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		50 μA 1 mA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = I_T$ Notes 1, 2			11 mΩ

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = I_T$ Notes 1, 2	35	55	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		4800	pF
C_{oss}			1675	pF
C_{rss}			590	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}, R_G = 2.5\ \Omega$ (External)		50	ns
t_r			75	ns
$t_{d(off)}$			95	ns
t_f			31	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$ Notes 2		180	nC
Q_{gs}			42	nC
Q_{gd}			75	nC
R_{thJC}			0.54	K/W
R_{thCK}		0.25		K/W

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			80 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			320 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V}$, Note 1			1.5 V
t_{rr}	$I_F = 25\text{ A}$ $-di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 50\text{ V}$			200 ns
Q_{RM}			0.5	μC
I_{RM}			6	A

Note: 1. Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$
 2. $I_T = 40\text{ A}$

ISOPLUS220LV Outline


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.157	.197	4.00	5.00
A2	.098	.118	2.50	3.00
b	.035	.051	0.90	1.30
b2	.049	.065	1.25	1.65
b4	.093	.100	2.35	2.55
c	.028	.039	0.70	1.00
D	.591	.630	15.00	16.00
D1	.472	.512	12.00	13.00
E	.394	.433	10.00	11.00
E1	.295	.335	7.50	8.50
e	.100	BASIC	2.55	BASIC
L	.512	.571	13.00	14.50
L1	.118	.138	3.00	3.50
T*			42.5*	47.5*

Notes:

- Lead 1 = Gate
- Lead 2 = Drain
- Lead 3 = Source
- Back surface 4 is electrically isolated from leads 1, 2 & 3