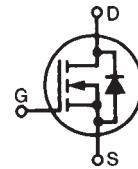


PolarHV™ HiPerFET Power MOSFET ISOPLUS220™

(Electrically Isolated Back Surface)

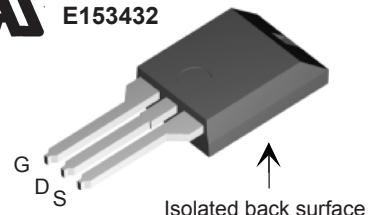
N-Channel Enhancement Mode
Fast Intrinsic Diode
Avalanche Rated

V_{DSS} = 800 V
 I_{D25} = 9 A
 $R_{DS(on)}$ \leq 650 mΩ
 t_{rr} \leq 250 ns



ISOPLUS220™ (IXFC)

E153432



G = Gate
S = Source

D = Drain

Symbol	Test Conditions	Maximum Ratings		
V_{DSS}	$T_J = 25^\circ C$ to $150^\circ C$	800	V	
V_{DGR}	$T_J = 25^\circ C$ to $150^\circ C$; $R_{GS} = 1 M\Omega$	800	V	
V_{GS}	Continuous	± 30	V	
V_{GSM}	Transient	± 40	V	
I_{D25}	$T_c = 25^\circ C$	9	A	
I_{DM}	$T_c = 25^\circ C$, pulse width limited by T_{JM}	48	A	
I_{AR}	$T_c = 25^\circ C$	8	A	
E_{AR}	$T_c = 25^\circ C$	30	mJ	
E_{AS}	$T_c = 25^\circ C$	1.5	J	
dv/dt	$I_s \leq I_{DM}$, $di/dt \leq 100 A/\mu s$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ C$, $R_G = 5 \Omega$	10	V/ns	
P_D	$T_c = 25^\circ C$	150	W	
T_J		-55 ... +150	°C	
T_{JM}		150	°C	
T_{stg}		-55 ... +150	°C	
T_L	1.6 mm (0.062 in.) from case for 10 s	300	°C	
T_{SOLD}	Plastic body for 10 s	260	°C	
V_{ISOL}	50/60 Hz, RMS, $t = 1$, leads-to-tab	2500	V~	
F_c	Mounting Force	11..65/2.5..15	N/lb	
Weight		2	g	

Symbol	Test Conditions ($T_J = 25^\circ C$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0 V$, $I_D = 250 \mu A$	800		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4 mA$	3.0		5.0 V
I_{GSS}	$V_{GS} = \pm 30 V$, $V_{DS} = 0 V$		± 100	nA
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 V$		25	μA
			250	μA
$T_J = 125^\circ C$				
$R_{DS(on)}$	$V_{GS} = 10 V$, $I_D = I_{T_c}$ (Note 1) Pulse test, $t \leq 300 \mu s$, duty cycle $d \leq 2 \%$		650	mΩ

Features

- Silicon chip on Direct-Copper-Bond substrate
 - High power dissipation
 - Isolated mounting surface
 - 2500V electrical isolation
- Low drain to tab capacitance(<35pF)
- Low $R_{DS(on)}$ HDMOS™ process
- 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			
		($T_J = 25^\circ C$ unless otherwise specified)	Min.	Typ.	Max.
g_{fs}	$V_{DS} = 20 V$; $I_D = I_T$, pulse test	9	16	S	
C_{iss} C_{oss} C_{rss}	$V_{GS} = 0 V$, $V_{DS} = 25 V$, $f = 1 MHz$	4600		pF	
		330		pF	
		23		pF	
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10 V$, $V_{DS} = 0.5 V_{DSS}$, $I_D = I_T$ $R_G = 5 \Omega$ (External)	27		ns	
		32		ns	
		75		ns	
		29		ns	
$Q_{g(on)}$ Q_{gs} Q_{gd}	$V_{GS} = 10 V$, $V_{DS} = 0.5 V_{DSS}$, $I_D = I_T$	71		nC	
		21		nC	
		23		nC	
R_{thJC}			0.82	$^\circ C/W$	
R_{thCS}			0.21	$^\circ C/W$	

Source-Drain Diode

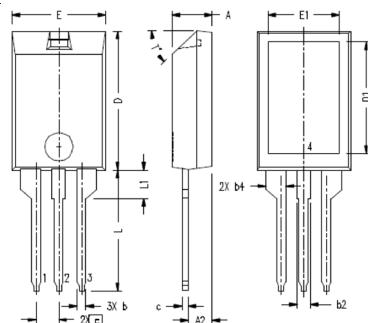
Characteristic Values

 $(T_J = 25^\circ C$ unless otherwise specified)

Symbol	Test Conditions	Min.	Typ.	Max.
I_s	$V_{GS} = 0 V$		16	A
I_{SM}	Repetitive		48	A
V_{SD}	$I_F = I_S$, $V_{GS} = 0 V$, Pulse test, $t \leq 300 \mu s$, duty cycle $d \leq 2 \%$		1.5	V
t_{rr} I_{RM} Q_{RM}	$I_F = 16 A$, $-di/dt = 100 A/\mu s$ $V_R = 100 V$, $V_{GS} = 0 V$		250	ns
		7		A
		0.8		μC

Note 1: Test Current $I_T = 8 A$ **ADVANCE TECHNICAL INFORMATION**

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated objective result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

ISOPLUS220™ (IXFC) Outline

Note:
Bottom heatsink (Pin 4) is electrically isolated from Pin 1, 2, or 3.

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°

Ref: IXYS CO 0177 R0