IXYS

Preliminary Technical Information

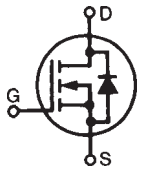
PolarHT™ Power MOSFET

(Electrically Isolated Tab)

N-Channel Enhancement Mode
Avalanche Rated

IXTC 62N15P
IXTR 62N15P

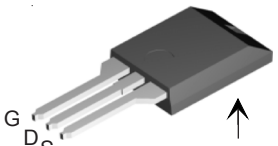
V_{DSS} = 150 V
I_{D25} = 36 A
$R_{DS(on)}$ ≤ 45 mΩ



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25° C to 150° C	150	V
V_{DGR}	T_J = 25° C to 150° C; R_{GS} = 1 MΩ	150	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	T_C = 25° C	36	A
I_{DM}	T_C = 25° C, pulse width limited by T_{JM}	150	A
I_{AR}	T_C = 25° C	50	A
E_{AR}	T_C = 25° C	30	mJ
E_{AS}	T_C = 25° C	1.0	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤100 A/μs, $V_{DD} \le V_{DSS}$, T_J ≤150° C, R_G = 10 Ω	10	V/ns
P_D	T_C = 25° C	150	W
T_J		-55 ... +175	°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
F_C	Mounting force ISOPLUS220	11..65 / 2.5..15	N/lb
	ISOPLUS247	20..120 / 4.5..25	N/lb
Weight	ISOPLUS220	3	g
	ISOPLUS247	5	g

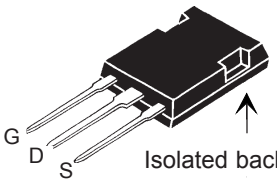
Symbol (T_J = 25° C unless otherwise specified)	Test Conditions	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0 V, I_D = 250 μA	150			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250 μA	3.0		5.0	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0			± 100	nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS} = 0 V			10	μA
	T_J = 125° C			200	μA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 31 A, Note 1			45	mΩ

ISOPLUS220 (IXTC)
E153432



Isolated back surface

ISOPLUS247 (IXTR)
E153432



Isolated back surface

G = Gate D = Drain
S = Source TAB = Drain

Features

- International standard isolated packages
- UL recognized packages
- Silicon chip on Direct-Copper-Bond substrate
  - High power dissipation
  - Isolated mounting surface
  - 2500V electrical isolation
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
  - easy to drive and to protect
- Fast intrinsic diode

Advantages

- Easy to mount
- Space savings
- High power density

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Symbol	Test Conditions (T_J = 25°C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS}= 20 V; I_D = 31 A, Note 1	14	24		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		2250		pF
C_{oss}			660		pF
C_{rss}			185		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 62 A; R_G = 10 Ω (External)		27		ns
t_r			38		ns
$t_{d(off)}$			76		ns
t_f			35		ns
$Q_{g(on)}$	V_{GS}= 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 31 A		70		nC
Q_{gs}			20		nC
Q_{gd}			38		nC
R_{thJC}				1.0	°C/W
R_{thCS}			0.15		°C/W

Source-Drain Diode

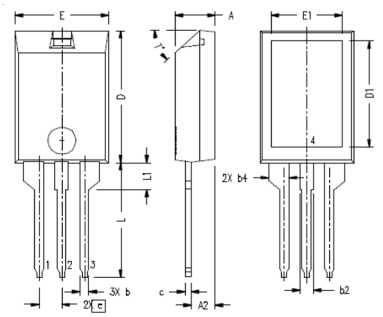
Symbol	Test Conditions (T_J = 25°C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0 V			62	A
I_{SM}	Repetitive			150	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Note 1			1.5	V
t_{rr}	I_F = 25 A, -di/dt = 100 A/µs		150		ns
Q_{RM}	V_R = 100 V, V_{GS} = 0 V		2.0		µC

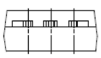
Note 1: Pulse test, t ≤300 µs, duty cycle d ≤ 2 %;
2: Test current I I_T = 62 A.

PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

ISOPLUS220™ (IXTC) Outline



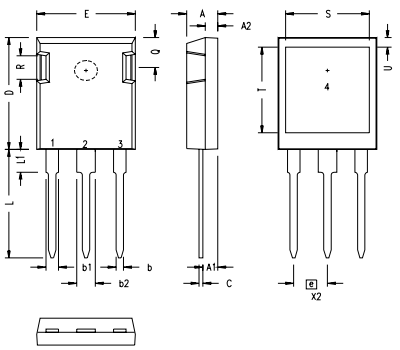


Note:
Bottom heatsink (Pin 4) is electrically isolated from Pin 1,2, or 3.

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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

ISOPLUS247 (IXTR) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b1	.075	.084	1.91	2.13
b2	.115	.123	2.92	3.12
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
E	.620	.635	15.75	16.13
e	.215 BSC		5.45 BSC	
L	.780	.800	19.81	20.32
L1	.150	.170	3.81	4.32
Q	.220	.244	5.59	6.20
R	.170	.190	4.32	4.83
S	.520	.540	13.21	13.72
T	.620	.640	15.75	16.26
U	.065	.080	1.65	2.03

1 – GATE
2 – DRAIN (COLLECTOR)
3 – SOURCE (EMITTER)
4 – NO CONNECTION

NOTE: This drawing will meet all dimensions requirement of JEDEC outline TO-247AD except screw hole.

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

IXYS MOSFETs and IGBTs are covered by one or moreof the following U.S. patents: 4,835,592 4,850,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405B2 6,710,463 6,727,585 6,759,692 6771478 B2 7,005,734B2